

Annual Report

2012 - 2013



Indian Institute of Technology
Kharagpur

September 2013

Contents

Subject

Members, Council of Indian Institutes of Technology
Board of Governors
Finance Committee
Building and Works Committee
Administrative Heads
The Senate
Director's Report
Courses of Study

PART-I

Departments, Centres and Schools
Academic Programmes

Departments

Aerospace Engineering
Agricultural and Food Engineering
Architecture and Regional Planning
Biotechnology
Chemical Engineering
Chemistry
Civil Engineering
Computer Science and Engineering
Electrical Engineering
Electronics and Electrical Communication Engineering
Geology and Geophysics
Humanities and Social Sciences
Industrial Engineering and Management
Mathematics
Mechanical Engineering
Metallurgical and Materials Engineering
Mining Engineering
Ocean Engineering and Naval Architecture
Physics and Meteorology

Centers

Centre for Educational Technology
Centre for Oceans, Rivers, Atmosphere and Land Sciences
Cryogenic Engineering Centre
Materials Science Centre
Reliability Engineering Centre
Rubber Technology Centre
Rural Development

Schools

G. S. Sanyal School of Telecommunications
Rajendra Mishra School of Engineering Entrepreneurship
Rajiv Gandhi School of Intellectual Property Law
Ranbir & Chitra Gupta School of Infrastructure Design and Management
School of Information Technology
School of Medical Science & Technology
School of Water Resources
Vinod Gupta School of Management

PART-II

Centralised Services, Programmes and Units

Advanced Technology Development Centre
Alumni Affairs & International Relations
Central Library
Central Research Facility
Central Workshop & Instruments Service Section
Centre for Theoretical Studies
Computer and Informatics Centre
Continuing Education Centre
Estate (E&M) Works Section
Estate Civil Head Office
Extra Academic Activities
Information Cell
Kalpana Chawla Space Technology Cell
Rajbhasha Vibhag
Science & Technology Entrepreneurs' Park
Sponsored Research and Industrial Consultancy
Technology Students Gymkhana
Technology Telecom Centre
Training and Placement Section
Water Works Section

PART- III

Statistical Information

Table A-1: Admission to Undergraduate Courses
Table A-2: Admission to 2-Year M.Sc. Courses
Table A-3: Students Awarded M.C.M. Scholarship
Table A-4: Students Awarded only Free Tuitionship
Table A-5: Students (SC & ST) Awarded Financial Assistance
Table A-6: Endowment Prizes - (Under Graduate)
Table A-7: Students Awarded Scholarships by External Agencies
Table A-8: Students on Roll – Undergraduate
Table A-9: Statement of Results (Undergraduate)
Table B-1: Admission to Postgraduate Courses
Table B-2: Postgraduate Students on Roll
Table B-3: Statement Of Results Of Postgraduate Examination
Table C-1: Table C-1: Number of Research Scholars Enrolled During: 2012-2013
Table C-2: Number Of Ms Students Enrolled During: 2012-2013
Table C-3: Number Of UGC Scholars Enrolled During: 2012-2013
Table C-4: Number of Research Scholars Enrolled As On 20-09-2013
Financial Information

Members of the Council of Indian Institutes of Technology

1. Dr. M. Mangapati Pallam Raju
Hon'ble Minister of Human Resource Development
2. Shri Deepender Singh Hooda
Hon'ble Member of Parliament (Lok Sabha)
3. Shri Janardhana Swamy
Hon'ble Member of Parliament (Lok Sabha)
4. Smt. Vasanthi Stanley
Hon'ble Member of Parliament (Rajya Sabha)
5. Dr. Anil Kakodkar
Chairman, Board of Governors,
Indian Institute of Technology, Bombay
6. Dr. Vijay P. Bhatkar
Chairman, Board of Governors,
Indian Institute of Technology, Delhi
7. Dr. R.P. Singh
Chairman, Board of Governors,
Indian Institute of Technology, Guwahati.
8. Prof. M. Anandkrishnan
Chairman, Board of Governors,
Indian Institute of Technology, Kanpur
9. Prof. M.M. Sharma
Chairman, Board of Governors,
Indian Institute of Technology Madras.
10. Shri Shiv Nadar
Chairman, Board of Governors,
Indian Institute of Technology Kharagpur
11. Shri Analjit Singh
Chairman, Board of Governors,
Indian Institute of Technology, Roorkee
12. Mr. S. K. Roongta
Chairman, Board of Governors
Indian Institute of Technology, Bhubaneswar
13. Dr. R.A. Mashelkar, FRS
Chairman, Board of Governors,
Indian Institute of Technology, Gandhinagar
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Chairman, Board of Governors,
Indian Institute of Technology, Hyderabad

15. Prof. Goverdhan Mehta
Chairman, Board of Governors,
Indian Institute of Technology, Jodhpur
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Chairman, Board of Governors,
Indian Institute of Technology, Indore
17. Shri M. Natarajan
Chairman, Board of Governors,
Indian Institute of Technology, Mandi
18. Dr. T. Ramasami
Chairman, Board of Governors,
Indian Institute of Technology, Ropar
19. Dr. Lalji Singh
Chairman, Board of Governors,
Indian Institute of Technology (BHU), Varanasi
20. Prof. Devang V. Khakhar
Director, Indian Institute of Technology, Bombay
21. Prof. R.K. Shevgaonkar
Director, Indian Institute of Technology, Delhi
22. Prof. S.G. Dhande
Director, Indian Institute of Technology,
Kanpur
23. Prof. P. P. Chakrabarti
Director, Indian Institute of Technology, Kharagpur
24. Prof. Bhaskar Ramamurthi
Director, Indian Institute of Technology, Madras
25. Prof. Gautam Barua
Director, Indian Institute of Technology, Guwahati
26. Prof. Pradipta Banerji
Director, Indian Institute of Technology, Roorkee
27. Prof. Prem Kumar Kalra
Director, Indian Institute of Technology, Jodhpur
28. Prof. Sudhir K. Jain
Director, Indian Institute of Technology, Gandhinagar
29. Prof. Anil K. Bhowmick
Director, Indian Institute of Technology, Patna
30. Prof U.B. Desai
Director, Indian Institute of Technology, Hyderabad
31. Prof. M.K. Surappa
Director, Indian Institute of Technology, Ropar
32. Prof. Madhusudan Chakraborty

- Director, Indian Institute of Technology, Bhubaneswar,
33. Prof. Timothy Gonsalves
Director, Indian Institute of Technology, Mandi
 34. Prof. Pradeep Mathur
Director, Indian Institute of Technology, Indore
 35. Prof. Raeev Sangal
Director, Indian Institute of Technology (BHU), Varanasi
 36. Prof. Ved Prakash
Chairman (Actg.), University Grants
Commission
 37. Prof. Samir K Brahmachari
Director General, Council of Scientific and Industrial Research
 38. Dr. K. Kasturirangan,
Chairman, Council of Indian Institute of Science, Bangalore
 39. Prof. P. Balaram,
Director, Indian Institute of Science, Bangalore
 40. Shri Sumit Bose,
Secretary (Expenditure), Ministry of
Finance,
 41. Shri J Satyanarayana,
Secretary, Department of Information Technology
 42. Dr. S.S. Mantha,
Chairman (Acting), All India Council for Technical Education

Board of Governors, IIT Kharagpur
(From 1st April, 2012 to 31st March, 2013)

Sl. No	Name & Address	Position
1.	Dr. Shiv Nadar Chairman,BoG, IIT Kharagpur & Founder- HCL Technologies Ltd. A-10/11, Sector-3, Noida-201301, U.P.	Chairman
2.	Secretary(HE) (upto 08.07.2012) Ministry of Human Resource Development Department of Higher Education Shastri Bhawan,New Delhi -110115	Member
3.	Dr. Srikumar Banerjee (from 09.07.2012) Bhabha Atomic Research Centre, Trombay Mumbai – 400085	Member
4.	Prof. B. B. Bhattacharya Professor of Economics A-44, Sarve Sanjhi Apts. Plot No.8, Sector-9, Dwarka, New Delhi-110077	Member
5.	Shri Sandipan Chakravorty Managing Director Tata Steel Processing & Distribution Limited Tata Centre (Ground Floor), 43, Chowringhee Road, Kolkata – 700071	Member
6.	Prof. N. Balakrishnan Associate Director Indian Institute of Science, Bangalore – 560012	Member
7.	Shri Tamal Dasgupta A-3, Royal Greens 49/1, PGM Shah Road Golf Garden, Kolkata – 700033	Member
8.	Prof. D. Acharya Director (upto 30.06.2012) Director (Officiating) (upto 30.09.2012) IIT Kharagpur	Member
10.	Prof. S. K. Som Director (Officiating) (from 01.10.2012) IIT Kharagpur	Member
11.	Prof. N. R. Mandal Dept. of Ocean Engg. & Naval Architecture IIT Kharagpur	Member
12.	Prof. S. K. Satsangi Dept. of Ocean Engg. & Naval Architecture IIT Kharagpur	Member
13.	Dr. T.K. Ghosal Registrar (Officiating) (upto 13.12.2012) Registrar (from 14.12.2012) IIT Kharagpur	Secretary

**Finance Committee, IIT Kharagpur
(From 1st April, 2012 to 31st March, 2013)**

SI No	Name and Address	Position
1.	Shri Shiv Nadar Chairman,BoG, IIT Kharagpur & Founder- HCL, HCL Technologies Ltd. A-10/11, Sector-3, Noida-201301, U.P.	Chairman
2.	Secretary(HE) Govt. of India Ministry of Human Resource Development Department of Higher Education Shastri Bhawan,New Delhi -110115	Member
3.	Additional Secretary & Financial Adviser (upto 04.03.2013) Government of India Ministry of Human Resource Development Department of Higher Education Shastri Bhawan New Delhi -110115	
4.	Joint Secretary & Financial Adviser (from 05.03.2013) Government of India Ministry of Human Resource Development Department of Higher Education Shastri Bhawan New Delhi -110115	Member
5.	Shri Tamal Dasgupta A-3, Royal Greens 49/1, PGM Shah Road Golf Garden Kolkata – 700033	Member
6.	Prof. D. Acharya Director(upto 30.06.2012) Director (Officiating) (upto 30.09.2012) IIT Kharagpur	Member
8.	Prof. S. K. Som (from 01.10.2012) Director (Officiating) IIT Kharagpur	Member
9.	Prof. S. K. Satsangi Dept. of Ocean Engg. & Naval Architecture IIT Kharagpur	Member
10	Dr. T.K. Ghosal Registrar (Officiating) (upto 13.12.2012) Registrar (from 14.12.2012) IIT Kharagpur	Secretary

Building and Works Committee

Sl. No	Name & Address	Position
1.	Prof. D. Acharya Director (upto 30.06.2012) Director (Officiating) (upto 30.09.2012) IIT Kharagpur	Chairman
3.	Prof. S. K. Som Director (Officiating) IIT Kharagpur	Chairman
4	Shri S. K. Biswas Superintending Engineer & Circle Manager Midnapore Distribution Circle West Bengal State Electricity Distribution Co. Ltd. (WBSEDCL) 190, S. K.Bose Road Paschim Medinipur PIN - 721101	Member
5.	Shri Swadesh Kumar Chakraborty Superintending Engineer South Western Circle Public Works Department (PWD) Saheed Mangal Pandey Sarani Paschim Medinipur PIN - 721101	Member
6.	Head Department of Civil Engineering IIT Kharagpur	Member
7.	Head Department of Electrical Engineering IIT Kharagpur	Member
8.	Head Dept. of Architecture & Regional Planning IIT Kharagpur	Member
9.	Registrar IIT Kharagpur	Secretary

Administrative Heads

Director	Prof. Damodar Acharya (up to 30.06.2012)		
Director (Officiating)	Prof. Damodar Acharya (from 01.07.2012 up to 30.09.2012) Prof. S. K. Som (From 01.10.2012)		
Deputy Director	Prof. A.K. Majumdar		
Registrar (Officiating) Registrar	Dr. T.K. Ghosal (Up to 13.12.2012) Dr. T.K. Ghosal (From 13.12.2012)		
Deans			
Undergraduate Studies	Prof. S. K. Som Prof. Somnath Sengupta	Upto From	20.12.2012 21.12.2012
Postgraduate Studies & Research Faculty	Prof. A. N. Samanta Prof. Amit Basak		
Planning & Coordination	Prof. B. K. Mathur		
Sponsored Research & Industrial Consultancy	Prof. P. P. Chakrabarti		
Students' Affair	Prof. N. R. Mondal		
Continuing Education	Prof. Somnath Sengupta		
Alumni Affairs & International Relations	Prof. Amit Patra		
Vinod Gupta School of Management	Prof. K. K. Guin (Acting)		
Head of Departments			
Aerospace Engineering	Prof. K. P. Sinha mahapatra		
Agricultural & Food Engineering	Prof. P. B. S. Bhadoria		
Architecture & Regional Planning	Prof. Jaydip Barman		
Biotechnology	Prof. Amit K. Das Prof. T. K. Maiti	Upto From	31.12.2012 01.01.2013
Chemical Engineering	Prof. N. C. Pradhan		
Chemistry	Prof. D. R. Mal		
Civil Engineering	Prof. L.S. Ramachandra Prof. Subhasis Dey	Upto From	31.12.2012 01.01.2013
Computer Science & Engineering	Prof. Jayanta Mukhopadhyay		
Electrical Engineering	Prof. Jayanta Pal		
Electronics & Electrical Communication Engineering	Prof. C.K. Maiti Prof. Swapna Banerjee	Upto From	15.06.2012 16.06.2012
Geology & Geophysics	Prof. Biswajit Mishra Prof. Debashish Sengupta	Upto From	31.12.2012 01.01.2013
Humanities & Social Sciences	Prof. K. B. L. Srivastava		
Industrial Engineering & Management	Prof. B. Mohanty Prof. M. K. Tiwari	Upto From	31.12.2012 01.01.2013
Mathematics	Prof. P. D. Srivastava		
Mechanical Engineering	Prof. Ranjan Bhattacharyya		

Metallurgical & Materials Engineering	Prof. Siddhartha Das
Mining Engineering	Prof. K. U. M. Rao
Ocean Engineering & Naval Architecture	Prof. O. P. Sha
Physics & Meteorology	Prof. S. K. Ray

Head of Centers

Advanced Technology Development Centre	Prof. P. P. Chakrabarti		
Centre for Educational Technology	Dr. Bani Bhattacharyya		
Centre for Oceans, Rivers, Atmosphere and Land Sciences	Prof. D. Sen		
Cryogenic Engineering	Prof. V. V. Rao	Upto	31.12.2012
	Prof. Kanchan Chowdhury	From	01.01.2013
Material Science	Prof. S. Ram		
Reliability Engineering	Prof. B. Mohanty	Upto	31.12.2012
	Prof. M. K. Tiwari	From	01.01.2013
Rubber Technology	Prof. G. B. Nando		
Rural Development	Prof. P. B. S. Bhadoria		
Computer & Informatics	Prof. Prabir Kumar Biswas		
Administrative Computer Service Support Centre	Prof. R.N. Banerjee		

Head of Schools

G. S. Sanyal School of Telecommunications	Prof. Saswat Chakrabarti		
School of Information Technology	Prof. Jayanta Mukhopadhyay		
School of Medical Science & Technology	Prof. Pranab Kumar Dutta		
Vinod Gupta School of Management	Prof. K. K. Guin		
Rajendra Mishra School of Engineering Entrepreneurship	Prof. D. Biswas		
Rajiv Gandhi School of Intellectual Property Law	Prof. S. V. Joga Rao	Up to	14.09.2012
	Prof. M. Padmavati	From	15.09.2012
	Prof. K. Vibhute	From	04.03.2013
Ranbir and Chitra Gupta School of Infrastructure Design and Management	Prof. U. K. Banerjee		
School of Water Resources	Prof. S. N. Panda		

Chairmen & Vice-Chairmen

UG Admissions	Prof. P. K. Das	JEE-2013
Vice-Chairman, UG Admissions	Prof. M. K. Panigrahi	JEE-2013
	Prof. S. K. Pal	
PG Admissions	Prof. D. Deb	GATE and JAM - 2011
Vice-Chairman, PG Admissions	Prof. G. P. Raja Sekhar	GATE and JAM - 2011
	Prof. B. C. Maikap	
Central Library	Prof. S. Sahu	
Hall Management Committee	Prof. A. Goswami	

Chairman, CWISS
CRF (Materials Division)
CRF (Life Science Division)
Rajbhasha Vibhag
Nehru Museum of Science &
Technology
Kalpana Chawla Space Technology
Cell (KCSTC)

Prof. P. K. Das
Prof. Rahul Mitra
Prof. A. K. Ghosh
Prof. U. C. Gupta
Prof. D. Sen
Prof. Somnath Sengupta

Professors-in-Charge

B C Roy Technology Hospital
Examinations
Training & Placement
General Time Table
Convocation-2012
Institute Information Cell
President, Technology Students
Gymkhana
Refrigeration & Air Conditioning
Horticulture
Water Works
Civil Works (Construction and
Maintenance)
Electrical Works
Telecommunication
Institute Guest Houses
Intellectual Property Right & Industrial
Relation

Prof. Chhanda Chakraborti
Prof. Biswajit Maiti
Prof. Sudhir Kumar Barai
Prof. D. K. Pratihar
Prof. S. K. Som
Prof. B. K. Mathur
Prof. Manish Bhattacharjee
Prof. M. Ramgopal
Prof. C.K. Mukherjee
Prof. A. K. Gupta
Prof. N. Dhang
Prof. D. Das
Prof. Raja Datta
Prof. B. K. Sengupta
Prof. S. K. Barai

General

Librarian
Public Information Officer
Head, B.C. Roy Technology Hospital
Superintending Engineer (Civil)
Executive Engineer (Civil)
Executive Engineer (Electrical)
Security Officer

Dr. B. Sutradhar
Dr. Anathbandhu Patra
Dr. B. Mishra
Shri T. K. Mukherjee
Shri Subrat Roy (*on EOL*)
Shri S. K. Biswas
Shri Sabyasachi Ghosh
Shri Mahesh Kumar
Shri R. N. Senapati

List of Senate Members

Chairman

Prof. D. Acharya
Director (up to 30.06.2012)
Director (Officiating) (from 01.07.2012 up to 30.09.2012)

Prof. S. K. Som
Director (Officiating) (from 01.10.2012)

Members

Aerospace Engineering

Prof. P.K. Datta
Prof. N. Singh
Prof. K. P. Sinhamahapatra
Prof. B. N. Singh

Agricultural & Food Engineering

Prof. K.P. Pandey
Prof. B.C. Mal
Prof. R. Singh
Prof. V.K. Tewari
Prof. K.N. Tiwari
Prof. R. K. Panda
Prof. R. Banerjee
Prof. S.K. Das
Prof. P.B.S. Bhadoria
Prof. B.C. Ghosh
Prof. A. K. Datta
Prof. H. N. Mishra
Prof. N. S. Raghuwanshi
Prof. S. N. Panda
Prof. T. K. Goswami
Prof. N. Mallik
Prof. M. K. Jha
Prof. H. Raheman
Prof. S. Dutta Gupta

Architecture & Regional Planning

Prof. R.N. Datta
Prof. B.K. Sengupta
Prof. U.K. Banerjee
Prof. J. Barman
Prof. S. Chattopadhyay

Biotechnology

Prof. S.C. Kundu
Prof. D. Das
Prof. S. Dey
Prof. A.K. Ghosh
Prof. A.K. Das
Prof. T. K. Maiti
Prof. S. K. Ghosh

Centre for Educational Technology

Prof. B. Bhattacharya

Centre for Oceans, Rivers, Atmosphere and Land Science

Prof. A. Chakraborty

Chemical Engineering

Prof. D. Mukherjee
Prof. A.N. Samanta
Prof. S. Dasgupta
Prof. N. C. Pradhan
Prof. S. De
Prof. G. Da
Prof. S. Neogi
Prof. J. K. Basu
Prof. G. Kundu

Chemistry

Prof. D. Mal
Prof. T.K. Sarkar
Prof. J.K. Roy
Prof. P.K. Chattaraj
Prof. T. Pathak
Prof. T. S. Pal
Prof. A. Basak
Prof. D. Ray
Prof. M. Bhattacharjee
Prof. S. K. Srivastava
Prof. N. Sarkar
Prof. S. Dasgupta
Prof. S. Taraphder
Prof. S. Bandyopadhyay
Prof. S. Hajra
Prof. J. K. Dey
Prof. P. Pramanik

Civil Engineering

Prof. D. J. Sen
Prof. S.K. Bhattacharyya
Prof. K.S. Reddy
Prof. L.S. Ramachandra
Prof. S. Dey
Prof. D.K. Baidya
Prof. N. Dhang
Prof. S. K. V. Barai
Prof. V. R. Desai

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Prof. B. Bhattacharya

Computer Science & Engineering

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Prof. A.K. Majumdar
Prof. S. Ghose
Prof. P.P. Chakraborti
Prof. A. Basu
Prof. I. Sengupta
Prof. J. Mukhopadhyay
Prof. S.P. Pal
Prof. R. Mall
Prof. D. Sarkar
Prof. D. Roy Chowdhury
Prof. P. Dasgupta
Prof. R. Kumar
Prof. S. Sarkar
Prof. C. Mandal
Prof. A. Gupta
Prof. P. P. Das

Cryogenic Engineering

Prof. S.K. Sarangi
Prof. S.S. Bandyopadhyay
Prof. T.K. Dey
Prof. V. Rao Vutukuru
Prof. K. Chowdhury

Electrical Engineering

Prof. S.K. Das
Prof. A.K. Sinha
Prof. J. Pal
Prof. A. Patra
Prof. N.K. Kishore
Prof. A. Barua
Prof. G. Ray
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Prof. S. Sen
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Prof. S. Sengupta
Prof. T. K. Bhattacharya
Prof. C. Chakraborty
Prof. S. Maka
Prof. A. K. Pradhan
Prof. D. Kastha
Prof. A. Routray

Electronics & Electrical Communication Engineering

Prof. A. Chakraborty
Prof. D. Dutta,
Prof. Ajoy Kr. Roy

Prof. S. Banerjee
Prof. C.K. Maiti
Prof. V.R.K. Ratnam
Prof. P.K. Biswas
Prof. S. Sengupta
Prof. M. Chakraborty
Prof. R. Garg
Prof. S. S. Pathak
Prof. S. Sanyal
Prof. D. Biswas
Prof. K. K. Bandyapadhyay
Prof. S. Chattopadhyay
Prof. B. K. Sarkar

Geology & Geophysics

Prof. S.K. Nath
Prof. B. Mishra
Prof. A.K. Gupta
Prof. D. Sengupta
Prof. A. Bhattacharya
Prof. S. Tripathy
Prof. A. Sarkar
Prof. S. Das
Prof. M. K. Panigrahi
Prof. S. K. Bhowmik
Prof. S. Gupta
Prof. A. K. Bhattacharya
Prof. S. P. Sharma
Prof. M. A Mamtani

G S Sanyal School of Telecommunication

Prof. S. Chakraborti

Humanities & Social Sciences

Prof. B. Chatterjee
Prof. P. Basu
Prof. H.R. Tewari
Prof. D. Suar
Prof. A. Gera Roy
Prof. K.B.L. Srivastava
Prof. S. Chopra Chatterjee
Prof. V. N. Giri
Prof. C. Chakraborti
Prof. P. Patnaik

Industrial Engineering & Management

Prof. S. Srinivasan
Prof. P.K.J. Mohapatra
Prof. R.N. Banerjee
Prof. D. Acharya
Prof. B. Mohanty
Prof. P.K. Ray
Prof. M. K. Tiwari
Prof. P. L. Narasimhan

Materials Science

Prof. D. Bhattacharya
Prof. C.K. Das
Prof. B. Adhikari
Prof. S. Ram
Prof. S. Banerjee

Mathematics

Prof. A. R. Roy
Prof. P.D. Srivastava
Prof. A. Sarkar
Prof. U.C. Gupta
Prof. M.P. Biswal
Prof. D.K. Gupta
Prof. V. K. Jain
Prof. S. Bhattacharyya
Prof. A. Goswami
Prof. S. Kumar
Prof. R. K. Pandey
Prof. G. P. Raja Sekhar

Mechanical Engineering

Prof. B. Maiti
Prof. A. Mukherjee
Prof. S.K. Som
Prof. V.V. Satyamurty
Prof. A. K. Chattopadhyay
Prof. S. Bhattacharya
Prof. R. Bhattacharyya
Prof. S. K. Dash
Prof. P. K. Das
Prof. A. R. Mohanty
Prof. S. N. Bhattacharyya
Prof. R. N. Maiti
Prof. S. Paul
Prof. M. C. Ray
Prof. A. K. Nath
Prof. S. Roy
Prof. D. K. Pratihari
Prof. S. Chakraborty
Prof. A. Dasgupta
Prof. A. Guha
Prof. S. K. Roy Chowdhury
Prof. M. Ramgopal
Prof. A. Roy Choudhury

Metallurgical & Materials Engineering

Prof. M. Chakraborty
Prof. S. K. Pabi
Prof. M.M. Godkhindi
Prof. K.K. Ray
Prof. N. Chakraborty
Prof. I. Manna
Prof. S. Das
Prof. S. K. Roy
Prof. K. Das
Prof. G. G. Roy
Prof. R. Mitra
Prof. P.K. Sen
Prof. J. Dutta Majumdar

Prof. S. B. Singh

Mining Engineering

Prof. S.S. Bhamidipati
Prof. A. Bhattacharya
Prof. K. U. M. Rao
Prof. S. K. Das
Prof. K. Pathak
Prof. J. Bhattacharyya
Prof. S. K. Mukhopadhyay
Prof. S. K. Pal
Prof. D. Deb

Ocean Engineering & Naval Architecture

Prof. S.C. Misra
Prof. S.K. Satsangi
Prof. N.R. Mandal
Prof. D. Sen
Prof. O. P. Sha
Prof. Trilochan Sahoo

Physics & Meteorology

Prof. B.K. Mathur
Prof. S.L. Sharma
Prof. S.K. Ray
Prof. A. Taraphder
Prof. K. Kumar
Prof. S. Bharadwaj
Prof. S. Kar
Prof. A. Roy
Prof. P. K. Datta

Rajiv Gandhi School of Intellectual Property Law

Prof. Khushal Vibhute,

Reliability Engineering

Prof. V.N.A. Naikan

Rubber Technology

Prof. A.K. Bhowmick
Prof. G.B. Nando
Prof. D. Khastgir
Prof. T. K. Chaki

School Of Information Technology

Prof. S. Sural

School of Medical Science & Technology

Prof. S. K. Guha
Prof. A. K. Bardhan

Steel Technology Centre

Prof. R. N. Ghosh

Vinod Gupta School Of Management

Prof. K. K. Guin,
Prof. G. Sinha
Prof. P. Mukherjee
Prof. Prabina Rajib

Librarian

Dr. B. Sutradhar,

Students Representative

Secretary

Registrar: Dr. T. K. Ghosal

Vice President: Mr. Rinshul Chandra

UG representative: Mohammed Janipasha

PG Representative: Mr. Anshu Bansal

Research Scholar representative: Mr. Jose
Gilbert J

DIRECTOR'S REPORT

IIT Kharagpur continued taking new strides towards emerging directions to further the growth and dissemination of scientific and technological knowledge during the year 2012-2013. Brief outlines of the major activities of the Institute during this period are highlighted.

ACADEMIC PROGRAMMES

The Institute has been very sensitive to the human resource development of the country and to that end continues initiating new academic programs. In recent years we have introduced several new academic programmes. These include:

- M. Arch : Master of Architecture in Sustainable Built Environments is being taken up in the Department of Architecture and Regional Planning
- Dual-degree programme on Quality Engineering design and Manufacturing coordinated by the Department of Industrial Engineering and Management
- M. Tech programme on Embedded Software and Control coordinated by the Advanced Technology Development Centre
- M. Tech. Programme in Water Management in School of Water Resources.
- M.Tech in Infrastructure Design and Management in the Ranbir and Chitra Gupta School of Infrastructure Design and Management.
- M.Tech in Media and Sound Engineering in Centre for Education Technology
- Introduction of a specialized M. Tech. programme on Telecommunication Network Engineering in the GS Sanyal School of Telecommunication.
- The Department of Mathematics is in the process of reviewing its already existing programs though a change of course content of different topics as per the present day requirements
- A new Programme in the area of Marine Resource Development and Management is being launched in the Centre for Ocean, River, Atmosphere and Land Sciences
- Dual Degree Postgraduate programme in Financial Engineering involving various departments.
- 3-Year Executive MBA (EMBA) Programme in Kolkata and Bhubaneswar Campus introduced by the Vinod Gupta School of Management.

The Institute is presently offering B.Tech (Hons) programmes in seventeen different branches of engineering, a B.Arch. (Hons.) programme in Architecture, fifteen Dual Degree programmes, seven Integrated M.Sc. programmes, four two-year Joint M.Sc.-Ph.D. programmes, fiftythree postgraduate degree programmes leading to Joint M.Tech. / MCP-Ph.D., MBM, MHRM and MMST degrees besides an LLB degree. The curricula and syllabi of these programmes are constantly updated to meet the needs of the changing world with focus on quality and excellence.

A noteworthy recent addition is the implementation of the ERP System. All academic issues including faculty recruitment, student's registration, enrollment, course allocation, examination results, students feedback and sponsored project details are now available on-line through this system.

Today, at this function we will be conferring 149 Ph.D., 25 MS, 771 M.Tech., 32 MCP, 123 MBA, 4 MMST, 17 MHRM, 27 LLB, 270 Dual Degree, 472 B.Tech. (Hons), 20 B.Arch. (Hons.) and 228 M.Sc. degrees.

58th Convocation

Fifty-eighth Annual Convocation of the Institute was held on September 15, 2012. Shri Pranab Mukherjee, President of India was the Chief Guest. The convocation conferred degrees to 2049 graduates that include 1 D.Sc., 181 Ph.D., 46 MS, 696 M.Tech., 32 MCP, 84 MBA, 11 MMST, 19 MHRM, 28 LLB, 283 Dual Degree, 416 B.Tech. (Hons.), 22 B.Arch. (Hons.) and 230 M.Sc. degrees. Following students were the recipients of Institute Gold Medals for their academic excellence and all round performance in the year 2011-2012.

- Shri Avishek Biswas of the Department of Electronics and Electrical Communication Engineering received the **President of India Gold Medal** for the best academic performance among the outgoing B.Tech. (Hons.) and B.Arch.(Hons.) students.
- Shri Devesh Kumar Dhruw of the Department of Electrical Engineering won the **Dr. Bidhan Chandra Roy Memorial Gold Medal** for the best all-round performance among the B.Tech. (Hons.) and B.Arch.(Hons.) outgoing students.
- **The Prime Minister of India Gold Medal** for the best academic performance among the Dual degree and Integrated M.Sc. outgoing students went to Shri Vighnesh Avadhani of the Department of Computer Science and Engineering.
- **Dr. Jnan Chandra Ghosh Memorial Gold Medal** for the best all-round performance among the outgoing Dual Degree and Integrated M.Sc. students was awarded to Shri Chirag Fialoke of the Department of Mechanical Engineering.
- Shri Pratish Datta of the Department of Mathematics won the **Professor Jagadish Chandra Bose Memorial Gold Medal** for the best academic performance among the outgoing students of all 2-year M.Sc. courses in the Science Disciplines.
- Ms. Vinnakota L.B.K.Manoja of the Department of Electronics and Electrical Communication Engineering received **The Director's Gold Medal** for the best academic performance among the students completing M.Tech and MCP courses.

The Senate and the Board of Governors of the Institute conferred the highest honor, the degree of Doctor of Science (Honoris Causa), on the following distinguished personalities:

- Mr. Arjun Malhotra in recognition of being a doyen of the Indian Computer Industries and chief architect in setting up HCL.
- Mr. B. Muthuraman for his visionary leadership in making Tata Steel to become a truly global company.
- Mr. Baba Neelkanth Kalyani for being the global leader in automotive forging industry.
- Professor M. M. Sharma who has been acclaimed world wide as an outstanding Chemical Engineer and is regarded as a scientist of rare distinction.

In the convocation the **Distinguished Alumnus Award** were conferred on:

- Prof. Sanjoy Banerjee, CUNY Distinguished Professor of Chemical Engineering and Director of the Energy Institute, which he founded when he moved to the City College of New York.
- Prof. Pinakpani Chakrabarti, Senior Professor at Bose Institute and is known nationally and internationally for his work in structural biology and bioinformatics.
- Mr. Sandipan Chakravorty, Managing Director of Tata Steel Processing and Distribution Limited (formerly Tata Ryerson Limited).
- Dr. Anand Deshpande, Founder, Chairman and Managing Director of Persistent Systems.
- Dr. Supratik Guha, is the Director of the Physical Sciences Department at IBM Research and is responsible for managing IBM's worldwide research in the physical sciences,
- Prof. Farrokh Mistree, who holds the L.A. Comp Chair and is the Director of the School of Aerospace and Mechanical Engineering at the University of Oklahoma in Norman, Oklahoma,
- Prof. Viswanath Ramamurti, a rare case of an academician with a flare of solving design problems of industry,
- Mr. Dipankar Raychowdhuri, Professor Electrical and Computer Engineering and Director, WINLAB (Wireless Information Network Lab) at Rutgers University,
- Mr. Ved Prakash Sandlas, the Director General, Amity Institute of Aerospace Engineering, Noida,
- Mr. Pronob Kumar Sandell, internationally recognized expert in the metallurgical industries. He is the first Vice President of the student's Gymkhana at IIT, Kharagpur.

- Prof. Subrata Sengupta, Dean of the College of Engineering and Computer Science at the University of Michigan-Dearborn,
- Dr. Puthenveetil C. Varghese, one of the gems of Structural Engineering.

Research and Development Activities

- **Aerospace Engineering** : Department is involved in various research activities in different fields namely; Composite & Smart Structures Structural Dynamics & Aeroelasticity Design & Development of MR-fluid damper. Analysis of aerospace Structures using DQM, DTFM, FEM Nanomaterials and nanomechanics. Development of reconfigurable autonomous air vehicle. Lunar gravity modeling, topography modeling and orbit determination for the Chandrayaan-I. Fault tolerant and reconfigurable architecture development for the automotive. Real time system identification, system identification using neural sensitivity analysis. Fault detection and identification for aircraft.
- **Agricultural and Food Engineering** : Application of GIS in both command area and watershed management, Neural network in hydrology, Ballast management of agricultural tractors, Biofiltration Technology, Bio-fuels from tree-based oils, Climate change analysis and applications in water and crop management, Design, development and field evaluation of a small power tractor, Design and development of slip meter for two-wheel drive tractors
- **Architecture and Regional Planning** : Performance studies, Design Simulation and Intelligent Architecture, Building Automation and Management Systems, Sustainable Development, Energy Efficient Design, Appropriate Technologies, Spatial Environmental Planning, Eco-sensitive and Green Architecture; Indian Traditional Architecture and Heritage studies, Vernacular Architecture, Visual Communication, Visual Simulation, Product design and Industrial design; Transportation Planning, Traffic Engineering and Management, Hazards and Disaster Mitigation and Management, Urban Design, Eco-tourism, Recreation and Landscape Planning, Conservation and Preservation Studies, Housing and Shelter, Social Infrastructure; Urban Development Management and Finance, Advanced Planning Informatics, Geographical Information Systems, Decision support systems and Expert systems, Urban Settlement and Systems Dynamics.
- **Biotechnology** : Production of an anti-tumor biosurfactant, Alkaline lipase, Biodiesel; Bioreactor strategies for the enhanced production of probiotic endospores for Nutraceutical formulations and their clinical evaluation; Molecular characterization of metronidazole activation and deactivation pathways in *Entamoeba histolytica*; Structural and functional studies of protein from *M. tuberculosis* and *S. aureus* aiming at drug and inhibitor design; Biomicrofluidics and Biochip development, Microbial fuel cell. Molecular cloning, expression and characterization of *E. invadens* encystation specific proteins. Improvement of hydrogen production from industrial waste using hybrid bioreactor. Characterization of Antarctic microbiota Probiotic nutraceutical development.
- **Chemical Engineering** : Advanced separation processes involving membranes with emphasis on water purification, dye removal, effluent treatment, etc.; Development of innovative catalysts from fly ash for organic chemical synthesis (alkylation, isomerisation etc.); Plasma assisted surface modification for chemical engineering applications Heterogeneous reactions with application to chemical process development; Utilization of non-edible oils for manufacturing of value-added chemicals; Steam reforming of petroleum feedstock in mini-and micro-reactors for production of hydrogen.
- **Chemistry** : Synthesis of bioactive natural products, Isolation and characterization of an angiogenic protein; Supramolecular chemistry; Development of highly selective and green methodologies; Development integrated biosensing platform for clinical and environmental applications; electron transfer processes with emphasis in dioxygen chemistry; Micellar, zeolite, and bimetallic catalysts, aqueous medium polymerization; metal nanoparticles, nanocrystalline ferrites, ceramics and composites; Materials for high temperature and superconducting applications.
- **Civil Engineering** : Cell filled low cost rural roads, Analysis and Evaluation of Concrete and flexible pavements, Specifications for bituminous mixes and Urban transportation planning; Microbial Fuel Cells, Onsite treatment of domestic sewage from small community, Studies on granulation in

UASB reactor treating low strength wastewater to enhance efficiency of the reactor, Water quality and health assessment, Nanoparticle synthesis, their characterization and application; Photodegradation of organic pollutants; Removal of Arsenic from ground water using low cost adsorbent; Erosion control and mechanical stabilization of soils using natural fibers, ground improvement, soil-microbe interaction, in situ testing, geotechnical earthquake engineering, landslides and slope stabilization

- **Computer Science and Engineering** : Computer Networks, Cryptography, Databases, Embedded Systems, Fault Tolerant Computing, Formal Verification, Image Processing and Computer Vision, Mobile Computing, Multimedia, Natural Language Processing, Object Oriented Design Tools, Parallel and Distributed Processing, Real Time Systems, Software Engineering, Speech Recognition and Synthesis, VLSI Design and CAD tools, Quantum Information and Computation Artificial Intelligence, Bioinformatics, Combinatorial and Computational Geometry, Computer Graphics.

- **Electrical Engineering** : Magnetic Levitation, Superconducting magnetic energy storage, Variable frequency AC-Drives, Simulation of power electronic circuits, Resonant Converters, Design of integrated circuits for Power Management, Nonlinear phenomena in Power Electronics, Automotive Electronics, Diagnostic of drives, Drive fatigue analysis Control and Dynamic Systems: Neuro-fuzzy controllers, Control of chaotic systems, Discrete event and hybrid systems, Fault-tolerant control of aero-space systems, Attitude control of satellites and launch vehicles, Robust stabilization using periodic controllers, Bifurcation theory of hybrid dynamical systems, Delta domain digital control analysis and design, Neural networks applications in control, Genetic algorithm applications in control, Wind turbines, Power system dynamics, Real-time digital simulation of power systems, Power system protection, Intelligent relaying, State estimation of power systems, Condition and Diagnostic Monitoring of Power Apparatus, Energy audit and management, Power system planning and optimization, Wavelet Application to Power system Transients, Electric Field Computations, Lightning Protection, Material Characterization, FACTS Instrumentation and Signal Processing: Motion estimation using MRI and colour Doppler imaging, Testing of analog and digital VLSI circuits, Fault detection and diagnosis of analog circuits, Biomedical signal processing, Design and development of MEMS accelerometer, Seismic signal processing, active noise control, Fast algorithms for real time signal processing; Fibre-optic components and sensors.

- **Electronics and Electrical Communication Engineering** : Design and development of an embedded system-on-chip solution for an adaptive intelligent biomedical system, low cost Doppler Ultrasonography system, design of an Ultrasound Imaging system, development of non-invasive blood glucose monitor based on laser induced photo acoustic spectroscopy, early detection of oral cancer via image processing. Fibre Optics and Networking: The current research involves dispersion compensation of 40 Gb/s optical transmission system with optical phase conjugation and distributed Raman amplifier as well as with chirped fibre Bragg grating. In the optical networking area, innovative schemes have been developed for guaranteeing WDM network survivability and IP-over-WDM integrated routing. Development of a RISC DSP for Modems. Development of a dual standard baseband processor for 3G Wireless Systems. Automated Visual Inspection of Industrial Objects, VLSI Architecture for low bit rate Video Coding, Medical Image Processing, Gesture Recognition from Video Sequences, Face recognition, Content based Retrieval of Texture Images, Fuzzy Neural Network. Automated Visual Inspection of Industrial Objects, VLSI Architecture for low bit rate Video Coding, Medical Image Processing, Gesture Recognition from Video Sequences, Face recognition, Content based Retrieval of Texture Images, Fuzzy Neural Network.

- **Geology and Geophysics** : Tectonic evolution of craton – mobile belt ensembles in parts of the Indian shield; Gold mineralization in greenstone belts of Dharwar Craton; Metamorphic remobilization of massive sulphide deposits; Studies on Indian microvertebrates, Lithospheric structure across Himalaya, Deformation at Collisional boundaries, Stable isotopes in Himalayan foreland sediments; Paleogene climate of Kutch, Rajasthan, Seismic Hazard assessment and microzonation in the NE India and metropolitan cities; Studies on Indian monsoon and paleoclimate studies of the Indian subcontinent and paleoceanography of the Indian Ocean.

- **Humanities and Social Sciences** : Quantitative economics, Financial economics, Economics of growth, Industrial economics, Development economics, Environmental and resource economics, Sociology of health and medicine, Brain and behavior, Visual aesthetics, Business ethics, corporate social responsibility.

- **Industrial Engineering and Management** : Operations Management: Production Planning and Inventory Control, Logistics and Supply Chain Management, E-Business, Quality Engineering and Control, Facility Layout and Design, Total Quality Management and Six Sigma. Simulation and Soft Computing: Genetic Algorithms and its variants, Heuristics, System Dynamics, Discrete Event Simulation. Work System Design: Ergonomics/Human Factors Engineering, Occupational Safety and Health Management, and Probabilistic Risk Assessment.
- **Mathematics** : Fuzzy Mathematics, Soft Algebra, Bio Mechanics, Clifford Analysis, Dynamics of Nonlinear systems, Inventory Management, Graph Theory, Integral Equations, Cryptography, Queueing Theory, Statistical Decision Theory, Statistical Data Analysis, Compiler Design, Combinatorics, Fractional Calculus, Optimization and Theoretical Computer Science; Information and coding Theory; Cryptology.
- **Mechanical Engineering** : Design and development of expert systems in robotics, manufacturing science, medical diagnosis and others using soft computing; Bio-micro-fluidics and microscale transport processes, Transport Phenomena in Phase Change Problems; Laser materials Processing; CFD/Lattice Boltzmann Method in Complex Flows; Rotor dynamics and dynamics of lubricated ball bearings; Numerical simulation on two phase flow pertaining to bottom injected gas stirred ladles; Multi Layer TiN-MoS₂ coating on cutting tools by unbalanced magnetron technique; Machinability study of Inconel 718; Development of control strategies for autonomous underwater vehicles; Model based fault detection and isolation; Simulation of liquid sloshing in a tank using numerical grid generation techniques; Prediction of fluid flow and heat transfer from wavy surfaces; Design and development of carbon di-oxide based heat pump systems; Vehicle system dynamics; Vibration Analysis Based Machine Fault Diagnostics.
- **Metallurgical and Materials Engineering** : Extractive Metallurgy, Mechanical Metallurgy, Melting, Casting and Solidification Processing, Modeling, Simulation and Multimedia in Metallurgical Engineering, Physical Metallurgy, Powder Metallurgy, Corrosion Science and Technology, Surface Engineering, genetic algorithm for the optimization of metallurgical systems, mathematical simulation of high temperature metallurgical systems by application of computational fluid dynamics, heat and mass transfer, molecular dynamic simulation of nanostructured materials, Development of Lithium Ion Battery (LIB) Technology for applications in Electric Vehicles in India.
- **Mining Engineering** : Environment and Safety- Application of LCA, GIS and remote sensing for soil and water analysis as a part of mine closure planning; Experimental and computational fluid dynamics studies for shock loss determination in mine air flow; Biological and passive treatment of mine waste water; Investigation of soil and water contamination vis-à-vis land use changes near mining fields. Study of human behaviour related accidents in mines, Rock Mechanics / Ground Control- Finite element analysis for longwall strata control problems, and design of shield supports; Assessment of Fly ash composites as a substitute fill material for underground mine voids; Risk analysis for the safety management of coalmines; Mine Planning / Modeling; Integration of GPS and I.SAR ground deformation data over mining areas. Use of lasers for assessment of stability of dumps. Vision based semi-automatic mine navigation system.
- **Ocean Engineering and Naval Architecture** : Ship structures, Dynamics of Marine Vehicles, Wave-Structure Interactions, Marine Design and Production, Ocean Turbulence CFD, Marine Structures, Wind-Wave Modeling, Coastal Processes, Coastal Sediment Dynamics, Hydroelasticity, Computational Weld Mechanics and Welding Technology, Experimental and Mathematical Modeling of Ship Motions, Coastal Hydrodynamics,.
- **Physics and Meteorology** : Nonlinear Optics, Photonics, magnetic semiconducting nanoparticles and thin films, Magnetism, Spintronics, Semiconductor Devices, Nano- and Bulk-material science, Nuclear condensed matter physics, Optoelectronics, Organic Electronics, Physics of Semiconductor Crystals and Thin Films, Quantum Many-Body Theory, String Theory. Astrophysical Spectroscopy, Astrophysics, Atmospheric Sciences, Atomic and Molecular Physics, Biophysics, Condensed Matter Physics, Cosmology, Optical Imaging, Nuclear Physics, Ferroelectricity, Fiber and Integrated Optics, Optoelectronics, Gravitation and Geometry, High Energy Physics, Hydrodynamics, Laser Physics.

- Centre for Educational Technology** : National Program on Technology Enhanced Learning - CET, IIT Kharagpur has already developed 186 courses (7,440 hours of video courses) as a part of NPTEL phase I & II which are available in the LAN for internal feedback. Development of suitable pedagogical methods for various classes, intellectual calibers and research in e-learning. 90 courses have been completed in the pilot phase. These courses consist detailed curriculum documents for each course with instructional objectives, assessment and references to learning resource materials. Creation of Integrated Development Environment (IDE) for Generation of Pronunciation Lexicon for Indian Languages (PL-IL) in W3C Pronunciation Lexicon Standard (PLS) and Example lexicon in Hindi and Bangla Languages
- Centre for Ocean, Rivers, Atmosphere and Land Sciences** : The CORAL center is actively participating in DST/MOES sponsored STORM (Severe Thunderstorms and Regional Modeling) which is in operation along East/North East part of India. Under this program a 50 m instrumented micro-meteorological tower was installed in IIT Kharagpur campus to monitor the atmospheric surface layer characteristics during the pre-monsoon thunderstorm activity. A state of art upper air sounding system was procured to study the atmospheric boundary layer dynamics during various epochs of thunderstorm activities at Kharagpur. These systems are actively used in STORM programme as well as CTCZ experimental programme. The centre is also involved in the development of Data Assimilative Coastal Circulation Model Over Bay of Bengal; development of a Hybrid Coordinate Ocean Model (HYCOM) for the Bay of Bengal, numerical simulation of Bay-of-Bengal Circulation Features using satellite data; air-sea interaction studies, sea ice monitoring using remote sensing and satellite data obtained from Megha-Tropiques and to study any climate signal in their variation.
- Cryogenic Engineering Centre** : Cryogenic Engineering Centre is engaged in teaching at UG and PG levels, sponsored research and consultancy remain at the core activity of the Centre. The Centre is also active in Continuing Education through training engineers from industries, faculty from academic institutions, and scientists from R&D organisations by conducting short term courses and workshops in specialised areas like Cryogenic Engineering, Air Seapatio, Vacuum Technology etc.
- Materials Science Centre** : Novel polymers, ceramics and semiconductor materials supported by our Institute as well as by various funding agencies. In the area of polymer materials besides polymer modification we synthesize new polymers for application as electronic materials, membranes for gas separation, nanoclay and carbon nanotube reinforced composites for automobiles and other high performance speciality applications. welding thermoplastics, recycling waste polymers and direct fluorination of polymers. synthesis of nano-crystalline shape memory materials for biomedical applications, nano-fluids, nano ceramics for drug delivery, nano-structured oxides for ceramic gas sensor and cathode materials for lithium rechargeable batteries. We are also actively involved in the research on ferroic and multiferroic thin/thick films, sensors magnetic and magnetocaloric materials. Novel inorganic and organic semiconductor materials are being synthesized and characterized for various electronic and optoelectronic applications. MOCVD growth of InGaP epitaxial layers as well as quantum dots are also being carried out for various applications such as solar cell, etc. Another important area of research is the synthesis and characterization of wide band gap materials like SiC, ZnO and nitride semiconductors and nano materials for device applications. Multiwall carbon nanotubes are also being synthesized by CVD on silicon substrates.
- Reliability Engineering Centre** : The Centre is developing a Virtual Lab on fault Diagnosis of Rotary Systems. This lab will be useful for virtually creating certain faults in rotating systems and then diagnose the fault and its severity. The centre is also developing a remote monitoring system for fault diagnosis of industrial system which can be used for e-maintenance. Other activities include organizing short term courses on latest topics of Reliability Engineering for officers and engineers of the Industry, Defense Organizations and R & D Establishments. safety and reliability studies of nuclear power plants and missile systems are other activities.
- Rubber Technology Centre** : Polymer composites and nanocomposites Chemical modification of rubbers, Thermoplastic elastomers based on novel blends and alloys, Recycling of rubber waste Ionomers, Conductive rubber composites for electrical and electronics application, Electron beam modification of polymers Rheology and processability of rubber compounds and polymer blends, Polymer foam and microcellular rubber composite for various critical and industrial applications, Development of rubber blends and composites for different industrial application like cable, oil seal, tank track pad, vibration isolators, high voltage insulators Development of adhesives

and coatings. Development of biodegradable polymer and recycling of rubber and polymer. Controlled radical polymerization, Development of polymers for, biomedical application, electronic application. Centre will initiate two research projects under Centre for Railway Research (CRR), IIT Kharagpur.

- **Rural Development Centre** : Essential oil production technology, Fish feed production from non-conventional biological sources, Farm level technology for processing of agricultural products. Transfer of agricultural products processing technology, Organization of training and workshops on rural technology application.
- **G. S. Sanyal School of Telecommunications** : Radar signal processing, BioMedical Signal Acquisition and Processing; MAC protocols in Wireless Adhoc Networks and WMAN, Physical Layer Technologies for Next Generation Cellular, WMAN and WLAN, Loss-less Compression Methods for Images and Pictures, Channel Estimation and Equalization Method for Multi-carrier Wireless, Synchronization algorithms for OFDM based wireless transmission, Wireless Sensor Networks,
- **Rajiv Gandhi School of Intellectual Property Law** : Research in diverse issues of Intellectual Property Law and Policy framework under the Microsoft Centre of Excellence in Intellectual Property Research and Technology Policy Creation of Multimedia based Courseware for E&IT students to be implemented by IIT Kharagpur
- **Ranbir and Chitra Gupta School of Infrastructure Design and Management** : The school was inaugurated by Padma Bhushan Professor Lord Shushantha Kumar Bhattacharyya of Warwick Manufacturing group on 18th of August 2008 (Institute Foundation Day). An advisory Council comprising eminent experts from different fields as external experts has been constituted
- **School of Information Technology** : Systems Security: Survivable information system architecture to tolerant with potential information warfare attacks is under development. Such systems are typically characterized by the presence of a large repository of sensitive data in a distributed environment. The architecture takes into account the presence of multiple operating systems and database platforms, their known and potential vulnerabilities as well as possibilities of simultaneous attacks from adversaries. It will be developed as a generic model which can be used to build specific information systems in a number of application domains like e-governance, finance and insurance, education, etc. Development of architectures, protocols and algorithms for mobile ad-hoc networks, vehicular ad-hoc networks, wireless sensor networks and wireless mesh networks, smart grid communications, cloud computing. characterization and incorporation of emotions in speech, speaker recognition system for handheld devices in varying background environments and development of Text-to-Speech (TTS) system for Indian languages. Various areas of network security are being explored, like penetrating testing, development of new algorithms for cryptography, their efficient and attack-resistant hardware implementation etc.
- **School of Medical Science and Technology** : Integrated macro and micro-imaging on various healing and non-healing wounds including oral and breast precancer and cancer for their early characterization through image processing and analysis as well as integration with clinico-epidemiological features. Development of biodegradable scaffold for tissue engineering and wound research. Design, Synthesis and reactivity of β -lactam based hybrid molecules. Cancer Biomarker, Nutraceuticals and Herbal medicine. Development of micro-fluidic Biochips / Bio-MEMS for medical application. Disease pattern recognizer for Oral Pre-cancer and cancer. Proteomics and reproductive health. Vaccine preventable diseases in HIV infected children.
- **School of Water Resources** : Groundwater modelling in selected basins between Farakka and Ganga Sagar, Water Resources Management of Ganga River Basin Management Plan.
- **Vinod Gupta School of Management** : Conducting Management Development Programs and In-House Training Programs for various industries.

Infrastructure Development

In view of the requirement of constant modernization in infrastructure and experimental facilities the Institute has acquired and installed several new scientific equipments and created facilities in the Departments, Centers and Schools. These are :

- **Aerospace Engineering** : IBM X3755 M3 Server with 4 AMD Opteron 12 core 6220 processors (48 cores), 2.4 GHz, 16 MB L3 cache, 256 GB DDR3 @ 1333 MHz for Departmental Computer Laboratory; Digital Protractor (Angle Indicator), Model: PRO-3600, Make: Smart Tools Technology, USA to be used for wind tunnel model setting in Aerodynamics Lab; ePIV System including hardware and FLOWEX Software. Make: Interactive Flow Studies Corporation, USA. It is an educational Particle Image Velocimetry System meant for Laboratory demonstrations in Aerodynamics Laboratory.
- **Agricultural and Food Engineering** : ThermoFisher Scientific, GC-MS-HeadSpace System, CLARUS 600T, Perkin Elmer. Atomic Absorption Spectrometer, ThermoFisher Scientific; Flash 2000 CHNS Analyzer.
- **Architecture and Regional Planning** : 10 licenses of DesignBuilder and EnergyPlus -- Building Energy simulation software -- from USAID ECO-III project; Large format scanner.
- **Biotechnology** : Peristaltic Pump; Cell Disrupter; Fume Exhaust Hood Biobase; Rota Vapor System; HPLC (Analytical).
- **Chemical Engineering** : Gas Chromatograph System; HPLC; High Performance Cluster; Atomic Absorption Spectrophotometry Unit; Automated Surface Area & Pore Size Analyzer; Evaporation Unit & Liquid Nitrogen Container.
- **Civil Engineering** : Total organic carbon analyzer; Atomic absorption spectrophotometer; Seismic piezocone; In situ testing vehicle; MASW system for shear wave velocity profiling; Resonant column for small strain dynamic testing system for soil; Digital direct shear apparatus for soil testing.
- **Electrical Engineering** : Mono-crystalline cell based PV modules and their support structure with Bi-annual sun tracking mechanism has been installed on the rooftop of the Electrical Engineering Dept. Total 108 modules with an installed capacity of 17.68 kWp (at STC) has been installed. However, in real operating conditions they may provide maximum 11 kW power output. Electrical energy output from solar PV array is available at the DC Busbar in the Energy lab through DC cable interconnection from the rooftop.
- **Geology and Geophysics** : A PC Based Gamma Ray Spectroscopy System GSPEC (for low level radiometric prospecting and assaying both in the laboratory and in-situ in the field/area of study, for ambient radioactivity measurements); An HANNA multiparameter meter (for measuring water quality); A FRANTZ magnetic barrier separator; A FRITSCH disc mill.
- **Mathematics** : Dell Blade Servers - 2 Units; Lenovo Desktop computers - 10 Units; Dell Desktop computers - 50 units; Online UPS 10 KVA - 2 Units; Online UPS 20 KVA - 1 Unit; Tetcos NetSim Software.
- **Mechanical Engineering** : Dell precision T7600 workstation; Precision spectral pyrometer; Twin hopper powder feeder; Micro vicker indenter for Leco LM 700 micro-hardness tester; Vacuum tube furnace; Torsion testing machine; B&K 2250-L-D30 Hand held analyzer 2250 light with 1/3 octave frequency analyser software; Cosmos make surface grinding machine; Micromatic make precision external cylindrical grinding machine; Die sinking electro-discharge machine; Chamber furnace with temperature controller and control panel; Contact angle meter; All geared universal milling machine; CNC flame cutting machine nesting software; Single axis stepper motor ball screw driven close loop controlled table with encoder; Indus make portable gas analyser; Electra CNC wire cut electro-discharge machine; 4-ch input module LAN-XI 51.2kHz; Cosmos high precision NC surface grinding machine; All geared lathe machine; Otis passenger elevator;

Server mounted rack ; SIMPACK Perpetual academic license multibody dynamics simulation tool; Sulzermetco power supply unit 10MR-04; Sulzermetco complete 9mc plasma control unit; Complete 9mcd plasma distribution unit; 2T friction stir welding unit; Trnsys software package; Gear hobbing machine; One time up-gradation of existing MSC ADAMS university 50 user license; Computer-controlled open-circuit subsonic wind tunnel with accessories; Rotary type torque sensor (Model 1702-20); Product code VL-EDU.01-1-FY LMS virtual lab educational bundle LMS virtual lab software; Mapple software and mapplesim; Magic RP SG module EOSTYLEE2; Motion simulation system; Computerized engine test set up for four cylinder four stroke MPF1 petrol engine; Nx8.5 academic CAD/CAM/CAE bundle perpetual license with one year ME&S; In-vehicle human vibration analyzer; CATIA V6 academic pack; Object 3D printer desktop series object30 scholar; Water Jet System; Multi channel - signal conditioner for rotating dynamo-meter.

- **Metallurgical and Materials Engineering** : Thermal Conductivity Analyser; Slurry Erosion Test Set Up; Impact Wear Testing Set Up; Ultra Pure Water Purification System; Fretting Wear Test Set-up.
- **Mining Engineering** : Los Angles Abrasive tester; Flicker tester LED based; Bomb Calorimeter Model 6100 EF; Autoclave; Pneumatic trainer Ron make cat No. 4030; Dust Track DRX; Centrifugal Pump (closed circuit); Electro Hydraulic trainer; Temperature controlled gas desorption on canister with portable gas measurement system; Refrigerated Centrifuge High Speed (Make – REM 1 without rotor head) model C-24BL; Experimental set-up for the 2nd part of Slurry flow; 4800 Start synth Microwave synthesis Lab Station; Pilot Plant for Air Pollution control Equipment (Bagfilter).
- **Ocean Engineering and Naval Architecture** : NAPA Ship Design software, ADCIRC with SMS Interface, ORCAFLEX, WAMIT, MAXSURF, SHIPFLOW, Milling machine installed in Welding Laboratory.
- **Physics and Meteorology** : X-ray Photo-electron Spectroscopy; Optical Lithography.
- **Centre for Educational Technology** : CET connected 15 locations though Video Conferencing both in IIT-Kharagpur and in extension centers in Kolkata and Bhubaneswar. The main purpose of the same is to run part time M Tech programs in Electronics & Communication Engineering and Electrical Engineering for AICTEE recognized college teachers. It is also used for conducting various meetings, overseas interviews etc. The project cost around 270.00 lacs for various equipments and studio upgradation. 20 or more manpower has been trained to operate the system to provide support for the same; The video studios are being updated to HD (High definition) system and as a result new set of instruments like camera, switcher etc are being installed; Establishment of Video Systems Laboratory at CET: A state-of-the-art video systems laboratory has been set up with purchase of audio / video equipment worth Rs. 80 lakhs. Centre also creating the largest active video lecture storage system of 400TB.
- **Materials Science Centre** : Rotary vacuum evaporator (Heidolph), Microwave synthesis system (China National Corp.), Ageing oven, Source Meter (Keithley), Computerized; channel battery analyzer (MTI Corp.), Precision Impedance analyzer (Waynekerr), Moisture & oxygen control Glove box (Mbraum, Germany), Single channel FFT analyzer, Electrometer with GPIB & RS232 (Keithley).
- **Rubber Technology Centre** : Dynamic Mechanical Analyser(DMA)- Metraviv, France.
- **G. S. Sanyal School of Telecommunications** : FPGA test/ Programming facility with data acquisition cards; Radio Transceivers with FPGA test/ Programming facility; Embedded DSP Board with data acquisition; OPTSIM: An Optical Communication System Design and Simulation tool.
- **School of Water Resources** : Three numbers of HCL desktop computers in the Computer Simulation and Design Laboratory; Creation of a new classroom with projector, screen and other facilities; Installation of Wi-Fi system; Books for departmental library; Acquisition of meteorological data from IMD, Pune.

As a part of the ongoing infrastructural development, various construction projects have been taken up by Estate Civil Head Office. Current status of those projects is as follows:

- Students accommodation : The entire Lal Bahadur Shastri Hall of Residence with 667 rooms have been handed over. One more Block of Bachelor Flat has been renovated and handed over for use of Girl students.
- Nalanda Classroom Complex : 44 class rooms have been handed over & Furniture etc. for 30 class rooms have been completed for use.
- J. C. Ghosh Science Block and P. C. Roy Laboratory Block : Floor slabs for both the Blocks up to 5th floor is complete.
- Residential apartments for faculty and staff : 64 Nos. 1BR Flats have been handed over and occupied. 64 Nos. 2BR Flats have been handed over and occupied.
- Sir A. J. C. Bose Laboratory Complex : Construction of extension portion is already over and 4 more laboratories have been handed over.
- New water supply project : 8.00 km. of pipelines have been laid. Construction at river bed is going on.
- Construction of new Kendriya Vidyalaya : Construction is already complete and area development has also been completed. The School is already shifted to the new location and functioning.
- New market complex behind B. C. Roy Hospital : Four shops have been newly constructed and the old shops near Electric Overhead Office have been demolished. A new block has also been constructed.
- Development of children parks at campus : Six children parks at Campus have been developed.
- Expansion work in academic buildings : Entire Expansion work of Department of IE&M, Chemical Engineering and New buildings for Department of Mechanical Engineering and Computer Science & Engineering have been completed. Expansion work of Department of Biotechnology is going on.

International Collaboration

The Institute has always been active in establishing international collaborations to achieve progress in academic fronts. During the academic year 2012-2013, the Institute has signed several MoUs for the purpose of faculty and student exchange. These are :

- Joining and Welding Research Institute,
- University of Osaka, Japan;
- United Nations University on Climate and Ecosystems Change Adaptation Research, Japan;
- Friedrich Schiller University Jena, Germany;
- Rhein-Waal University of Applied Sciences, Germany;
- Leibniz-Institut für Polymerforschung, Dresden, Germany;
- The University of British Columbia Applied Science;
- The University of Alberta, Canada,
- National Taiwan University of Science and Technology, Taipei, Taiwan and
- Moscow State Mining University, Moscow, Russia.

Sponsored Research and Industrial Consultancy

The synthesis of teaching and research is fundamental to IIT Kharagpur. IIT Kharagpur is highly rated for the quality and breadth of its research enterprise, for the innovation of its faculty, for the excellence of its Ph.D programs, and for the amount of funding received in support of its research initiatives. We are particularly noted for our openness to multidisciplinary research, and several new initiatives expand a long IIT Kharagpur tradition of cross-disciplinary research and collaboration. Today, our faculty and researchers in energy and the environment are exploring the development of renewable technologies to enable us to coexist with a bio-diverse planet. Through computation and information technologies, IIT Kharagpur researchers are deepening our comprehension of a multi-faceted world.

Our research groups in nanotechnology and microscale processes are enabling the development of new materials and methods that support a safer, more cost-effective, and sustainable environment. The impact of our research ripples through India and around the world. IIT Kharagpur's research programs reach across the campus and beyond, linking together all departments, academic centers and a large number of advanced R&D laboratories, stimulating the integration of inquiry, new knowledge, and education.

Some of the noteworthy research initiatives and collaborative research facilities in recent years include :

- Centre for Railway Research
- P. K. Sinha Centre for Bioenergy
- Steel Technology Center
- R&D Center in collaboration with DVC
- Tea Engineering Research Center
- Centre of Excellence in Information Assurance
- National Program in Marine Hydrodynamics
- Vodafone-Essar-IIT Kharagpur Centre of Excellence in Telecommunications
- National facilities for EPMA
- Rural Technology Action Group (RUTAG)
- General Motors Collaborative Research Program
- Advanced VLSI Design Laboratory
- Research Laboratory in Electronics Controls and Software

In the past year IIT Kharagpur has received a number of high-value and flagship projects from the government and the industry such as –

- Online monitoring system for OHE traction parameters by RDSO, Lucknow
- Design & development of an on-board intelligent embedded platform for detection of weak failure modes and prognosis of severe faults in locomotives and associated equipment by RDSO, Lucknow
- Preparation, characterization and performance of functionalized membrane with improved anti-fouling properties by BRNS, DAE, Mumbai
- Thermomechanically processed high strength bainitic steel rails for Indian Railways by RDSO, Lucknow
- Aerodynamic design of traction rolling stock with speed potentials of 250 km/h upgradeable up to 350 km/h by RDSO, Lucknow
- Teachers empowerment, student empowerment and integration of tools for improvement - synchronous delivery (talk to a teacher) by MHRD, New Delhi
- Studies on shrinkage swelling characteristics of some Indian coals to ascertain recoverability of CBM from deep seated coal and shale resources by CMPDI, Ranchi
- Development of rubber compound and repair techniques for trailing cables of underground mining machines, by CMPDI, Ranchi
- Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning ice - main phase by MHRD, New Delhi

Besides these newly initiated research projects, IIT Kharagpur has been engaged in a number of ongoing innovative and socially relevant funded research activities. A partial list of which includes the following :

- Scientific evaluation of high voltage insulator conditions/predictions of residual life of composite insulators by RDSO, Lucknow
- Total synthesis of mayamycin, a c-glycosidic angucycline by SERB, New Delhi
- Smart nano-sensors for medical, coal mine and environmental monitoring by SERB, New Delhi
- Development of composition and standardization of properties of composite brake blocks for application in coaches of indian railways by RDSO, Lucknow
- Experimental & numerical studies on deep excavation under static & seismic conditions by SERB, New Delhi
- Novel polymeric composite membranes for selective separation of gas mixtures by SERC, New Delhi

- Development of microbial fuel cell for direct electricity recovery during waste water treatment by SERC, New Delhi.
- Development of expert system for indian blast furnace by Ministry of Steel, New Delhi.
- Aakash Development Laboratory (AADL) at IIT Kharagpur by MHRD New Delhi.
- Catalytic hydrolysis by a microbial enzyme with potential of an antibiotic target by DST, New Delhi
- Suspension and bogie technology for high speed trains by RDSO, Lucknow.
- Supporting consolidation, replication and upscaling of sustainable waste water treatment and reuse technologies for india (saraswati) by DST, New Delhi.
- Fast fixed point algorithms for identifying alertness and emotions, Sumsung, Korea.
- Development of technology and prototype facility for enhancement of shelf life of fruits and vegetables through active packaging & modified atmosphere storage by DBT, New Delhi.
- Involvement of functional single nucleotide polymorphisms (SNP) of matrix metalloproteinase (MMP) gene promoters in the cell type specific regulation of human MMPs: intrinsic genetic characteristics in cancer cell progression by DBT, New Delhi.
- Development of pilot scale palletisation technology for Indian geothitic/hematite ore with varying degree of fineness by Ministry of Steel, New Delhi.
- Tracking of ultrasonography machines towards prevention of its misuse by Ministry of Health and Family Welfare, New Delhi.

During the year 2012-2013 the Institute received from the Government, private and international funding agencies/enterprises **145 research projects for a total value of Rs. 129.87 crores and 151 consultancy projects worth Rs. 14.5 crores** aggregating a **total of 296 projects for Rs. 144.37 crores.**

The Intellectual Property Rights and Industrial Relations (IPR & IR) Cell under SRIC is responsible for the licensing and the transfer of technologies developed by researchers at IIT Kharagpur to the commercial sector. Till date, more than 400 patents were filed and more than 120 were granted and a total of 19 technologies were transferred. This year IPR&IR Cell under SRIC carried out **unique drive – 100 Days 100 Patents**. The Institute Faculty, students and staff supported and responded whole heartedly and more than 200 abstracts were received and finally more than 100 patent applications have been sent out to patent attorneys for the filing applications to patent office. IPR&IR Cell in collaboration with Rajiv Gandhi School of Intellectual Property Law conducted **3rd Intellectual Property Rights Researcher's Confluence on Information Technology-Telecommunication (ICT): Emerging Issues in Intellectual Property (IP)**.

The Entrepreneur Cell under SRIC supports a variety of incubation programmes funded by the Government.

Students are encouraged and supported to take up innovative challenging problems. One of the examples is **TeamKART** under Formula Student. Formula Student (FS) is Europe's most established educational motorsport competition, run by the Institution of Mechanical Engineers. It seeks to challenge university students to conceive, design, build, cost, present and compete as a team with a small single-seat racing car in a series of static and dynamic competitions. Recently IIT Kharagpur team has participated in Silverstone track in UK.

Technology Transfer Group (TTG) is a students' initiative under the aegis of SRIC, IIT Kharagpur, which believes in the potential of the Institute as a premier Research & Development centre. TTG acts as a link between the industry and the academia to facilitate transfer of industry ready technologies and presenting IIT Kharagpur as a research consultant. TTG also organized **TED^X IIT Kharagpur event on the theme – The Unturned Page**. The event hosted eminent speakers such as **Professor Sugata Mitra, Mr. Shubhranshu Choudhary, Mr. Kailash Satyarthi, and Mr. Aniruddha Sharma** who mesmerized the IIT community by sharing their experiences.

STEP - IIT Kharagpur

STEP IIT Kharagpur, the core of IIT Kharagpur entrepreneurship ecosystem is dedicated to extend every possible support to promote and development of innovation and entrepreneurship in this country. Since inception over 25 years ago, STEP has been engaged in various kind of activity to

enhance the economic condition of this part of country through innovation and enterprise creation and gradually transformed itself as a sustaining innovation & entrepreneurship ecosystem as well as enterprise creation platform. It is the most active innovation and incubation activity within the entire IIT system. STEP in association with Rajendra Mishra School of Engineering Entrepreneurship, provides leading edge financial, managerial, technical, legal and expert mentoring support as well as co-incubation facilities to innovators and entrepreneurs in and around eastern India. In association with various departments of state and central governments and nodal agencies, it facilitates various kind of financial support i.e., financial grants and seed loan facilities for product development and enterprise creation. At present around 60 startup companies are incubated at STEP IIT Kharagpur, in various domains such as information & communication technology, health care, manufacturing, agriculture, electrical, electronics and chemical domain. STEP IIT Kharagpur has facilitated various kinds of financial grants and seed support to innovators and entrepreneurs, such as, around Rs. 2.00 crores of Innovation Grant to 31 innovators and Rs 40.15 lakhs to 9 microenterprises for scale up and also facilitate ample funds for technology transfer and commercialization. Till date, STEP and its Technology Incubation & Entrepreneurship Training Society (TIETS) has provided around Rs 2.32 crores of seed support to 20 startups with an excellent recovery rate. Organizations like Capillary Technologies Pvt. Ltd., P2Power solutions Pvt. Ltd., S M Technologies Pvt. Ltd., Data Resolve Technologies Pvt. Ltd., Sankalp Semiconductors Pvt. Ltd., People's Advanced Communication Technologies Pvt. Ltd. etc. have started their journey from STEP IIT Kharagpur as startups and they have availed variety of incubation supports, eventually transforming into phenomenally successful enterprises in the real competitive commercial space. In order to extend its capacity STEP IIT Kharagpur has already in the process of expansion and 4500 sq. feet is almost ready and will be functional from the month of September, 2013. The 2nd phase of construction of Incubation Lab is under process, with eventually 40,000 sq ft of built-up space for supportive incubation within 12 months.

A high tech VLSI product design and testing lab is available for the incubatees which fulfills the fast prototyping, design and test measurement requirements of Techno Entrepreneurs. Besides, a Health Management Lab is an integral part of our inclusive scalable health delivery activity for providing affordable and accessible health care for rural and semi-urban population of our country.

STEP has always initiated, nurtured and strengthened its international co-entrepreneurship collaborations by establishing its successful "The Global Venture Lab", a global academic consortium for the development of innovation and entrepreneurship, initially started in collaboration with University of California, Berkeley, USA and Jyväskylä University, Finland. Later on eminent universities like Alto University, Helsinki, Finland, University of Aberdeen, Scotland, Johns Hopkins University, United States and Laval University, Montréal, Canada have joined the consortium to expand the diversity and excellence of this unique alliance. Last year National Chiao Tung University, Taiwan has setup an extension centre at STEP IIT Kharagpur for academic as well as entrepreneurial collaboration.

Conferences, Symposia, Seminars and Workshops

The Institute lays great emphasis on knowledge dissemination, and encourages organization of conferences, symposia and workshops. The last year saw Departments, Centers and Schools of the Institute organizing many such activities which attracted a large number of participants from India and abroad. Some of the important ones are :

- **Agricultural and Food Engineering** : Advances in Micro irrigation and Greenhouse Technologies (February 14-15, 2013); Engineering & Management in fisheries & Aquaculture (June 23-30, 2011); Hyperspectral remote sensing and applications in water resources; IIT-CII FACE Certified Food Professional Course on Food Safety and Quality Management (FSQM-2013) (February 18 - March 8, 2013); Micro-irrigation and Greenhouse Technology (November 15-16, 2012); Plasticulture applications in Horticultural Crops (July 16-17, 2012); Plasticulture Applications in Horticultural Crops (December 20-21, 2012); Precision Farming in Horticulture (March 14-15, 2013); Precision Farming Practices in Horticulture (September 17-18, 2012); Protected Cultivation Technologies (January 17-18, 2013); Protected Cultivation Technologies (June 11-12, 2012); Scope of Greenhouse and Plasticulture in Horticulture (October 8-9, 2012); Sprinkler and Micro-irrigation (August 23-24, 2012).

- **Computer Science and Engineering** : Micro Controller & Embedded Systems (5 Days) Spec2Layout Training Programme (August 13 – October 19, 2012).
- **Electrical Engineering** : Tata Power Course (2 weeks).
- **Electronics and Electrical Communication Engineering** : Advanced DSP Design Techniques (July 2-6, 2012) Electromagnetic Environmental Effects Management (December 11-20, 2012); ISRO Scientists Refresher program on Basic Theoretical topics of RF and Microwaves (14 days); Microwave Fundamental & its applications to Radar and Avionics (May 21 June 2, 2012); QIP Short Term Course On Microwave Fundamentals & its applicaions in Radar and Avionics (May 21 – June 2, 2012); Refresher Program on Basic Theoretical Topics of RF and Microwave (January 14-27, 2013).
- **Humanities and Social Sciences** : Essentials of Writing (August 2 - 8, 2012); The Futural Critical Constellations: The Cultural politics of the Neo- empire (5 Days).
- **Industrial Engineering and Management** : A Course on Lean Manufacturing for managers of different companies; Conducted a Course on PLM/PDM for DRDO Professionals; Decision modeling in Facility Planning (July 4-8, 2011); Facility Layout and Decision Modeling (July 4-7, 2011); Industrial safety engineering (December 22-24, 2012); One-Day Duration Seminar on “SME Performance – Quality and Environmental Sustainability” (September 26, 2012); One-Day Workshop on ‘Asset Management for Railway Systems: Opportunities and Challenges (February 1, 2013); Project Management (February 24-26, 2012); Project Management (May 11-14, 2013); Reconfigurable Manufacturing System for Faculty members of different Technical Institutes (One week); Short-Term Course on ‘Industrial Safety Engineering’ for Industry Participants (December 21-23, 2012); Total Quality Management (September 16-18, 2011); Workshop on Total Quality Management for Industry Professionals (May 3-4, 2012).
- **Mining Engineering** : Accident Prevention and safety Management in Mines (November 6-9, 2012); Project Land Acquisition Rehabilitation Resettlement of Displace People (July 11-14, 2012); Project Land Acquisition, CSR and Sustainable Development (February 20-23, 2013).
- **Ocean Engineering and Naval Architecture** : Short term course on Practical Shipbuilding for Officers of Mazagon Dock Ltd (February 4-15, 2013).
- **Cryogenic Engineering** : Cryogenic Air Separation and Oxygen Safety-2012 (6 days); Term Course on Vacuum Technology and Process Applications (November 1-10, 2012).
- **Reliability Engineering Centre** : Reliability Measurement and Demonstration Medhods (6 days).
- **Materials Science** : Advanced materials; Nanotechnology for Electronics & Photonics Applications (2 weeks (October 3-17, 2012); Renewable Energy Materials and Their Industrial Application (2 weeks).
- **Rajendra Mishra School of Engineering Entrepreneurship** : Faculty Development Programme - Acdemic Aspects of Entrepreneurship (2 weeks); Faculty Development Programme - Entrepreneurship theory and Practice (2 weeks).
- **School of Information Technology** : Short Term Coures on Internet Programming with Java (June 18 – July 5, 2012).
- **Vinod Gupta School of Management** : Advanced Management Programme for Executives from Mining Industry (February 18-22, 2012); AICTE Approved Short Term Course. Title: “Consumer Behavior: Role Of Market Research (May 21-25, 2012).

Continuing Education Programme

The Continuing Education Programme is a significant academic domain of the Institute. Over the years, it has diversified in terms of coverage of disciplines, duration and level of the programmes and industries served. The activities includes providing continuing education and training to professionals from industries – large and small, providing opportunities to teachers of Engineering Colleges to update their knowledge through short term courses and pursuing M.Tech. and Ph.D programme under QIP. Also, CEP promotes teaching-learning resource materials in the form of printed text, CDs and computer aided instruction packages etc.

The break up of the activities of continuing education programme during 2012-2013 are as following :

AICTE SUPPORTED ACTIVITIES :

• Formal Degree Programmes under QIP

No. of Teachers completing Ph.D degree	---	11
No. of Teachers completing M.Tech degree	---	09
No. of Teachers joined Ph.D programme	---	08
No. of Teachers took advance admission	---	11
No. of Teachers joined M.Tech. programme	---	06
QIP Short Term Courses	---	10 (12 weeks)
Total No. of participants (QIP)	---	320

• Self-Financed Short Term Courses

47 self-financed short term courses (both on campus as well as off campus) have been conducted for professionals employed in industry, R&D organizations which include IT related training as well. Certificates were awarded to 3240 participants. Moreover 13 nos. workshops/conferences have been organized by the Faculty members of the Institute with the help of this centre.

• M. Tech Programme organized by the Unit

<u>Name of the Subject</u>	<u>No. of Students</u>	<u>Duration</u>
Electrical Engineering	28	3 Years
Electronics and Electrical Communication Engineering	50	3 Years
Information & Communication Technology	42	3 years

Laurels and Distinctions Awarded to Faculty

The teachers and students of IIT Kharagpur have been receiving awards and honours, laurels and distinctions in recognition to their excellence. This year, too, faculty members have been honoured with prestigious awards and elected as Fellows of the National Science and Engineering Academies. The students have also been rewarded with various scholarships and their contribution has been recognized for their stellar performance in various conferences, symposia etc. Herein, I highlight these achievements.

Fellowships

- | | |
|----------------------------|---|
| Dr. Rintu Banerjee (Ag&FE) | • Selected for the Fellow Award (FIFIB) of the International Forum on Industrial Bioprocesses for the year 2012 |
| Dr. Sirshendu De (ChE) | • Elected Fellow of The National Academy of Sciences, India, Allahabad, in the year 2012 |
| Dr. Dipak Ranjan Mal (CY) | • Elected Fellow of West Bengal Academy of Science & Technology for the year 2012 |

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|--|---|
| Dr. Subhasish Dey (CE) | <ul style="list-style-type: none"> • Elected Fellow of The National Academy of Sciences, India, Allahabad, in the year 2012 |
| Dr. Pallab Dasgupta (CSE) | <ul style="list-style-type: none"> • Elected Fellow of the Indian National Academy of Engineering (INAE), in recognition to his distinguished contributions to "Engineering" |
| Dr. Ashok Kumar Pradhan (EE) | <ul style="list-style-type: none"> • Elected Fellow of the Indian National Academy of Engineering (INAE), in recognition to his distinguished contributions to "Engineering" |
| Dr. Anindya Sarkar (G&G) | <ul style="list-style-type: none"> • Elected Fellow of West Bengal Academy of Science & Technology for the year 2012 |
| Dr. Anil K. Gupta (G&G)
(currently on lien as Director, Wadia Institute of Himalayan Geology, Dehra Dun, Uttarakhand) | <ul style="list-style-type: none"> • Elected as Fellow of the Third World Academy of Sciences (FTWAS), in recognition to his outstanding contribution to science and its promotion in the developing world |
| Dr. Manoj Kumar Tiwari (IEM) | <ul style="list-style-type: none"> • Elected Fellow of the Indian National Academy of Engineering (INAE), in recognition to his distinguished contributions to "Engineering" |
| Prof. P. L. Narasimhan (IEM)
TVS Motors Chair Professor | <ul style="list-style-type: none"> • Elected Fellow of the Indian National Academy of Engineering (INAE), in recognition to his distinguished contributions to "Engineering" |

Awards

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|-----------------------------|--|
| Dr. K. N. Tiwari (Ag&FE) | <ul style="list-style-type: none"> • Selected by the Indian Agricultural Research Institute, New Delhi, for the XIIIth Hari Krishna Shastri Memorial Award for the year 2012 for his outstanding research contributions in automation of micro-irrigation and greenhouse technology |
| Dr. Rintu Banerjee (Ag&FE) | <ul style="list-style-type: none"> • Received the Panjabrao Deshmukh Outstanding Woman Scientist Award 2012, conferred by the Indian Council of Agricultural Research, New Delhi |
| Dr. Madan Kumar Jha (Ag&DE) | <ul style="list-style-type: none"> • Awarded the Commendation Medal 2012 by the Indian Society of Agricultural Engineers (ISAE), New Delhi for his outstanding contributions in the field of Soil and Water Engineering |
| Dr. Tarasankar Pal (CY) | <ul style="list-style-type: none"> • Awarded the Tokyo University of Science President Award to visit the university |
| Dr. Rajib Maity (CE) | <ul style="list-style-type: none"> • Selected by the Executive Council of Indian Society for Hydraulics for Prof. R. J. Grade Research Award for the year 2012 |
| Dr. Pallab Dasgupta (CSE) | <ul style="list-style-type: none"> • Winner of the ISA TechnoMentor Award 2012 from the India Semiconductor Association (ISA), Bangalore |

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|-----------------------------------|--|
| Dr. Niloy Ganguly (CSE) | <ul style="list-style-type: none"> • Recipient of the Yahoo! 2012 Faculty and Research and Engagement Program (FREP) |
| Dr. Animesh Mukherjee (CSE) | <ul style="list-style-type: none"> • Selected for the INAE Young Engineer Award 2012 |
| Dr. Rabindra Kumar Pradhan, (HSS) | <ul style="list-style-type: none"> • Recipient of the award for "Excellence in Training and Human Resource Development - 2012", conferred by the Indian Society for Training and Development (ISTD), Hyderabad Chapter |
| Dr. Jyotsna Dutta Majumdar, (MME) | <ul style="list-style-type: none"> • Selected for the prestigious "2012 Metallurgist of the Year Award", instituted by the Ministry of Steel, Government of India • Selected for the MRSI Medal for the year 2013 |
| Dr. Nikhil Kumar Singha (RTC) | <ul style="list-style-type: none"> • Selected to receive the "MRSI Medal" for the year 2013 • Recipient of the "Polymer Foundation Award", awarded by the Professor Sukumar Maiti Polymer Award Foundation, Kolkata, for his innovative research contribution in the field of Polymer Science and Technology |
| Dr. Sudip Misra (SIT) | <ul style="list-style-type: none"> • Selected for the 6th IEEE Asia Pacific (AP) Outstanding Young Researcher Award |
| Dr. Chandan Chakraborty (SMST) | <ul style="list-style-type: none"> • Selected to receive "2012 IBM Faculty Award", awarded by the IBM India University Relations in recognition to his exceptional efforts in building and leading innovation • Selected for the prestigious IBM-Shared University Research (SUR) Award for 2013. |

Membership of Editorial Boards

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|-----------------------------|--|
| Dr. Abraham George (ARP) | <ul style="list-style-type: none"> • Selected an Editorial Board Member of the Journal of Education and Practice, published by International Institute for Science, Technology & Education |
| Dr. Subhasish Dey (CE) | <ul style="list-style-type: none"> • Invited to join as an Associate Editor for the Journal of Hydraulic Research, published by the International Association for Hydro-Environment Engineering and Research (IAHR) |
| Dr. Sankar Kumar Nath (G&G) | <ul style="list-style-type: none"> • Invited to join as a Member of the Editorial Board of the International Journal of Earthquake Engineering and Hazard Mitigation (IREHM), published by Praise Worthy Prize S.r.l. Publishing House, Naples, Italy • Invited to join as a Member of the Editorial Board of the ISET Journal of Earthquake Engineering, published by Indian Society of |

Earthquake Technology

Dr. Dilip Kumar Pratihar (ME)

- Appointed as Member of the Editorial Board of the International Journal "Advances in Robotics Research", published by Techno Press, Korea
- Appointed as Member of the Editorial Board of the International Journal of Information Engineering (IJIE), published by American V-King Scientific Publisher
- Appointed as Member of the Editorial Board of the international journal "Statistics, Optimization & Information Computing", published by International Academic Press
- Appointed as Member of the Editorial Board of the International Journal of Mechanic Systems Engineering, published by American V-King Scientific Publisher

Dr. Debabrata Lahiri (RDC)

- Invited to take over the responsibility of Editor-in-Chief of the journal "Economic Affairs" - a quarterly journal of economics

Achievements By The Students

Laurels :

Ms. Ranjita Das
CY, 09CY9715

- Young Scientist Award in the "Acharya Prafulla Chandra Ray Memorial Symposium on Chemistry & Industry (2012)" by the Indian Chemical Society, Kolkata

Ms. B. Nandini,
ChE, 12CH91R04

- Innovative Student Projects Award 2012 from Indian National Academy of Engineering for the Master's Thesis

Shri Santhosh Prabhu
Ex-M.Tech. Student, CSE

- Innovative Student Projects Award 2012 from Indian National Academy of Engineering for the Master's Thesis

Shri Arvinder Singh,
PH, 11PH91F01

- ISCA Young Scientist Award for the paper in the 100th Session of Indian Science Congress (Materials Science Section) held at Kolkata.

Shri Inderjeet Singh
Roll No. 12PH90J02

- Best poster award for the paper in the 100th Session of Indian Science Congress (Materials Science Section) held at Kolkata.

Ms. Akhtar Jahan Siddiqa
MS, 09MS9404

- Best poster presentation for the paper in the Kathmandu Symposia on Advanced Materials 2012

Shri Pankaj Kumar Rawat
MS, 11MS91F03

- Best poster award for a paper in the 6th India-Singapore Joint Physics Symposium on Physics of Advanced Materials held at IIT Kharagpur

Shri Tippa Muniraja
AE 11AE3006

- Awarded Governor's Medal, West Bengal as an NCC Cadet for his high performance, involvement and discipline in all NCC activities.

Shri Anuj Gopal
PH, 12PH20003

- Received an Honorable Mention in the All India Essay Writing Event 2012 by the Shri Ram Chandra Mission, in association with the United Nations Information Services for India & Bhutan (UNIC)

Shri Abhinav Pandey
G&G, 12GG20001

- Received an Honorable Mention in the All India Essay Writing Event 2012 by the Shri Ram Chandra Mission, in association with the United Nations Information Services for India & Bhutan (UNIC)

Scholarships :

Shri Sanyam Agarwal
12CS10045

- OP Jindal Engineering and Management Scholarship 2012

Shri Aashish Kumar
11EC10001

- OP Jindal Engineering and Management Scholarship 2012

Ms. Aishwarya Roy
11ME10073

- OP Jindal Engineering and Management Scholarship 2012

Shri Tallavajhula Abhijeet
09ME1028

- OP Jindal Engineering and Management Scholarship 2012

Shri Piyush Bagaria
09EC1026

- Aditya Birla Scholarship 2012

Shri Himanshu Uniyal
09ME1001

- Aditya Birla Scholarship 2012

Shri Gaurav Kumar
10EC10020

- Aditya Birla Scholarship 2012

Shri Sandeep D'souza
11EC10045

- Aditya Birla Scholarship 2012

Shri Swarnabha Chattaraj
09EC1002

- Todai-IIT Undergraduate Students Scholarship 2012

Shri Abhishek Roy
09EC1001

- Todai-IIT Undergraduate Students Scholarship 2012

Shri Lakshya Jain
10ME10024

- Todai-IIT Undergraduate Students Scholarship 2012

Shri Siddhartha Sarkar
10EC10050

- Todai-IIT Undergraduate Students Scholarship
2012

Shri Aashish Kumar
11EC10001

- Todai-IIT Undergraduate Students Scholarship
2012

Ms. Tanvi Ranjan
11EC30034

- Todai-IIT Undergraduate Students Scholarship
2012

Health Care

The Institute provides primary health care to the campus community through B C Roy Technology Hospital located strategically within the campus. Constant efforts are on to upgrade and improve the existing facilities at the B. C. Roy Hospital. Round-the-clock emergency service and a 24 hour pharmacy have been made available. Critical care ambulance support is provided in emergency situations. Special clinics are provided in Medicine, Chest, Paediatrics, Skin, Psychiatry, Orthopaedics, Eye, ENT and Dental etc. in addition to general outdoor services. Medical Insurance coverage through the Institute is available for the students. Immunization clinics are operated with the help of Consultant in Public Health and Paediatrician. Health Care remains a top priority in the activities of the Institute.

The different clinics in the Out Patient Department have been upgraded with modern diagnostic equipments. To name a few, Computerized Radiology Unit, Fully Automatic Biochemical analyzer, ICU Ventilator, Telemedicine Video Conference System, Video Slit Lamp and Auto- Refractometer, are some of the recently added equipments. A fully equipped Operation Theatre to meet the day to day need of the patients is on the anvil.

All the student hostels are regularly inspected by the visiting consultant in Public Health, who advises measures for improvement of sanitation and food services. Preventive Health Care is also functioning well. Personal hygiene measures of all hall workers are also being monitored.

Alumni Affairs

IIT-KGP alumni have been the face of the Institute for over 6 decades now. They have significantly contributed to the nation and the world following the motto of the Institute. Also they have contributed substantially to the evolution of their Alma Mater.

The Office of the Dean, Alumni Affairs & International Relations (AA&IR) is the chief coordinating center for all official communication, events and other activities on behalf of the Dean. The Office of AA&IR strives to excel in alumni relations and networking and create an effective platform for the alumni, students, faculty and other stakeholders of the Institute.

Under the Dean a program has been launched in 2010, the Institutional Development (ID) Program. Under ID Program and with support of the Students Alumni Cell, several activities are organized throughout the year –

Annual Alumni Meet : Held in January every year. The 10th Annual Alumni Meet was organized from January 4 – 6, 2012. The special batches were 1963, 1973 and 1988. About 150 alumni came from India and abroad and several on-campus alumni joined them as well.

Foundation Day : The office of the Dean organizes events on the occasion of the Foundation Day of the Institute. The 62nd Foundation Day was celebrated on August 18, 2012. The event was graced by alumnus Dharam Vir IAS (Retired), State Election Commissioner, Haryana.

Mentorship Program : One of the flagship initiatives of ID Program now in its 3rd year helping students to be mentored by the alumni.

Awards : The Dean is the primary coordinating authority for Distinguished Alumnus Award and Distinguished Service Award.

Publications : The print publications are KGPIan – quarterly newsletter, Alumni Annual Report and the other annual souvenir Yearnings of Yore. Additionally there is an online publication KGP Connection which is an e-newsletter circulated every fortnight.

ID Program has brought into picture several new initiatives in 2012-2013.

Students Alumni Regional Meets : conducted in Bangalore in 2012 to bring together students and alumni and offer them a networking platform.

Guest Lecture Conclave : conducted in November 2012 at the IIT-KGP campus, the event saw interactive presentations from several achievers (alumni or otherwise) who motivated the students through their inspirational words.

E-Guest Lecture Series : conducted through Google+ Hangout, this is a series of e-lectures conducted throughout the year except for semester offs.

Brand Building : ID Program has been enhancing the IIT-KGP internationally and domestically in a streamlined manner. Starting from public relations activities, regular communication, social media and ranking data submission, the Institute has started taking small steps towards the big goal of Vision 2020.

My Imprint Program : Although launched with the class of 2011, the program made its mark among the students in 2012. Through this program, the outgoing students are requested to pledge their support towards the Institute initially by donating their caution money towards students' services. More than 400 outgoing students from the Class of 2012 contributed towards this cause.

Founding Endowment Batch campaign : This is a grass root campaign which brings together alumni from individual batches and motivate them to donate collectively in the name of their batch. Each batch is given a minimum target of INR 50 lakhs. On reaching the mark, the batch will be honored by endowing a classroom after them in the Nalanda Academic Complex. Two batches have already succeeded. While the classroom endowed in the name of 1991 batch was unveiled on December 10, 2012, the 1970 batch will receive the honor in 2013. A corpus of more than 3 crores was generated in 2012-13. This will help strengthen the endowment fund of IIT-KGP.

Training and Placement

The Training and Placement Section is responsible for arranging practical training for 3rd year B. Tech/Dual Degree and 4th year M.Sc. degree students and job placement of final year students graduating from the Institute. The Section is actively engaged in forging synergistic relationships between the Institute and various industries and user systems of technical and scientific manpower. Based on these interactions, the T&P Section gives feedback to the Institute on the academic programmes.

Summer Training Details : Eight weeks of summer practical training at the end of 3rd year B. Tech/Dual Degree and 4th year M.Sc. degree is a compulsory part of the curriculum at IIT Kharagpur, carrying 2 credits. All efforts are made to place the concerned students in the best of organizations in India and abroad for summer training through Training and Placement section and various departmental supports. An emergent trend is that more and more students are seeking summer training abroad.

A total of 1400 companies/organizations in India were contacted for training facilities for the current summer vacations in May-July 2013. Among these 110 in India had offered training facilities, out of

which 45 organizations had extended out-of pocket allowances (covering 270 students) and many other extended subsidized transport, subsidized canteen, subsidized accommodation and to-and fro travel expenses (e.g. 3AC fare, air fare etc.) for our students. The highest out of pocket allowance of Rs. 60,000/- per month was paid by ITC Ltd. and Hindustan Unilever. Some other organizations such as GIDA offered Rs 52,500/- per month, Times Internet and American Express offered Rs. 50,000/- per month, Directi offered Rs. 45,000/- per month, Google, Amazon and Adobe offered Rs. 30,000/- per month, Yahoo, Qualcomm, and Microsoft offered Rs. 20,000/- per month. There are about fifteen (15) companies like Shree Cement, Tega Industries, Reliance India Limited, Infosys, Tata Motors, Siemens, Tata Steel, Schlumberger, Goldman Sachs offered stipend in the range Rs. 10,000/- to 20,000/- per month. Around fifteen companies offered below Rs. 10,000/- per month. In addition to the above some students arranged internship by themselves with good amount of stipend.

Out of 1180 third/fourth year B.Tech/Dual Degree/M. Sc. students, 90 students have taken up summer internship abroad in many Institutes/organizations likes EPFL, Switzerland , University of Warwick, Deakin University ,Australia, National University of Singapore Memorial University, Canada University of Tokyo, Max Plank Institute for Software Systems, Germany University of Alberta, Biotechnology & Bio Chemical Engineering, Belgium Iowa State University, U.S.A., Rice University, Technical University of Berlin , Kyoto University, Japan Rhinewall University, Germany University of Freiburg University of Michigan, University of Hagen, University of Leeds, Bremen University Dong A University, Busan , Stanford University etc. and foreign companies like Finisar ,Malaysia , Mitsubishi , Works Application , Japan , ST Engineering Marine Ltd., Singapore during May-July, 2013.

Placement Details : 209 companies / organizations have considered our students for employment during 2012-2013. The details of number of students who had registered for placement and those actually placed through campus interviews including those who have opted either for higher studies or arranged job through off campus as on 30.06.2013 are as follows :

<u>Course/Degree</u>	<u>No. of students registered</u>	<u>No. of students placed</u>
B.Tech. (Hons.)	506	456
B.Arch. (Hons.)	21	17
5-year Integrated M.Sc.	121	97
2-year M. Sc	114	91
Dual Degree (B. Tech + M. Tech.)	289	265
M.Tech./MCP	724	458
M.B.A.	101	89
MS/Ph D	40	40
Total	1916	1513

The Overseas Highest salary received in 2012-13 is \$127000 per annum and the second highest is \$119000 per annum.

The Highest salary received in INR is Rs. 28.5 lakh per annum and the second highest is Rs.28 lakh per annum in 2012-13.

Average Salary for 2012-2013 is as follows :

<u>Courses</u>	<u>Average Salary (CTC) Rs. Lakhs per annum)</u>
B. Tech.	11.72
B.Arch.	8.00
Duel Degree	9.67
5yr. Integrated M.Sc.	12.27
2yr. M.Sc.	9.77
M. Tech.	8.69
Ms/ Ph.D	7.85
Average Salary for all Courses	10.35
VGSOM (MBA)	10.9

Some companies have offered pre placement offers like ITC Ltd., Schlumberger, Hindustan Unilever, Qualcomm, Barclay's Capital, etc. Total number of P.PO's received are 103.

Student Participation: T&P Section at IIT Kharagpur has taken an initiative to harness the students' management skills through a formal system during the placement season since 2005-2006. The system has progressed extremely well and from year 2010 onwards, the T&P has immensely benefitted from students participating in placement process. The organizational skill of students has helped T&P to conduct 12-15 companies' placement interviews per day and round the clock. During the placement season students play an active role from contacting the companies to the final selection at campus by providing complete logistic support.

Students' Affairs

Technology Students' Gymkhana is the nerve center of the extra curricular activities of the students and is vibrant with various sports, socio-cultural and technological activities.

In the 48th Inter IIT Aquatic Meet held at IIT Roorkee, IIT Kharagpur secured over all 1st position. Extra ordinary performance in swimming by Darshan Varier was the highlight of the meet. In the Inter IIT Sports Meet, women athletics team and lawn tennis team secured 1st position. Ms. Sruthi Chekuri was declared individual champion in the women athletics meet. The men volleyball team secured 3rd position.

The Spring Fest '12 was organized in the month of January, 2012. This year participation from colleges from various parts of country was very good. The annual techno – management fest Kshitij '12 was also organized and a large number of participants from all over the country were present.

Like every year inter hall sports, socio – cultural as well as technology related competitions were held, where all the halls participated.

A large number of facilities have been added. Construction of a new students' activity center is complete and operational.

Courses of Study

Aerospace Engineering

- B.Tech.- Aerospace Engineering
- Dual Degree - Aerospace Engineering
- Dual Degree - Aerospace Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
- M. Tech. - Aerospace Engineering

Agricultural and Food Engineering

- B.Tech.- Agricultural & Food Engineering
- Dual Degree - Agricultural & Food Engineering/ Farm Machinery & Power
- Dual Degree - Agricultural & Food Engineering/Post Harvest Engineering
- Dual Degree - Agricultural & Food Engineering/Dairy & Food Engineering
- Dual Degree - Agricultural & Food Engineering/Food Process Engineering
- Dual Degree - Agricultural & Food Engineering/Aqua Cultural Engineering
- Dual Degree - Agricultural & Food Engineering/Agricultural Systems & Management
- Dual Degree - Agricultural & Food Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
- M. Tech. - Farm Machinery and Power
- M. Tech. – Land and Water Resources Engineering
- M. Tech. – Food Process Engineering
- M. Tech. – Agricultural Biotechnology
- M. Tech. - Aquacultural Engineering
- M. Tech. - Agricultural Systems and Management

Architecture and Regional Planning

- B.Arch.
- Master of City Planning

Biotechnology

- B.Tech.- Biotechnology & Biochemical Engineering
- Dual Degree - Biotechnology & Biochemical Engineering
- Dual Degree - Biotechnology & Biochemical Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
- M. Tech. - Biotechnology and Biochemical Engineering

Chemical Engineering

- B.Tech.- Chemical Engineering
- Dual Degree - Chemical Engineering
- Dual Degree - Chemical Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
- M. Tech. - Chemical Engineering

Chemistry

- M.Sc. - Chemistry
- Joint M.Sc.- Ph.D. in Chemistry (with effect from 2009 admissions)

Civil Engineering

- B.Tech.- Civil Engineering
- Dual Degree - Civil Engineering/ Hydraulic & Water Resources Engineering
- Dual Degree - Civil Engineering/ Transportation Engineering
- Dual Degree - Civil Engineering/ Geotechnical Engineering
- Dual Degree - Civil Engineering/ Structural Engineering
- Dual Degree - Civil Engineering/ Environmental Engineering & Management
- Dual Degree - Civil Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering

- M. Tech. - Hydraulic and Water Resources Engineering
- M. Tech. - Transportation Engineering
- M. Tech. - Environmental Engineering and Management
- M. Tech. - Geotechnical Engineering (Withdrawn due to less than 5 students admission)
- M. Tech. - Structural Engineering

Computer Science and Engineering

- B.Tech.- Computer Science & Engineering
- Dual Degree - Computer Science & Engineering
- Dual Degree - Computer Sc. & Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
- M. Tech. - Computer Science and Engineering

Centre for Educational Technology

- M. Tech. - Media and Sound Engineering

Centre for Oceans, Rivers, Atmosphere and Land Sciences

- M. Tech. - Earth System Science and Technology

Cryogenic Engineering

- M. Tech. - Cryogenic Engineering

Electrical Engineering

- B.Tech.- Electrical Engineering
- B.Tech.- Instrumentation Engineering
- Dual Degree - Electrical Engineering/ Machine Drives & Power Electronics
- Dual Degree - Electrical Engineering/ Control System Engineering
- Dual Degree - Electrical Engineering/ Power System Engineering
- Dual Degree - Electrical Engineering/ Instrumentation Engineering
- Dual Degree - Instrumentation Engineering/ Control Systems Engineering
- Dual Degree - Electrical Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
- Dual Degree - Instrumentation Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
- M. Tech. - Machine Drives and Power Electronics
- M. Tech. - Control System Engineering
- M. Tech. - Power and Energy Systems
- M. Tech. - Instrumentation

Electronics and Electrical Communication Engineering

- B.Tech.- Electronics & Electrical Communication Engineering
- Dual Degree - Electronics & Elect. Comm. Engineering/ Fibre Optics and Lightwave Engineering
- Dual Degree - Electronics & Elect. Comm. Engineering/ Microelectronics & VLSI Design
- Dual Degree - Electronics & Elect. Comm. Engineering/ RF and Microwave Engg.
- Dual Degree - Electronics & Elect. Comm. Engineering/ Visual Information & Embedded System
- Dual Degree - Electronics & Elect. Comm. Engineering/ Telecommunications System Engg.
- Dual Degree - Electronics & Elect. Comm. Engineering/ MBA/Engineering Entrepreneurship/Financial Engineering
- M. Tech. - Fibre Optics and Light wave Engineering (not offered in the session 2008-2009)
- M. Tech. - Microelectronics and VLSI Design
- M. Tech. - RF and Microwave Engineering
- M. Tech. - Telecommunication Systems Engineering
- M. Tech. - Visual Information and Embedded Systems Engineering

Geology and Geophysics

- M.Sc. - Exploration Geophysics
- M.Sc. - Applied Geology
- Joint M.Sc.- Ph.D. in Geophysics (with effect from 2009 admissions)
- Joint M.Sc.- Ph.D. in Geology (with effect from 2009 admissions)
- M. Tech. - Exploration Geosciences
- M. Tech. - Computational Seismology (Withdrawn due to less than 5 students admission)

Humanities and Social Sciences

- M.Sc. - Economics
- Master of Human Resource Management

Industrial Engineering and Management

- B.Tech.- Industrial Engineering
- Dual Degree - Industrial Engineering/ Industrial Engineering & Management
- Dual Degree – Quality Engineering Design and Manufacturing
- Dual Degree - Industrial Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
- M. Tech. - Industrial Engineering and Management

Materials Science

- M. Tech. - Materials Science and Engineering.

Mathematics

- M.Sc. - Mathematics & Computing
- Joint M.Sc.- Ph.D. in Mathematics (with effect from 2009 admissions)
- M. Tech. - Computer Science and Data Processing

Mechanical Engineering

- B.Tech.- Mechanical Engineering
- B.Tech.- Manufacturing Science & Engineering
- Dual Degree - Mechanical Engineering/ Manufacturing Science and Engineering
- Dual Degree - Mechanical Engineering/ Thermal Science and Engineering
- Dual Degree - Mechanical Engineering/ Mechanical Systems Design
- Dual Degree - Mechanical Engineering/ Mechanical Systems, Dynamics & Control
- Dual Degree - Manufacturing Science & Engineering/ Industrial Engineering & Management
- Dual Degree - Mechanical Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
- Dual Degree - Manufacturing Science & Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
- M. Tech. - Manufacturing Science and Engineering
- M. Tech. - Thermal Science and Engineering
- M. Tech. - Mechanical Systems Design

Metallurgical and Materials Engineering

- B.Tech.- Metallurgical and Materials Engineering
- Dual Degree - Metallurgical & Materials Engineering
- Dual Degree - Metallurgical & Materials Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
- M. Tech. - Metallurgical and Materials Engineering
- Master of Steel Technology

Mining Engineering

- B.Tech.- Mining Engg.
- Dual Degree - Mining Engineering/ Mining Engineering
- Dual Degree - Mining Engineering/ Safety Engineering and Disaster Management

- Dual Degree - Mining Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
- M. Tech. - Mining Engineering

Ocean Engineering and Naval Architecture

- B.Tech.- Ocean Engineering and Naval Architecture
- Dual Degree - Ocean Engineering & Naval Architecture
- Dual Degree - Ocean Engineering & Naval Architecture/MBA/Engineering Entrepreneurship/ Financial Engineering
- M. Tech. - Ocean Engineering and Naval Architecture

Physics and Meteorology

- M.Sc. - Physics
- Joint M.Sc.- Ph.D. in Physics
- M. Tech. - Solid State Technology

Rajendra Mishra School of Engineering Entrepreneurship

- Dual Degree - B.Tech. in Parent Dept/ Entrepreneurship Engineering

Rajiv Gandhi School of Intellectual Property Law

- Bachelor of Laws - Intellectual Property Rights (3 Years)

Ranbir & Chitra Gupta School of Infrastructure Design and Management

- M. Tech. - Infrastructure Design and Management

Reliability Engineering

- M. Tech. - Reliability Engineering

Rubber Technology

- M. Tech. - Rubber Technology

School of Information Technology

- M. Tech. - Information Technology
- M. Tech. – Information and Communication Technology

School of Medical Science and Technology

- Master of Medical Science and Technology (3 Years)
- M.Tech – Medical Imaging and Image Analysis (Withdrawn due to less than 5 students admission)

School of Water Resources

- M. Tech. - Water Management

Vinod Gupta School of Management

- MBA - Business Administration (2 Years)
- Executive MBA (3 Years)

Distance Mode (Kolkata & Bhubaneswar Centre) (3 Years)

- M.Tech - Electronics and Communication Engineering
- M.Tech - Electrical Engineering
- M.Tech - Information and Communication Technology

Department of Aerospace Engineering

Head

Prof. Kalyan Prasad Sinha Mahapatra

Professors

Bandyopadhyay, Gautam	<i>Ph.D.(IIT Kharagpur)</i> , Computational Aerodynamics Experimental Aerodynamics
Datta, Prosun Kumar	<i>Ph.D.(Georgia Tech)</i> , Aerospace Structures
Singh, Bhriagu Nath	<i>Ph.D.(IIT Kanpur)</i> , Aerospace and Smart Composite Structures, Uncertainty Quantification in Aircraft Analysis & Design, Multi-scale Modelling, FGM Plates and Shells, Adaptive Nonlinear FEM
Singh, Navtej	<i>Ph.D.(IIT Kharagpur)</i> ,
Sinha Mahapatra, Kalyan Prasad	<i>Ph.D.(IIT Kharagpur)</i> , Computational Fluid Dynamics, Aeroacoustics, Large Eddy Simulation, Fluid-Structure Interaction

Associate Professors

Laha, Manas Kumar	<i>Ph.D.(IIT Kharagpur)</i> , computational fluid dynamics and flight mechanics
Maiti, Dipak K	<i>Ph.D.(IIT Kharagpur)</i> , Aerospace Structures, Composite and Smart Structures, Structural Dynamics & Aeroelasticity, Design & Development of MR fluid damper & Landing Gear Dynamics, Structural Health Monitoring
Pradhan, Suresh Chandra	<i>Ph.D.(IIT Kanpur)</i> , Aerospace structures, Nonlocal elasticity, FEM, FGM, Smart Structures, composite materials and nano-composites, Optimization

Assistant Professors

Ghosh, Anup	<i>Ph.D.(IIT Kharagpur)</i> , Aerospace Structures, Composite Structures, Micro Air Vehicle
Roy, Arnab	<i>Ph.D.(IIT Kharagpur)</i> , Aerodynamics, Computational Fluid Dynamics
Sinha, Manoranjan	<i>Ph.D.(IIT Kanpur)</i> , Flight Dynamics Controls System-Identification Neural Networks

Faculty Appointments

Naba Kumar Peyada	Assistant Professor
Somnath Ghosh	Assistant Professor
Ratan Joarder	Assistant Professor
Manoranjan Sinha	Associate Professor
Arnab Roy	Associate Professor
Srinibas Karmakar	Assistant Professor
Mrinal Kaushik	Assistant Professor

Faculty Retirement

Rao, T. V.	Associate Professor
Gautam Bandyopadhyay	Professor (expired)

Faculty Re-employment

Datta, Prosun Kumar

Professor

Brief Description of on-going activities

Department is involved in various research activities in different fields namely; Composite & Smart Structures Structural Dynamics & Aeroelasticity Design & Development of MR-fluid damper. Analysis of aerospace Structures using DQM, DTFM, FEM. Nanomaterials and nanomechanics. Development of reconfigurable autonomous air vehicle. Lunar gravity modeling, topography modeling and orbit determination for the Chandrayaan-I. Fault tolerant and reconfigurable architecture development for the automotive. Real time system identification, system identification using neural sensitivity analysis. Fault detection and identification for aircraft. Low Reynolds number airfoils for micro air vehicles. Analysis of High Reynolds number three dimensional flows. Supersonic and hypersonic flows for various configurations. Large eddy simulation of turbulent flow. Flow-induced vibration and fluid-structure interaction. Development of micro-aerial vehicles

Thrust Areas

1. Computation of High-Speed High-Temperature Reactive Flows, Turbulent flow and large-eddy simulation, Combustion, Composite and smart structures, probabilistic analysis & design, Autonomous reconfigurable flight vehicle development and Chandrayaan-I project

New Acquisitions

1. IBM X3755 M3 Server with 4 AMD Opteron 12 core 6220 processors (48 cores), 2.4 GHz, 16 MB L3 cache, 256 GB DDR3 @ 1333 MHz for Departmental Computer Laboratory
2. Digital Protractor (Angle Indicator), Model: PRO-3600, Make: Smart Tools Technology, USA to be used for wind tunnel model setting in Aerodynamics Lab
3. ePIV System including hardware and FLOWEX Software. Make: Interactive Flow Studies Corporation, USA. It is an educational Particle Image Velocimetry System meant for Laboratory demonstrations in Aerodynamics Laboratory.

Doctoral and MS Degrees Awarded

1. A. K. Rajesh : Aircraft Parameter Estimation(Ph.D.)
2. Kalyan Kumar Das : Experimental and Large-eddy simulation of thunderstorm downburst(Ph.D.)
3. Shrivankumar B. Kerur : Geometrically Nonlinear Static and Dynamic Analysis of Piezoelectric Fiber Reinforced Composite Plates and Shells(Ph.D.)
4. Md. Talha : An Improved Structural Kinematics for Thermoelastic analysis of FGM Plates with random material Properties(Ph.D.)
5. Pabitra Halder : Analysis of Some High-Speed Compressible Flow Problems Using Flux Splitting Algorithms(Ph.D.)

Member - Professional Bodies

1. Pradhan, Suresh Chandra, *Member* - ISSS
2. Pradhan, Suresh Chandra, *Member* - Computational Mechanics India
3. Pradhan, Suresh Chandra, *Member* - IE(I)
4. Pradhan, Suresh Chandra, *Member* - Aeronautical Society of India
5. Maiti, Dipak K, *Member* - Institution of Engineers (India)
6. Maiti, Dipak K, *Member* - Aeronautical Society of India
7. Singh, Bhriku Nath, *Life* - ISTE, India
8. Datta, Prosun Kumar, *Senior Member* - Japan Soc. of Aeronautical and Space Sciences
9. Bandyopadhyay, Gautam, - Aeronautical Society of India
10. Sinha Mahapatra, Kalyan Prasad, *Member* - Aerospace Resources Panel of AR&DB

11. Sinha Mahapatra, Kalyan Prasad, *Life* - Aeronautical Society of India
12. Sinha Mahapatra, Kalyan Prasad, *Life* - Wind Engineering Society of India
13. Sinha Mahapatra, Kalyan Prasad, *Member* - Aerodynamics Panel of AR&DB
14. Sinha Mahapatra, Kalyan Prasad, *Fellow* - Institute of Engineers

Member - Editorial Board

1. Datta, Prosun Kumar (2010) *Member, Editorial Board* - Int J. of Structural Stability and Dynamics
2. Datta, Prosun Kumar (2012) *International Advisory Board* - International Journal of Aeronautical and Space Sciences
3. Ghosh, Anup (2010) *Reviewer* - Aircraft Engineering and Aerospace Technology
4. Ghosh, Anup (2010) *Reviewer* - Mechatronics
5. Ghosh, Anup (2010) *Reviewer* - International Journal of Crashworthiness
6. Pradhan, Suresh Chandra (2010) *Member* - IJVSS
7. Pradhan, Suresh Chandra (2010) *Member* - IJETAETS
8. Sinha Mahapatra, Kalyan Prasad (2010) *Member, Editorial Board* - INTERNATIONAL JOURNAL OF FLUID DYNAMICS & AEROSPACE ENGINEERING
9. Sinha Mahapatra, Kalyan Prasad (2010) *Member* - Journal of Aerospace Engineering & Technology

Sponsored Research Projects

1. Aerodynamic design of traction rolling stock with speed potential of 250 km/h (CRR, Indian Railways, Rs.600.00 Lakhs)
2. Aerodynamics modeling of chaff bloom (DRDO, Defence Laboratory, Jodhpur, Rs.9.78 Lakhs)
3. Analysis and Development of Conceptual Design Methodologies for Air Collection and Enrichment System of Air Breathing Propulsion (IIT – ISRO KCSTC, Rs.12.50 Lakhs)
4. Analysis and Development of Conceptual Design Methodologies for Air Collection and Enrichment System of Air Breathing Propulsion -Phase II (IIT – ISRO KCSTC, Rs.5.00 Lakhs)
5. Boeing University Relations, IIT Kharagpur- Campus Engagement Plan (Boeing Co., USA, Rs.23.50 Lakhs)
6. Damage Assessment of Aircraft Structures From Limited Vibration Data (AR&DB, New Delhi, Rs.8.45 Lakhs)
7. Estimation of Acoustic Load in MCA weapon bay and Hinge moment on the doors (ADA, Rs.17.28 Lakhs)
8. Inter Planetary (Applied to Mars) Satellite Orbit Determination in the Frame Work of IAU2000A/2006 (ISRO, Rs.12.19 Lakhs)
9. Large Eddy Simulation of AURA-type Flying Wing Configurations with Dragerons at Operating Speed Range (ADA, Bangalore, Rs.70.20 Lakhs)
10. Large-Eddy Simulation of Transonic and Supersonic Cavity Flow Fields (AR & DB, Rs.8.43 Lakhs)
11. Least square finite element analysis of adhesively bonded joint (AR &DB, Rs.4.45 Lakhs)
12. Numerical Prediction of Flow Field, Fountain Flow and Associated Noise in Supersonic Impinging Twin-Jet (AR&DB, Rs.16.80 Lakhs)
13. Setting up of AR & DB Associate Centre for CFD at IIT Kharagpur (Aeronautical Research & Development Board, Rs.0.00 Lakhs)
14. Study of Flow Structure and Associated Accoustics in Weapon Bay Cavity using LES (ADA, Bangalore, Rs.8.16 Lakhs)
15. Uncertainty Quantification in Aircraft Analysis and Design (AR & DB, DRDO, New delhi, Rs.27.58 Lakhs)
16. Upgradation of the Associate Node for CFD at IIT Kharagpur (AR & DB, Rs.40.89 Lakhs)

Consultancy Projects

1. Wind tunnel testing of scaled down railway locomotives (HEWPL, Rs.1.21 Lakhs)

Visits Abroad by Faculty Members

1. Sinha Mahapatra, Kalyan Prasad - Attending conference (Amsterdam, The Netherlands,) 4 days
2. Sinha Mahapatra, Kalyan Prasad - Attending conference (Tokyo, Japan,) 4 days

Invited Lectures by Faculty Members

1. Simulation of dry downbursts by Sinha Mahapatra, Kalyan Prasad (Guwahati)
2. CFD activities at the ARDB associate centre at IIT Kharagpur by Sinha Mahapatra, Kalyan Prasad (Bangalore)

Papers Published in Journals

1. A new inverse hyperbolic shear deformation theory for static and buckling analysis of laminated composite and sandwich plates By Neeraj Grover, D K Maiti and B N Singh *Composite Structures* 95, 667-675 (2013)
2. A New Inverse Hyperbolic Shear Deformation Theory for Static and Buckling Analysis of Laminated Composite and Sandwich Plates By Neeraj Grover, D. K. Maiti and. Singh B. N *Composite Structures*,. 95(2), 667-676, (2012)
3. Active Vibration Control of Smart Composite Structures in Hygrothermal Environment By P. K. Mahato and D. K. Maiti *Structural Engineering and Mechanics, An International Journal* 44(2), 127-138 (2012)
4. Analytical and finite element modeling of laminated composite and sandwich plates: an assessment of a new shear deformation theory for free vibration response By Dash Grover Neeraj, Singh, B. N. and Maiti D. K. *International Journal of Mechanical Sciences* 67, 89-99 (2013)
5. Analytical and finite element modeling of laminated composite and sandwich plates: an assessment of a new shear deformation theory for free vibration response By Neeraj Grover, B. N. Singh and D. K. Maiti *Int. J. Mechanical Sciences* 67, 89-99 (2013)
6. Buckling , Vibration and Flutter behaviour of Laminated Composite Panel By Datta, P. K., Biswas, S and Kong, C.D *J. of Engineering Mechanics, ASCE* 347 - 357 (2012)
7. Buckling and Post-Buckling of Laminated Composite Plates By Dash P. and Singh B. N., *Mechanics Research Communications* 46(1), 1-7 (2012)
8. CFR: A Finite Volume Approach for Computing Incompressible Viscous Flow By A.B. Harichandan and A. Roy *Journal of Applied Fluid Mechanics* Vol. 5(3), pp. 39-52 (2012)
9. Damage Assessment of Beams from Changes in Natural Frequencies Using Ant Colony optimization By Aditi Majumdar, Ambar De, Damodar Maity and Dipak kumar Maiti *Structural Engineering Mechanics* 45(3), 391-410 (2013)
10. Damage Assessment of Truss Structures from Changes in Natural Frequencies Using Ant Colony Optimization By Aditi Majumdar, Dipak kumar Maiti and Damodar Maity *Applied Mathematics and Computation* 218, 9759–9772 (2012)
11. Dynamic behaviour of Stepped Multilayered Viscoelastic Beams By Datta, P. K., Roy, H. and Dutt, J.K *Advances in Vibration Engineering* 12(1), 75-88 (2013)
12. FRF based structural damage detection using PSO By S.C.Mohan, D. K. Maiti and D. Maity *Applied Mathematics and Computation* Accepted (2013)
13. Geometrically Nonlinear Free Vibration of Laminated Composite Plate Embedded with Piezoelectric Layers having Uncertain Material Properties By Dash P and Singh B N *ASME Journal of Vibration and Acoustics* 134(6), 1-13 (2012)
14. High Angle of Attack Parameter Estimation of Cascaded Fins Using Neural Network By M. Sinha, R. A. Kuttieri, A. K. Ghosh, A. Misra *AIAA Journal of Aircraft* 55 (1), 272-291 (2013)
15. Hygrothermally Induced Buckling Analysis of Elastically Supported Laminated Composite Plates with Random System Properties By Kumar Rajesh, Lal Achchhe, Patil H. S. and Singh B. N., *Journal of Composite Materials* 46(2), 2711-30, (2012)
16. Neural Partial Differentiation for Aircraft Parameter Estimation under Turbulent Atmospheric Conditions By R. A. Kuttieri, M. Sinha *Journal of The Institution of Engineers: Series C* Vol 93, No. 3 (2012)

17. New Non-polynomial Shear Deformation Theories for the Structural Behavior of Laminated Composite and Sandwich Plates By Neeraj Grover, B. N. Singh and D. K. Maiti *AIAA Journal* Accepted (2012)
18. Nonlinear and Linear Unstable Aircraft Parameter Estimation Using Neural Partial Differentiation By M. Sinha, R. A. Kuttieri, S. Chatterjee *AIAA Journal of Guidance Control and Dynamics* ACCEPTED (2013)
19. Numerical investigation of flow past single and tandem cylindrical bodies in the vicinity of a plane wall By A.B. Harichandan and A. Roy *Journal of Fluids and Structures* Vol. 33, pp. 19–43 (2012)
20. Numerical Investigation of Three Dimensional Cavity Flow, with a Curved Base, using Space-Time Conservation and Solution Element Method By Poonkodi S., Srinivasan G. and Sinhamahapatra K.P. *Advances in Aerospace Science and Applications* vol. 2, pp. 156-159 (2013)
21. Parametric Resonance Characteristics of Laminated Composite Curved Shell By Datta, P.K., Sahu, S.K. *Intl. J. of Aeronautical and Space Sciences* 13(3), 332-348 (2012)
22. Post buckling Response of Functionally Graded Materials Plate subjected to Mechanical and Thermal Loadings with random material properties By Lal, Achchhe Jagtap K.R., Singh B.N., *Applied Mathematical Modelling* 37(5) (2013)
23. Post-Buckling Analysis of Laminated Composite Doubly Curved Panel Embedded with SMA Fibres subjected to Thermal Environment By Panda Subrata K and Singh B. N. *Mechanics of Advanced Materials and Structures* 20(6) (2013)
24. Stochastic hygrothermoelectromechanical loaded post buckling analysis of piezoelectric laminated cylindrical shell panel By Lal Achchhe, Saidane Nitesh, and Singh B. N *Smart Structures and Systems, An international Journal* 9(6), 505-534 (2012)
25. Stochastic Nonlinear Bending Response Of Functionally Graded Materials Plate With Random System Properties In Thermal Environment, By Jagtap K. R., Lal Achchhe and Singh B. N. *International Journal of Mechanics and Materials in Design* 8(2), 149-167 (2012)
26. Stochastic Nonlinear Free Vibration Analysis of Piezolaminated Composite Conical Shell Panel subjected to Thermoelectromechanical Loading with Random Material Properties By Lal A, Choski P and Singh B N *ASME J of Applied Mechanics: doi:10.1115/1.4006765* 79(11), 1-17 (2012)
27. Structural Optimization of Rotating Disk using Response Surface Equation and Genetic Algorithm By Mohan S.C and D.K.Maiti *International Journal for Computational Methods in Engineering Science and Mechanics* 14, 124-132 (2013)
28. Unstable Aircraft Parameter Estimation using Neural Partial Differentiation By Kuttieri, R. A., and Sinha, M. *Journal of Aerospace Technologies* 64 N3/770, 201-216 (2012)
29. Vibration-Based Structural Damage Detection Technique using Particle Swarm Optimization with Incremental Swarm Size By Bharadwaj Nanda, Damodar Maity and D.K. Maiti *International Journal of Aeronautical & Space Sciences* 13(3), 323–331 (2012)

Papers Presented in Conferences

1. An improved algorithm for interprocessor communication in distributed parallel computing, By Poonkodi S., and Sinhamahapatra K.P., *International Conference on Meta Computing, ICOMEC 2013*, Bhubaneswar, (2013)
2. CFD analysis of the energy separation in a Ranque-Hilsch vortex tube (RHVT), By Bej Nilotpala and Sinhamahapatra K.P., *14th CFD Symposium*, Bangalore, (2012)
3. Damage Assessment of Beam Structures from Changes in Curvature Mode Shape using Unified Particle Swarm Optimization Technique, By Bharadwaj Nanda, Damodar Maity and Dipak Kumar Maiti, *International Congress on Computational Mechanics and Simulation (ICCMS)*, IIT Hyderabad, (2012)
4. Development of a 3D numerical code for the simulation of an isolated downburst using rotating impinging jet mode, By Das K.K., and Sinhamahapatra K P., *International Workshop on Wind Engineering – Prospects and Challenges*, Guwahati, (2013)
5. Flow field studies over V-shaped rear face cavities at supersonic speed, By Srinivasan G., Sinhamahapatra K P. and Das S., *14th CFD Symposium*, Bangalore, (2012)
6. Numerical Investigation of Three Dimensional Cavity Flow, with a Curved Base, using Space-Time Conservation and Solution Element Method, By Poonkodi S., Srinivasan G., and

Sinhamahapatra K.P, *WORLD CONGRSS on Frontiers of Mechanical, Aeronautical and Automobile Engineering (WCFMAAE-2013)*, New Delhi, (2013)

7. Optimal Sensor Placement for Damage Detection using Continuous Ant Colony Optimization Technique, *By* Aditi Majumdar, Bharadwaj Nanda, Dipak K. Maiti and Damodar Maity, *International Congress on Computational Mechanics and Simulation (ICCMS)*, IIT Hyderabad, (2012)

Department of Agricultural & Food Engineering

Head

Prof. P B Singh Bhadoria

Professors

Banerjee, Rintu	<i>Ph.D.(IIT Kharagpur)</i> , Food Biotechnology, Bioenergy, Enzymology & its Biotechnological applications, Protein Chemistry
Bhadoria, P B Singh	<i>Ph.D.(IIT Kharagpur)</i> , Development and transfer of rural technology, Soil Science & Plant nutrition
Das, Susanta Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Mechanized Food Processing and Food Engineering
Datta, Ashis Kumar	<i>Ph.D.(Pennsylvania)</i> , Dairy and Food Process Engineering
Dutta Gupta, Snehasish	<i>Ph.D.(Kalyani Univ)</i> , Plant Tissue Culture & Biotechnology
Ghosh, Bijoy Chandra	<i>Ph.D.(IIT Kharagpur)</i> , Soil less culture Organic farming Tea production and processing
Goswami, Tridib Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Cold Storage, CA and MA storage of fruits and vegetables, Cryogenic grinding of spices, Discrete Element Analysis of grinding, CFD analysis of temperature distribution in precooler
Jha, Madan Kumar	<i>Ph.D.(Japan)</i> , Groundwater Management using RS-GIS and MCDM Techniques, Basin-wide Modeling of Groundwater Systems, Inverse Modeling for Aquifer Parameter Estimation, Rainwater Harvesting and Artificial Recharge
Mal, Bimal Chandra	<i>Ph.D.(IIT Kharagpur)</i> ,
Mallick, Nirupama	<i>Ph.D.(BHU, Varanasi)</i> , Microalgal Biofuel, Biodegradable Polymers (Polyhydroxyalkanoates) from Cyanobacteria, Bioremediation with Microalgae, Bioactives from Microalgae
Mishra, Hari Niwas	<i>Ph.D.(IIT Kharagpur)</i> , Algal Food Biotechnology, RTE Health Foods & Nutraceuticals, Innovative Food Processing Technologies, Horticultural & Plantation Crop Products Processing, Food Safety & Quality Control, High pressure processing of high value perishables
Panda, Rabindra Kumar	<i>Ph.D.(IARI Delhi)</i> , Watershed Management, Non-point Source Pollution of Soil & Water, Climate Change Effect on Agriculture, Rainwater Management
Panda, Sudhindra Nath	<i>Ph.D.(PAU, Ludhiana)</i> , Integrated Land and Water Resources Planning and Management, Rainwater Conservation and Recycling
Pandey, Keshaw Prasad	<i>Ph.D.(IIT Kharagpur)</i> , 1 Tractor power systems 2. Traction modelling 3. Precision agriculture
Raghuwanshi, Narendra Singh	<i>Ph.D.(California)</i> , Irrigation and Water Management, Hydrological Modelling, Watershed Management
Raheman, Hifjur	<i>Ph.D.(Bangkok)</i> , Development of farm Implements, Biofuel production and hybrid power generation
Singh, Rajendra	<i>Ph.D.(IIT Kharagpur)</i> , Hydrological Modelling, Irrigation System Management
Tewari, Virendra Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Farm Machinery & Power, Ergonomics & Safety, Precision Agriculture
Tiwari, Kamlesh Narayan	<i>Ph.D.(IARI Delhi)</i> , Micro Irrigation, Greenhouse Technology, Remote Sensing & GIS Application in Watershed Management

Associate Professors

Chatterjee, Chandranath	<i>Ph.D (IIT Kharagpur)</i> , Flood Forecasting, Design Flood Estimation, Flood Inundation Modeling and Hazard Assessment, Remote Sensing and GIS Applications in Surface Water Hydrology, Hydrological Modeling
Das, Bhabani Sankar	<i>Ph.D.(Kansas)</i> , Spectral characterization of soils, Rice hydrology, Measurement and modeling of water and nutrient status in soil, Pedotransfer functions
Majumdar, Gautam Chandra	<i>Ph.D.(IIT Kharagpur)</i> , Food Process Engineering
Mitra, Adinpunya	<i>Ph.D.(East Anglia UK)</i> , Biotechnology of Gentianaceae medicinal plants for phenolic bioactives, Regulation of shikimate/phenylpropanid and MVA/MEP pathways in hairy root cultures of <i>Daucus carota</i> , Biochemistry and molecular biology of floral scent volatiles, Biochemistry of phenolic fragrance <i>Hemidesmus indicus</i> roots and cell cultures, Targeted metabolite profiling of phenolic compounds in transgenic root cultures and plants
Mitra, Arunabha	<i>Ph.D.(Calcutta Univ)</i> , Value based education, Waste utilization in aquaculture, Ecology and environmental pollution, Chemical-free farming, Mind and consciousness, Stress management and control
Srinivasa Rao, Pavuluri	<i>Ph.D.(IIT Kharagpur)</i> , Recirculatory Aquacultural Systems, Post Harvest & Food Engineering, High Pressure Processing of High Value Perishable Commodities
Thomas, E V	<i>Ph.D.(IIT Kharagpur)</i> , Farm Machinery & Power, Rice Transplanter, Tea Process Machinery

Assistant Professors

Das, Madhusweta	<i>Ph.D.(Jadavpur Univ)</i> , Functional Foods, Starch based edible and biodegradable film, Isolation of bioactive component from food waste
Guha, Proshanta	<i>Ph.D.(IIT Kharagpur)</i> , 1.Agronomy 2.Post-harvest Technology 3.Forest and Wasteland Management 4.Weed & Water Management
Mishra, Ashok	<i>Ph.D.(IIT Kharagpur)</i> , Hydrological modelling & Watershed management, Crop yield modelling, Climate change analysis & applications in water and crop management
Mukherjee, Chanchal Kumar	<i>MS (New Jersey)</i> , Cage for mariculture
Nalavade, Parish Prakash	<i>D. Eng. (A I T, Thailand)</i> , Tillage and Traction, Soil-Tool Interaction, Precision Agriculture
Shrivastava, Shanker Lal	<i>Ph.D.(IIT Kharagpur)</i> , Post Harvest Engineering, Dairy & Food Process Engineering, Development of low cost - farm level processing equipment
Srivastav, Prem Prakash	<i>Ph.D.(IIT Kharagpur)</i> , Food Science and Technology
Swain, Dillip Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Sustainable & Precision Production Agriculture, Climate Change Adaptations & Mitigations, Crop Growth & Yield Simulation
Tripathy, Punyadarshini Punam	<i>Ph.D.(IIT Delhi)</i> , Heat and Mass transfer during drying of food products, Mathematical modeling and simulation in food drying process, CO ₂ mitigation in solar dryers, CO ₂ capture and storage

Senior Scientific Officer

Singh, Manindra Nath	<i>Ph.D (BHU)</i> , Grain Storage Technology
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Faculty Retirement

Singh, Manindra Nath

Senior Scientific Officer

Brief Description of on-going activities

Application of GIS in both command area & watershed management, Application of neural network in hydrology, Ballast management of agricultural tractors, Biofiltration Technology, Bio-fuels from tree-based oils, Biosynthesis of phenolic fragrance and xanthenes, Cage for mariculture, Climate change analysis & applications in water and crop management, Coal biotechnology, Design and development of continually variable transmission for tractors, Design , development and field evaluation of a small power tractor, Design and development of slip meter for two-wheel drive tractors, Design and development of automatic depth control system for tractors, Design and development of ergo NVH_ag 1.0 software, Design and development of noise and vibration reducing device for hand tractor, Design and development of noise and vibration reducing device for vertical conveyer reaper, Design of a centrifugal press for semi-continuous production of paneer, Development of aseptic packaging system for milk, Development of environment-friendly aquaculture, Development of food products, Development of machineries and process technology for cereals & pulses based snacks, Development of rice transplanter, Development of a continuous chhana making device, Development of jacketted scraped surface vessel for kneading, heating and concentration of high viscosity liquids and pastes, Development of endless chain pressure dryer for orthodox tea, Design of a centrifugal press for semicontinuous production of paneer, Development of Cashew nut sheller and Cashew peeler, Evaluation of cosmetic properties of Aloe vera L., Flow and solute transport in sub-surface environment, Food Packaging, High pressure processing of high value perishables, Hydrological modelling of small watersheds, Imaging photosynthesis of micropropagated plants, Integration of surface irrigation and two-dimension infiltration model, Machinery systems and ergonomics, Microalgal biofuel, Microbial degradation of plant phenolics for value-added products, Micropropagation and cryopreservation of endangered medicinal plants, Microwave assisted drying of high moisture food, Nutrient management, Polyhydroxyalkanoates from Cyanobacteria, Predicting traction performance using artificial neural network, Process technology for dehydration of mushrooms, Production and processing of tea, Production of tannase under solid state fermentation, Process technology for dahi powder & dahi powder based energy drink mix, Process technology for antioxidant rich RTE health food, Process technology for manufacture of RTE health food (herbal kurkure), Rainwater harvesting and groundwater recharge, Software development for machinery management, Spectral characterization of soils, Starch based edible and biodegradable film, Thermal analysis of food materials, Traction potential of bias-ply tyres used in agricultural tractors, Water quality and watershed management

Thrust Areas

1. Agricultural Biotechnology
2. Agro-Informatics
3. Mechanized Food Processing
4. Natural Resources Management
5. Precision Farming

New Acquisitions

1. Atomic Absorption Spectrometer, ThermoFisher Scientific
2. Flash 2000 CHNS Analyzer, ThermoFisher Scientific
3. GC-MS-HeadSpace System, CLARUS 600T, Perkin Elmer

International Collaborations

Technical University of Braunschweig, Germany

Department of Geoinformatics, Geohydrology and Modeling, Friedrich-Schiller-University, Jena, Germany

Biosystems Engineering Department, College of Agriculture, Sam Ginn College of Engineering, Auburn University, USA

Institute of Water Resources Management, Hydrology and Agricultural Hydraulic Engineering, Leibniz University Hannover, Germany

ALTERRA-Centre for Water and Climate, Wageningen University, The Netherlands

Waikato Institute of Technology, Hamilton, New Zealand

Institute of Biological Sciences, University of Rostock, Rostock, Germany

United Nations University, Tokyo, Japan (Collaborator: Prof. Srikantha Herath): Research and education, Network on climate change adaptation research

MoU Agreement : Signed MoU as Focal Point for 'University Network for Climate and Ecosystem Change Adaptation Research (UNCECAR)', with United Nations University, Tokyo, JAPAN

Dr. Thomas Crawford, Department of Geography, East Carolina University, Greenville, NC USA 27858 USA. Under a scoping project-"Human Responses to Catastrophic Monsoon Events in South Asia: Designing a Spatially Explicit Model in Low-Lying Coastal Bangladesh and India" funded by Asian Pacific Network for Global Change Research (APN).

The Coordinated Climate-Crop Modeling Project, USA (Collaborators: Dr. Cynthia Rosenzweig, NASA-Goddard Institute for Space Studies and Columbia University, USA, Agricultural Model Intercomparison and Improvement Project): Research, Analysis of uncertainty in the agricultural impacts of climate change

Lectures by Visiting Experts

1. Teaching and Research in Agricultural Engineering at University of Southern Queensland, Australia *by* Dr. R.K. Mishra (University of Southern Queensland, Australia)
2. Heart Management: Sharing Personal Experience *by* Prof. Jaswant Singh, Former Head, AgFE (Varanasi)
3. Extraction of Bioactive Components, Food and Bioprocess Engineering, Ultrasonic Treatment and Radio Frequency Enhanced Solvent Extraction *by* Dr. Oon-Doo Baik (Chemical and Biological Engineering, University of Saskatchewan, Saskatoon, Canada)
4. Making Processed Food Healthier - A Study on Incorporation of Fiber in Extruded Products *by* Dr. Sajid Alavi (Department of Grain Science and Industry, Kansas State University, USA)
5. Bioresource Engineering at McGill and Post Harvest Technology for Sustainable Food Security *by* Dr. G S Vijay Ragavan (Department of Bio-Resource Engineering, McGill University, Canada)

Doctoral and MS Degrees Awarded

1. Sushil Kr. Pandey : Modified Atmospheric packaging of capsicum(Ph.D)
2. Pramod Tiwary : Development and evaluation of decision support for integrated water resource management(Ph.D.)
3. Narayan Bag : Performance of Indian major crops cultured with different stocking densities and management practices(Ph.D)
4. Ajay Singh : Optimization and simulation modeling for managing waterlogging in semi-arid region of Haryana, India(Ph.D)
5. Amit Baran Das : Production of rice snacks by using a single screw extruder(MS)

6. Sourya Das : Utilization and management of wetland resources in West Bengal(Ph.D)
7. Abhinav Mishra : Moisture sorption isotherms of pigeonpea (*Cajanus cajan*) and its thermodynamic properties(MS)
8. Sangeeta Mukhopadhyay : Optimization of process parameters for the production of chhana podo(MS)
9. Chandani Sen : Active packaging of fresh Singapuri banana(MS)
10. Chhaya : Processing of stevia extract using membrane separation technology(Ph.D.)
11. Nandede Balaji Murhari : Development of tractor drawn multi-stack automatic vegetable transplanter(Ph.D.)
12. A.K. Srivastava : Design of universal mounting fixture and deployable roll-over protective structure for 2WD Agricultural Tractors(Ph.D.)
13. Debajit Datta : Criteria and indicators for assessing sustainable community management of Sunderbans mangroves, India(Ph.D.)
14. Tanima Chowdhury : Development of starch based self supporting edible films and their characterization(Ph.D.)
15. Sudipto Sarkar : Development of water quality mode for culture of Indian major crops(Ph.D.)
16. Ranjana Bhati : Poly (3-hydroxybutyrate-co-3-hydroxyvalerate) co-polymer production by the nitrogen fixing Cyanobacterium *Nostoc muscerum* Agardh(Ph.D)
17. Shilalipi Samantaray : Production of polyhydroxyalkanoate polymers using a Rice-field cyanobacterium *Aulosira fertilissima*(Ph.D)
18. C.K. Raju : Enhancing sustainability and secureness of software in public applications(Ph.D.)
19. Ranjana Pandey : Studies on safe storage of green gram (*Vigna radiata*)(Ph.D.)

Member - Professional Bodies

1. Mallick, Nirupama, *Regular* - Life Member: Biotech Research Society of India
2. Mitra, Adinpunya, *Life Member* - Society for Plant Biochemistry and Biotechnology (India)
3. Mitra, Adinpunya, *Life member* - Association of Microbiologists of India
4. Mitra, Adinpunya, *Life Member* - Biotech Research Society of India
5. Das, Madhusweta, *Regular* - American Society of Agricultural and Biological Engineers
6. Singh, Manindra Nath, *Senior Member* - Bioved research society Allahabad
7. Guha, Proshanta, *Life member* - Indian Society of Weed Science
8. Guha, Proshanta, *Life Member* - Association of Rice Research Workers
9. Guha, Proshanta, *Regular* - Association of food scientists and technologists (India)
10. Guha, Proshanta, *Life member* - Indian Science Congress Association
11. Guha, Proshanta, *Life Member* - Indian Society of Plant Physiology
12. Srivastav, Prem Prakash, *Life Member* - IDA
13. Srivastav, Prem Prakash, *MTIE* - Institution of Engineers
14. Srivastav, Prem Prakash, *Member* - American Society of Agricultural and Biological Engineers
15. Srivastav, Prem Prakash, *Life member* - Association of Microbiologists of India
16. Srivastav, Prem Prakash, *Life Member* - ISTE
17. Srivastav, Prem Prakash, *Life Member* - AFST(I)
18. Shrivastava, Shanker Lal, *Life Member* - Association of Food Scientists and Technologists (India)
19. Shrivastava, Shanker Lal, *Member* - Agricultural Engineering Society, Kharagpur
20. Srinivasa Rao, Pavuluri, *Member* - Institution of Engineers (India)
21. Srinivasa Rao, Pavuluri, *Life member* - Indian Society of Agricultural Engineers
22. Srinivasa Rao, Pavuluri, *Members* - Institute of Food Technologists (USA)
23. Srinivasa Rao, Pavuluri, *Life member* - Association of Food Scientists and Technologists
24. Srinivasa Rao, Pavuluri, *Member* - American Society of Agricultural and Biological Engineers
25. Srinivasa Rao, Pavuluri, *Life Member* - Andhra Agricultural Association
26. Swain, Dillip Kumar, *Life member* - Indian Society of Agronomy
27. Swain, Dillip Kumar, *Member* - American Society of Agronomy
28. Swain, Dillip Kumar, *Life member* - Indian Science Congress Association
29. Swain, Dillip Kumar, *Member* - International Society for Environmental Information Sciences

30. Mishra, Ashok, *Member* - Environmental & Water Resources Institute (EWRI), American Society of Civil Engineers (ASCE)
31. Mishra, Ashok, *Life Member* - Indian Society of Agricultural Engineers.
32. Mishra, Ashok, *Life Member* - Indian Water resources Society (IWRS)
33. Pandey, Keshaw Prasad, *Member* - The Institution of Engineers (India)
34. Pandey, Keshaw Prasad, *Member* - American Society of Agricultural and Biological Engineers
35. Pandey, Keshaw Prasad, *Life Member* - Indian Society of Agricultural Engineers
36. Bhadoria, P B Singh, *Life memeber* - Indian Society of Soil science
37. Bhadoria, P B Singh, *senior* - Agril. Engg soicety, IIT kharagpur
38. Bhadoria, P B Singh, *Annual Member* - German Society of plant nutrtn and soil science
39. Mukherjee, Chanchal Kumar, *Regular* - Society of Naval Architects & marine Engineers USA
40. Mukherjee, Chanchal Kumar, *regular* - Society of Fisheries technologists of India
41. Mukherjee, Chanchal Kumar, *regular* - Institution of Engineers India
42. Mukherjee, Chanchal Kumar, *Associate member* - Aquaculture Engineering society, USA
43. Mukherjee, Chanchal Kumar, *Member* - World Aquaculture Society
44. Tiwari, Kamlesh Narayan, *Life Member* - Indian Water Resources Society
45. Tiwari, Kamlesh Narayan, *Regular Member* - American Society of Agricultural and Biological Engineers
46. Tiwari, Kamlesh Narayan, *Life Member* - Indian Society of Agricultural Engineers
47. Tiwari, Kamlesh Narayan, *Life Member* - Indian Society of Remote Sensing
48. Tiwari, Kamlesh Narayan, *Senior Member* - Institution of Engineers (India)
49. Mitra, Arunabha, *Life Member* - Zoological Society of India
50. Mitra, Arunabha, *Regular* - World Aquaculture Society, USA
51. Mitra, Arunabha, *Life Member* - Inland Fisheries Society of India
52. Mitra, Arunabha, *Full Founding Member* - Asian Fisheries Society, Philippines
53. Mitra, Arunabha, *Member* - Research Advisory Committee, Central Institute of Fisheries Education, ICAR, Govt. of India
54. Mitra, Arunabha, *Life Member* - Indian Science Congress
55. Mitra, Arunabha, *Member* - Board of Studies, Aquaculture Management & Technology, Vidyasagar University, Midnapore
56. Das, Susanta Kumar, *Regular* - American Society of Agricultural and Biological Engineers, USA
57. Ghosh, Bijoy Chandra, *Life Member* - Indian Society of Agronomy
58. Ghosh, Bijoy Chandra, *Life Member* - Indian Society of Weed Science
59. Datta, Ashis Kumar, *Member* - American Society of Agricultural and Biological Engineers (ASABE)
60. Datta, Ashis Kumar, *Life Member* - Indian Dairy Engineers Association (IDEA)
61. Datta, Ashis Kumar, *Ordinary* - Indian Dairy Association (IDA)
62. Datta, Ashis Kumar, *Life Member* - All India Council for Technical Education (AICTE)
63. Singh, Rajendra, *Life Member* - ISAE
64. Thomas, E V, *Associate Member* - Institution of Engineers (India)
65. Thomas, E V, *Regular Member* - Indian Society of Agricultural Engineers
66. Thomas, E V, *Regular Member* - American Society of Agricultural and Biological Engineers
67. Goswami, Tridib Kumar, *Life* - Indian Association of Chemical Engineers (AIChE)
68. Goswami, Tridib Kumar, *Life* - Indian Society of Cryogenic Engineers
69. Goswami, Tridib Kumar, *Life* - Association of Food Scientists and Technologists (AFST)
70. Goswami, Tridib Kumar, *Rehgular* - American Society of Agricultural and Bilogical Engineers (ASABE)
71. Tewari, Virendra Kumar, *Regular* - Indian Society of Weed Science
72. Tewari, Virendra Kumar, *Regular* - Association of Food Scientists and Technology (India)
73. Tewari, Virendra Kumar, *Regular* - Indian Society of Ergonomics
74. Tewari, Virendra Kumar, *Regular* - Indian Society for Technical Education
75. Tewari, Virendra Kumar, *Regular* - American Society of Agricultural and Biological Engineers
76. Dutta Gupta, Snehasish, *Regular* - European Federation of Biotechnology
77. Dutta Gupta, Snehasish, *Life* - Indian Society for Plant Physiology
78. Dutta Gupta, Snehasish, *Fellow Member* - Plant Tissue Culture Association (India)
79. Dutta Gupta, Snehasish, *Regular* - Society for In Vitro Biology, USA

80. Panda, Rabindra Kumar, *Life Member* - Indian Society of Agricultural Engineers
81. Panda, Rabindra Kumar, *Life Member* - Indian Society of Water Management
82. Panda, Rabindra Kumar, *Life Member* - Asia Pacific Association of Hydrology and Water Resources
83. Panda, Rabindra Kumar, *Life Member* - Indian Society of Agro-meteorologist
84. Panda, Rabindra Kumar, *Associate Member* - American Society of Agricultural and Biological Engineers
85. Mishra, Hari Niwas, *Past President & Life Member* - Association of Food Scientists & Technologists (India)
86. Mishra, Hari Niwas, *Member* - All India Food Processors Association
87. Mishra, Hari Niwas, *Member* - Indian Society of Agricultural Engineers
88. Raheman, Hifjur, *Member* - Member of the American Society of Agricultural & biological Engineers
89. Raheman, Hifjur, *Life Member* - Indian Society of Agricultural Engineers
90. Raheman, Hifjur, *Fellow* - Institution of Engineers India
91. Jha, Madan Kumar, *Life Member* - Indian Science Congress Association, Kolkata
92. Jha, Madan Kumar, *Regular Member* - International Association of Hydrogeologists (IAH), U.K.
93. Das, Bhabani Sankar, *Member* - Indian Society of Soil Science
94. Tripathy, Punyadarshini Punam, *Life member* - Indian Society of Agricultural Engineers

Member - Editorial Board

1. Das, Madhusweta (0) *Member* - International Journal of Chemoinformatics and Chemical Engineering
2. Das, Madhusweta (2011) *Editor* - Research and Reviews: Journal of Agricultural Science and Technology
3. Das, Madhusweta (2011) *Editor* - Research and Reviews: Journal of Food Science and Technology
4. Dutta Gupta, Snehasish (2011) *Associate Editor* - Journal of Plant Genomics
5. Dutta Gupta, Snehasish (2011) *Associate Editor* - Journal of Crop Science
6. Dutta Gupta, Snehasish (2010) *Editorial board member* - Functional Plant Science and Biotechnology
7. Dutta Gupta, Snehasish (2011) *Editorial Board Member* - Journal of Biological Research (Hong Kong)
8. Dutta Gupta, Snehasish (2010) *Editorial board member* - Asian and Australian Journal of Plant Science and Biotechnology
9. Goswami, Tridib Kumar (0) *Editorial Board Member* - The Standard International Journals (The SIJ)
10. Guha, Proshanta (2011) *Member of Editorial Board* - Research & Reviews: Journal of Agricultural Science and Technology
11. Guha, Proshanta (2011) *Member of Editorial Board* - Research & Reviews: Journal of Food Science and Technology
12. Jha, Madan Kumar (2012) *Associate Editor* - Hydrogeology Journal
13. Jha, Madan Kumar (2012) *Executive Editor-in-Chief* - International Agricultural Engineering Journal
14. Jha, Madan Kumar (2010) *Editor* - Journal of Water Resource and Protection
15. Mishra, Hari Niwas (0) *Member* - Indian Food Packer
16. Mishra, Hari Niwas (2011) *Member* - LWT - Food Science & Technology
17. Mishra, Hari Niwas (0) *Member* - Journal of Food Science & Technology
18. Mishra, Hari Niwas (2012) *Member* - International Journal of Food Science & Technology
19. Mishra, Hari Niwas (0) *Member* - Fresh Produce
20. Mishra, Hari Niwas (2012) *Member* - Focusing Modern Food Industry
21. Mishra, Hari Niwas (0) *Member* - Food
22. Mishra, Hari Niwas (0) *Member* - Indian Food Industry
23. Mitra, Arunabha (2012) *Honorary Editor* - Journal of Aquaculture in the Tropics

24. Panda, Rabindra Kumar (2012) *Editorial Board Member* - International Journal of Agricultural and Biological Engineering
25. Raghuwanshi, Narendra Singh (2002) *Advisory Editorial Board* - Irrigation Science
26. Shrivastava, Shanker Lal (2012) *Editor* - American Journal of Food and Nutrition
27. Srinivasa Rao, Pavuluri (2013) *Reviewer* - Journal of Food Process Engineering
28. Tiwari, Kamlesh Narayan (2012) *Member Editorial Board from India* - International Journal of Agricultural & Biological Engineering

Awards & Honours

1. Jha, Madan Kumar (2013) *Commendation Medal by the Indian Society of Agricultural Engineers*
2. Tiwari, Kamlesh Narayan () *Commendation Medal from Indian Society of Agricultural Engineers*
3. Mitra, Adinpunya (2012) *DAAD Research Stay Scholarship*
4. Srinivasa Rao, Pavuluri (2012) *Doctoral thesis under my supervision got Jawaharlal Nehru Award for Outstanding Doctoral Thesis Research in Agricultural and Allied Sciences 2012 by ICAR, New Delhi*
5. Tiwari, Kamlesh Narayan (2012) *Harikrishna Shastri Memorial Award of IARI for Outstanding Research in Micro Irrigation and Greenhouse Technologies*
6. Goswami, Tridib Kumar (2013) *i. Conferred with best poster presentation award for the paper entitled "Discrete Element modeling of material flow inside a screw conveyor for cryogenic grinding" by K. Charithkumar and T.K. Gosw*
7. Srinivasa Rao, Pavuluri (2012) *Member, Board of studies (Agril. Engg.), Jawaharlal Nehru Technological University, Hyderabad*
8. Mishra, Hari Niwas (2012) *Member, Board of Studies in Food Technology, Bigyan University, AP. India*
9. Jha, Madan Kumar (2012) *Prof. S.C. Puranic Award by the Association of Geologists and Hydrogeologists (GEOFORUM)*
10. Nalavade, Parish Prakash (2012) *Recipient of rank three in the 1st edition of the "Giuseppe Pellizzi International Best PhD Prize" competition, organized by Club of Bologna and FEDER-UNACOMA, Italy.*
11. Das, Madhusweta (2013) *Second Best Prize on Poster Presented at the 3rd. International summit, ISPI 2013, Dec. 29-30, held at Hotel The Leela, Mumbai*

Fellowships

1. Mitra, Adinpunya (2012) *DAAD Scholarship*

Sponsored Research Projects

1. A value chain on aloe vera processing (ICAR, New Delhi under NAIP of World Bank, Rs.385.65 Lakhs)
2. Adaptation to changing water resources availability in northern India with Himalayan glacier retreat and changing monsoon pattern (European Commission, Rs.155.00 Lakhs)
3. Advanced Agro-techniques for Improving Productivity of Tea Garden (Tea Board, Govt. of India, Kolkata, Rs.12.48 Lakhs)
4. AICRP on Ergonomics & Safety in Agriculture (ICAR, New Delhi, Rs.126.24 Lakhs)
5. AICRP on Farm Implement and Machinery (ICAR, New Delhi, Rs.140.78 Lakhs)
6. AICRP on Post Harvest Technology (Indian Council of Agricultural Research, Rs.14.00 Lakhs)
7. Analysis of Climate Change and its Impact on Flood and Drought in a River Basin (Sponsored Research and Industrial Consultancy (SRIC), IIT Kharagpur, Rs.3.15 Lakhs)
8. Assessment of harvest and post harvest losses of major crops and commodities in India (ministry of Food Processing Industries, New Delhi, Rs.6.40 Lakhs)

9. Assessment of harvest and post harvest losses of major crops and commodities in India (Ministry of Food Processing Industries, New Delhi, Rs.6.50 Lakhs)
10. Assessment of harvest and post harvest losses of major crops and commodities in India (AHM) (Ministry of Food Processing Industries, New Delhi, Ministry of Food Processing Industries, Rs.640000.00 Lakhs)
11. Award of Fellowship under National Rebevable Fellowships (MNRE, Rs.61.76 Lakhs)
12. Bioactive peptide synthesis from honey protein and its biochemical characterization (CSIR, Rs.0.00 Lakhs)
13. Biodepolymerization of low grade lignite to Biomethane and Humic acid (ONGC, New Delhi, Rs.248.00 Lakhs)
14. Characterization of soil reflectance in the visible and near-infrared region for the iron-rich soils of eastern India (SERC, DST, New Delhi, Rs.19.65 Lakhs)
15. Climate change and rice-based crop production system of eastern and south eastern India: Impact assessment and risk management through simulation (C-MMACS, CSIR, Bangalore, Rs.16.67 Lakhs)
16. Designing optimum size of rainwater harvesting and recycling structure for diversified cropping system in rainfed upland ecosystems in rainfed upland (CSIR, Rs.17.76 Lakhs)
17. Development of a GIS based decision support system for irrigation system management (INCID, New Delhi, Rs.42.48 Lakhs)
18. Development of a GIS based decision support system for irrigation system management (Indian National Committee on Surface Water (INCSW), Ministry of Water Resources (MoWR), Rs.42.47 Lakhs)
19. Development of a Prototype for Continuous Production of Kheer (NDDDB, Anand, Rs.6.25 Lakhs)
20. Development of Agricultural Machines (NIFP) (National Innovation Foundation, Ahmedabad, Rs.5.73 Lakhs)
21. Development of an automatic vegetable transplanter with technology for paper pot seedlings (Council of Scientific and Industrial Research, Rs.12.94 Lakhs)
22. Development of cage for mariculture through numerical & physical modeling (MOES, New Delhi, Rs.47.00 Lakhs)
23. Development of criteria and indications for sustainable forest management in Sunderbans mangrove forest under joint forest management ((CSIR, New Delhi), Rs.3.00 Lakhs)
24. Development of e-Courses for B.Tech. (Agricultural Engineering) (ICAR-NAIP (New Delhi), Rs.78.11 Lakhs)
25. Development of e-Courses for B.Tech. (Agricultural Engineering) (NAIP, ICAR, New Delhi, Rs.78.11 Lakhs)
26. Development of GIS based decision support system for irrigation system management (INCID, Min. of Water Recources, Govt. of India, Rs.42.47 Lakhs)
27. Development of Technology and Prototype Facility for Enhancement of Shelf life of Fruits and vegetables through Active Packaging and Modified Storage (Department of Biotechnology, Govt of India, Rs.89.00 Lakhs)
28. Development of Technology for processing and preservation of ripe Palmyra Palm fruits (ICAR, Rs.23.00 Lakhs)
29. Development of Vermicompost Technology and Organic Farming at DTRDC, Kurseong, Darjeeling and at IIT Kharagpur (DTRDC, Tea Board, Govt. of India, Darjeeling, Rs.9.00 Lakhs)
30. Distributed Hydrological Modelling to Analyse Sediment and Nutrient Status of Brahmani-Baitarani Delta (Space Applications Centre, Ahmedabad, Rs.10.46 Lakhs)
31. Elucidating fragrant methoxybenzaldehyde biosynthesis in hairy roots/normal root cultures of *Hemidesmus indicus* (completed in April-2012) (DAE-BRNS, Mumbai, Rs.25.00 Lakhs)
32. Enhancing Research Capacity and Initiating Integrated M Tech & Ph D programme in Food Science & Technology (Department of Biotechnology, Government of India , New Delhi, Rs.837.80 Lakhs)
33. Ensemble modeling of rainfall-runoff transformation process (INCOH, New Delhi, Rs.26.43 Lakhs)
34. Ensemble modeling of rainfall-runoff transformation process (Indian National Committee on Surface Water (INCSW), Ministry of Water Resources (MoWR), Rs.26.44 Lakhs)

35. Flood inundation zoning for different return periods in Mahanadi river basin (Indian National Committee on Surface Water (INCSW), Ministry of Water Resources (MoWR), Rs.36.00 Lakhs)
36. Forecasting Agricultural output using Space, Agrometeorology and Land based Observations (Ministry of Earth Sciences, Rs.12.00 Lakhs)
37. Formulation and Pilot Scale Unit for Production of Therapeutic Food in Ready-to-Eat Form (TF-RTE) for Management of SAM Children (Department of Biotechnology, Govt of India and M/s GCPL New Delhi, Rs.218.70 Lakhs)
38. Groundwater modelling in selected basins between Farakka and Ganga Sagar (Ministry of Environment & Forest, Govt. of India, Rs.25.00 Lakhs)
39. High Noon: Adaptation to changing water resources availability in northern India with Himalayan glacier retreat and changing monsoon pattern (European Commission, Rs.155.00 Lakhs)
40. Hydrological Modelling of Watersheds to Evaluate Impacts of Watershed Structures on Surface Flow and Groundwater Recharge (Department of Science & Technology, New Delhi, Rs.19.33 Lakhs)
41. Impact of MGNREGA in one District of West Bengal and Mandal, M.P. (MoRD, Rs.20.00 Lakhs)
42. Implementation of Agro-techniques towards recovery of lost soil fertility to salinity after Aila incidence in Dayapur, island of Sunderban areas: An i (NABARD, Kolkata, Rs.9.00 Lakhs)
43. Indo-Denmark Collaborative research project on High rate algal biomass for food, feed and bioenergy (DBT, GOI, Rs.0.00 Lakhs)
44. Integrated Agromet Advisory Services (Ministry of Earth Sciences, Govt. of India, Rs.30.00 Lakhs)
45. Integration of rainwater harvesting and climate resilient agriculture in sustaining productivity and profitability of rainfed agro-climatic zones o (ICAR, Rs.111.00 Lakhs)
46. Integration of rainwater harvesting and climate resilient agriculture in sustaining productivity and profitability of rainfed agro-climatic zones of e (CRIDA (ICAR), Rs.111.00 Lakhs)
47. Interdisciplinary network for holistic environment system analysis, eco-system services, integrated modelling and sustainable resources management (IN (BMBF, Germany, Rs.85.00 Lakhs)
48. Kheer Making (NDDDB, Rs.6.25 Lakhs)
49. Land use land cover dynamics in relation to human dimension and climate in Mahanadi river basin, Orissa (NRSC, Hyderabad, Rs.22.80 Lakhs)
50. Modeling the performance of a few major cropping systems in eastern India in the light of projected climate change (National Agricultural Innovation Project, ICAR, New Delhi, Rs.50.00 Lakhs)
51. NAIP project entitled "Precision Farming Technologies in Production Agriculture ◆◆? (ICAR, New Delhi, Rs.59.74 Lakhs)
52. Operational Research Project on Agro-processing centre (ICAR, New Delhi, Rs.5.54 Lakhs)
53. Perturbing phenolic natural product metabolism in tobacco by expressing a cryptogein gene of novel elicitor function (DST-SERB, New Delhi, Rs.34.50 Lakhs)
54. Power generation with reduced emissions using de-oiled cake and biodiesel from non-edible oil seeds (Department of Science & Technology, Rs.33.07 Lakhs)
55. Precision Farming Development Centre (National Committee on Plasticulture Application in Horticulture, Min. of Agriculture, Govt. of India, Rs.250.00 Lakhs)
56. Precision Farming Technologies based on Microprocessor & Decision Support Systems for Enhancing Input Application Efficiency in Production Agriculture (ICAR, NAIP, Rs.46.49 Lakhs)
57. Production and performance evaluation of of biodiesel from tree based oils (with high free fatty acids) and their mixtures (Petroleum Conservation Research Association, Rs.11.62 Lakhs)
58. Production of Citrus Juice through enzymatic debittering (DBT, Rs.0.00 Lakhs)
59. Production of ethanol from lignocellulosics: Lab to Pilot scale (DBT, Rs.345.00 Lakhs)
60. Rapid soil carbon mapping using soil reflectance in the visible and near-infrared region (NRDMS, DST, New Delhi, Rs.60.00 Lakhs)
61. Research and Development & Dissemination of Human Energy or Minimal Energy Driven Composite Devices for Farm Level Processing of Agricultural Products (Department of Agriculture, MW&C Branch, Government of West Bengal, Rs.43.00 Lakhs)
62. Rural Technology Action Group-EI (PSA, Gol, Rs.90.00 Lakhs)

63. Standardization of process parameters in withering, maceration, rolling, fermentation and drying of tea (SOP) (Tea Board, Government of India, Kolkata, Rs.0.00 Lakhs)
64. Studies on Cryogenic Grinding for Retention of Flavour and Medicinal Properties of Some Important Indian Spices . (NAIP, ICAR (WORLD BANK FUNDED PROJECT), Rs.90.10 Lakhs)
65. Studies on High Pressure Processing (HPP) of High Value Perishable Commodities (National Agricultural Innovation Project, ICAR, New Delhi, Rs.340.69 Lakhs)
66. Studies on Microalgal Triacylglycerols (TAGs) as a Source of Biodiesel (ICAR, New Delhi, Rs.170.29 Lakhs)
67. Study of heat and mass transfer and estimation of CO₂ mitigation during solar drying of food products (ISIRD, SRIC, Rs.4.87 Lakhs)
68. Survey to Identify the Practices for Ripening of Fruits (ICAR-ICMR, Rs.0.00 Lakhs)
69. Understanding scent volatiles emission in Polianthes tuberosa flowers (CSIR, New Delhi, Rs.25.00 Lakhs)
70. Upgradation of laboratory and library facilities for renewable energy programme (MNRE, Rs.50.00 Lakhs)

Consultancy Projects

1. 4. Rainwater Harvesting at Bokaro Steel Ltd. (Bokaro Steel Ltd., SAIL, Rs.7.50 Lakhs)
2. Agriculture Farming System and Management (HMV Laboratory, Panskura, Rs.3.50 Lakhs)
3. Construction of periphery road in the BRBNMPL campus (Bharatiya Reserve Bank Note Mudran Ltd., Salboni, Rs.10.00 Lakhs)
4. Educational and Design Software (State and Central Govt Agencies, Rs.0.00 Lakhs)
5. Evaluation of Antioxidant Potential, Synergistic Behaviour and Stability of Rosemary& Sage Extracts (M/s Synthite Industries Ltd., Kolenchery, Kerala, Rs.49.90 Lakhs)
6. Evaluation of capacity of Rice Mill at Midnapur (Rice Millers' Association, Rs.0.00 Lakhs)
7. Evaluation of Probable Maximum Flood for Nagarjun Sagar Dam (Irrigation and CAD Department, Govt. of Andhra Pradesh, Rs.29.00 Lakhs)
8. Groundwater Exploration at Bengal College of Engineering and Technology Campus, Durgapur (Director (Admn.), Bengal College of Engineering and Technology, Rs.0.73 Lakhs)
9. Intervention Analysis of the IGB Basin Focal Project (International Water Management Institute, Sri Lanka, Rs.6.00 Lakhs)
10. Performance Evaluation of power weeder and vertical conveyor reaper (Bengal Tools Ltd., Rs.0.52 Lakhs)
11. Performance of a bia-ply tyre (PBPT) (TVS Tyres Ltd, Madurai, Rs.5.52 Lakhs)
12. Planning and Design of Rainwater Harvesting Systems for Cement Grinding Unit in Purulia (West Bengal) (Reliance Cement Company Pvt. Ltd. Mumbai, Rs.4.91 Lakhs)
13. Preservation of fresh betel leaves cultivated in and around Midnapore District (Private party (Sri Krishna Cold Storage, Nonakuri Bazaar, East Midnapore, WB), Rs.0.22 Lakhs)
14. Probable maximum flood estimation for Nagarjunasagar Dam (SE, N.S. Dam Circle, Govt. of Andhra Pradesh, Rs.29.10 Lakhs)
15. Rainwater Harvesting at Arati Steel Ltd. (Arati Steel Ltd., Cuttack, Rs.4.20 Lakhs)
16. Rainwater Harvesting in the UAL Bengal Campus (UAL Bengal, Rs.2.00 Lakhs)
17. Study of effect of mining activities on water quality in surrounding areas (Tata Steel, Noamundi, Rs.15.00 Lakhs)
18. Tea Based Crop Planning (TBCP) (Greenfeel Services Ltd, Kolkata, Rs.1.00 Lakhs)
19. Testing of Angad Power Weeder and Reversible Mould Board Plough (M/s SAS Motors Limited, Rs.0.74 Lakhs)
20. Testing of Rice Mills (TTRM) (B K Agro Products Pvt Ltd, Rs.0.10 Lakhs)
21. Testing of Texas Tiller (TGTT) (M/s Texas Farm & Garden Technologies Pvt. Ltd., Gurgaon, Haryana, Rs.1.55 Lakhs)
22. TPIA for Creation of Teaching Labs for NIFTEM (Ministry of Food Processing Industries, Govt of India, Rs.13.80 Lakhs)
23. Tractive performance of bias-ply and radial-ply tyres (Apollo Tyres Ltd, Vadodara, Rs.19.85 Lakhs)

24. Vermicomposting (Greenfield Agrotech, Rs.0.25 Lakhs)

Technology Transferred

1. Rotary Club, Kolkata - Domestic Filter for Arsenic Free Drinking Water : Rs. 0.00 Lakh
2. Datan Manab Kalyan Kendra, Datan - Doop- Stick Making Machine, Modified Sabai Grass Rope Making Machine : Rs. 0.00 Lakh
3. Keshiary - Integrated Puffed Rice Making Machine : Rs. 0.00 Lakh
4. Suchetana, Jhargram - Leg Driven Amber Charkha, Modified Sabai Grass Rope Making Machine : Rs. 0.00 Lakh
5. Loddhasuli - Leg Driven Potters Wheel : Rs. 0.00 Lakh
6. Bamunmara - Puffed Rice Making Machine, Leg Driven Potter Wheel : Rs. 0.00 Lakh
7. Gharisole - Sabai Grass Machine, Puffed Rice Making Machine : Rs. 0.00 Lakh
8. Nayagram - Sabai Grass Rope Making Machine, Puffed Rice Making Machine : Rs. 0.00 Lakh
9. 70 Beneficiaries - Small scale manually operated oil expeller : Rs. 0.20 Lakh
10. 70 Beneficiaries - Small scale manually operated pulse mill : Rs. 0.20 Lakh
11. 4 Beneficiaries - Small scale manually operated tuber starch extractor : Rs. 0.20 Lakh
12. 70 Beneficiaries - Small scale manually operated/motor operated spice grinder : Rs. 0.20 Lakh
13. Farmers of Jhilimili, Panagarh, Mallarpur, and Pancha in West Bengal - Transfer of OFR Technology to villages with the cooperation of Purbanchal Kalyan Ashram, an NGO : Rs. 0.00 Lakh

Patents (filed / granted)

1. A method for enzymatic delignification of lignocellulosic raw materials
2. A process for increasing shelf-life of sugar cane juice
3. A process for preparation of gallic acid by co-culture
4. A process on lactic acid production from starchy agro-residues
5. A process technology for production of soluble black tea
6. A system for extraction of essential oil from plants/parts thereof bearing essential oil
7. Aloe Vera Gel Filleting Machine and a Method for Filleting
8. An edible film from Soy Whey and a process for the Preparation.
9. An Improved Pedal Driven Potters Wheel Machine
10. Bamboo Sliver Making Machine
11. Barley-Flaxseed mix soup
12. Biodepolymerization of humic acid from lignite
13. Chironji nut decorticator
14. Conical Roller Jamun Juice Extractor
15. ENZYMATIC PEELING OF POTATOES
16. Enzymatic saccharification and fermentation of pretreated lignocellulosic raw material
17. Flow-regulated Drip Emitter
18. Kick Driven Potters Wheel
19. Leg operated Jute Rope Making Machine
20. Leg-driven Amber Charkha
21. Modified Sabai Grass Rope Making Machine
22. Motorized Jute Rope Making Machine
23. Process for preparation of Gluten free bread
24. Process Technology for Instant (Soluble) Tea Manufacture
25. Process Technology for Mango-Milk Based Fruit Bar
26. Process Technology for Manufacture of Dahi (Curd) Powder
27. Purification of lactic acid and its polymerisation to Polylactic acid (PLA) with improved property.
28. Sabai Grass Rope Polishing Machine
29. Single screw extruder for third generation snacks
30. Sun Tracking Solar Dryer
31. Sweat Irrigation System

32. Tamarind De-Seeder Machine

Visits Abroad by Faculty Members

1. Srinivasa Rao, Pavuluri - Attended ASABE Annual Meeting (Dallas, Texas, USA,) 28 July to 1 August 2012
2. Panda, Rabindra Kumar - To make an oral presentation in International CIPA conference (Tel Aviv, Israel,) May 15-17, 2012
3. Mishra, Ashok - Project scoping workshop (Dhaka, Bangladesh,) 16-22 September, 2012
4. Mishra, Hari Niwas - To deliver Invited Lecture (University College, Dublin,) April 2012
5. Mishra, Hari Niwas - To attend International Conference (MMU, Manchester, UK,) April, 2012
6. Goswami, Tridib Kumar - To present paper (Dallas, USA,) 28th July 1st August, 2012
7. Das, Bhabani Sankar - Attend Conference (Germany and Czech Republic,) 10 days
8. Mitra, Adinpunya - Paper presentation in International conference (Chiang-Mai, THAILAND,) October-2012 (4 days)
9. Tewari, Virendra Kumar - Guest Speaker for Rural Mechanization Workshop (BRAC, Dhaka, Bangladesh,) March 7-8, 2013
10. Mitra, Adinpunya - Research stay (University of Rostock, GERMANY,) June-2012 (4 weeks)
11. Chatterjee, Chandranath - To participate in a workshop to develop a collaborative project to be funded by BMBF and DST (Potsdam University, Germany,) 1 week (2 September, 2012 to 9 September, 2012)
12. Swain, Dillip Kumar - Invited Lecture (Bangkok, Thailand,) 19 to 22 November 2012
13. Panda, Sudhindra Nath - Invited for oral presentation in 2012 International CIPA Conference (Tel Aviv, Israel,) May (15-17), 2012
14. Mishra, Hari Niwas - Member of CII Delegation to USA on Food Processing and Agriculture (Washington DC, Maryland, San Francisco and Berkeley, USA,) November 2012
15. Datta, Ashis Kumar - To attend V International Symposium on Advances in computational Heat Transfer (University of Bath, UK,) July 1- 6, UK
16. Banerjee, Rintu - International collaboration (UC Berkeley,) July 8th- 16th July
17. Banerjee, Rintu - To receive award (Taiwan, Taipei,) 6th-9th Oct 2012
18. Banerjee, Rintu - International Collaboration (Germany,) 22nd Oct-29th Oct 12

Invited Lectures by Faculty Members

1. Water Management of Horticultural Crops *by* Tiwari, Kamlesh Narayan (NBSS & LUP, Salt Lake City Kolkata)
2. Challenges ahead in land and water resources and their solutions through research and development *by* Tiwari, Kamlesh Narayan (IARI New Delhi)
3. Salient Achievements and Future Research Plan of Prof. K N Tiwari *by* Tiwari, Kamlesh Narayan (NAAS, NASC, New Delhi)
4. Status of Agricultural Mechanization in State of West Bengal India *by* Tewari, Virendra Kumar (Dhaka, Bangladesh)
5. Phenolic fragrance from *Hemidesmus indicus* roots - biosynthetic and in vitro pharmaceutical studies *by* Mitra, Adinpunya (University of Rostock)
6. Potential of rainwater harvesting in IIT Gandhinagar campus *by* Panda, Sudhindra Nath (IIT Gandhinagar)
7. Undergroundwater and its Use *by* Panda, Sudhindra Nath (Sutahata Janakalyan Sikshaniketan, Sutahata)
8. Managing water resources for sustainable natural resources *by* Panda, Sudhindra Nath (IIT Kharagpur)
9. Biochemical insight of floral fragrance emission - A new *by* Mitra, Adinpunya (National Research Centre for Orchids, Sikkim)
10. Simulation modelling for sizing lined on-farm pond for various crop substitution ratios *by* Panda, Sudhindra Nath (Tel Aviv, Israel)

11. Use of crop model for rice production management *by* Swain, Dillip Kumar (AIT, Bangkok, Thailand)
12. Hari Krishna Shastri Memorial Lecture *by* Tiwari, Kamlesh Narayan (IARI New Delhi)
13. Bioactive Ingredients: Functionality and Stability During Processing & Storage *by* Mishra, Hari Niwas (MMU, Manchester, UK)
14. Trends in Food Science & Technology Research and Education *by* Mishra, Hari Niwas (UCD, Dublin, Ireland)
15. Novel Technologies for Food Processing & Packaging *by* Mishra, Hari Niwas (BARC, Mumbai)
16. Novel Technologies for Food Processing & Product Development *by* Mishra, Hari Niwas (Allahabad University, Allahabad)
17. Post Harvest Processing and Management of Fruits and Vegetables *by* Mishra, Hari Niwas (UC Davis, California, USA)
18. Food Laws: Food quality and Safety standards *by* Guha, Proshanta (IIT, Kharagpur (Food safety & Quality management Professional Course))
19. Antioxidant activity: An overview *by* Das, Madhusweta (Gurunanak Institute of Technology, Kolkata,)
20. Application high pressure for perishable fruits *by* Srinivasa Rao, Pavuluri (Central Institute of Fisheries Technology Cochin)
21. Design of MA packaging system for fruits *by* Goswami, Tridib Kumar (Kottayam, Kerala)
22. Food Safety and quality *by* Goswami, Tridib Kumar (Dept. of Chemical Tech, North Maharashtra University Jalgaon (M.S.), India)
23. Challenges and Opportunities in Food Production and Safety *by* Goswami, Tridib Kumar (Hotel Mayfair, Bhubaneswar)
24. Food Packaging *by* Goswami, Tridib Kumar (ICFoST XXII, CFTRI, Mysore)
25. Cryogenis in Food Processing and preservation *by* Goswami, Tridib Kumar (NIFTEM, Haryana)

Books Published

1. Deswal A, Deora N S and Mishra H N: Functional Food and Beverages: Recent Trends *published by* LAP Lambert Academic Publishing, (2012)
2. S Dutta Gupta: Reactive Oxygen Species and Antioxidants in Higher Plants *published by* CRC Press & Science Pub (2010)
3. S Dutta Gupta and Y Ibaraki: Plant Tissue Culture Engineering *published by* Springer (2006)
4. SM Jain & S Dutta Gupta: Biotechnology of Neglected and Underutilized Crops *published by* Springer (2013)

Short-Term Courses, Training Programmes and Workshops organised

1. Advances in Micro irrigation and Greenhouse Technologies (February 14-15, 2013)
2. Engineering & Management in fisheries & Aquaculture (23 -30 june 2011)
3. Hyperspectral remote sensing and applications in water resources (6 days)
4. IIT-CII FACE Certified Food Professional Course on Food Safety and Quality Management (FSQM-2013) (February 18- March 8, 2013)
5. Micro-irrigation and Greenhouse Technology (Nov 15-16,2012)
6. Plasticulture applications in Horticultural Crops (July 16-17, 2012)
7. Plasticulture Applications in Horticultural Crops (December 20-21, 2012)
8. Precision Farming in Horticulture (March 14-15, 2013)
9. Precision Farming Practices in Horticulture (Sept 17 – 18, 2012)
10. Protected Cultivation Technologies (January 17-18, 2013)
11. Protected Cultivation Technologies (June 11-12, 2012)
12. Scope of Greenhouse and Plasticulture in Horticulture (October 08-09, 2012)
13. Sprinkler and Micro-irrigation (August 23-24, 2012)

Papers Published in Journals

1. A novel technology for production of instant tea powder from the existing black tea manufacturing process By Ch. Someswararao, Srivastav, P. P., Das, H. *Innovative Food Science and Emerging Technologies* 16: 143 – 147 (2012)
2. A Review on the Functional Properties, Nutritional Content, Medicinal Utilization and Potential Application of Fenugreek By Meghwal, M., Goswami, T.K. *J Food Process Technol* 3:181 (2012)
3. Accessibility of enzymatically delignified Bambusa bambos for efficient hydrolysis at minimum cellulase loading: an optimization study, By Kuila A, Mukhopadhyay M, Tuli DK and Banerjee R, *Enzyme Research*, 1-8. (2011)
4. An Engineering Approach to Design Perforated and Non Perforated Modified Atmospheric Packaging unit for Capsicum By Pandey, S.K., and Goswami T.K. *J Food Process Technol* 3:187 (2012)
5. Automatic feeding mechanism of a vegetable transplanter By Prasanna Kumar, G.V., Raheman, H. *International Journal of Agricultural and Biological Engineering* 5(2):20-27 (2012)
6. Automatic wheel slip control system in field operations for 2WD tractors By Pranav P K, Tewari V K, Pandey K P, Jha K R *Computers and Electronics in Agriculture* 84, 1-6 (2012)
7. Biodiesel production by the green microalga *Scenedesmus obliquus* in a recirculatory aquaculture system. By Mandal, S. and Mallick, N. *Applied and Environmental Microbiology* 78: 5929-5933. (2012)
8. Camphor sulphonic acid doped polyaniline for detection of terpenes released by plants after pest attack By Adhikari S, Singh J, Banerjee R and Banerji P *Sensor Letters*, 9, 1807-1813. (2011)
9. Changes during Accelerated Storage in Millet–Wheat Composite Flours for Bread. By Singh K P, Mishra H N and Saha S *Food and Bioprocess Technology* Accepted, In Press (2012)
10. Chilled storage of high pressure processed black tiger shrimp (*Penaeus monodon*). By Kaur B P, Kaushik N, Rao P S and Mishra H N *Journal of Aquatic Food Product Technology*. Accepted, In press (2012)
11. Cold Chain: An Ideal Approach to Extend Shelf Life of Horticultural Produce. By Sen C, Mukhopadhyay S and Mishra H N *Cooling India*. 7 (11) .74-79. (2012)
12. Combining climatological and participatory approaches for assessing changes in extreme climatic indices at regional scale By Mittal, N., A. Mishra, R. Singh *Climatic Change* DOI 10.1007/s10584-0 (2013)
13. Community based mangrove management: A review on status and sustainability By Datta, D., R.N. Chattopadhyay and P. Guha *Journal of Environmental Management*, 107:84-95. 107:84-95 (2012)
14. Comparative analysis of solid-state bioprocessing and enzymatic treatment of finger millet for mobilization of bound phenolics By Yadav, G., Singh, A., Bhattacharya, P., Yuvraj, J., Banerjee, R. *Biosystem and Bioprocess Engineering* in press (2013)
15. Comparison of multi-objective evolutionary neural network, adaptive neuro-fuzzy inference system and bootstrap-based neural network for flood forecasting By Kant, A., Suman, P. K., Giri, B. K., Tiwari, M. K., Chatterjee, C., Nayak, P. C. and Kumar, S. *Neural Computing & Applications*, DOI 10.1007/s00521-013-1344-8 (0)
16. Copolymerization of lactic acid for cost-effective PLA synthesis and studies on its improved characteristics By Bishai, M, De, S, Adhikari, B., Banerjee, R. *Food Science and Biotechnology* 22(1), 73-77 (2013)
17. Design and Development of a Three-Point-Linkage Dynamometer for Tillage Research By Tewari, V.K., Ravi, N., Jha, K.R., Ashok, A. *Agricultural Engineering Today* 36(3), 33-38 (2012)
18. Design and Development of Modified Atmosphere Packaging System for Guava (cv. Baraipur) By (Ixi) Mangaraj, S., Goswami, T.K., Giri, S.K. and Joshy, C.G. *J Food Science and Tchnology* DOI 10.1007/s13197-0 (2012)
19. Design and Implementation of Ergonomic Performance Measurement System at a Steel Plant in India By Ray Pradip Kumar and Tewari V K *Work: A Journal of Prevention, Assessment and Rehabilitation* 41, 5943-5949 (2012)

20. Development and application of an optimization model for the maximization of net agricultural return By Singh, A., Panda, S. N. *Agricultural Water Management* 115: 267-275 (2012)
21. Development and evaluation of MA packages employing lamination technique for Royal Delicious apple. By Mangaraj, Shukadev, Goswami, T.K., Giri, S.K., Chandra, P., Pajnoo, R.K. *Emirates Journal of Food and Agriculture*, Vol 25, No 5 (2013)
22. Development of a user friendly water balance model for paddy By 3. Bhadra, A., Bandyopadhyay, A., Singh, R., Raghuwanshi, N.S. *Paddy and Water Environment* DOI: 10.1007/s10333- (2012)
23. Effect of Climate Change on Growth, Phenology and Yield of Rice Crop Grown in Open Top Chamber in Eastern India By Satapathy S.S., Swain D.K., and Ghosh M. 2013 *Global Journal of Applied Agricultural Research* 3(1):19-30 (2013)
24. Effect of fertilization on crop responses and solute transport for rice crop in a sub-humid and sub-tropical region By Behera, S. K. and Panda, R. K. *Paddy and Water Environment* 11:227-239 (2013)
25. Effect of high pressure processing on physical, biochemical and microbiological characteristics of black tiger shrimp (*Penaeus monodon*) By Barjinder Pal Kaur, Kaushik, N, P. Srinivasa Rao and O.P. Chauhan *Food and Bioprocess Technology* DOI 10.1007/s11947-0 (2012)
26. Effect of Moisture Content on the Physical and Textural Properties of Fenugreek Seed By Meghwal, M., Goswami T.K. *Food* Vol. 6, No. 1, 14 ♦♦ (2012)
27. Effect of pH and distance between electrodes on the performance of sediment microbial fuel cell. By Sajana, T.K, Ghangrekar, M.M and Mitra, A *Water Science and Technology* Accepted for publica (0)
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29. Effect of synbiotic interaction of fructooligosaccharide and probiotics on the acidification profile, textural and rheological characteristics of fermented soy milk. By Mishra S and Mishra H N *Food and Bioprocess Technology* (2012)
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55. Production of bioethanol from potato waste, *By* Chintagunta AD and Banerjee R., *International Symposium on New Horizons in Bioenergy Research*, at IIT Kharagpur, India,, (2013)
56. Production of biomethane from pineapple waste, *By* Kumar M, Jacob SB and Banerjee R., *International Symposium on New Horizons in Bioenergy Research*, at IIT Kharagpur, India,, (2013)
57. Regulation of bioactive xanthone biosynthesis in *Hoppea fastigiata*, *By* Utkarsh Moon, Adinpunya Mitra, *5th International Conference on Medicinal Plants and Herbal Products*, Manipal University, Manipal, (2013)
58. Rheological properties of Gluten free pasta dough supplemented with chickpea flour, modified starch and gums,, *By* Deora N S, Deswal A and H N Mishra,, *International Conference on Food Safety, Quality and Nutrition* ,, Manchester, UK, (2012)
59. Screening of cultural parameters for accumulation of P(3HB-co-3HV) co-polymer in *Nostoc muscorum* Agardh., *By* Bhati, R. and Mallick, N., *International Conference on Biotechnology: Emerging Trends*, Chaudhary Devi Lal University, Hariyana, (2012)
60. Sediment and Nutrient Assessment of Mangrove Swamps Using ArcSWAT: Case Study for Bhitarkanika Area, *By* Ashok Mishra, P.K. Gupta, R. Singh, N.S. Raghuvanshi, C. Chatterjee, S. Panigrahy, *2012 International SWAT Conference*, New Delhi, India, (2012)
61. Simultaneous saccharification and fermentation of enzyme pretreated *Ricinus communis* using *Saccharomyces cerevisiae*, *By* Kuila A, Mukhopadhyay M and Banerjee R., *International Symposium on New Horiz*, at IIT Kharagpur, India,, (2013)
62. Studies on the Effect of Recirculatory Hot Air Drying on the Ergothioneine Content of Oyster Mushroom using HPLC and LCMS, *By* Bhattacharya M., Srivastav P.P., Mishra H.N., *2012 IFT Annual Meeting and Food Expo*, Las Vegas, Nevada, USA, (2012)
63. Substrate Standardization and Process Optimization for Development of Probiotic Vegetable Beverage Using *Lactobacillus plantarum* by D-Optimal Mixture Design,, *By* Sharma V and Mishra H N, *IFT 2012 Annual Meeting Scientific Program*, Las Vegas, NV, USA, (2012)
64. Testing CERES-rice model for elevated CO₂ environment using open top chamber experiment, *By* Sushree Sagarika Satapathy and Dillip Kumar Swain, *International Symposium on sustainable rice production and livelihood security: Challenges & Opportunities*, CRRI, Cuttack, (2013)
65. Testing of catchment module of IRCIM for Kangsabati Irrigation Project, *By* Daghe, P. M., Bhadra, A., Raghuvanshi, N. S. and Singh, R., *Proc. Nat. Seminar on Modernization and Monitoring of Irrigated Command.*, Jabalpur, (2012)
66. Tyrosinase and acetylcholinesterase inhibitory activities of fragrant methoxybenzaldehydes from *Hemidesmus indicus* roots and *Vanilla planifolia* pods, *By* Anish Kundu, Adinpunya Mitra, *5th International Conference on Medicinal Plants and Herbal Products*, Manipal University, Manipal, (2013)
67. Use of aquarium for releasing stress and holistic mental growth in children, *By* Arunabha Mitra, *100th Indian Science Congress*, Kolkata, (2013)
68. Water quality assessment of mine affected watershed in India using water quality index and GIS, *By* V T Shinde, K N Tiwari, *International conference on Environmental and Water Resources Engineering*, Kuala Lumpur, Malasia, (2012)
69. Whippability and rheological characteristics of dairy cream as influenced by Xanthan / Locust bean Gum incorporation,, *By* Chitra J, Deswal A, Deora N S and H N Mishra, *International Conference on Food Safety, Quality & Nutrition: Greening the Food Industry*, Manchester, UK,, (2012)

Department of Architecture & Regional Planning

Head

Prof. Jaydip Barman

Professors

Banerjee, Uttam Kumar	<i>Ph.D.(IIT Kharagpur),</i>
Barman, Jaydip	<i>Ph.D.(IIT Kharagpur),</i> Urban Design, Green Buildings and Eco Habitat, Tourism Planning and Management, Urban Waterfront Development, Landscape Design in Defensible Space
Chattopadhyay, Subrata	<i>Ph.D.(IIT Kharagpur),</i> Company housing Peri urban dynamics Slum upgradation Effect of transit on housing location choice
Datta, Rabindranath	<i>Ph.D.(IIT Kharagpur),</i> City Planning Urban and Regional Transportation Planning
Sen Gupta, Biplab Kanti	<i>MCP(IIT Kharagpur),</i> Urban and Regional Planning, Architecture and Urban Design, Development Management and Finance

Associate Professors

Basu, Sanghamitra	<i>Ph.D.(IIT Kharagpur),</i> Tourism Planning in Historic Areas, Urban Conservation & Heritage Management, Architectural Design and Pedagogy, Quality of Life in Residential Neighbourhoods & Communities, Traditional Architectural and application of Shape Grammar, GIS in Urban Planning, Post Modernism & Contemporary Architecture
George, Abraham	<i>Ph.D.(Calicut University),</i> Architecture Design-Pedagogy-Graphics-Sustainable Designs-Landscape-Housing-Preservation
Sen, Joy	<i>Ph.D.(IIT Kharagpur),</i> Community and Regional Planning & Programming, Architecture and Planning related Heritage Studies & Documentation
Sen, Somnath	<i>Ph.D.(IIT Kharagpur),</i> Environmental Planning and Landuse Planning

Assistant Professors

Banerji, Haimanti	<i>Ph.D.(IIT Kharagpur),</i> Barrier Free Architecture, Behavioral Architecture, Urban Design, Town Planning and Settlement Planning, Ergonomics and Product Design
Bhattacharya, Shankha Pratim	<i>Ph.D. (BIT, Mesra),</i> Earthquake Resistant Building, Structural Systems, Building Physics
Chakraborty, Banhi	<i>Ph.D (IIT Kharagpur),</i> Consumer Welfare, Rural Economics, Rural and Forest Livelihood
Das, Sutapa	<i>Ph.D. (National University of Singapore),</i> Building maintainability, Building performance grading, Decision making, Construction materials, Project management, Intelligent building, Safety management
Majumdar, Tapan Kumar	<i>MCP(IIT Kharagpur),</i> Work environment in industries for industrial workers, Low cost Construction
Mazumder, Tarak Nath	<i>Ph.D (IIT Kharagpur),</i> Urban Planning, Transportation Planning, Hazardous Waste Management
Pandit, Debapratim	<i>Ph.D.(Univ. of Tokyo),</i> Transportation Planning, Urban Services & Utilities, Urban Environmental Planning, GIS & RS

Paul, Saikat Kumar

MCP(IIT Kharagpur), Computer Application in Built Environment, GIS and Remote Sensing in Planning, Urban and Regional Planning, Architectural Design, Environmental Planning

Faculty Re-employment

Prof. Rabindranath Datta Professor

New Academic Programmes

M. Arch: Master of Architecture in Sustainable Built Environment is under consideration.

Brief Description of on-going activities

Architectural Design, Building Science and Environmental Planning: (Performance studies, Design Simulation and Intelligent Architecture, Building Automation and Management Systems, Sustainable Development, Energy Efficient Design, Appropriate Technologies, Spatial Environmental Planning, Eco-sensitive and Green Architecture)

Art and Architecture: (Indian Traditional Architecture and Heritage studies, Vernacular Architecture, Design, Visual Communication, Visual Simulation, Product design and Industrial design)

Infrastructure and spatial Planning: (Transportation Planning, Traffic Engineering and Management, Hazards and Disaster Mitigation and Management, Urban Design, Eco-tourism, Recreation and Landscape Planning, Conservation and Preservation Studies, Housing and Shelter, Social Infrastructure)

Urban Information System and Planning: (Urban Development Management and Finance, Advanced Planning Informatics, Geographical Information Systems, Decision support systems and Expert systems, Urban Settlement and Systems Dynamics)

Architecture, Media and Communication: (Cultural studies, Media and Architectural journalism, Symbolism and Cultural sustainability)

Thrust Areas

1. Green Architecture and sustainable designs and Energy efficiency.
2. Urban information system
3. Universal Design in Built Environment

New Acquisitions

1. Digital cum computerized Universal Testing Machine model MUTC- 60 Capacity 600KL

Lectures by Visiting Experts

1. Contemporary Architecture of Fernando Menis *by* Ar. Fernando Menis and Associates (Visiting Expert from Spain)
2. Modern Lighting concepts and LED applications in Interior Design and Urban Design. *by* Ms. Sudesha Mukhopadhyay (Director, Philips Lighting Education Program)
3. Clay Modelling, Pottery and Ceramics *by* Mr. Somnath Raha and group (Artist, Delhi Art College)
4. Approaches towards Transit Oriented Development (TOD) in current transportation planning. *by* Prof. S.L. Dhingra (Professor Emeritus, Civil Engineering, IIT Bombay)

Doctoral and MS Degrees Awarded

1. Keya Chakravarty : A Methodology to Assess inequality Variation within Kolkata Urban Agglomeration Applying Human Development Index based Indicators (PhD)
2. Lakshmi Thilagam : Comparitive Analysis of Spatial Configuration of Historical Temple Towns of Tamil Nadu applying Space Sytax and Urban Image Analysis(PhD)
3. Paul Varghese : Shape Algebra and Rules in Design: Bridging the Gap between Formal and Intuitive Thinking (PhD)

Member - Professional Bodies

1. Chakraborty, Banhi, *Associate member* - Institute of Town Planners India

Awards & Honours

1. Paul, Saikat Kumar (2013) *Fulbright Fellowship Awarded for research at Cornell University*
2. Barman, Jaydip (2012) *Supervised Third year B.Arch. students in Transparence 2012 National Futuristic Club House Design Competition sponsored by Saint-Gobain and received Regional Best Design Award*

Sponsored Research Projects

1. Creation of a Universally Stimulating and Responsive Environment within Hospitals - A Conceptual Research Model (SRIC, Rs.4.70 Lakhs)
2. Developing Suitable Pedagogical Methods for various classes, intellectual calibers and learning, Course: Structural System (National Mission on Education through Information and Communication Technology (NMEICT) of MHRD, Gov, Rs.5.00 Lakhs)
3. Development of a Methodology for Bus Transit Reform and Redesign: Case study Kolkata (ISIRD, SRIC, IIT Kharagpur, Rs.2.80 Lakhs)
4. Development of Women Technology Park in Nayagram Tribal Block, West Midnapore, West Bengal (Department of Science and Technology, Govt. of India, Rs.24.71 Lakhs)
5. Rural Industrialisation in West Bengal: Technology Intervention & Management of Development (TMD) (Khadi and Village Industries Commission, Govt. of India, Rs.60.00 Lakhs)
6. Sustainable Urban planning in India (to be released in summer 2013) (The Energy Research Institute (TERI) New Delhi, Rs.0.60 Lakhs)
7. Swami Vivekananda - A Forerunner of Universal renaissance: Vision 2100 - work completed under the sponsorship of Ministry of Culture Govt of India (The Indological Research Cell (IRC), The R K M Institute of Culture, Kolkata, Rs.0.50 Lakhs)
8. Technology Dissemination Program of IIT Kharagpur Interface of KVC programme (Khadi and Village Industries Commission, Govt. of India, Rs.12.00 Lakhs)
9. Women Technology Park at Nayagram Tribal Block,Paschim Medinipur,West Bengal (Science & Society Division, Deptt. of Science & Technology, Govt. of India, Rs.46.00 Lakhs)

Consultancy Projects

1. Architectural Consultancy services for proposed 9500 sq ft residential block in Ghatal municipality, Midnapore (Residents of Ghatal Municipality, Rs.2.85 Lakhs)
2. Comprehensive Development Plan for Bhubaneswar and Cuttack (Ministry of housing and urban development, govt. of Orissa, Rs.165.29 Lakhs)
3. Development plan preparation for Korba urban area, Chhattisgarh (Directorate of Town and Country Planning, Chhattisgarh, Rs.29.92 Lakhs)
4. Development Strategies for Coochbehar District (NREG, Coochbehar, Rs.10.00 Lakhs)

5. Land Use and Development Control Plan, Asansol Sub-Division (ADDA, Rs.40.00 Lakhs)
6. Land Use Development Plan for Haldia (Haldia Development Authority, Purba Medinipur, Rs.70.00 Lakhs)
7. MAKING OF A SURVEY ON SUSTAINABILITY OF TOURISM INDUSTRY IN KERALA/THRISSUR (Department of Tourism Science, Tokyo, Rs.3.74 Lakhs)
8. Monitoring landuse changes at Barrackpore Cantonment (Barrackpore Cantonment Board, Rs.8.50 Lakhs)
9. Perspective Plan for for MKDA region (Medinipur Kharagpur Development Authority(MKDA), Rs.18.08 Lakhs)
10. Perspective plan for MKDA (Midnapore Kharagpur Development Authority, Paschim Midnapore, Rs.0.00 Lakhs)
11. PRELIMINARY MASTER PLAN FOR CSIR INNOVATION COMPLEX AT BARUIPUR (CSIR, Rs.533710.00 Lakhs)
12. PREPARATION OF AIZAWI MASTER PLAN (Aizawl Development Authority, Rs.7022500.00 Lakhs)
13. Preparation of Aizawl Master Plan (Aizawl Development Authority, Rs.70.22 Lakhs)
14. Preparation of Concept Plan fot St Xaviers College in New Town rajarhat (St Xaviers College and Basumati Enterprise Kolkata, Rs.2.50 Lakhs)
15. Preparation of Land Use and Development Control Plan for Haldia (RLDC) (HDA, Rs.55.00 Lakhs)
16. Preparation of Perspective Plan- Vision 2030 and Comprehensive Development Plans for Planning Areas of Bhubaneswar & Cuttack Development Authority (Housing and Urban Development, Government of Orissa, Rs.165.29 Lakhs)
17. Preparation of Temple Plan in Midnapore (Loknath Temple Trust Midnapore, Rs.1.00 Lakhs)
18. Preparation of Zonal Development Plan for 14 Planning Zones of Bhubaneswar Development (BDA, Rs.400.00 Lakhs)
19. Preparation of zonal development plan for 14 planning zones in Bhubaneswar Development Plan Area (Bhubaneswar Development Authority, govt. of Orissa, Rs.391.00 Lakhs)
20. PREPARATION OF ZONAL DEVELOPMENT PLANS FOR 14 PLANNING ZONES OF BHUBANESWAR DEVELOPMENT PLAN AREA (Bhubaneswar Development Authority, Rs.39163000.00 Lakhs)
21. Preparation of Zonal Development Plans for 14 Planning Zones of Bhubaneswar Development Plan Area (BDA, Rs.391.60 Lakhs)
22. Preparation of Zonal Development Plans for 14 Planning Zones of Bhubaneswar Development Plan Area (PZDP) (Bhubaneswar Development Authority, Rs.391.63 Lakhs)
23. REVISION/AMENDMENT OF THE LANDUSE AND DEVELOPMENT CONTROL PLAN FOR OLD HALDIA PLANNING AREA (Haldia Development Authority, Rs.5515000.00 Lakhs)
24. STEP BUILDING AT GOPALI (STEP IIT Kharagpur, Rs.600000.00 Lakhs)

Visits Abroad by Faculty Members

1. Sen, Joy - Plenary talk: Graduate School of Urban environmental Services Tokyo Metropolitan University Japan (Tokyo Japan,) November 2 2012
2. Banerji, Haimanti - Present paper in Conference (Paris,) April, 2013
3. Das, Sutapa - Paper presentation in int. conference (Penang, Malaysia,) 4 days
4. Paul, Saikat Kumar - Research and Teaching (Cornell University,) 4 months starting 15th March 2013

Invited Lectures by Faculty Members

1. Sustainable Urban Development *by* Paul, Saikat Kumar (Raipur, Chattisgarh)
2. Architecture of Civilization 2012 *by* Sen, Joy (UNESCO sponsored IUHU Course at Institute of Culture (RMIC))
3. Indian Civilization - This time the Center is India - Shovabazar Rajbari 2013 *by* Sen, Joy (Special lecture on Civilization of India organized by Sarada Math Rasik Bhita in February 2012)

4. An approach to assess composite levels of Livability-affordability: case study of Kolkata UA by Sen, Joy (Tokyo Metropolitan University Japan Nov 2012)
5. Challenges in Transport Planning and Management in India by Datta, Rabindranath (SPA Bhopal)
6. Water management to Water Sensitive Design- by Sen, Somnath (CSE, New Delhi)
7. Advanced Rainwater Harvesting by Sen, Somnath (CSE, New Delhi)
8. Creating Expressionistic Spaces in Architectural Design by Barman, Jaydip (Department of Architecture, National Institute of Technology Patna)
9. Sustainable Architecture by George, Abraham (Sardar Vallabhbhai National Institute of Technology)
10. Barrier Free Environment by Banerji, Haimanti (National Institute of Orthopedically Handicapped)
11. Inclusive Urban Development by Sen Gupta, Biplab Kanti (SPA Bhopal)
12. Social Infrastructure Development by Sen Gupta, Biplab Kanti (BIT Mesra)
13. Planning for a Beautiful City – Development Control for Urban Beautification by Basu, Sanghamitra (Unnayan Bahvan, Kolkata)
14. The Amasat Act 2010: Challenges & Opportunities, by Basu, Sanghamitra (Conference of Competent Authorities, National Monuments Authority, New Delhi)
15. Urban Planning of KMA and Future Role of KMDA by Sen Gupta, Biplab Kanti (Kolkata)
16. Urban Green Space by Sen Gupta, Biplab Kanti (Kolkata)
17. A Presentation of Green Building by Sen Gupta, Biplab Kanti (Ranchi)
18. Sustainable architecture and Biomicing by George, Abraham (IIT Guwahati)

Papers Published in Journals

1. A comprehensive risk assessment framework for offsite transportation of inflammable hazardous waste By Arup Das, A K Gupta, T N Mazumder *Journal of Hazardous Materials* Volumes 227–228 (2012)
2. A systems approach to Truth Realization: Parable of the Beehive By Joy Sen *Bulletin of the RM Institute of Culture SPECIAL COMMEMORATIVE NUMBER* Vol LXIV pp107ff (2013)
3. ALTERNATIVE MODELS OF DEVELOPMENT FOR SUSTAINABLE INCLUSIVE GROWTH OF UTTARAKHAND HILL REGION By Nitin Srivastava and Dr. Somnath Sen *ABACUS* Vol-7, No.-1 (2012)
4. Architecture - an all embracing experience By Joy Sen *Premier CoA Edition 2012* Vol 1 pp 18ff (2012)
5. Assessing human factor for intelligent buildings using Post Occupancy Evaluation By S. Das *Bonfring Int.J. of Industrial Engineering & Management Science* 2(4), 51--56 (2012)
6. Better Work Environment For Small Scale Industries In Developing Countries By Tapan Kumar Majumdar *Indian Journal of Applied Research, May 2012* Vol.1/Pages 14 & 15 (2012)
7. Book Review: Construction science and materials, Surinder Viridi, Wiley-Blackwell, West Sussex, UK By S. Das *Material & Manufacturing Processes* 28(4), 502-503 (2013)
8. Bus Route Merging and Frequency Setting Methodology for Bus Rapid Transit Trunk Corridor : A Case Study of Kolkata' By Tuhin Subhra Maparu and Debapratim Pandit *Space: The SPA Journal of Planning and Architecture*, 16(2), pp. 16 – 37 (2012)
9. Changes in energy requirements of the residential sector in India between 1993–94 and 2006–07 By Aparna Das, Saikat Kumar Paul *Energy Policy* ISSN: 0301-4215 Volume 53, February (2013)
10. Importance of User Perception in evaluating Level of Service for Bus Transit for a developing country like India: A Review By Shreya Das and Debapratim Pandit *Transport Reviews* Accepted (2013)
11. Mechanism of income generation from paddy cultivation : a case study By Dr. Banhi Chakraborty and Dr. C. R. Pathak *Anvesak : Journal of the Sardar Patel Institute of Economic and Social Research* Vol.22,1,p.83-100 (1992)
12. Mechanism of wage fixation in agriculture By Dr. Banhi Chakraborty *The Indian journal of economics* Vol.76,1,p.31-46 (1995)

13. Methodology to determine the service area gaps in bus transit services amongst different user groups: Case study Kolkata, India By Shreya Das and Debapratim Pandit *Transport Policy* Under Review (0)
14. Methodology to Identify the Gaps in the Level of Service Provided for Urban Bus Transit: Case Study Kolkata. By Shreya Das and Debapratim Pandit *SPANDREL* 4 (Spring), 59-71 (2012)
15. MGNREGA Policy and Application : Needs Reelook By Banhi Chakraborty *International Journal of Sociology and Social Policy* communicated (2013)
16. Pareto frontier analyses based decision making tool for transportation of hazardous waste By Arup Das, T N Mazumder, A K Gupta *Journal of Hazardous Materials* Volumes 227–228 (2012)
17. Re-definition of Local Self Governance in a Metropolis: The case of Housing Infrastructure in KUA By Ankhi Banerjee and Joy Sen *Local Government Quarterly* Vol LXXXII N4 pp20ff (2012)
18. Relevance of New Urbanism in the context of developing countries – a literature review (Under review) By Suparna Saha, Sanghamitra Basu and Debapratim Pandit *Abacus* Spring (2013)
19. Strategies to Cope Up Socio-economic Vulnerability for The Backward Regions in India By Sarkar Basudatta, Banerji Haimanti, Sen Joy *Spandrel*. Issue 4 (2012)
20. The Price of Living By Joy Sen and Ankhi Banerjee *Architecture - TIME SPACE PEOPLE* Vol 12 issue 8 p 26f (2012)

Papers Presented in Conferences

1. A framework for bus transit reform & redesign: Case study Kolkata, By Debapratim Pandit and Shreya Das, *13th International Computers in Urban Planning and Management Conference (Under review)*, Utrecht, Netherlands, (2013)
2. An approach to assess composite levels of Livability - Affordability: case study of Kolkata UA, By Joy Sen, *International symposium on sustainable urban environment*, Tokyo Metropolitan university Japan, (2012)
3. Cities Under Positive Change- Towards Sustainable Urbanization, By Sarkar Basudatta, Sen Joy, Banerji Haimanti, *Centre for Built Environment. International Symposium on Cities under Change*, Kolkata, (2012)
4. Empowering Poor with Technological support : Towards Achieving Sustainability, By Banhi Chakraborty, *Regional Network on Poverty Eradication*, Bengkulu, Indonesia, (2012)
5. Globalization can lead to inclusive growth in developing countries - myth or reality, By Banerji Haimanti, *International Scientific Conference Economic and Social Development*, Paris, France, (2013)
6. Health and safety aspects of sanitary-plumbing system of buildings, By Sutapa Das, *IETSD 2012: Int. Conf. on Innovation in Engg & Tech. for Sustainable Dev.*, Sathyamangalam, India, (2012)
7. Hidden cost in PPP project: A case study of East West metro of Kolkata, By Sutapa Das, *PPG 2012: Int Conf Public Policy & Gov*, Bangalore, India, (2012)
8. Integrated Urban Conservation In Indian Cities and the Amsar Act,2010: A Case Study Of Bhubaneswar, By V Chatterjee & S Basu, *International Symposium on Cities Under Change , the Centre for Built Env*, Kolkata, (2012)
9. Market Mechanism and the Drug Availability – State of Consumers' Health : An Investigative Study, By Banhi Chakraborty, *Validation Seminar on Validation Seminar on Research Studies under the Consultancy Project on "Promoting Involvement of Research Institutions in Consumer Protection and Consume*, Indian Institute of Public Affairs, ND, (2013)
10. Methodology to determine commuter preference for a proposed bus rapid transit corridor, By Debapratim Pandit and Shreya Das, *2nd Conference of Transportation Research Group of India (Under Review)*, Agra, India, (2013)
11. Methodology to determine Level of Service for Bus Transit in a developing country like India, By Shreya Das and Debapratim Pandit, *13th International Computers in Urban Planning and Management Conference (Under review)*, Utrecht, Netherlands, (2013)

12. National Rural Employment Guarantee Act and Challenge For The Government: Needs Rethinking, *By Banhi Chakraborty, International Conference on Public Policy and Governance 2012, IISC, Bangalore, (2012)*
13. Planning for minimization of socioeconomic inequalities within Vidarbha region, Maharashtra, India, *By Amruta Khairnar and Joy Sen, Madrid March 2013 Oral Presentation ICURPT 2013: International Conference on Urban, Regional Planning and Transportation., Madrid, Spain, (2012)*
14. Proposed POE framework for intelligent building, *By Sutapa Das, AARCV 2012: Int. Conf. on Advances in Arch. & Civil Engg., Bangalore, India, (2012)*
15. Reflections of Post-modern Culture in a Post-colonial Context: Experiences from Contemporary Architecture in India, *By Arjun Mukerji and Sanghamitra Basu, FARU Research Symposium on Emerging Built Environment, Galle Fort, Sri Lanka,, (2012)*
16. Review of indicators for evaluating bicycle as feeder mode for rail transit in Indian cities, *By Tirthankar Sarkar and Debapratim Pandit, 2nd Conference of Transportation Research Group of India (Under Review), Agra , India, (2013)*
17. TRANSITIONING TO WATER SENSITIVE CITIES, *By Somnath Sen, 61st National Town & Country Planners Congress, Ahmedabad,INDIA, (2013)*

Department of Biotechnology

Head

Prof. Amit Kumar Das Upto 31.12.2012
Prof. Tapas Kumar Maiti From 01.01.2013

Professors

Das, Amit Kumar *Ph.D.(Calcutta Univ)*, Structural Biology and Biochemistry, Crystallographic study of M.tuberculosis and S. aureus proteins, Structural Bioinformatics

Das, Debabrata *Ph.D.(IIT Delhi)*, Biohydrogen production processes, CO₂ sequestration for algae cultivation, Microbial fuel cell

Dey, Satyahari *Ph.D.(IIT Kharagpur)*, Bio-prospecting genes & molecules. Molecular profiling Antarctic flora. Nutraceutical development

Ghosh, Ananta Kumar *Ph.D.(Calcutta Univ)*, Recombinant DNA Technology, Hybridoma Technology, Molecular Virology

Ghosh, Sudip Kumar *Ph.D.(Kalyani Univ)*, Plant Molecular Biology, Nanobiotechnology, Molecular and Cellular Parasitology

Kundu, Subhas Chandra *Ph.D.(BHU, Varanasi)*, Cell based tissue engineering and regenerative medicine, Silk biomaterials

Maiti, Tapas Kumar *Ph.D.(Kalyani Univ)*, Plant lectins and lectin derived peptides in cancer therapy, Mushroom derived glucans as immunomodulators, Biomicrofluidics and biochip development, Tissue engineering through top down and bottom up approach

Associate Professors

Ghosh, Anindya Sundar *Ph.D.(Calcutta Univ)*, Microbial genetics, Antimicrobial chemotherapy, Bacterial biofilm, Physiology and Biochemistry of Penicillin-binding proteins (PBPs)

Sar, Pinaki *Ph.D.(BHU, Varanasi)*, Microbiology of arsenic contaminated groundwater, Microbial diversity and bioremediation, Metagenomics and environmental biotechnology, Microbial bioprospecting, Molecular methods in detection of microbes in drinking water

Sen, Ramkrishna *Ph.D.(IIT Madras)*, Biosensor, Algal Biofuels and Bio-CCS, Biorefinery, Bioprocess Development Modeling & Optimization, Marine Biotechnology, Biochemical Engineering, Enzymes and Biofuels Technology, Bioenergy, Probiotics and Nutraceuticals, Environmental Biotechnology

Assistant Professors

Bahadur, Ranjit Prasad *Ph.D.(Jadavpur Univ)*, Bioinformatics and Computational Structural Biology

Maiti, Mrinal Kumar *Ph.D.(Calcutta Univ)*, Metabolic engineering of plant and fungal storage-lipids, Functional genomics of rice plant, Bioprospecting of endophytic microbes for pharmaceuticals

Faculty Retirement

Prof. S C Kundu Professor

Faculty Re-employment

Prof. S C Kundu Professor

Brief Description of on-going activities

1. Process development & optimization for the production of an anti-tumor biosurfactant. 2. Alkaline lipase production. 3. Production of Biodiesel and its evaluation. 4. Bioremediation of heavy metals, radionuclides and organic pollutants; molecular analysis of microbial community structure and function at contaminated sites. 5. Development of methods of o-antigens and its relation with pathogenicity in Gram negative bacteria. 6. Bioreactor strategies for the enhanced production of probiotic endospores for Nutraceutical formulations and their clinical evaluation. 7. Molecular characterization of metronidazole activation and deactivation pathways in *Entamoeba histolytica*. Characterisation of *E. histolytica* surface proteins. 8. Molecular cloning, expression and characterization of *E. invadens* encystation specific proteins. 9. Recombinant protein (therapeutic & diagnostic) expression in plant, animal and microbial systems. 10. Structural and functional studies of protein from *M. tuberculosis* and *S. aureus* aiming at drug and inhibitor design. 11. Improvement of hydrogen production from industrial waste using hybrid bioreactor. 12. Continuous hydrogen production by immobilized recombinant *E. coli* BL-21. 13. Molecular analysis of cypovirus infecting tasar silkworm. 14. Phytomedicine and molecular farming. 15. Development of silk (fibroin and sericin) based Biomaterials and cell based tissue (skin and bone) engineering. 16. Development of low fat content transgenic oilseed plant. 17. Biomicrofluidics and Biochip development. 18. Identification and characterization of immunomodulator from natural sources. 19. Microbial fuel cell. 20. Characterization of Antarctic microbiota. 21. Probiotic nutraceutical development.

Thrust Areas

1. Healthcare Biotechnology (Prospecting novel therapeutics/diagnostics molecules for cancer, protozoan parasites, microbes, tuberculosis, etc.).
2. Bio-energy (Production of bio-diesel, bio-ethanol & bio-hydrogen).
3. Bioremediation, Biomaterials and Tissue engineering

New Acquisitions

1. Peristaltic Pump
2. Cell Disrupter
3. Fume Exhaust Hood Biobase
4. Rota Vapor System
5. HPLC (Analytical)
6. Fluorimeter
7. Phosphoimager
8. Autoclave

International Collaborations

Prof. S. C. Kundu has four collaborative research projects: (iv) Project on Immunogenic responses of silk biomaterial used for cell based tissue engineering and regenerative medicine, Professor Heinz Redl, LBI-Ludwig Boltzmann Institute for experimental and clinical traumatology, Vienna, Professor Martijn van Griensvan, Indo- Austrain (DST-BMWF) in 2011 (two years)

Prof. D. Das has two international collaborative projects : (i) Indian-Norwegian-Swedish collaboration project entitled "BioCO₂: An integrated multidisciplinary project using solar energy for production of renewable hydrogen combined with CO₂ capture, to address global warming and energy production" sponsored by Norwegian Foreign Ministry. Collaborating Universities: Oslo University, Norway and Uppsala University, Sweden (ii) Indian-Dannish collaborating project entitled "High rate algal biomass production for food, feed, biochemicals and biofuels" sponsored by Department of Biotechnology, Govt. of India. Collaborating Universities: Technical University of Denmark and Copenhagen University, Denmark

Prof. R. Sen has two international collaborative projects : (i) Federal University of Rio-de-Janeiro (Brazil) through DST-CNPq program (Biofuel) (ii) University of Minho, Portugal through DST-Portugal program (Biosurfactant)

Lectures by Visiting Experts

1. Novel regulators in cardiac development and angiogenesis *by* Dr. Chinmoy Patra (Max Planck institute for Heart and Lung Research, Bad Nauheim, Germany)
2. Divergent promoter Architectures employed by budding yeast *by* Dr. Bhaswar Ghosh (Computational System Biology Lab, Ecole Polytechnique Federeale de Lausanne, Switzerland)
3. Gut Microbes and Malnourishment: insights from Metagenomics Study *by* Dr. Sharmila Mande (Head of Bio-Science R&D, TCS Innovation Labs, Tata Consultancy Services Ltd., Pune-411013)
4. Extreme radioresistance of *Deinococcus radiodurans*: novel opportunities for basic research and application *by* Dr. S.K.Apte (Associate Director, Bio-medical Group & Head-Mol. Bio Division, Bhabha Atomic Research Centre, Mumbai)
5. Determinants of instability in cancer genomes *by* Dr. Subhajyoti De, (Assistant Professor, Department of Medicine, University of Colorado School of Medicine, Associate member, University of Colorado Cancer Center)
6. Interspecies and multispecies crosstalk: Harnessing the biotechnological potential of plant-associated endophytic fungal treasure troves *by* Dr. Souvik Kusari (Research Scientist, Institute of Environmental Research (INFU), TU Dortmund, Germany)
7. Improving tobacco (*Nicotiana tabacum*) suspension cells as a molecular farming platform: a protease knock down approach *by* Dr. Manoj Kumar Mondal (Fraunhofer IME, Aachen, Germany)
8. Development of fluorogenic bio-application based on supramolecular interactions *by* Dr. Kalyan Kumar Sadhu (Institu de Science et Ingenierie Supramoleculaires (ISIS), Universite de Strasbourg, 8 allée Gaspard Monge, Strasbourg)
9. Mechanism of Human TDG in maintaining genetic and epigenetic integrity *by* Dr. Atanu Maiti (Dept. of Biochemistry & Molecular Biology, University of Maryland School of Medicine, Baltimore, USA)
10. Understanding Signal Transduction at the Molecular Level Using Biological and Chemical Approaches *by* Dr. Devrani Mitra (University of Chicago, USA)

Doctoral and MS Degrees Awarded

1. Mr. Shibendu Sekhar Das (07BT9709) : Isolation, purification and characterization of betacyanins and betanidin glycosyltransferase from *Amaranthus tricolor* L.(Ph.D.)
2. Ms. Sarmishtha Talukdar (08BT9704) : Engineered Silk fibroin matrices for 3D in vitro tissue modeling(Ph.D.)
3. Mr. Sintu Kumar Samanta (08BT9701) : Chitin biosynthesis and protein kinase mediated signaling in encysting *Entamoeba*(Ph.D.)
4. Mr. Paltu Kumar Dhal (07BT9701) : Molecular analysis of microbial communities in uranium mines and mine tailings and assessment of indigenous bacterial potential for bioremediation(Ph.D.)
5. Ms. Mousumi Biswas (06BT9712) : Betalain production in vitro and DOPA 4.5 dioxygenase mediated biotransformation in *Amaranthus tricolor* L.(Ph.D.)
6. Ms. Nandana Bhardwaj (08BT9702) : Silk fibroin/chitosan polyelectrolyte complex porous scaffolds as biomaterial for tissue engineering applications(Ph.D.)
7. Mr. Mohan Yama (06BT9701) : Clean Energy Generation using Microbial fuel Cells(Ph.D.)
8. Mr. Soham Chattopadhyaya (08BT9705) : Continuous biocatalytic production and characterization of biodiesel using a renewable vegetable oil as a model feedstock(Ph.D.)
9. Ms. Saumita Kamal Banerjee (08BT9501) : Improved Pre treatment for Enhanced Enzymatic Saccharification and bioethanol Production from Rice Husk as a Model Lignocellulosic feedstock(Ph.D.)

Member - Professional Bodies

1. Ghosh, Sudip Kumar, *Life Member* - Indian Science News Association
2. Ghosh, Sudip Kumar, *Life Member* - Society of Biological Chemists, India
3. Sar, Pinaki, *Regular* - American society for microbiology
4. Sar, Pinaki, *Regular* - European federation of biotechnology

5. Sen, Ramkrishna, *Life member* - Indian Institute of Chemical Engineers (IIChE)
6. Sen, Ramkrishna, *Founding member* - Global Biorenewables Research Society (www.gbrsociety.org)
7. Sen, Ramkrishna, *Member* - Asian Federation of Biotechnology
8. Sen, Ramkrishna, *Member* - European Federation of Biotechnology
9. Ghosh, Anindya Sundar, *Regular* - American Society for Microbiology (ASM)
10. Ghosh, Anindya Sundar, *Associate Member* - Horticultural Society of India
11. Ghosh, Anindya Sundar, *Ordinary member* - Society of General Microbiology (SGM), UK
12. Ghosh, Anindya Sundar, *Member* - International Society of Travel Medicine (ISTM)
13. Maiti, Mrinal Kumar, *Life Member* - Society for Plant Biochemistry & Biotechnology, IARI, New Delhi
14. Maiti, Mrinal Kumar, *Regular* - American Society of Plant Biologists
15. Maiti, Mrinal Kumar, *Member* - Asian Federation of Biotechnology
16. Maiti, Mrinal Kumar, *Life Member* - Plant Physiology Forum, Kolkata
17. Maiti, Mrinal Kumar, *Life Member* - Institute of Science, Education and Culture (ISEC) Kolkata
18. Bahadur, Ranjit Prasad, *Member* - Asian Federation of Biotechnology
19. Bahadur, Ranjit Prasad, *Life member* - Indian Science Congress Association
20. Das, Debabrata, *Life member* - Association of Food Scientists & Technologists (India) (AFST)
21. Das, Debabrata, *Life member* - Indian Society for Technical Education (ISTE)
22. Das, Debabrata, *Regular Member* - International Association of Hydrogen Energy (IAHE)
23. Das, Debabrata, *Life member* - Indian Institute of Chemical Engineers (IIChE)
24. Das, Debabrata, *Life member* - The Institution of Engineers (India) (IE)
25. Dey, Satyahari, *Member* - Society for Biotechnology Japan
26. Dey, Satyahari, *Member* - Phytochemical Society of Europe
27. Dey, Satyahari, *Member, Executive Board* - Assian Federation of Biotechnology
28. Dey, Satyahari, *Life member* - Society for Plant Biochemistry & Biotechnology
29. Kundu, Subhas Chandra, *Elected Member, Asia Specific* - Tissue Engineering and Regenerative Medicine, International Society
30. Kundu, Subhas Chandra, *Life Member* - All India Cell Biology Society
31. Ghosh, Ananta Kumar, *Life member* - Physiological Society of India
32. Ghosh, Ananta Kumar, *Regular* - Biotechnology Society of India
33. Das, Amit Kumar, *Member* - ASM
34. Das, Amit Kumar, *Life* - National Crystallographic Society

Member - Editorial Board

1. Bahadur, Ranjit Prasad (2010) *Editorial board member* - Journal of Computational Biology and Bioinformatics Research
2. Bahadur, Ranjit Prasad (2011) *Editorial Board Member* - ISRN Biomathematics
3. Das, Debabrata (2013) *Member of the Editorial board* - International Journal of Hydrogen Energy
4. Das, Debabrata (2013) *Editor-in-Chief* - American Journal of Biomass and Bioenergy
5. Das, Debabrata (2013) *Member of the Editorial board* - Indian Journal of Biotechnology
6. Das, Debabrata (2013) *Member of the Editorial board* - Biotechnology for Biofuels
7. Ghosh, Anindya Sundar (2011) *Board Member* - International Journal of BioSciences and Technology IJBST
8. Kundu, Subhas Chandra (2012) *Editorial Board Member* - Journal of Biological Engineering
9. Kundu, Subhas Chandra (2008) *Editorial Board Member* - Biomaterials
10. Kundu, Subhas Chandra (2012) *Editorial Board Member* - Journal of Regenerative Medicine and Tissue Engineering
11. Kundu, Subhas Chandra (2011) *Editorial Board Member* - World Journal of Stem Cells
12. Kundu, Subhas Chandra (2012) *Editorial Board Member* - Biomedical Materials
13. Sen, Ramkrishna (2010) *Member* - International Journal of Biosciences and Technology (ISSN: 0974-3987)
14. Sen, Ramkrishna (2011) *Member* - Journal of Microbial & Biochemical Technology

Awards & Honours

1. Das, Debabrata (2013) *Received third prize in the Poster Competition of the International Conference on Algal Biorefinery (ICAB-2013, January 1-12, 2013, IIT Kharagpur*

Fellowships

1. Das, Debabrata (0) *Renewable Energy Chair Professor at IIT Kharagpur*

Sponsored Research Projects

1. A Dissection of macromolecular interactions in cellular assemblies (ISIRD, Rs.5.00 Lakhs)
2. Algae mediated biosequestration and storage of CO₂ (Bio-CCS) from coal-based flue gas.....and animal feed application (West Bengal Department of Science and Technology, Rs.27.39 Lakhs)
3. Analysis of macromolecular interactions in ribosome: implication to its self assembly Sponsor:Submitted (DST (awarded), Rs.18.60 Lakhs)
4. Assessment of microbial communities and their biodegradation potentials in petroleum hydrocarbon contaminated environments in Assam (Department of Biotechnology, Rs.62.00 Lakhs)
5. Biofuel production in a biorefinery concept (PBC) (P K Sinha Center for Bioenergy - IIT Kharagpur, Rs.3.00 Lakhs)
6. Biofuels from marine microalgae (BMM) (CSIR (under NMITLI program), Rs.59.30 Lakhs)
7. Bioinformatics SUB-DIC (DBT, New Delhi, Rs.8.60 Lakhs)
8. Bioprocess development and bioreactor strategies for the probiotic endospores for the lab scale manufacture of nutraceuticals (MNF) - Complete (CSIR, Rs.16.00 Lakhs)
9. Bioprocess development and optimization for the enhanced production of biosurfactants of marine origin for healthcare and commercial applications (HCA (DBT, Rs.36.16 Lakhs)
10. Bioprospecting antarctic microflora (MoES, Rs.105.00 Lakhs)
11. Bioprospecting of antarctic flora: screening of novel genes and healthcare molecules (Ministry of Earth Sciences, Rs.105.96 Lakhs)
12. Biotechnology based value addition of neem and jatropha leaves, oilcakes and oil (NOVOD, Rs.11.00 Lakhs)
13. Characterization of arsenic oxidizing bacteria from contaminated groundwater and their mechanisms of arsenite oxidation process for potential applicat (Council of Scientific and Industrial Research, Rs.27.30 Lakhs)
14. Characterization of a novel short chain dehydrogenase reductase (SDR) family enzyme involved in fatty acid metabolism in M. tuberculosis and structure (DBT, Gol, Rs.76.70 Lakhs)
15. Characterization of encystation specific kinase(s) of Entamoeba during encystation (DBT, Rs.35.98 Lakhs)
16. Continuous process for enzymatic biofuel production - Grant for exchange visit and project formulation - Completed (DST (India)-CNPq (Brazil), Rs.1.50 Lakhs)
17. Crystal structure determination, kinetic and biophysical characterization of glyceraldehyde 3 phosphate dehydrogenase from MRSA 252 (BRNS - DAE, Rs.3140500.00 Lakhs)
18. Deciphering the structure and function of SuhB analogue protein from S. aureus (DST, GOI, Rs.33.98 Lakhs)
19. Development and characterization of ecofriendly jute geo-composites (EFB) (JMDC, Rs.67.00 Lakhs)
20. Development of fluorescent whole cell optical fibre biosensor for heavy metal pollutants (DBT, Rs.31.79 Lakhs)
21. Development of multifunctional dendritic polymers for injectable bone tissue engineering (DBT, Rs.37.10 Lakhs)
22. Development of water-repellant and durable jute geotextiles (JGN) (JMDC, Rs.170.00 Lakhs)
23. Droplet-Based screening of amyloidB-peptide aggregation-DBT (DBT, Rs.43.44 Lakhs)
24. Effects of auxiliary membrane components on biofilm formation in Escherichia coli (Council of Scientific and Industrial Research (CSIR), Rs.24.76 Lakhs)
25. Engineered silk matrices for optimization of in vitro 3-D tumor model (ICMR, New Delhi (sanctioned), Rs.46.90 Lakhs)

26. Enhanced production and purification of a marine lipopeptide.....breast cancer therapy (BCT) (MoES, Rs.100.36 Lakhs)
27. Evaluation of Potential applications in Drug Delivery of some novel pH responsive biocompatible and biodegradable hydrophobically modified polymers (DST, Rs.35.00 Lakhs)
28. Exploration of microbial diversity and microbial role in arsenic mobilization in As-contaminated groundwater of North Eastern states (Arunachal Prade (Department of Biotechnology, Rs.68.28 Lakhs)
29. Extraction, characterization and optimized production of biopigment from *Amaranthus tricolor* (ACA) - Completed (DBT, Rs.24.41 Lakhs)
30. Functional characterization of soluble penicillin-binding protein 6 of *E. coli* (Department of Science and Technology, Govt. of India, Rs.22.86 Lakhs)
31. High rate algal biomass production for food, feed, biochemicals and biofuels (Department of Biotechnology, Rs.66.56 Lakhs)
32. Identification and characterisation of *Phaseolus vulgaris* microRNAs differentially expressed in biotic and abiotic stress conditions by deep sequen (DBT, Rs.2.99 Lakhs)
33. Identification and characterization of molecular tools in order to generate improved jute cultivars (Council of Scientific and Industrial Research, Rs.16.76 Lakhs)
34. Immunogenic responses of silk biomaterials used for cell based tissue engineering and regenerative medicine. (Indo Austria, DST, Rs.7.03 Lakhs)
35. Indian origin silk based biomimetic scaffolds for engineering of load-bearing tissue (Department of Biotechnology, New Delhi, Rs.54.45 Lakhs)
36. Molecular and structural analysis of *Antheraea mylitta* cytoplasmic polyhedrosis virus RNA dependent RNA polymerase. (DST, Rs.39.70 Lakhs)
37. Molecular characterization of DacD (a putative DD-carboxypeptidase) of *Escherichia coli* (DBT, Rs.20.86 Lakhs)
38. Molecular characterization of the emerging beta-lactamases in Gram negative bacilli (Department of Biotechnology, Rs.100.51 Lakhs)
39. Molecular cloning and characterization of *Antheraea mylitta* cytoplasmic polyhedrosis virus genome segments 4 and 5 (CSIR, Rs.29.00 Lakhs)
40. Molecular Structural analysis of *A mylitta* cytoplasmic polyhedrosis virus RNA dependent RNA polymerase (DST-SERB, Gol, Rs.3970000.00 Lakhs)
41. North Eastern origin silk protein based matrices and nano/microparticles for biomedical applications (Department of Biotechnology, New Delhi, Rs.118.35 Lakhs)
42. Nutritional enhancement of rice bran oil through metabolic engineering of fatty acid biosynthesis (CSIR/Govt. of India, Rs.22.82 Lakhs)
43. P K Sinha Center for Bioenergy (PKS) (IIT Foundation (Dr. Prabha Kant Sinha), Rs.400.00 Lakhs)
44. Periferal nerve regeneration on silk matrices (British Council, Rs.13.00 Lakhs)
45. Potential use of biosurfactants for medical applications (PBM) (DST (under Indo-Portugal Collaboration Program), Rs.4.14 Lakhs)
46. Protein-protein interface targeted drug designing (DBT - New Delhi, Rs.3060000.00 Lakhs)
47. Reducing accumulation of toxic metals or metalloids in rice grains by RNAi-mediated gene silencing approach (DBT/Govt. of India, Rs.29.81 Lakhs)
48. Role of Penicillin-binding proteins and O-antigens in the development of beta-lactam antibiotic resistance in Gram negative bacteria (Indian Council of Medical Research (ICMR), Rs.17.40 Lakhs)
49. Search for local isolates of oleaginous micro-organism as potential source of biodiesel production (ISIRD, SRIC, IIT-KGP, Rs.4.96 Lakhs)
50. Silk Protein/Blend Matrices in Tissue Engineering & Biotechnological Applications (Department of Science & Technology, Rs.41.43 Lakhs)
51. Technology Mission Mode Project on "Hydrogen Production through Biological Routes ◆◆?" (MNRE, Govt. of India, Rs.287.00 Lakhs)
52. Tntegrating large scale biohydrogen production and hydrogen fuel cellfor sustainable power generation (DRDO, Rs.9.99 Lakhs)

Consultancy Projects

1. Biocatalyst based continuous production of biodiesel (PFP Technology LLC., Houston, Texas, USA, Rs.11.00 Lakhs)
2. Calculation alcohol loss in the Distillery Plant (IFB Agro Industries Ltd., Noorpur, Rs.4.00 Lakhs)
3. Establishment of Biotechnology Park Kharagpur: Concept paper (WBIDC, Rs.27.00 Lakhs)
4. Validation trial for bioethanol production (VTBP) - Completed (DSS Corp., Kolkata, Rs.0.25 Lakhs)

Patents (filed / granted)

1. 1,4 triazole based polyphenol hybrids - in vitro inhibition of M. tuberculosis b-ketoacyl reductase FabG4 9Rv0242c) by Debranjana Banerjee, D Dutta, B Saha, A K Das, Amit Basak
2. A biofuel additive for diesel engines
3. A novel microbial carbon capture cell design for simultaneous wastewater treatment and CO₂ biofixation
4. An antihyperglycemic EPS from a spore-forming probiotic bacterium, B. coagulans RK-02, and its preparation method thereof
5. An efficient, cost-effective, reusable and eco-friendly algal biomass dewatering system and an accelerated adsorption process thereof
6. Anticancer cyclic peptide from sandalwood and synthesis of the same
7. Antimicrobial peptide from jatropa
8. Continuous bio-catalytic production of bio-diesel in an integrated CSTR-PBR operation
9. Cost-effective natural salt formulation for sea water substitution, precipitation thereof
10. Durability enhancement of lignocellulosic fibers by vegetable oil treatment
11. Earthen material based cathode separator assembly for scalable bioelectrochemical system.
12. Methods of Optimally Harvesting Electrical Power from Parallel Stacked Microbial Fuel Cells and Reliably Dispatching to End-Use Applications.
13. Microbial transformation of lignocellulosic fibers using eco-friendly reagents for strength and durability enhancement
14. Natural resins and the use thereof for the production of jute fiber reinforced composites
15. Probiotic spore based novel drug delivery system

Visits Abroad by Faculty Members

1. Kundu, Subhas Chandra - Invited lecture (Linkopings University, Sweden,) May 19-21, 2012
2. Kundu, Subhas Chandra - Key Note Speaker, TERMIS World Congress (Vienna, Austria,) September 05-08, 2012
3. Das, Debabrata - Discussion on the Indo-Danish research project and seminar talk (Denmark Technical University, Denmark,) June 11-24, 2012
4. Das, Debabrata - Session Chair, Bioenergy & Biorefinery section, International Biotechnology Symposium (IBS-2012) and (International Biotechnology Symposium and Exhibition (IBS-2012)Daegu, South Korea,) 13-21 September, 2012
5. Kundu, Subhas Chandra - Collaborative research with Dr. Heinz Reidl and Dr. Martijn van Griensvan (LBI-Ludwig-Boltzmann Institute, Vienna, Austria,) May 24-27, 2012
6. Kundu, Subhas Chandra - Invited speaker on Non-mulberry silk based tissue engineering (University of Wurzburg, Germany,) May 22-24, 2012
7. Dey, Satyahari - Invited lecture, AFOB Symposium 2012 (Daegu, South Korea,) September 19-20, 2012
8. Ghosh, Anindya Sundar - Presenting poster in the Asia Pacific Travel Health Conference (Singapore,) May 01-06, 2012
9. Sen, Ramkrishna - To fulfill some of the objectives of the DST Indo-Portugal Collaborative Project (SRIC code: PBM) (University of Minho, Braga, Portugal,) September 20 - 29, 2013
10. Maiti, Tapas Kumar - To attend the workshop on Biomicrofluidics and Micro-scale Bioengineering (University of Southampton,) 4days
11. Sar, Pinaki - Participating the metagenomics workshop (Joint Genome Institute, Walnut Creek, USA,) 10th-14th Sept. 2012

12. Sar, Pinaki - Attending the international conference (ISME 14) (Copenhagen,) 19-24th August, 2012
13. Sar, Pinaki - Strengthen the collaboration on proposed water resource research centre (University of California, Berkley,) 12th Sept. 2012
14. Bahadur, Ranjit Prasad - To attend and give a poster presentation in EPSO Plant Biology Congress (Freiburg, Germany,) 29th July-3rd August

Invited Lectures by Faculty Members

1. Non-essential penicillin binding proteins (PBPs) maintain an intrinsic beta-lactam resistance in *Esc. coli* by Ghosh, Anindya Sundar (Workshop on Microbial Biology, Hyderabad,)
2. What makes three redundant DD-carboxypeptidases of *Escherichia coli* behave functionally different in *by* Ghosh, Anindya Sundar (Annual Meeting of Society for Biological Chemists)
3. PCR based DNA fingerprinting *by* Ghosh, Anindya Sundar (Assam University Silchar, Biotech Hub)
4. Protein-Protein interaction in microfluidic platform and its application in Glycobiology *by* Maiti, Tapas Kumar (University of Southampton)
5. Immunotherapeutic and anticancer potential of VARIOUS ethnic medicinal mushroom derived glucan *by* Maiti, Tapas Kumar (Thrissur , Kerala)
6. Problems and prospects of edible mushroom derived immunomodulatory glucans: *by* Maiti, Tapas Kumar (CETRI, Mysore)
7. A Perspective on Computational Structural Biology *by* Bahadur, Ranjit Prasad (OUAT, Bhubaneswar)
8. Structural analysis of protein-RNA recognition sites *by* Bahadur, Ranjit Prasad (Central University of Tezpur)
9. Petroleum Microbiology *by* Sar, Pinaki (IIT Kharagpur)
10. Advances in biohydrogen production processes: present state of art *by* Das, Debabrata (National Renewable Energy Fellows Convention, MNRE, New Delhi)
11. Biohydrogen: a zero-carbon fuel for the future *by* Das, Debabrata (DST-INSPIRE Internship Science Camp., Raja N.L. Khan Womens College, Medinipur)
12. Improvement of biohydrogen production from the organic wastes *by* Das, Debabrata (International Symposium on New horizon in Bioenergy Research", IIT Kharagpur)
13. Biohydrogen: a pollution free fuel for the future *by* Das, Debabrata (Materials and Energy Security, B.H.U, Varanasi)
14. DNA Sequencing *by* Ghosh, Ananta Kumar (Vidyasagar University)
15. Improvement of energy recovery from cane molasses by dark Fermentation followed by microbial fuel *by* Das, Debabrata (15th International Biotechnology Symposium and Exhibition (IBAS-2012), Daegu, South Korea)
16. Biohydrogen production: towards a sustainable energy system *by* Das, Debabrata (JNTU, Hyderabad (ICABHPA-2012))
17. Algae as food, feed, biofuel and biochemicals: Present state of art. *by* Das, Debabrata (ICAB-2013, IIT Kharagpur)
18. Fermented foods-safety and quality aspects *by* Das, Debabrata (Short term course on Food Safety and Quality Management (FSQM), IIT Kharagpur)
19. Nonmulberry silk biomaterial for regenerative medicine *by* Kundu, Subhas Chandra (Wurzburg, Germany)
20. Cell based tissue engineering and biomolecule delivery *by* Kundu, Subhas Chandra (Linkopings University, Sweden)
21. Silk biomaterials for tissue engineering *by* Kundu, Subhas Chandra (Max-Planck-Institute for Heart and Lungs Germany)
22. Nonmulberry silk biopolymer as emerging natural biomaterials *by* Kundu, Subhas Chandra (Vienna, Austria)
23. Biomaterials for drug delivery *by* Kundu, Subhas Chandra (Visva-Bharati, Santiniketan)
24. Natural biomaterials for regenerative medicine *by* Kundu, Subhas Chandra (Manipal University, Bangalore)
25. Engineering of Indian origin silk matrices for tissue engineering and regenerative medicine *by* Kundu, Subhas Chandra (IISc, Bangalore)
26. Indian origin natural smart silk biopolymers for regenerative medicine *by* Kundu, Subhas Chandra (IIT Kharagpur (ICRRM))

27. Bio-inspired processes & products vis-à-vis my R&D activities with industrial BT focus & perspective *by* Sen, Ramkrishna (DuPont India R&D Centre, Hyderabad)
28. Current trends in biosurfactant research vis-a-vis our R&D - New horizons and Opportunities *by* Sen, Ramkrishna (University of Minho, Portugal)
29. Holistic views of a layman on refining the green crude for human good *by* Sen, Ramkrishna (IIT Kharagpur - ICAB - 2013)
30. A journey through the challenges of biofuels with some relevant case studies *by* Sen, Ramkrishna (IIT Kharagpur - NHBR - 2013 -)
31. Holistic strategy to capitalize on energy environ water nexus in biorefinery model:Our R&D Solutions *by* Sen, Ramkrishna (Nagpur (IC-IMPACTS Workshop - 2013))
32. A Vision-inspired Journey through the Global Challenges of Energy Environment Water & Food *by* Sen, Ramkrishna (IIT Madras (TREE-2013))
33. Collaboration between Asian regions in Biotechnology: Networking AFOB resources for strengthening ov *by* Dey, Satyahari (Daegu, South Korea)
34. Non-heterocystous cyanobacteria: prospective source of nutraceuticals, cosmeceuticals and others *by* Dey, Satyahari (IIT Kharagpur)
35. Encystation signal and cyst wall synthesis in Entamoeba invadensn signal in Entamoeba invadens *by* Ghosh, Sudip Kumar (81st Annual meeting of SBC(I), Kolkata)
36. Chitin biosynthesis pathway and Encystation signal in Entamoeba invadens *by* Ghosh, Sudip Kumar (Indo Uk Meeting on Parasitology, Kolkata)
37. Encystaion biology of Entamoeba *by* Ghosh, Sudip Kumar (Moulana Azad College, Kolkata)

Papers Published in Journals

1. 1,3,5-Trisubstituted benzenes as fluorescent photoaffinity probes for human carbonic anhydrase II capture. *By* Addy PS, Saha B, Pradeep Singh ND, Das AK, Bush JT, Lejeune C, Schofield CJ, Basak A *Chem Commun (Camb)*. 49, 1930-32 (2013)
2. 1-(Hydroxyacetyl)pyrene a new fluorescent phototrigger for cell imaging and caging of alcohols, phenol and adenosine *By* Jana A, Saha B, Ikbal M, Ghosh SK, and Pradip Singh ND *Photochem. Photobiol. Sci*, 11: 1558-66 11: 1558-66 (2012)
3. A CN- specific turn-on phosphorescent probe with probable application for enzymatic assay and as an imaging agent *By* Reddy UG, Das P, Saha S, Baidya M, Ghosh SK and Das A *Chem. Comm*. 49 (3), 255 – 257 (2013)
4. A glucan from an ectomycorrhizal edible mushroom Tricholoma crassum (Berk.) Sacc.: isolation, characterization, and biological studies *By* 10. Surajit Samanta, Kousik Maity, Ashis K. Nandi, Ipsita K. Sen, K. Sanjana P. Devi, Shreemoyee Mukherjee, Tapas K. Maiti, Krishnendu Acharya, Syed S. Islam *Carbohydrate Research* 367, Pages 33-40 (2013)
5. A heteroglycan from the mycelia of Pleurotus ostreatus: structure determination and study of antioxidant properties *By* 8. Suresh Patra , Pradip Patra , Kankan K. Maity , Soumitra Mandal , Sanjay K. Bhunia , Biswajit Dey ,K. Sanjana P. Devi , Somanjana Khatua , Krishnendu Acharya , Tapas K. Maiti , Syed S. Islam. *Carbohydrate Research* 368 (2012) 16-21 (2013)
6. A new arabinoxylan from green leaves of Litsea glutinosa (Lauraeae): Structural and biological studies *By* Das, D., Maiti, S., Maiti, T.K., Islam, S.S. *Carbohydrate Polymers* 92 (2) , pp. 1243-12 (2013)
7. A structurally novel hemopexin fold protein of rice plays role in chlorophyll degradation. *By* Chattopadhyay T, Bhattacharyya S, Das AK, Maiti MK. *Biochem Biophys Res Commun*. 420, 862-868 (2012)
8. An immunostimulating water insoluble β -glucan of an edible hybrid mushroom: Isolation and characterization *By* 9. Kousik Maity, Surajit Samanta, Sunil K. Bhanja, Saikat Maity, Ipsita K. Sen, Swatilekha Maiti, Birendra Behera, Tapas K. Maiti, Samir R. Sikdar, Syed S. Islam. *Fitoterapia* 84, Pages 15-21 (2013)
9. An inexpensive strategy for facilitated recovery of metals and fermentation products by foam fractionation process. *By* Rangarajan, V and Sen, R* *Colloids & Surfaces B: Biointerfaces* 104:99–106. (2013)
10. Antineoplastic and apoptotic potential of traditional medicines thymoquinone and diosgenin in squamous cell carcinoma *By* Das S, Dey KK, Dey G, Pal I, Majumder A, MaitiChoudhury S, Kundu SC, Mandal M *PLoS ONE* 7 e46641 (2012)

11. Biocompatible composites of fibrous nanohydroxyapatite embedded in a polydimethylsiloxane By Roy N, Dey T, Kundu SC, Bhowmick AK *Journal of Materials Science* DOI 10.1007/s10853-0 (2013)
12. Biomat _dBase: A Database on Biomaterials By Subia B, Mukherjee S, Bahadur RP, Vitor M Correlo, Reis, Rui L, Sabarinathan R, Sekar Kand Kundu SC *The Open Tissue Engineering and Regenerative Medicine Journal* 5:59-67 (2012)
13. Biosurfactants: Synthesis, Properties and Applications in Environmental Bioremediation. By Sen R*, Mudhoo A, Gunaseelan, D. *Book chapter in: Bioremediation and Sustainability: Research and Applications.* Chapter 4, 137–211 (2012)
14. Biotransformation of p-coumaric acid and 2,4-dichlorophenoxy acetic acid By Samiran S. Gauri , Santi M. Mandal , Satyahari Dey , Bikas R. Pati *Bioresource Technology*, 126:350-353. (2012)
15. Characteristics of cured and wild strains of *Enterobacter cloacae* IIT-BT 08 for the improvement of biohydrogen production By 5. Khanna N, Kumar K, Todi S, Das D *International Journal of Hydrogen Energy* 37:11666-11676 (2012)
16. Characterization and lectin microarray of an immunomodulatory heteroglucan from *Pleurotus ostreatus* mycelia By K. Sanjana P. Devi, Bibhas Roy, Pradip Patra, Banalata Sahoo, Syed S. Islam, Tapas K. Maiti *Carbohydrate Polymers* 94(2) , pp. 857-86 (2013)
17. Characterization of arsenic resistant bacteria from arsenic rich groundwater of West Bengal, India By Angana Sarkar, Sufia K Kazy and Pinaki Sar *Ecotoxicology* 22: 363-376 (2013)
18. Chemical analysis of an immunostimulating (1→4)-, (1→6)-branched glucan from an edible mushroom, *Calocybe indica* By 12. Eshita Kar Mandal, Kousik Maity, Saikat Maity, Sanjoy K. Gantait, Birendra Behera, Tapas K. Maiti, Samir R. Sikdar, Syed S. Islam *Carbohydrate Research* 347, 172–177 (2012)
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41. Isolation and characterization of bioactive compounds/peptides from a new cyanobacterial isolate of microalga *Lyngbya* sp., By SS Gauri & S Dey, *IBS-2012*, Daegu, South Korea, (2012)
42. Isolation and characterization of bioactive oligopeptides from rice bran, By Jigni Misra, Abheepsa Mishra, SS Das, SS Gauri, S Mukherjee, S Chatterjee, M Patra, A Kumar & S Dey, *4th Indian Peptide Symposium*, Kolkata, (2013)
43. Isolation and identification of arsenic resistant bacteria from arsenic contaminated groundwater from West Benga, By Joshi, S., Paul, D., Sar, P, *53th annual AMI conference 2012 on "international conference on Microbial world: recent innovation and future trends*, KIIT university, Bhubaneswar-24, India, (2012)
44. Isolation of transposon mutant of *Escherichia coli* with altered biofilm formation, By Akash Kumar, Dhanasingh, Anindya S. Ghosh*, *3rd World Congress on Biotechnology*, HICC, Hyderabad, India, (2012)
45. MGM workshop, By Pinaki Sar, *Microbial Genomics and Metagenomics*, Joint Genome Institute, Walnut Creek, US, (2012)
46. Modelling of wastewater treatment using Butler Volmer model and Biofilm model, By Patel V, Pandit S and Das D, *International conference on Advances in biological hydrogen production and applications (ICABPHA)*, JNTU, Hyderabad, (2012)
47. Molecular characterization of a MATE family gene in relation to arsenic transport or accumulation in indica rice grain, By Natasha Das, Somnath Bhattacharyya and Mrinal K. Maiti, *National Symposium on Plant Tissue Culture & Biotechnology for Food and Nutritional Security*, Mysore, India, (2013)
48. Molecular cloning and characterization of *Antheraea mylitta* cytoplasmic polyhedrosis virus genome segments 4 and 5., By Biswas, P. and Ghosh A. K., *11th International symposium on double stranded RNA viruses*, SanJuan, Puerto Roco, USA,, (2012)
49. Molecular modeling and structure analysis of *Antheraea mylitta* cytoplasmic polyhedrosis virus RNA dependent RNA polymerase, By Kundu, A., Das, A. K. and Ghosh, A. K., *11th International symposium on double stranded RNA viruses*, SanJuan, Puerto Roco, USA,, (2012)
50. Molecular modeling of protein-protein interaction to decipher the structural mechanism of nonhost resistance in rice, By Ranjit P Bahadur & Jolly Basak, *Plant Biology Congress Freiburg 2012*, Freiburg, Germany, (2012)
51. Non-mulberry silk biomaterial for regenerative medicine, By Kundu SC, *3rd International Conference on Strategies in Tissue engineering*, Wurzburg, Germany, (2012)
52. Non-mulberry silk biopolymer as emerging natural biomaterial, By Kundu SC, *3rd World Congress of TERMIS*, Vienna, Austria, (2012)
53. Non-mulberry silk proteins facilitate osseo-integration in orthopedic implants, By Dey T, Naskar D, Nayak S, Kundu SC, *3rd World Congress of TERMIS*, Vienna, Austria, (2012)
54. Novel Encystation Specific Protein Kinases in *Entamoeba invadens*, By Sintu Samanta, Biswajit Saha, Mithu Baidya, Tanya Singh and Sudip K. ghosh, *81st Meeting of Society of Biological Chemists (I) and Symposium on Chemistry and Biology: Two weapons against Diseases*, Kolkata, (2012)
55. of Indian origin silk matrices for tissue engineering and regenerative medicine, By Kundu SC, *Interl. Conf. on Design of Biomaterials, Indian Institute of Sciences*, Bangalore, India, (2012)

56. PRince: A web server for structural and physicochemical analysis of Protein-RNA interface, By Amita Barik, Abhishek Mishra and Ranjit Prasad Bahadur, *Indian Science Congress*, Kolkata, (2013)
57. Quantitative characterization of biofilm-altered Escherichia coli transposon mutants using COMSTAT software, By Akash Kumar, Dhanasingh M., Anindya S. Ghosh*, *International conference on Microbial world: recent innovations and future trends*, KIIT University Bhubaneswar, Odisha, (2012)
58. Resistant to uranium and heavy metals and uranium accumulation properties of U ore deposit bacteria: prospect for U hydrometallurgy, By E Islam and P Sar, *53th annual AMI conference 2012 on "international conference on Microbial world: recent innovation and future trends"*, KIIT university, Bhubaneswar-24, India, (2012)
59. Silk nanoparticles incorporated 3D porous scaffolds for delivery of TGF β -1 in human mesenchymal stem cells, By Subia B, Talukdar S, Kundu SC, *3rd World Congress of TERMIS*, Vienna, Austria, (2012)
60. Two stage process for biohydrogen production by synechocystis PCC 6803., By Nayak, B.K. and Das, D., *International conference on Algal Biorefinery*, IIT Kharagpur, (2013)

Department of Chemical Engineering

Head

Prof. Narayan Chandra Pradhan

Professors

Basu, Jayanta Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Adsorption and Separation Science, Waste Water Treatment, Reaction Engineering
Das, Gargi	<i>Ph.D.(IIT Kharagpur)</i> , Multiphase flow, Two phase instrumentation, CFD simulation
DasGupta, Sunando	<i>Ph.D.(RPI, USA)</i> , Microscale Transport Process and Microfluidics
De, Sirshendu	<i>Ph.D.(IIT Kanpur)</i> , Membrane separations, Transport Processes, Flow through microchannels
Kundu, Gautam	<i>Ph.D.(IIT Kharagpur)</i> , Multiphase Operation, Mineral Beneficiation, Rheology of Suspension
Mukherjee, Dibyendu	<i>Ph.D.(IIT Kharagpur)</i> , Multi Phase Flow, Column Flotation, Modeling & Simulation
Neogi, Sudarsan	<i>Ph.D.(Ohio Univ.,USA)</i> , Surface Modification And Engineering of Polymer Substrates For Biomedical Applications, Plasma Enhanced Chemical Vapor Deposition, Plasma Sterilization, Adhesive Development, Antimicrobial Coatings, Modeling And Simulation Of Chemical Process Plant, Environmental Pollution Control, Polymer Composites
Pradhan, Narayan Chandra	<i>Ph.D.(UDCT Bombay)</i> , Heterogeneous Catalysis, Chemical Process Development, Petrochemical Technology, Petroleum Refining, Separations Technology
Samanta, Amar Nath	<i>Ph.D.(IIT Kharagpur)</i> , Process Dynamics & Control, Nonlinear Process Control, Process Modeling & Simulation, Carbon Capture & Sequestration

Associate Professors

Chakraborty, Sudipto	<i>Ph.D.(IIT Kharagpur)</i> , Process Modelling and Simulation, CFD & Heat Transfer, Ultra-fast cooling of steel, Coal and mineral beneficiation
Jana, Amiya Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Renewable energy, Energy intensification, Nonlinear control, Modeling and simulation
Kar, Debdulal	<i>Ph.D.(IIT Kharagpur)</i> , Mineral Processing, Fluidization Engineering, Biogas Development
Meikap, Bhim Charan	<i>Ph.D.(IIT Kharagpur)</i> , Pollution Control, Coal Beneficiation, CO ₂ Capturing, Fluidization
Mukherjee, Rabibrata	<i>Ph.D.(IIT Kanpur)</i> , Polymer Thin Film Instability, Soft Lithography, Structural Super Hydrophobicity, Polymer Blends, Soft Condensed Matter
Neogi, Swati	<i>Ph. D.(Ohio University)</i> ,

Assistant Professors

Atta, Arnab	<i>Ph.D. (IIT Delhi)</i> , Computational Fluid Dynamics, Multiphase Flow, Complex Fluids, Process Intensification, Interfacial Science and Engineering
Chakrabarty, Saikat	<i>Ph.D.(Univ. of Houston)</i> , Chemical Reaction Engineering, Biomedical Engineering, Bioenergy
Chakraborty, Jayanta	<i>Ph.D.(IISc., Bangalore)</i> , Particle technology, Population balance modeling, Synthesis of nanoparticles, Crystallization, Manufacturing of nanomaterial based solar cells

Deshpande, Parag Arvind	<i>Ph.D.(IISc., Bangalore)</i> , Electronic structure calculations, Computational organic chemistry and catalysis, First principles analysis of physiological reactions
G, Hari Krishnan	<i>Ph.D.(IIT Bombay)</i> , polymeric foams, polymer nanocomposites, rheology, polymeric coatings
Ganguly, Somenath	<i>Ph.D.(Univ. of Kansas, USA)</i> , Flow in thin channel and porous media, Hydrogel, Improved recovery of hydrocarbon
Padmanabhan, Venkat	<i>Ph.D.(Columbia Univ.)</i> , Advanced Functional Materials, Polymer Nanocomposites, Bio-Mechanics of <i>C. elegans</i> , Organic Photovoltaics
Ray, Subhabrata	<i>M.Tech.(IIT Kharagpur)</i> ,
Sarkar, Debasis	<i>Ph.D.(IISc. Bangalore)</i> , Optimization and control of fed-batch bioreactors, Crystallization process modeling and control, Multi-objective optimization: Genetic Algorithms, Multivariate image analysis
Sengupta, Sonali	<i>Ph.D.(UDCT Mumbai)</i> , Reaction Engineering, Petroleum engineering, Heterogeneous and Homogeneous Catalysis

Faculty Appointments

Arnab Atta Assistant Professor

Brief Description of on-going activities

1. Heterogeneous reactions with application to chemical process development with special emphasis on greener alternatives 2. Utilisation of non-edible oils for manufacturing of value-added chemicals 3. Steam reforming of petroleum feedstock in mini-and micro-reactors for production of Hydrogen 4. Advanced separation processes involving membranes with emphasis on water purification, dye removal, effluent treatment processes etc. 5. Simulation and modeling of coal & biomass combustion processes in pulverized and fluidized combustors 6. Multi-phase processes & reactions in gas-liquid, liquid-solid, solid-liquid and liquid-liquid systems using pipelines, ejector based systems, fluidized bed, column flotation etc. 7. Development of innovative catalysts from fly ash for organic chemical synthesis (alkylation, isomerisation etc.) 8. Plasma assisted surface modification for chemical engineering applications 9. Development & performance of novel bubble column scrubber/reactor for removal of SO₂ and fly ash 10. Technology of composite materials 11. Pattern Formation of Soft Materials utilizing Interfacial Instability 12. Microscale transport processes and microfluidics including droplet based digital microfluidics 13. Training of Personnel for construction and maintenance of Bio Gas Plants. 14. Beneficiation of Coal and Mineral by Column Flotation Cell.

Thrust Areas

1. Green chemical process technology
2. Advanced separation processes & environmental process engineering
3. Multiphase flow and reaction engineering
4. Petroleum reaction engineering & petrochemical processes
5. Nonlinear process control
6. CFD application in chemical processes and equipment design
7. Technology of composite materials
8. Thin Films, Interfacial and Nano Science
9. Hydrogen Production by steam reforming in microreactor
10. Manufacture and testing of Polymer Composites
11. Plasma treatment
12. Microscale transport processes and microfluidics
13. Column Flotation

New Acquisitions

1. Gas Chromatograph System

2. HPLC
3. High Performance Cluster
4. Atomic Absorption Spectrophotometry Unit
5. Automated Surface Area & PoreSize Analyzer
6. Evaporation Unit & Liq. Nitrogen Container

International Collaborations

Indian investigator: P A Deshpande Austrian collaborator: Dr. Heidrun Gruber-Woelfler Institute: Institute for Process and Particle Technology, Technical University Graz Agency: DST-BMWF India-Austria Scientific-Technological Cooperation (2013-14)

Lectures by Visiting Experts

1. Multi-Functional Materials Based On Aerogels and Novel Polymer Nanofibers *by* Sadhan C. Jana (Department of Polymer Engineering, University of Akron)
2. Dense Granular Flows: Rheology and Segregation *by* Devang Khakhar (IIT Bombay)
3. Colloid and Material Science Research in Academia and Industry: A chemical Engineers perspective *by* Kaustav Ghosh (Whirlpool Corporation, Michigan, USA)
4. Reaction Mechanisms and the Design of Heterogeneous Catalysts for Sustainable Energy *by* M. Ali Hyder (University of Virginia)
5. Breaking the Tradition: Whole Crude Oil Hydrotreating *by* I.M. Mujtaba (University of Bradford, UK)

Doctoral and MS Degrees Awarded

1. Barnali Bej : Reforming of C1 and C2 Hydrocarbons Over Indigenous Nano-Nickel Catalyst(Ph.D.)
2. Sudeshna Roy : Dewetting, Pattern Formation, and Stability of Thin Polymer Films(Ph.D.)
3. Debadrita Maiti : Heat Integrated Batch Distillation with a Jacketed Reboiler(Ph.D.)
4. Satyabrata Mohanta : Dry beneficiation of high ash Indian thermal coal in an air dense medium fluidized bed(Ph.D.)
5. Vivek Kumar : Performance Improvement of Hydrocyclone used for Fine Particle Separation(Ph.D.)
6. Prabir Ghosh : Treatment of Aqueous Organic Pollutants By Fenton and Fenton Related Processes(Ph.D.)

Member - Professional Bodies

1. Das, Gargi, *Life member* - Indian Institute of Chemical Engineers
2. Sengupta, Sonali, *Life-member* - Indian Institute of Chemical Engineers
3. Sengupta, Sonali, - Catalysis Society of India
4. Meikap, Bhim Charan, *Member* - International Water Association (IWA), UK
5. Meikap, Bhim Charan, *Life Member* - Indian Institute of Metals
6. Meikap, Bhim Charan, *Member* - American Institute of Chemical Engineers (AIChE)
7. Meikap, Bhim Charan, *Member* - Canadian Institute of Chemical Engineering
8. Meikap, Bhim Charan, *Life Member* - Indian Institute of Chemical Engineers
9. Meikap, Bhim Charan, *Member* - Institution of Chemical Engineers (IChemE), UK
10. Meikap, Bhim Charan, *Member* - The South African Institute of Chemical Engineers(SAIChE)
11. Meikap, Bhim Charan, *Life Member* - Indian Institute of Public Health Engineers (IPHE)
12. Chakraborty, Sudipto, *Life Member* - IIChE
13. Chakraborty, Sudipto, *Life Member* - IIM
14. Chakraborty, Sudipto, *Life Member* - IE(I)
15. Neogi, Sudarsan, *Member* - Refrigerants in Cold Storage review Committee, WBPCB, Govt. of West Bengal
16. Neogi, Sudarsan, *Member of Gov. Body* - Institute of Environmental Studies and Wetland Management, Govt. of West bengal

17. Neogi, Sudarsan, *Member* - Municipal Solid Waste Disposal Committee, WBPCB, Govt. of West Bengal
18. Neogi, Sudarsan, *Member* - Mobile Tower Radiation Committee by Ministry of Environment, Govt. of West Bengal
19. Neogi, Sudarsan, *Member* - Performance Review Committee WBPCB, Govt. of West Bengal
20. Neogi, Sudarsan, *Chairman* - State Level Expert Appraisal Committee, Govt. of India
21. Neogi, Sudarsan, *Member* - Indian Institute of Chemical Engineers
22. Neogi, Sudarsan, *Member* - Administrative Committee WBPCB, Govt. of West Bengal
23. Neogi, Sudarsan, *Member* - Sponge Iron Industries : Status of Environmental Pollution Investigation Committee by Ministry of Environment, Govt. of West Bengal
24. Neogi, Sudarsan, *Member* - West Bengal Pollution Control Board
25. Neogi, Sudarsan, *Technical Advisor* - Ministry of Environment, Govt. of West Bengal
26. Chakrabarty, Saikat, *Life Member* - Indian Institute of Chemical Engineers
27. Jana, Amiya Kumar, *Life Member* - Indian Institute of Chemical Engineers (IIChE)
28. Jana, Amiya Kumar, *Life Member* - Indian Society for Technical Education (ISTE)
29. Ganguly, Somenath, *Senior Member* - American Institute of Chemical Engineers
30. Ganguly, Somenath, *Life Member* - Indian Institute of Chemical Engineers
31. Mukherjee, Rabibrata, *Life Member* - Indian Ceramic Society
32. Mukherjee, Rabibrata, *Life Member* - Materials Research Society of India
33. Mukherjee, Rabibrata, *Life Member* - Indian Institute of Chemical Engineers (IIChE)
34. Sarkar, Debasis, *Associated Member* - The Institution of Engineers (India)
35. Sarkar, Debasis, *Associate Member* - Indian Institute of Chemical Engineers
36. Mukherjee, Dibyendu, *Life Member* - Indian Institute of Chemical Engineers
37. Mukherjee, Dibyendu, *Life Member* - Indian Institute of Mineral Engineers
38. Kundu, Gautam, *Life Member* - Indian Society of Theoretical and Applied Mechanics
39. Kundu, Gautam, *Life Member* - Indian Institute of Chemical Engineers
40. Kundu, Gautam, *Life Member* - Indian Institute of Mineral Engineers
41. Basu, Jayanta Kumar, *Life Member* - Indian Institute of Chemical Engineers
42. Pradhan, Narayan Chandra, *Life Member* - Indian Institute of Chemical Engineers
43. De, Sirshendu, *Life Member* - Indian Institute of Chemical Engineering
44. De, Sirshendu, *Life Member* - Indian Society of Theoretical and Applied Mechanics
45. Padmanabhan, Venkat, - American Physical Society (APS)
46. Padmanabhan, Venkat, - Division of Polymer Physics (DPOLY)
47. Padmanabhan, Venkat, - Division of Biological Physics (DBIO)

Member - Editorial Board

1. Chakrabarty, Saikat (2009) *Honorary Editorial Board Member* - International Journal of BioSciences and Technology
2. Chakrabarty, Saikat (2009) *Honorary Editorial Board Member* - International Journal of Medical Sciences and Technology
3. Meikap, Bhim Charan (2012) *Editor* - South African Journal of Chemical Engineering

Awards & Honours

1. De, Sirshendu (2012) *DAE-SRC Outstanding Investigator Award, from Department of Atomic Energy, Govt. of India.*
2. Neogi, Sudarsan () *Recipient of University of Calcutta Young Alumnus Award*
3. De, Sirshendu (2012) *Silver Jubilee Young Engineer Award from Indian National Academy of Engineering, New Delhi*

Sponsored Research Projects

1. A novel approach to a selective catalytic process for reducing thiophenic sulphur content from petroleum products (Council of scientific and industrial research, Rs.7.00 Lakhs)
2. A study of Microscale transport processes leading to the development of a cooling strategy for electronic components (Department of Information Technology, Rs.89.76 Lakhs)

3. Advanced Material Processing using Radiofrequency Plasma for Biomedical Applications (DST, Govt of India, Rs.0.00 Lakhs)
4. Ammonia Production By Using Urea For Flue Gas Conditioning (FGC) (National Thermal Power Corporation (NTPC), New Delhi, Rs.0.00 Lakhs)
5. Antimicrobial Coating on Plasma Treated substrates for biomedical application (Life Science Research Board, DRDO, Rs.20.00 Lakhs)
6. Bio Gas Development & Training center (Ministry of New & Renewable Energy, Rs.10.00 Lakhs)
7. Design, analysis and control of internally heat integrated distillation columns (DST, Rs.0.00 Lakhs)
8. Design, Modeling and Control of a High Pressure Pilot Scale HIX Reactive Distillation (DAE, BARC, Rs.0.00 Lakhs)
9. Development and characterization of a high efficiency wet scrubber with internals for air pollution control (IIT Kharagpur, Rs.0.00 Lakhs)
10. Development of experimental setup and study on upgradation of high ash Indian coal (DES) (Tata Steel, Jamshedpur, Rs.20.00 Lakhs)
11. Development of Nano FRP Composites for Marine Applications sponsored by Naval Research Board (DRDO, Govt. of India, Rs.0.00 Lakhs)
12. Droplet based microfluidics for electronics cooling (Intel Corporation, Rs.20.15 Lakhs)
13. Droplet based screening of Amyloid β -peptide aggregation (DBT, Rs.43.44 Lakhs)
14. Enzymatic Hydrolysis and Chemical Fermentation of Cellulose for Bioethanol Production (IIT Foundation, Rs.5.00 Lakhs)
15. Estimation of Life time & Life Cycle cost of FRP Pipes manufactured using various technologies for Offshore and Onshore Application. (ONGC, Rs.30.00 Lakhs)
16. Fabrication and Durability Studies of Structured Superhydrophobic Surfaces (GRO Program, Samsung, Korea, Rs.63.30 Lakhs)
17. Fabrication of Nanostructured Surfaces by Soft Lithographic & Non Lithographic Techniques (Solar Energy Research Initiative (SERI), DST, Govt. of India, Rs.80.39 Lakhs)
18. Field Trial of Low Cost Laterite Based Arsenic Filter: Domestic and Community Scale (Department of Science & Technology (DST), Govt. of India, Rs.19.99 Lakhs)
19. Foam-gel formation in thin layer with flow complexities affecting the placement (DST, Rs.35.00 Lakhs)
20. Heat Transfer, Simulation and Measurement of Thermal properties of Sheet Molding Compound (CSP plastics, Troy, Michigan USA, Rs.0.00 Lakhs)
21. Hydrodynamic interactions and force measurements of the nematode *Caenorhabditis elegans* (ISIRD, SRIC, IIT Kharagpur, Rs.500000.00 Lakhs)
22. Hydrodynamic Study of Vortex and Air-Core Formation in a Two Phase Flow for Simple Geometries (FSG) (Tata Steel Limited, Jamshedpur, Rs.0.00 Lakhs)
23. Hydrodynamics Studies on Micro Bubble Generators (MBG) (M/s Tata Steel, Jamshedpur, Rs.0.00 Lakhs)
24. In silico mechanistic investigations of de novo synthesis of mycobacterium tuberculosis DNA (ISIRD SRIC IIT Kharagpur, Rs.5.00 Lakhs)
25. Indo-US Centre on Fabronics (Indo-US Science and Technology Forum, Rs.495.00 Lakhs)
26. Instability and Pattern Formation in Thin Polymer Bilayers (DST Nano Mission, Rs.52.20 Lakhs)
27. Locomotion and chemotaxis of the nematode *Caenorhabditis elegans* in complex media (DST, New Delhi, Rs.2715600.00 Lakhs)
28. Modeling, Analysis and Control of Reactive Distillation Columns (CSIR, New Delhi, Rs.0.00 Lakhs)
29. MODELLING OF THE ELECTROTHERMAL PROCESS OF MAGNESIUM PRODUCTION AND PROCESS OPTIMIZATION (NML, Jamshedpur, Rs.7.20 Lakhs)
30. National Renewable Fellowships (MNRE, Rs.61.76 Lakhs)
31. Optimization of batch crystallization processes under uncertainty (ISIRD Grant of SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
32. Performance Characterization of a Hydrocyclone with Internals for Separation of Fine Particles (CSIR, New Delhi, Rs.0.00 Lakhs)
33. Performance Evaluation of Bag Filters in the Sponge Iron Plants in Orissa-Field Investigation (BFS) (State Pollution Control Board, Orissa (Ministry of Environment & Forest, Govt. of Orissa), Rs.0.00 Lakhs)

34. Performance Evaluation of Bag Filters in the Sponge Iron Plants in Orissa-Field Investigation (BFS) Phse-II (PEO) (State Pollution Control Board, Orissa (Ministry of Environment & Forest, Govt. of Orissa), Rs.0.00 Lakhs)
35. Performance Study of a Hydrocyclone (HDR) (M/s Tata Steel, Jamshedpur, Rs.0.00 Lakhs)
36. PK Sinha Center Project (IIT Foundation, Rs.1000.00 Lakhs)
37. Plasma Treatment of SMC on Surface Energy and Orange Peel Index of Painted Substrates (CSP Plastics, Troy, Michigan, USA, Rs.0.00 Lakhs)
38. Process Simulation and Material Balance of Uran Plant (ONGC, Rs.6.50 Lakhs)
39. Processing of tender coconut water using membrane filtration (Technoeagles Pvt Ltd., Rs.10.00 Lakhs)
40. Production of low cost hollow fiber hemodialysis cartridge (DST, Rs.35.70 Lakhs)
41. Production of monodispersed nanoparticles for a large class of materials using heat treatment based post processing technique (ISIRD SRIC IIT Kharagpur, Rs.5.00 Lakhs)
42. Production of Synthesis Gas and Its Clean Processing by a Multi-Stage Wet Scrubber (Department of Science & Technology (DST), Govt. of India, Rs.10.35 Lakhs)
43. Production of synthesis gas and its clean processing by a multi-Stage wet scrubber (PSG) (DST, Rs.10.35 Lakhs)
44. Rapid DNA hybridization in microfluidic channels (DBT, Rs.42.00 Lakhs)
45. Renewable Resource/Bio based Low Density SMC Development (CSP Plastics, Troy, Michigan, USA (Co-investigator), Rs.0.00 Lakhs)
46. Steel Technology Centre (TCB) (Ministry of Steel & DST, New Delhi, Rs.2025.00 Lakhs)
47. Studies on Effective Use of Microwave Energy for Green Mineral Beneficiation and Pipe Line Slurry Transport (MEG) (Council of Scientific and Industrial Research(CSIR), New Delhi, Rs.0.00 Lakhs)
48. Theoretical and experimental analysis of evaporation in the grooves of a micro heat pipe (ISRO, Rs.19.44 Lakhs)
49. Thermomechanically processed high strength bainitic steel rails for Indian Railways (TBR) (RDSO, Indian Railways, Rs.0.00 Lakhs)
50. Tuneable Meso Patterning of Polymer Bilayer Thin Films with Electric Field (ISIRD Grant of SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
51. Upgradation of Coal Fines in a Column Flotation Cell (CSIR, New Delhi, Rs.3.71 Lakhs)
52. Upgradation of facilities under Renewable Energy Program (MNRE, Rs.50.00 Lakhs)
53. Water lubricated transport of high viscous oils - Experimentation and theory (DST, Rs.19.00 Lakhs)

Consultancy Projects

1. Antimicrobial Coatings On Plasma Modified Polymer Substrates (DRDO, Govt. of India, Rs.0.00 Lakhs)
2. Blast Protection System For Vehicle Glass Windows (Army Technical Board, Govt. of India, Rs.0.00 Lakhs)
3. Bond Work Index of Rampura Agucha Ore (Ramura Agucha Mines, HZL, Rajasthan, Rs.2.00 Lakhs)
4. Composite Development Center (RDSO, Rs.7.50 Lakhs)
5. Consultancy Input on Design and Hydrodynamics Studies of Micro Bubble Generator (M/s Tata Steel, Jamshedpur, Rs.0.00 Lakhs)
6. Consultancy services for implementation of APC in DCU and HCU (NRL Ltd, Rs.7.72 Lakhs)
7. Design and development of a mathematical model for ultra fast cooling of steel strips (DDMM) (Tata Steel, Jamshedpur, Rs.0.00 Lakhs)
8. Design of an Industrial Scale Hydrocyclone (DISH) (M/s Tata Steel, Jamshedpur, Rs.0.00 Lakhs)
9. Design of Bubble Column with External Bubble Generator (BCEB) (M/s Tata Steel, Jamshedpur, Rs.0.00 Lakhs)
10. Design verification and critical analysis of bag filters installed at sponge iron plant in Orissa (CABF) (Orissa State PCB, Rs.0.00 Lakhs)
11. Design Verification of Bag Filters installed at various Sponge Iron Plants in Orissa (State Pollution Control Board, Orissa, Bhubaneswar, Rs.0.00 Lakhs)
12. Development of gas sweetening technology for removal of co2 from natural gas (Engineers India Limited, Rs.30.00 Lakhs)
13. Development of Long Fiber Thermoplastic Composites (IIT Kharagpur, Rs.3.00 Lakhs)

14. Development of mixing model for alloy dissolution in steel ladles (MMAD) (Tata Steel, Jamshedpur, Rs.0.00 Lakhs)
15. Development of Natural fiber SMC (Continental Structural Plastics, Troy, MI, Rs.32.00 Lakhs)
16. Development Of Software For Design Of Two Phase Flow System With Simple Geometries (DSSG) (M/s Tata Steel, Jamshedpur, Rs.0.00 Lakhs)
17. Examination of STPP Manufacture at Haldia (M/s Tata Chemicals, Durgachak, Haldia, Rs.0.00 Lakhs)
18. Modeling for Upscaling the Capacity of Ceramic Membrane based Wastewater Treatment Unit (Central Glass & Ceramic Reserach Institute, Rs.5.91 Lakhs)
19. Modelling of a closed cycle boiler reactor (CCBR) (NSTL (DRDO) Vizag, Rs.9.92 Lakhs)
20. Modelling of Chocolate behavior during tempering and cooling process (CBTP) (Cadbury India Ltd, Thane, Rs.4.00 Lakhs)
21. Modelling of thermite based closed cycle thermal system (CCTS) (HEMRL (DRDO), Pune, Rs.9.00 Lakhs)
22. Optimization, characterization and casting of haemodialysis membranes (Acropetal Pvt. Ltd, Rs.21.00 Lakhs)
23. Pelletization of Zeolite Synthesized from Lignite Fly Ash and Application of Zeolite Pellets in Treatment of Ground Water and Blowdown Water (Neyveli Lignite Corporation Ltd., Rs.28.67 Lakhs)
24. PERFORMANCE EVALUATION OF BAG FILTER SYSTEM(EABS) (M/S-AARTI STEEL LTD., Rs.0.00 Lakhs)
25. Process Simulation and Material Balance of Uran Plant (Oil and Natural Gas Commission, Rs.6.47 Lakhs)
26. Renewable resource/bio-based low density SMC development (Continental Structural Plastics, 755 West Big Beaver Road, Suite 700, Troy, MI 48084, USA, Rs.30.00 Lakhs)
27. Study and Modeling of Gas Processing Plant at Uran (ONGC, Rs.6.70 Lakhs)
28. Surface energy Modification of SMC subtrates using RF Plasma (CSP Plastics, TROY, MICHIGAN, USA, Rs.6.00 Lakhs)
29. Survey of Biogas Plants in West-Bengal (West-Bengal Renewable Energy Agency, Rs.2.50 Lakhs)
30. Technical Support and guidance to Improve Quality of Lead Acid Battery (QLAB) (M/S Bright Solar Ltd., Rs.0.00 Lakhs)
31. Testing & prototype manufacturing of composite products. (Various Organizations, Rs.5.00 Lakhs)
32. Training Programme on Pultrusion Technology with Introduction to other Fabrication Method. (Zoom Developers, Rs.0.60 Lakhs)
33. Verification of Bag Filter System at M/S Maithan Ispat Ltd. (M/S Maithan Ispat Ltd., Orissa, Rs.1.48 Lakhs)

Patents (filed / granted)

1. A Cheap and simple attachment to orient any object to desired direction accurately under microscope for efficient viewing and imaging.
2. A method for generation of meso scale surface patterns with different feature height in polymer films Coated on Planar and non planar Surfaces using a single stamp
3. A Novel Set up for Spinning Polymeric Hollow Fiber Membrane
4. A process for enzymatic hydrolysis of cellulosic biomass for bioethanol production
5. A process for ionic liquid based catalytic conversion of cellulose to fuel products
6. Clay Isocyanate nano dispersions and polyurethane nanocomposite produced there with.
7. Clays as cell openers in polyurethane foams
8. Creation of Complex micropatterns with flexible stamp
9. Design of a laterite based arsenic filter for domestic and community scale
10. Development of high capacity and cost effective arsenic adsorbent using modified laterite
11. Development of Vehicle Structure to Withstand Blast Loading
12. Electric field assisted membrane separation of pectin
13. Generation of Submicron to Macroscopic Patterns and Objects by Successive Miniaturization Using Shrinkable Materials and Articles Formed Thereby
14. Implantable Device having Antimicrobial coating and a method of Manufacturing the same
15. Membrane based water-extraction of polyphenols from green tea leaves
16. Micro and sub micro patterning of soft solids and articles formed thereby

17. Process for recovery of inorganic chemicals from kraft black liquor
18. Production of organic fertilizer from tannery effluent
19. Reticulated vitreous carbon with controlled pore size and enhanced electrical conductivity from open cell polyurethane foam precursors containing montmorillonite based clays
20. Vaginal Microencapsulated Effervescent Contraceptive and its delivery system

Visits Abroad by Faculty Members

1. Meikap, Bhim Charan - Chemical Congress (Dhaka, Bangladesh,) Dec 25-28, 2012
2. Meikap, Bhim Charan - Conference (Bangkok, Thailand,) Jan 25-27, 2013
3. Chakraborty, Jayanta - AIChE Annual meeting (Pittsburgh, USA,) 7 days
4. DasGupta, Sunando - Research (International Centre for Theoretical Physics (ICTP), Italy,) May 15 - June 9, 2012
5. Meikap, Bhim Charan - Chair a Sesssion of ICCE 2011 (ETH Zurich, Switzerland,) September 11-15, 2011
6. Meikap, Bhim Charan - Chair a Session of IWA Conf. on Wastewater Purification and Reuse (TEI, Crete, Greece,) March 28-30, 2012
7. Meikap, Bhim Charan - Chair a Session of International Workshop on Environmental Engineering and Technology (IWEET 2011) (Kunming University of Science and Technology, China,) July 23-24, 2011
8. Meikap, Bhim Charan - 14th Asia Pacific Confederation of APCChE 2012 (NUS, Singapore,) February 21-24, 2012
9. Sarkar, Debasis - Attending Conference (Pittsburgh, PA, USA,) Oct 27 - Nov 3, 2012
10. Chakrabarty, Saikat - For research collaboration with Prof. Chris Somerville (Director, Energy Biosciences Institute, UCB) (University of California Berkeley,) 1-7 July 2012
11. Chakrabarty, Saikat - To attend European Symposium on Computer-aided Process Engineering (London, UK,) 17-20 June, 2012

Invited Lectures by Faculty Members

1. Soft Patterning of Polymer Films *by* Mukherjee, Rabibrata (National Workshop on Soft Matter, Institute of Chemical Technology Mumbai)
2. Patterning of Polymer Films *by* Mukherjee, Rabibrata (Indo-US Workshop on Fabronics: Micro and Nano Scale Dynamics ◆◆?, BESUS)
3. Soft Nano Patterning of Polymer Films *by* Mukherjee, Rabibrata (QIP Short Term Course on Nanotechnology for electronic & photonic applications, Material Science Centre, IIT Kharagpur)
4. Soft Patterning of Polymer Thin Films: Some Recent Developments *by* Mukherjee, Rabibrata (Department of Chemical Engineering, IIT Guwahati)
5. Potential Applications of Soft Lithographically Patterned Surfaces in Biological Applications *by* Mukherjee, Rabibrata (Indo-US Workshop on Fabronics for Healthcare, CSIR – CMERI Durgapur)
6. Substrate surface energy effects in nanoparticle stabilized polymer thin films *by* Mukherjee, Rabibrata (Indian Science Congress, presented in Materials Science Section, Kolkata)
7. Pollution Control in Sponge Iron Plants *by* Meikap, Bhim Charan (NIT Karnataka)
8. Dust Emission Control *by* Meikap, Bhim Charan (Haldia Institute of Technology, Haldia)
9. Tailor made membranes and their applications *by* De, Sirshendu (Materials Science IIT Kharagpur)
10. Development of low cost arsenic filter *by* De, Sirshendu (Deartment of Chemical Engg., IIT Bombay)
11. Modeling approaches of pressure driven membrane separation processes *by* De, Sirshendu (Deartment of Chemical Engg., IIT Bombay)
12. Polymeric membranes: Tailor-made casting and their applications *by* De, Sirshendu (Deartment of Chemical Engg., IIT Bombay)
13. Synthesis of a PhD thesis/report/research paper: A tutorial *by* De, Sirshendu (Institute of Chemical Technology, Mumbai)
14. Development of low cost arsenic filter *by* De, Sirshendu (Institute of Chemical Technology, Mumbai)

15. Modeling of pressure driven membrane separation processes *by* De, Sirshendu (Institute of Chemical Technology, Mumbai)
16. Casting and spinning of polymeric membranes and their applications *by* De, Sirshendu (Institute of Chemical Technology, Mumbai)
17. Synthesis and traits of an Engineering Doctoral Thesis: A tutorial *by* De, Sirshendu (Dept Chemical Engg., IIT Kharagpur)
18. Indigenous technology for membrane casting, spinning and arsenic removal *by* De, Sirshendu (KIIT, Bhubaneswar)
19. Technology innovations: Membrane casting, applications and arsenic removal from groundwater *by* De, Sirshendu (Department of Chemical Engg., IIT Kanpur)
20. Fluoride removal by cellulose acetate-alumina mixed matrix membrane *by* De, Sirshendu (NGRI, Hyderabad)
21. Innovative technology for membrane casting, applications and arsenic removal *by* De, Sirshendu (IICT Hyderabad)
22. Membrane synthesis, application and novel technology for arsenic removal *by* De, Sirshendu (Materials Science IIT Kharagpur)
23. Polymeric membrane casting and applications *by* De, Sirshendu (CGCRI, Kolkata)
24. Low cost laterite based arsenic filter at community scale *by* De, Sirshendu (UNICEF, Kolkata)
25. Functional polymeric membranes and their applications *by* De, Sirshendu (Indian Science Congress, Kolkata)
26. Casting and spinning of polymeric membranes with applications and laterite based arsenic filter *by* De, Sirshendu (NIST, Behrampur)
27. Rajiv Gandhi Institute of Technology, Kottayam, Kerala *by* De, Sirshendu (Functional membranes and their applications)
28. Casting of polymeric membranes and their applications *by* De, Sirshendu (VNIT, Nagpur)
29. Treatment of textile and tannery effluent using membrane separation processes *by* De, Sirshendu (College of Engg, Kolkaghat)
30. Casting and spinning of polymeric membranes and their applications *by* De, Sirshendu (IISC, Bangalore)
31. Mixing Effects in Cellulosic Fuel Production *by* Chakrabarty, Saikat (University of California Berkeley)
32. Optimally mixed reactors for Cellulosic Fuel Production *by* Chakrabarty, Saikat (Joint Bioenergy Institute, California)

Books Published

1. Amiya K Jana: 1. Process Simulation And Control Using Aspen *published by* Prentice-Hall, 2nd Edn. (2012)
2. S. De and S. Mondal: Micellar enhanced Ultrafiltration: A surfactant mediated membrane based process *published by* CRC Press (2012)
3. S. De, S. Banerjee and S. Mondal: Stevioside: Separation and purification using membrane technology *published by* Wiley Blackwell (0)

Papers Published in Journals

1. A combined complete pore blocking and cake filtration model for steady state electric field assisted ultrafiltration *By* B. Sarkar and S. De *AIChE J* 58 (5) , 1453-1446 (2012)
2. A Kinetic Study of Pyrolysis and Combustion of Microalgae *Chlorella vulgaris* using Thermogravimetric Analysis *By* Ankit Agrawal and Saikat Chakraborty *Bioresource Technology* 128, pp 72-80 (2013)
3. A molecular simulation based assessment of binding of metal ions on micelles *By* S. Mondal, S. Ghosh and S. De *Langmuir* 28 (31), 11329 (2012)
4. A New Internally Heat Integrated Dividing Tower Batch Distillation: Feasibility and Analysis *By* Gyanprakash, M., and Jana, A. K. Under Review (2013)
5. A Novel Combination of Internal and External Thermal Integrations in Batch Distillation Columns *By* Jana, A. K., Maiti, D., and Samanta, A. N. Under Review (2013)
6. A novel gas-liquid contactor for chemisorption of CO₂, *By* A.Kundu, J. K Basu and G. Das *Sepn. Purif. Technol* 94, 115-123 (2012)

7. A novel method for spinning hollow fiber membrane and its application for treatment of turbid water By B. K. Thakur and S. De *Separation & Purification Technology* 93, 67-74 (2012)
8. A Novel Multi-stage Vapor Recompression Reactive Distillation with Intermediate Reboilers By Kumar, V., Kiran, B., and Jana, A. K. *AIChE Journal* 59, 761-771 (2013)
9. Accurate and efficient solution of bivariate population balance equations using unstructured grids By M Singh, J Chakraborty, J Kumar, R Ramakanth *Chemical Engineering Science* (2013)
10. Air Dense Medium Fluidized Bed for Dry Beneficiation of Coal : Technological Challenges for Future By Mohanta, Satyabrata , A. B. Daram, C. S. Rao, S. Chakraborty , B. C. Meikap *Particulate Science and Technology* 31, 16-27 (2013)
11. Alumina carbon composit as an effective adsorbent for removal of methylene blue and alizarin red-s from aqueous solution By Pranay A. Raut, Monal Dutta, Sonali Sengupta, Jayanta Kumar Basu *Indian Journal of Chemical Technology* 20, 15-20 (2013)
12. An Ideal Internally Heat Integrated Batch Distillation with a Jacketed Still with Application to a Reactive System By Jana, A. K., and Maiti, D. Under Review (2013)
13. Analysis of oxide and vanadate supports for catalytic hydro- gen combustion: Kinetic and mechanistic investigations By Deshpande PA, Poliseti S, Madras G. *AIChE J* 58:932-945 (2012)
14. Appilication of synthesised nano-crystalline titanium silicate-1 catalyst in the oxidation of thiophene in a kinetic approach By Uttam Maity, Rosilda Selvin, Jayanta Kumar Basu, Sonali Sengupta *Journal of nanoengineering and nanomanufacturing* 2, 241-247 (2012)
15. Application of artificial neural network for prediction of Pb(II) adsorption characteristics By Monal Dutta and Jayanta Kumar Basu *Environ. Sci. Pollut. Res.* published online (2012)
16. Application of artificial neural network for the decolorization of direct blue 86 by using microwave assisted activated carbon By Monal Dutta and Pinaki Ghosh, Jayanta Kumar Basu *J. Taiwan Inst. Chem. Engg.* 43,879-888 (2012)
17. Application of Statistical Design Approach to Develop A Low Cost Activated Carbon for the Removal of Textile Dye Direct Blue-86 By Jayanta Kumar Basu and Monal Dutta *Int. J. Env. and Dev.*, 8 (2) ,217-239 (2012)
18. Application of Synthesized Nano-crystalline Titanium Silicate-1 Catalysti n the Oxidation of Thiophene in a Kinetic Approach. By Uttam Maity, Rosilda Selvin, Jayanta Kumar Basu, and Sonali Sengupta *J. Nanoeng. Nanomanuf* 2, 241-247 (2012)
19. Assessment of the Implementation of Vapor Recompression Technique in Ba By Jana, A. K., and Maiti, D. *Separation and Purification Technology* 107, 1-10 (2013)
20. Batch adsorption of fluoride ions onto microwave assisted activated carbon derived from Acacia Auriculiformis scrap wood By Monal Dutta, Tanumoy Ray, Jayanta Kumar Basu *Archives of Applied Science Research* 4 (1), 536-550 (2012)
21. Catalyst-free direct growth of InP quantum dots on Si by MOCVD: a step toward monolithic integration By Nripendra N. Halder, Souvik Kundu, Rabibrata Mukherjee, D. Biswas and Pallab Banerji *J. Nanoparticle Res.* 14, 1279 (2012)
22. Charge storage properties of InP quantum dots in GaAs metal-oxide-semiconductor based nonvolatile flash memory devices By Souvik Kundu, Nripendra N. Halder, Pranab Biswas, D. Biswas, Pallab Banerji, Rabibrata Mukherjee and S. Chakraborty *Appl. Phys. Lett.* 101, 212108 (2012)
23. Chemical modification of HZSM-5 for selective methylation By Sonali Sengupta, Debarpita Ghosal, Jayanta Kumar Basu and Prashant Kamble *International Journal of Chemical Reactor Engineering* 1542, 6580 (2012)
24. Clarification of stevia extract by ultrafiltration: Selection criteria of the membrane and effects of operating conditions By Chhaya, S. Mondal, G. C. Majumdar and S. De *Food and Bioproduct Processing* 90, 525-532 (2012)
25. Control of Morphology in Pattern Directed Dewetting of a Thin Polymer Bilayer By Sudeshna Roy, Debarati Biswas, Namrata Salunke, Ajit Das, Pavanaphani Vutukuri, Ravdeep Singh and Rabibrata Mukherjee* *Macromolecules* 46, 935 - 938 (2013)
26. Creating Self-Organized Submicrometer Contact Instability Patterns in Soft Elastic Bilayers with a Topographically Patterned Stamp By Rabibrata Mukherjee* and Ashutosh Sharma* *ACS Appl. Mater. Interfaces* 4, 355 - 362 (2012)
27. Creation of Self - Organized Complex Meso Patterns in Sol - Gel Thin Films by Confined Capillary Dynamics By Rimlee Deb Roy, Devika Sil, Sunirmal Jana, Nandini Bhandaru, Shyamal Kumar Bhadra, Prasanta Kumar Biswas and Rabibrata Mukherjee* *Industrial Engineering Chemistry & Research* 51, 9546 - 9553 (2012)

28. Development of Bio/Blood Compatible Polypropylene through Low Pressure Nitrogen Plasma Surface Modification By Gomathi, N, Rajsekhar R, Rajesh Babu R, Debashis Misra, Neogi S. *Materials Science & Engineering* 32 (2012)
29. Development of new rate model for the adsorption of direct blue 86 By Monal Dutta and Jayanta Kumar Basu *Der Chemica Sinica* 3(3),576-581 (2012)
30. Dispersed ZrO₂ nanoparticles in MCM-48 with high adsorption activity By Deshpande PA, Poliseti S, Jyothi D, Chandrasekaran S, Madras G. *AIChE J* 58, 2987 (2012)
31. Dynamic Performance of a Vapor Recompressed Batch Distillation: Impact on Energy Consumption, Cost, CO₂ Emission and Closed-loop Control By Babu, G. U. B. and Jana, A. K. *Under Review* (2013)
32. Effect of chain stiffness on phase behavior of polymer/nanoparticle blends near substrate By Venkat Padmanabhan, Amalie L. Frischknecht, and Michael E. Mackay *Macromolecular Theory and Simulations* 21 (2), 98-105 (2012)
33. Effect of grafting on nanoparticle segregation in polymer/nanoparticle blends near a substrate By Venkat Padmanabhan *Journal of Chemical Physics* 137 (9), 094907 (2012)
34. Effects of Process variables and additives on mustard Oil Hydrolysis by Porcine Pancreas Lipase By D. Goswami, S. De and J. K. Basu *Brazilian J. Chem. Eng.* 29(3),449 -460 (2012)
35. Electric field assisted Cross flow Micellar Enhanced Ultrafiltration for removal of Naphthenic acid By B. V. Ganesh, A. Maiti, S. Bhattacharjee and S. De *Separation & Purification Technology* 98, 36-45. (2012)
36. Electrowetting of Evaporating Extended Meniscus By S. Bhaumik, S. Chakraborty and S. DasGupta *Soft Matter* 8, 11302–11309 (2012)
37. Experimental and kinetic modeling of As(V) and As(III) adsorption on treated laterite using synthetic and contaminated groundwater: Effects of phosphate, silicate and carbonate ions By Abhijit Maiti, Jayanta Kumar Basu and Sirshendu De *Chem. Eng. J.* 191, 1– 12 (2012)
38. Experimental investigation of effect of a surfactant to increase cooling of hot steel plates by a water jet By Soumya Mohapatra, S. V. Ravikumar, A. Verma, Surjya K. Pal and Sudipto Chakraborty *Trans. ASME J. Heat Transfer* 135 (3) (2013)
39. Experimental study and optimization of air atomized spray with surfactant added water to produce high cooling rate By Soumya Mohapatra, S. V. Ravikumar, S. Andhare, Sudipto Chakraborty and Surjya K. Pal *Journal of Enhanced Heat Transfer, Beggel House* 19 (5) pp 397 - 408 (2012)
40. Fe-Al nano-oxide prepared by sol-gel method using precursor of HCl digested liquid fraction of laterite: Arsenic adsorption performance By A. Maiti, J. K. Basu and S. De *International Journal of Nanoscience* 10, 1173-1177 (2012)
41. Fixed-bed column study of textile dye direct blue 86 by using a composite adsorbent By Monal Dutta, Jayanta Kumar Basu, Md Hassan Faraz, Nitin Gautam and Adarsh Kumar *Arch. Appl. Sci. Res* 4 (2),882-891 (2012)
42. Gas sparged gel layer controlled cross flow ultrafiltration: A model for stratified flow regime and its validity By V. Khetan, A. Srivastava, S. De *Membrane Water Treatment: An International Journal* 3 (3), 151-16 (2012)
43. Gel controlling dead-end membrane filtration: Theory revisited By S. Banerjee, S. Mondal and S. De *Separation & Purification Technology* 99, 77-85 (2012)
44. Generation of uniform small bubbles and hydrodynamic characterization of a bubble column with high pressure jet sparger By S. Lahore, S. Chakraborty, B. C. Meikap *Korean Journal of Chemical Engineering, Springer* 29 (6), pp 724-730 (2012)
45. High Gain Observer based Extended Generic Model Control with Application to a Reactive Distillation Column By Banerjee, S., and Jana, A. K. *Under Review* (2013)
46. Identification of fouling mechanism during ultrafiltration of stevia extract By S. Mondal, Chhaya, S. De *Food and Bioprocess Technology* 6, 931-940 (2013)
47. Identification of surfactant additives for modification of crystal morphology: the significance of the threshold concentration. By Nitish Singh, Ribani Yeri and Jayanta Chakraborty *Industrial and engineering chemistry research* Submitted (2013)
48. Improving Energy Efficiency and Cost-Effectiveness of Batch Distillation for Separating Wide Boiling Constituents. II. Internal versus External Heat Integration By Khan, M. M. N., Jana, A. K., and Maiti, D. *Under Review* (2013)

49. In situ synthesis of ammonia by catalytic hydrolysis of urea in the presence of aluminium oxide for safe use of ammonia in power plants for flue gas conditioning. By P. Gangadharan, J. N. Sahu, J. N. Sahu, B. C. Meikap *Journal of Chemical Technology and Biotechnology* 86 (10), 1282-1288 (2011)
50. Influence of Substrate Wettability on the Morphology of Thin Polymer Films Spin-Coated on Topographically Patterned Substrates By Sudeshna Roy, Khalid Jamal Ansari, Surendra Sasi Kumar Jampa, Pavanaphani Vutukuri, and Rabibrata Mukherjee* *ACS Appl. Mater. Interfaces* 4, 1887 - 1896 (2012)
51. Intensified Thermal Integration in Batch Reactive Distillation By Maiti, D., and Jana, A. K. *Applied Energy* 103, 290-297 (2013)
52. Lipase Application in Oil Hydrolysis with Case Study on Castor Oil: A Review By D. Goswami, J. K. Basu and S. De *Critical Reviews in Biotechnology* 33, 81-96 (2013)
53. Lithographic Tuning of Polymeric Thin Film Surfaces by Stress Relaxation By Nandini Bhandaru, Sudeshna Roy, Suruchi, G. Harikrishnan, and Rabibrata Mukherjee* *ACS Macro Letters* 2, 195 - 200 (2013)
54. Lithographic tuning of polymeric thin film surfaces by stress relaxation By Bhandaru N, Roy S, Suruchi, Harikrishnan G, Mukherjee R *ACS Macro Letters* 2, 195-200 (2013)
55. Locomotion of *C. elegans*: a piecewise- harmonic curvature representation of nematode behavior By Venkat Padmanabhan, Zeina S. Khan, Deepak E. Solomon, Andrew Armstrong, Kendra P. Rumbaugh, Siva A. Vanapalli, and Jerzy Blawdziewicz *PLoS One* 7 (7), e40121 (2012)
56. Mass transport in a porous microchannel for non-Newtonian fluid with electrokinetic effects By S. Mondal and S. De *Electrophoresis* 34 (5) 668-673 (2013)
57. Measuring the Three-Dimensional Morphology of Crystals Using Regular Reflection of Light By Jayanta Chakraborty, Debasis Sarkar, Abhishek Singh, and Aman Kumar Bharti *Crystal Growth and Design* 12, 6042-6049 (2012)
58. Mixing Effects on the Kinetics of Enzymatic Hydrolysis of Avicel for Batch Production of Cellulosic Ethanol By Ashwin Gaikwad and Saikat Chakraborty *Industrial & Engineering Chemistry Research* 52 (11), 3988-99 (2013)
59. Modeling diffusion in foamed polymer nanocomposites By Sandeep I, Ranaprathapan A. D, Singh S. N, Harikrishnan. G *ChemPhysChem* 14(6), 1190-1196 (2013)
60. Modeling for dye removal using polyelectrolyte enhanced ultrafiltration By S. Mondal, H. Ouni, M. Dhahbi and S. De *Journal Hazardous Materials*, 229-230, 381-389 (2012)
61. Modeling of cross flow ultrafiltration of Stevia extract in a rectangular cell By S. Mondal, Chhaya, S. De *Journal of Food Engineering* 112, 326-337 (2012)
62. Multiscale Analysis of Hypoxemia in Methemoglobin Anemia By Tanmoy Sanyal and Saikat Chakraborty *Mathematical Biosciences* 241 (2), 167-180 (2013)
63. Multiscale Analysis Of Simultaneous Uptake Of Two Reactive Gases In The Human Lungs And Its Application To Methemoglobin Anemia By Tanmoy Sanyal and Saikat Chakraborty *Computers & Chemical Engineering* 10.1016/j.compchemen (2013)
64. Multiscale Modelling and Simulation of simultaneous Oxygen and Nitric Oxide uptake in the Human Lungs and its application to Methemoglobin Anemia By Tanmoy Sanyal and Saikat Chakraborty *Computer-aided Chemical Engineering* 30, pp 1372-76 (2012)
65. Optimal hydrolysis of mustard oil to erucic acid: A biocatalytic approach By Debajyoti Goswami, Jayanta Kumar Basu and Sirshendu De *Chem. Eng. J.* 181- 182, 542- 5 (2012)
66. Optimization of Process Parameters for Water Extraction of Stevioside using Response Surface Methodology By Chhaya, G. C. Majumdar, S. De *Separation Science & Technology* 47, 1-9 (2012)
67. Optimization Process of an Air Dense Medium Fluidized Bed Separator for Treating High-Ash Non-Coking Coal By Mohanta, S., S. Chakraborty , B. C. Meikap *Mineral Processing and Extractive Metallurgy Review* 34, 240-248 . (2013)
68. Optimization process of an air dense medium fluidized bed separator for treating high-ash non-coking coal By Mohanta, S., S. Chakraborty , B. C. Meikap *Mineral Processing and Extractive Metallurgy Review, Taylor & Francis* 34, pp 240-248 (2013)
69. Ordered to Isotropic Morphology Transition in Pattern Directed Dewetting of Polymer Thin Films on Substrates with Different Feature Height By Sudeshna Roy and Rabibrata Mukherjee* *ACS Appl. Mater. Interfaces* 4, 5375 - 5385 (2012)
70. Passive mixing of co-flowing slugs in grooved microchannels. By Hasnain, S., Kumar, A., Ganguly, S. *Microsystem Technologies* 19:17-24 (2013)

71. Prediction of Adsorption Capacity of Microwave Assisted Activated Carbon for the Decolorization of Direct Blue 86 by using Artificial Neural Network By Monal Dutta, Pinaki Ghosh and Jayanta Kumar Basu *Asian J. Appl. Sci.* 5(6), 414-422 (2012)
72. Prediction of Phase Equilibria of Hlx System using Artificial Neural Network: Experimental Verification By Mandal, S., and Jana, A. K. *International Journal of Hydrogen Energy* 38, 1244-1250 (2013)
73. Primary clarification of stevia extract: A comparison between centrifugation and microfiltration By Chhaya, G. C. Majumdar, S. De *Separation Science & Technology* 48, 113-121. (2013)
74. Production of Hydrogen by Steam Reforming of Methane over Alumina Supported nano-NiO/SiO₂ Catalyst By Barnali Bej, Narayan C. Pradhan and Swati Neogi *Catalysis Today* 207, 28-35 (2013)
75. Production of bio-energy from composite waste materials made of corn waste, spent tea waste and kitchen waste co-mixed with cow-dung By U. S. Munda, L. Pholane, D D Kar and B. C. Meikap *International Journal of Green Energy* 9, 361-375 (2012)
76. Real-time Prediction of Vapor-Liquid Equilibria of Hlx System by a Simple Thermo-Physical Model By Mandal, S., and Jana, A. K. Under Review (2013)
77. Reducing Total Annualized Cost and CO₂ Emissions in Batch Distillation: Dynamics and Control By Babu, G. U. B., and Jana, A. K. *AIChE Journal* DOI 10.1002/aic (2013)
78. Removal of Cadmium from Aqueous Streams by Zeolite Synthesized from Fly Ash By Gaurav Das, Narayan C. Pradhan, G. M. Madhu and H. S. Preetham *Journal of Materials and Environmental Science* 4(3), 410-419 (2013)
79. Role of Particle Capture Velocity to Control Fugitive Dust Emission by Bag Filter System By A. K. Swar, B. C. Meikap. *South African Journal of Chem. Engg* 16(1), 63-75 (2011)
80. Selective extraction of (-)-epigallocatechin gallate from green tea leaves using two stage infusion coupled with membrane separation By A. Kumar, B. K. Thakur and S. De *Food and Bioprocess Technology* 5, 2568-2577., (2012)
81. Sherwood number in flow through parallel porous plates (microchannel) due to pressure and electroosmotic flow By N. Vennela, S. Mondal, S. Bhattacharjee and S. De *AIChE J* 58 (6), 1693-1703 (2012)
82. Statistical optimization for the prediction of ibuprofen adsorption capacity by using microwave assisted activated carbon By Monal Dutta, Pinaki Ghosh and Jayanta Kumar Basu *Arch. Appl. Sci. Res* 4 (2), 1053-1060 (2012)
83. Studies on factors influencing fly ash resistivity from electrostatic precipitator with reference to India By C. R. Mohanty, A. K. Swar. B. C. Meikap, J. N. Sahu *Journal of Scientific and Industrial Research* 70 (9), . 795-803 (2011)
84. Surface-induced phase behavior of polymer/nanoparticle blends with attractions By Amalie L. Frischknecht, Venkat Padmanabhan, and Michael E. Mackay *Journal of Chemical Physics* 136 (16), 164904 (2012)
85. Thermally Activated Control of Microfluidic Friction By R. Dey, S. DasGupta, and S. Chakraborty *Appl. Phys. Lett* 101, 134101-5 (2012)
86. Ultra fast cooling of a hot steel plate by using high mass flux air atomized spray By Soumya Mohapatra, S V Ravikumar, Surjya K Pal and Sudipto Chakraborty *Steel Research International, Wiley* 84 (3), pp 229 - 236 (2013)

Papers Presented in Conferences

1. A Review on the Catalytic Aspects of Methane Reforming., By Sudip Das and Narayan C. Pradhan, *CHEMCON-2012*, NIT, Jalandhar, (2012)
2. Augmenting Capillary Suction by Electrowetting for Cooling Applications, By Soubhik Kumar Bhaumik, Sunando DasGupta, *16th International Heat Pipe Conference*, Lyon, France, (2012)
3. Determination of Metastable Zone Width for Anti-Solvent Crystallization of Glycine, By Debasis Sarkar and K Krishna Chaitanya, *AIChE Annual Meeting 2012*, Pittsburgh, PA, USA, (2012)
4. Development and characterisation of nano-crystalline TS-1 catalyst for oxidative removal of organic sulfur compounds, By Uttam Maity, J.K. Basu, Sonali Sengupta, *Chemcon, 2012*, NIT, Jalandhar, Punjab, (2012)
5. Energy efficiency of gas liquid mixing in a downflow bubble column, By S. Mazumder, G. Kundu, and D. Mukherjee., *International Symposium on Reactor Engineering, ISCRE 22*, Maastricht, The Netherlands., (2012)

6. H-ZSM-5 and its Nb-modified form: A comparison of different properties and catalytic activity towards toluene methylation reaction with ceramic foam as catalyst support, *By* Debarpita Ghosal, Jayanta Kumar Basu, Sonali Sengupta, *3rd "Nirma University International Conference on Engineering NUICONE-2012, Ahmedabad, Gujarat, (2012)*
7. Hydrodynamic study of column flotation cell using different minerals, *By* Kamalendu Bhunia, G. Kundu and D. Mukherjee, *65th Annual Session of the Indian Institute of Chemical Engineers - CHEMCON 2012, Jalandhar, Punjab, India, (2012)*
8. In situ combustion for improved recovery of hydrocarbon, *By* Ruidas B.C., Ganguly S., *Chemcon 2012 organized by IChE Doaba Regional centre & Dept. of Chemical Engineering, NIT Jalandhar, NIT Jalandhar, (2012)*
9. Kinetics of Thermo-chemical Conversion of Microalgae *Chlorella vulgaris* for Bio-oil production, *By* Saikat Chakraborty and Ankit Agrawal, *International Conference on Algal Biorefinery, IIT Kharagpur, (2013)*
10. Measurement of Crystal Morphology: A New Method Based on Reflection of Light from Crystal Faces, *By* Jayanta Chakraborty, Debasis Sarkar, and Abhishek Singh, *AICHE Annual Meeting 2012, Pittsburgh, PA, USA, (2012)*
11. Mixing Effects on the conversion of Cellulose to Fuel Products, *By* Saikat Chakraborty, *International Symposium on New Horizons in Bioenergy Research, IIT Kharagpur, (2013)*
12. Multiscale Modeling of Methemoglobin Anemia induced by Reactive Uptake of NO in the Human Lungs, *By* Tanmoy Sanyal and Saikat Chakraborty, *International Conference on Mathematics and Chemical Kinetics in Engineering, IIT Madras, (2013)*
13. Multiscale Modelling and Simulation of simultaneous Oxygen and Nitric Oxide uptake in the Human Lungs and its application to Methemoglobin Anemia, *By* Tanmoy Sanyal and Saikat Chakraborty, *22nd European Symposium on Computer-aided Process Engineering, London, UK, (2012)*
14. Prediction of Ibrufen Adsorption Capacity Through Artificial Neural Network., *By* Monal Dutta and Jayanta Kumar Basu, *CHEMCON-2012, NIT Jalandhar, Punjab, (2012)*
15. Preparation and Characterization of Mullite support Silica coated Membranes for Hydrogen Separation., *By* V Saikumar Reddy, R. Ram Naresh, Narayan C. Pradhan and Sudipto Chakraborty, *CHEMCON-2012, NIT, Jalandhar, (2012)*
16. Removal of Phenol Based Effluent by Photocatalytic Reaction using Titania-Zirconia Composite Catalyst, *By* Lipika Das and Jayanta Kumar Basu, *CHEMCON-2012, NIT Jalandhar, Punjab, (2012)*
17. Studies on Steam Reforming of Methane to Produce Synthesis Gas over Nano-Ni/MWCNT Catalyst, *By* Sudip Das and Narayan C. Pradhan, *CHEMCON-2012, NIT, Jalandhar, (2012)*
18. Study of Column flotation Cell: Metallurgical performance and gas holdup characteristics, *By* Kamalendu Bhuyina, G. Kundu and D. Mukherjee, *XXVI International Mineral processing Congress - IMPC 2012, New Delhi, India, (2012)*
19. Two phase dispersion in a downflow bubble column, *By* S. Mazumder, G. Kundu and D. Mukherjee, *ACHEMA 2012, Frankfurt, Germany, (2012)*

Department of Chemistry

Head

Prof. Dipak Ranjan Mal

Professors

Bandyopadhyay, Sanjoy	<i>Ph.D.(IISc Bangalore)</i> , Protein folding, Theoretical and Computational Chemistry, Hydration properties of bio-molecules, Self-assembled molecular films at interfaces, Protein-ligand complexes, Phospholipid membranes, Cyclodextrin-guest interaction
Basak, Amit	<i>Ph.D.(Cal),D.Phil.(Oxon)</i> , Bioorganic/Medicinal Chemistry/Selective protein capture/Synthetic Chemistry
Bhattacharjee, Manish	<i>Ph.D.(NEHU)</i> , Catalysis, Synthetic Inorganic Chemistry
Chattaraj, Pratim Kumar	<i>Ph.D.(IIT Bombay)</i> , Density functional theory, Chemical reactivity, ab initio calculations, Quantum chaos, Aromaticity in metal clusters
Dasgupta, Swagata	<i>Ph.D.(RPI New York)</i> , Protein-protein and Protein-small molecule interactions
Dey, Joykrishna	<i>Ph.D.(Kanpur)</i> , Molecular Self-assembly, Colloidal Drug Delivery Systems, Polymer-Surfactant Interactions, Organogels and Hydrogels of Low-Molecular-Weight Amphiphiles
Hajra, Saumen	<i>Ph.D.(Pune Univ)</i> , Catalytic Asymmetric Reactions, Organocatalysis, Total Synthesis of Biologically Active Compounds
Mal, Dipak Ranjan	<i>Ph.D.(Missouri)</i> , Benzannulation and Hauser annulation, Lateral lithiation Michael-initiated ring closure, Total synthesis of bioactive natural products: angucyclines anthracyclines carbazoles quinonoids, Oxidative dearomatization
Pal, Tarasankar	<i>Ph.D.(Burdwan Univ.)</i> , <i>D.Sc.(Visva Bharati Uni)</i> ,
Pathak, Tanmaya	<i>Ph.D.(Uppsala Sweden)</i> , Carbohydrates. Nucleosides. Heterocycles. Carbocycles. Dinucleosides as Rnase A inhibitors
Pramanik, P	<i>Ph.D.(IIT Kharagpur)</i> , Nanoscience and Nanotechnology, Material Chemistry
Ray, Debashis	<i>Ph.D.(Jadavpur Univ)</i> , Solution coordination chemistry crystallization and crystal structures., Coordination driven supramolecular metal complex chemistry., Cluster coordination chemistry., Synthesis of ferromagnetic and single molecule magnetic metal complexes., Interaction of DNA and cleavage by heterometallic alkali metal-transition metal clusters., Self-assembly of dinuclear copper(II) motifs and mechanochemical core conversions.
Ray, Jayanta Kumar	<i>Ph.D.(Calcutta Univ)</i> , Synthetic Organic Chemistry
Sarkar, Nilmoni	<i>Ph.D.(Jadavpur Univ)</i> , Characterization of Ionic Liquid containing Microemulsion, Photoinduced electron transfer in RTIL and RTIL containing confined media., Photophysics and Photodynamics of biologically relevant molecules, Excited state intramolecular proton transfer in organized assemblies, Characterization of surface active ionic liquids
Sarkar, Tarun Kumar	<i>Ph.D.(Calcutta Univ)</i> , Synthetic Organic and Organometallic Chemistry
Srivastava, Suneel Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Inorganic material and polymer nanocomposites
Taraphder, Srabani	<i>Ph.D.(IISc Bangalore)</i> , Theoretical Physical Chemistry, Computer Simulation of Charge Transfer Processes

Associate Professors

Biradha, Kumar	<i>Ph.D.(Hyderabad)</i> , Gas sorption studies, Supramolecular Chemistry, Crystal Engineering, Polymorphism, Coordination Polymers, Structural Chemistry, Solid state reactions, Soft materials
Mahanty (Pathak), Amita	<i>Ph.D.(IIT Kharagpur)</i> , Synthesis and Characterization of Inorganic Nanomaterials
Nanda, Samik	<i>Ph.D.(IICT-Hyderabad)</i> , Asymmetric synthesis, Biocatalysis, Total synthesis of natural products
Raj, C Retna	<i>Ph.D.(M.K Univ Madurai)</i> , Optical and electrochemical sensors, Electrocatalysis and fuel cell, Inorganic multifunctional nanomaterials, Energy conversion and storage devices

Assistant Professors

Ayyappan, Anoop	<i>Ph.D.(Univ. of Hyderabad)</i> , Computational Chemistry, Reaction Mechanisms, QM/MM studies of biological systems, Computational Photochemistry
Dhara, Dibakar	<i>Ph.D.(Osmania Univ. Hyderabad)</i> , Synthetic Polymer Chemistry, Colloids and Nanomaterials, Block Copolymers and Gels, Physical Chemistry of Macromolecules
Halder, Mintu	<i>Ph.D.(IACS Kolkata)</i> , Experimental Physical Chemistry, Biophysics, Photophysics of Nano-materials, Spectroscopy
Mani, Ganesan	, Anion Receptors, Organometallic Chemistry
Mishra, Sabyashachi	<i>Ph.D.(Tech. Univ., Munich, Germany)</i> , Theory of Relativistic Vibronic Coupling in Molecular Physics, Relativistic Quantum Chemistry, Molecular Structure and Spectroscopy in Excited States, Reactive Processes in Biology, Network Dynamics in Bio-(chemical/physical) processes
Nag, Ahindra	<i>Ph.D.(Jadavpur Univ)</i> , Seventy papers published, Natural Product Enantioselective synthesis of compounds
Patra, Sanjib Kumar	<i>Ph.D. (IIT Kanpur)</i> , Inorganic Chemistry, Functional Polymer Chemistry, Organometallic Chemistry, Materials Chemistry
Rajakumar Ananthkrishnan	<i>Ph.D.(M.K.Univ., Madurai)</i> , Analytical Methods for the detection of heavy metals/ROS in AOP., Preparation of Visible light Active Photocatalysts (hybrid/nanomaterials), Visible light Photocatalysis of Selective Organic Reactions/Photodegradation of Organics.
Singh, N D Pradeep	<i>Ph.D.(Madras Univ.)</i> , Synthesis of fluorescent photoremovable protecting group and its application for biological studies, Synthesis of Photoacid generators for the development of photoresponsive polymer surface, Single component photoresponsive nanocarrier for drug delivery, Photoremovable protecting group for controlled release of agrochemicals, Visible light induced photocatalysis for organic transformation, Visible light activated DNA cleaving agent

Faculty Appointments

Sanjib K Patra	Assistant Professor
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Faculty Retirement

T K Sarkar	Professor
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Faculty Re-employment

T K Sarkar	Professor
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Brief Description of on-going activities

The department is actively pursuing research embracing both basic and applied aspects of chemistry. Currently, the department is handling over 40 sponsored projects from various agencies. The department is equipped with various sophisticated instruments: Bruker APEX SMART CCD Single Crystal diffractometer, Bruker AVANCE II 400 MHz and AVANCE II 200 MHz spectrometer, Shimadzu DT-40 model 883 IR Spectrometer, PW-17291710 X-Ray Diffractometer, Cyclic Voltammeter Model P9001, Chrompac Gas Chromatograph and JASCO DIP 370 digital polarimeter, Spex Fluorolog 3 fluorimeter, and a Perkin Elmer C, H, N Analyzer. Active research in synthetic chemistry is underway on the design and synthesis of novel enediynes as DNA cleaving agents, on the total synthesis of bioactive natural products such as anthracyclines, angucyclines, furocoumarins, indole alkaloids, furoterpenes, lactams and heterocyclic quinonoids. Enzyme mediated synthesis and a substrate analog approach to determine the active site of enzymes is being studied as is the enzyme inhibition approach to drug design. Isolation and characterization of an angiogenic protein is in progress with an aim to determine the specificity by studying several dinucleotide substrates. Supramolecular chemistry relating to thia azarenes and redox switchable receptors is in progress. Development of highly selective and green methodologies based on organometallic, radical and chiron approaches. In the area of catalysis, micellar, zeolite, and bimetallic catalysts are being developed. Early transition metal based catalysts for aqueous medium polymerization and cationic ruthenium complexes as catalysts for various organic transformations. Synthesis of advanced functional materials for fuel cell application. Electrocatalyst for oxygen reduction and methanol oxidation. Development integrated biosensing platform clinical and environmental applications. In the field of Bioinorganic chemistry, research is being pursued on electron transfer processes with emphasis in dioxygen chemistry. Active research is also underway in the areas of crystal engineering and electroanalytical chemistry. Notable research on various aspects of nanochemistry involve development of metal nanoparticles, nanocrystalline ferrites, ceramics and composites. Materials for high temperature and superconducting applications and solar energy conversion is also underway. Catalysis involving photoactivation techniques and micelle stabilized nanoparticles are currently being investigated to solve environmental pollution related problems. Colloidal systems, especially vesicles formed by chiral surfactants and their potential applications in i.v drug delivery are being studied. Active research is also being carried out on the development of hydrogels and organogels for applications in transdermal drug delivery. Investigation of solution properties of a number of polymers using a variety of tools is in progress. Studies are also being conducted on the aggregation behavior of polyelectrolytes and block copolymers in aqueous media. Capillary electrophoresis is being employed for the chiral separation of drugs. Photophysical studies of different organic molecules in pure solution and organized assemblies are being investigated using fluorescence spectroscopy. Theoretical physical chemistry in the department includes studies relating to density functional theory, chemical reactivity, ab initio calculations, quantum chaos; chemical reaction dynamics in liquids and biological macromolecules, molecular modeling and computer simulation studies of complex biological systems such as: membranes, proteins etc. Protein structure analysis on the loop regions in proteins is also underway.

Thrust Areas

1. Biomimics; Transition Metal Cluster Complexes; Structural Coordination Chemistry; Ferromagnetic Metal Complexes; Drug Design; Chemical and Electrochemical Sensors; Molecular Modeling; Protein Folding & Enzymatic Catalysis; Spectroscopy of Assemblies; Green Chemistry; Nanochemistry; Catalysis.

Lectures by Visiting Experts

1. Application of Biocatalysis in organic synthesis *by* Dr. Anju Chadha (IIT-Madras)
2. Development of New Synthetic Methods en route to Some Glycosidase Inhibitors *by* Prof. Y. D. Vankar (Dept. of Chemistry, IIT-Kanpur)
3. NHC-Organocatalysis in Novel C-C and C-Heteroatom Bond-forming Reactions *by* Dr. G. Vijay Nair (NIIST-Trivandrum)
4. Mechanotransduction through force-modulated ligand binding affinity *by* Dr. Sudipta Samanta (MIT, Cambridge, Massachusetts, USA)

5. Stereoselective synthesis of bioactive aza-, carbo- and oxacyclic compounds via enolate anions and dianions *by* Prof. Manas Ghorai (Dept. of Chemistry, IIT-Kanpur)
6. Understanding and Interfering with the Conformational Transitions of the Full-Length Amyloid- β Monomer: Insights from Computer Simulations *by* Dr. Neelanjana Sengupta (Physical Chemistry Divn, NCL Pune)
7. From Peptidomimetics to Proteins: Conformational Analysis of Peptoids and Profiling of Aldehyde Decarboxylase *by* Dr. Bishwajit Paul (University of Michigan, Department of Chemistry)
8. Functionalized Nanomaterials for Supramolecular Application *by* Dr. Mrinmoy De (Northwestern University)
9. Synthetic Approaches to the Architecturally Interesting Indole Based Alkaloids via Intramolecular-Dehydrogenative-Coupling (IDC) *by* Dr. Alakesh Bisai (IISER-Bhopal)
10. Contemporary developments in nonadiabatic chemical dynamics *by* Prof. Susanta Mahapatra (University of Hyderabad)
11. Functionalized microporous and mesoporous materials for high CO₂ uptake *by* Prof. Asim Bhowmick (IACS-Kolkata)
12. Energetics of charge transport processes in trans-membrane proteins: A molecular perspective *by* Dr. Suman Chakraborty (NCL, Pune)
13. Computational Investigations into Small Molecule Activation *by* Dr. Kumar Vanka (NCL, Pune)
14. Microcapsules and Micropumps: A Chemical Approach for Designing Microscale Container/ Devices *by* Dr. Debabrata Patra (Pennsylvania State University, USA)
15. Synthetic Studies of Macrolides and Their Analogues *by* Dr. P. Srihari (IICT-Hyderabad)
16. Study of C-X (X= H, O, F, S) Bond Activation by Ir and Pt Complexes and Related Chemistry *by* Dr. Sabuj Kundu (Dept. of Chemistry, University of North Carolina, USA)
17. Chemical Biology: applying chemistry to biological questions *by* Dr. Devraj Subramanian ()
18. Development of fluorogenic bio-application based on supramolecular interactions *by* Dr. Kalyan K. Sadhu (Institut de Science et d'Ingénierie Supramoléculaires, Université de Strasbourg, France)
19. Application of Self-Assembly Strategies in Artificial Photosynthesis *by* Dr. Kingsuk Mahata (Institut für Organische Chemie, Universität Würzburg, Am Hubland, 97074 Würzburg, Germany)
20. From Peptidomimetics to Transition Metal Catalysis *by* Dr. Prantik Maity ()
21. Rational Design of Potential Apoptotic and Antioxidant Agents: Structure-Activity Correlation Studies *by* Dr. Krishna Pada Bhabak (University of Oxford, U. K.)
22. Cellular targets of Guanidino phthalocyanines *by* Dr. BYR Vummidi (University of Zurich, Switzerland)
23. Programming Stereochemistry at all Carbons of Cyclohexane Rings: Total Synthesis of Structurally Complex Alkaloids *by* Prof. G. Pandey (NCL-Pune)
24. Effect of Azobenzene Isomerisation on DNA Stability *by* Dr. Mithun Biswas (Institut für Physikalische u. Theoretische Chemie, Goethe-Universität, Max-von-Laue-Str.7)
25. New Approaches to Asymmetric Nucleophilic Catalysis and the Development of Redox-Neutral Reaction Cascades *by* Dr. Chandra Kanta De (Michigan Max-Planck-Institut für Kohlenforschung, Germany)

Doctoral and MS Degrees Awarded

1. Mohammed Ikbal 08CY9709 : Newly Developed Nonionic Photoacid Generators and Their Applications(Ph.D.)
2. Vishal Govind Rao 09CY9721 : Preparation and Characterization of Different Microheterogeneous Systems Containing Ionic Liquids: Investigations of Various Physical and Dynamical Phenomena(Ph.D.)
3. Raudra Tapash Dey 05CY9708 : On the [3+2] Annulation of Allylsilanes with N-Phenyltriazolinedione: Enantio- and Diastereoselective Synthesis of Urazoles and cis-1,3-Diaminocyclitols(Ph.D.)
4. Atanu Singha Roy 08CY9724 : Interactions of dietary polyphenols and their copper complexes with serum albumins: Effects of glycation and binding with DNA(Ph.D.)
5. Debjit Das 08CY9725 : Heterobimetallic Catalysis within Palladium-Tin Domain: Carbon-Carbon & Carbon-Heteroatom Bond Formation(Ph.D.)
6. Sourov Ghosh 08CY9716 : Synthesis and Electrocatalytic Activity of Pt and Pt-Pd Bimetallic Nanoparticles for Low Temperature Fuel Cell Applications(Ph.D.)

7. Nilanjana Chowdhury 08CY9708 : Design and Development of Small Organic Molecules as Photoinduced DNA Cleaving Agents(Ph.D.)
8. Raju Karmakar 07CY9725 : Total synthesis of chlorocyclinone A, the first PPAR-gamma antagonist of natural origin; unfolding of a Prins reaction, and synthesis of pestacin methyl ethers(Ph.D.)
9. Snigdha Roy 07CY9401 : Bergman Cyclization: Effect of π -Stacking on the Reactivity of Ene-diyne-Nucleobase Conjugates, Synthesis of Artificial Peptide Cleaving Agents and Helicenes(Ph.D.)
10. Priyanka Bolel 07CY9719 : Studies on Electrostatic Interaction of Food Dyes with Serum Albumins and Small Molecular Assemblies(Ph.D.)
11. Nandan Jana 08CY9702 : Synthetic Studies Towards Resorcylic Acid Lactones (RALs) and Stagonolides(Ph.D.)
12. Biswajit Panda 07CY9706 : Catalysis by Gold Alone and in Combination with Palladium: Methodology Developments and Total Synthesis of Natural Products(Ph.D.)
13. Ramkinkar Santra 07CY9709 : Crystal Engineering Studies towards Template Directed Solid State Photodimerization of Olefins and Host-Guest Chemistry(Ph.D.)
14. Sarifuddin Gazi 08CY9403 : Visible Light Assisted Photodegradation of Organic Dyes and Photocatalysis of Selective Organic Reactions(Ph.D.)
15. Ashok Kumar Das 07CY9711 : Chemical and electrochemical synthesis of Au nanoparticles and their electroanalytical applications(Ph.D.)
16. Suman Samai 07CY9715 : Supramolecular Materials Based on Hydrogen Bonding and Coordination Bonding: Cocrystals, Coordination Polymers and Gels(Ph.D.)
17. Arnab Kumar Maity 08CY9712 : Electrophilic Activation across a Multimetallic Piano-Stool Iridium-Tin Catalyst: Synthetic and Mechanistic Studies(Ph.D.)
18. Tapas Guchhait 08CY9713 : Dipyrrolyl- and Tripyrrolylmethane Based Macrocyclic, Macrobicyclic and Acyclic Receptors for Anions(Ph.D.)
19. -Dicarbonyl and Related Reagents: Synthesis of C-Nucleosides, Densely Functionalized Carbocycles and Complex Polyheterocyclic Scaffolds(Ph.D.)
 βChinmoy Manna 08CY9703 : Functionalization of Carbohydrates with

Member - Professional Bodies

1. Mahanty (Pathak), Amita, *Member* - Asian Nanoscience and Nanotechnology Association (ANNA) and Academy of Nanoscience and Nanotechnology (ANN)
2. Bandyopadhyay, Sanjoy, *Life Member* - Chemical Research Society of India
3. Raj, C Retna, *Member* - Electrochemical Society
4. Raj, C Retna, *Life Member* - Chemical Research Society of India
5. Raj, C Retna, *Life Member* - Indian Society of Electroanalytical Chemistry
6. Rajakumar Ananthkrishnan, *Life Member* - Society of Environmental Chemistry and Allied Sciences (SECAS)
7. Rajakumar Ananthkrishnan, *Life Member* - Materials Research Society of India (MRSI)
8. Dhara, Dibakar, *Life Member* - Society of Polymer Science, India
9. Dhara, Dibakar, *Life Member* - Materials Research Society of India
10. Patra, Sanjib Kumar, *Life member* - Chemical Research Society of India
11. Patra, Sanjib Kumar, *Member* - Canadian Society of Chemistry
12. Patra, Sanjib Kumar, *Member* - American Chemical Society
13. Sarkar, Tarun Kumar, *Life member* - CRSI
14. Srivastava, Suneel Kumar, *Life member* - Materials Research Society of India
15. Srivastava, Suneel Kumar, *Life member* - Academy of Microscopic Science and Technology
16. Srivastava, Suneel Kumar, *Life member* - Society for Polymer Science, India
17. Mal, Dipak Ranjan, *Life member* - Indian Chemical Society
18. Mal, Dipak Ranjan, *Member* - American Chemical Society
19. Mal, Dipak Ranjan, *Life member* - Chemical Research Society of India
20. Chattaraj, Pratim Kumar, *Member* - Key Opinion Leaders Panel, Nature Collections (Chemical Sciences, Nature Publishing Group), Macmillan Scientific Communications, UK
21. Chattaraj, Pratim Kumar, *Member* - Nomination Council for the Russnano Prize
22. Chattaraj, Pratim Kumar, *Member: Nomination Panel* - Ahmed Zewail Prize, Chemical Physical Letters, Elsevier

23. Chattaraj, Pratim Kumar, *Member: Nomination Panel* - Tetrahedron Young Investigator Award, Elsevier
24. Ray, Debashis, *Life Member*. - Indian Chemical Society, Kolkata.
25. Ray, Debashis, *Life Member*. - Indian Association for the Cultivation of Science, Kolkata.
26. Ray, Debashis, *Life Member*. - Chemical Research Society of India (CSRI), Bangalore
27. Dasgupta, Swagata, *Member 2010* - National Screening Committee for Fulbright-Nehru Doctoral and Professional Research Fellowships
28. Dasgupta, Swagata, *Life Member* - Chemical Research Society of India
29. Taraphder, Srabani, *Life Member* - Chemical Research Society of India
30. Dey, Joykrishna, *Life Member* - Indian Society for Radiation and Photochemical Sciences
31. Dey, Joykrishna, *Life Member* - Society for Polymer Science, India
32. Dey, Joykrishna, *Life Member* - Chemical Research Society of India
33. Sarkar, Nilmoni, *life member* - Indian Association for the Cultivation of Science
34. Sarkar, Nilmoni, *life member* - Chemical Research Society of India

Member - Editorial Board

1. Bandyopadhyay, Sanjoy (0) *Editorial Board member* - Mediterranean Journal of Chemistry
2. Bandyopadhyay, Sanjoy (0) *Editorial Board member* - Philosophic Nature
3. Biradha, Kumar (2010) *EBM* - Crystal Growth & Design Network
4. Biradha, Kumar (2010) *Editor* - Crystal Engineering Book Series
5. Biradha, Kumar (2010) *Co-editor* - Acta Crystallographica, section E
6. Biradha, Kumar (2011) *Editorial Advisory Board Member* - New Journal of Chemistry
7. Biradha, Kumar (2007) *Editorial advisory board member* - The Open Inorganic Chemistry Journal
8. Biradha, Kumar (2008) *Editorial Board Member* - New Journal of Chemistry
9. Chattaraj, Pratim Kumar (2010) *Member, Editorial Board* - Indian Journal of Chemistry - Section A
10. Chattaraj, Pratim Kumar (2010) *Member, Editorial Board* - Computational and Theoretical Chemistry
11. Dasgupta, Swagata (0) *Editorial Board Member* - Protein and Peptide Letters
12. Dasgupta, Swagata (0) *Reviewer* - PROTEINS: Structure, Function and Bioinformatics
13. Dasgupta, Swagata (0) *Reviewer* - Journal of Molecular Structure
14. Mahanty (Pathak), Amita (2012) *Member* - International Journal of NanoScience and Nanotechnology (IJNN)
15. Mahanty (Pathak), Amita (2012) *Member* - International Journal of Nanotechnology and Applications (IJNA)
16. Mal, Dipak Ranjan (2012) *Member, Editorial Board* - Organic Chemistry International
17. Raj, C Retna (2012) *Editorial Board member* - E-Journal of Chemistry
18. Rajakumar Ananthakrishnan (2011) *Member of Editorial Advisory Board* - International Journal of Environmental Sciences
19. Rajakumar Ananthakrishnan (2011) *Associate Editor* - Environmental Chemistry Letters (Springer)
20. Rajakumar Ananthakrishnan (2013) *Associate Editor* - World Research Journal of Analytical Chemistry
21. Srivastava, Suneel Kumar (0) *Editorial Advisory Board Member* - Recent Patents on Nanotechnology
22. Srivastava, Suneel Kumar (0) *Associate Editor* - Nanoscience and Nanotechnology Letters
23. Srivastava, Suneel Kumar (0) *Editor* - Journal of Nano Energy and Power Research

Awards & Honours

1. Biradha, Kumar (2013) *Associate Editor, Crystal Growth & Design, ACS*
2. Biradha, Kumar (2012) *Associate Editor, Crystal Growth & Design, ACS*
3. Raj, C Retna (2013) *CRSI Bronze Medal*
4. Chattaraj, Pratim Kumar (2013) *Elected member, National Council for the Infosys Prize*
5. Chattaraj, Pratim Kumar (2013) *Highest Citation Award (on the papers published in one year), IIT Kharagpur*
6. Mishra, Sabyashachi (2012) *INSPIRE Faculty award of DST India*

7. Mishra, Sabyashachi (2012) *Ramanujan Fellowship of DST India*

Sponsored Research Projects

1. A step towards the utilization of D-fructose, L-sorbose and 1,5-anhydro-D-fructose as chiral pools in synthetic chemistry. (CSIR, New Delhi, Rs.23.00 Lakhs)
2. A Value Chain on Aloe Vera Processing (ICAR, NAIP, Rs.385.00 Lakhs)
3. Application of high resolution NMR spectroscopy in complex chemical and biochemical systems (DST, Rs.205.00 Lakhs)
4. Artificial Protein cleaving agents (CSIR, Rs.16.00 Lakhs)
5. Asymmetric Syntheses of γ -Butyrolactone Natural Products (CSIR, New Delhi, Rs.26.28 Lakhs)
6. • Theoretical Modelling of the Role of Hydration in Proton Transfer Processes in Proteins (CSIR, Rs.8.39 Lakhs)
7. CATALYTIC HYDROLYSIS BY A MICROBIAL ENZYME WITH POTENTIAL OF AN ANTIBIOTIC TARGET (DST India, Rs.73.00 Lakhs)
8. Characterization of IonicLiquid containing microheterogeneous media and investigation of ultrafast processes in these confined media (CSIR, Rs.19.67 Lakhs)
9. Computational studies of gold catalyzed cycloaddition reactions (ISIRD, Rs.5.00 Lakhs)
10. COOPERATIVITY IN LIGAND MIGRATION IN A DIMERIC MICROBIAL HEMOGLOBIN (ISIRD, SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
11. Crystal Engineering Studies on Derivatives Containing 2° Amide and Pyridine Functional Groups: Design and Applications (CSIR, Rs.11.00 Lakhs)
12. Cyclic and Acyclic Vinyl Sulfones Constructed on Chiral Appendages: Reactive Carbohydrates as Versatile Intermediates for Accessing Chirally Pure Hete (DST, Rs.24.00 Lakhs)
13. Design of Organic-Inorganic Hybrid Materials and Exploration of their Gas Adsorption and Desorption Properties (DST, Rs.49.00 Lakhs)
14. Design of Organic-Inorganic Hybrid Materials with Porous and/or Chiral Properties (DST, Rs.18.72 Lakhs)
15. Development and applications of polyolefin and polyolefinic rubber /hybrid filler nanocomposites (CSIR, Rs.17.92 Lakhs)
16. Development of Polypyrrole/Disinfectant Nanocomposites for Effective Purification of Water (DRDO, Rs.5.16 Lakhs)
17. Development of Silicon Carbide supported Graphene-Polymer Nanocomposites for EMI Shielding Applications (DRDO, Rs.47.79 Lakhs)
18. Droplet based screening of amyloid beta peptide aggregation (DBT, Rs.49.50 Lakhs)
19. Epoxy reinforced inorganic material filled organic polymer composites in tribological applications (DRDO, Rs.24.56 Lakhs)
20. Evaluation of Potential Applications in Drug Delivery of Some Novel pH-Responsive, Biocompatible, and Biodegradable Hydrophobically Modified Polyme (DST, Rs.35.00 Lakhs)
21. Fatty Acid Biosynthesis Inhibitors (DBT, Rs.70.00 Lakhs)
22. Garratt Braverman Rearrangement (DST, Rs.37.00 Lakhs)
23. Generation and Application of Photoaddressed surfaces (DST, Rs.50.00 Lakhs)
24. Gold catalyzed organic transformations: Applications to the synthesis of bioactive natural products (DST, Rs.29.16 Lakhs)
25. Hydroxymethylated cycloalkenones privileged small molecular chiral templates for asymmetric synthesis of bio-active natural products (DST, Rs.35.00 Lakhs)
26. Hydroxynitrile lyase biocatalysis: production of active pharmaceutical intermediates by substrate engineering (DBT, New-Delhi, Rs.20.00 Lakhs)
27. HYPOMAP new materials for hydrogen powered mobile applications (DST, Indo-Eu, New Delhi, Rs. 47.12 Lakhs: IIT KGP Share, Rs. 47.12 Lakhs, Rs.47.12 Lakhs)
28. Identification of potential biomarkers for the diagnosis of endometriosis: a proteomics approach (DST, Rs.25.20 Lakhs)
29. Investigations on development and properties of poly-olefinic elastomer nanocomposites (CSIR, Rs.13.50 Lakhs)
30. MULTIFUNCTIONAL MATERIALS FOR ELECTROCHEMICAL ENERGY CONVERSION AND STORAGE DEVICES (DST, Rs.46.75 Lakhs)
31. New Functional group photolithography methods to pattern self assembled monolayers (SAM's) (DST, Rs.17.00 Lakhs)

32. New photoremovable protecting groups for self assembled monolayers (SAM's) (ISIRD, SRIC, Rs.5.00 Lakhs)
33. Olefin polymerization by organolanthanide catalysts (CSIR, New Delhi, Rs.15.70 Lakhs)
34. Organocatalytic and Enantioselective 1,2-Halofunctionalization of Alkenes (Department of Science & Technology (DST), New Delhi, Rs.23.90 Lakhs)
35. PHOTOELECTROCHEMICAL SENSORS BASED ON FUNCTIONAL MATERIALS (CSIR, Rs.22.28 Lakhs)
36. Pi-pi interactions in cyclization reactions (DST, Rs.21.00 Lakhs)
37. Role of water in predicting the protein folding-unfolding pathways: Computer simulation studies (Department of Science and Technology, Rs.26.65 Lakhs)
38. Sesqui and Di Terpenoids by Palladacycles (DST, Rs.25.00 Lakhs)
39. Sir. J. C. Bose Fellowship (DST, New Delhi, Rs.68.00 Lakhs)
40. Studies on Palladium Catalysed Heck Reactions (CSIR, Rs.15.00 Lakhs)
41. Studies on Protein-Metal Colloid Interactions by Raman Spectroscopy (DST (Co-PI), Rs.20.96 Lakhs)
42. Studies on Sonophotocatalytic Degradation of Persistent Organic Pollutants (POPs) in Aqueous System (SERB (DST), Rs.26.90 Lakhs)
43. Study of the behaviour of Oil Spill on Ocean surface through laboratory experiments, modeling and Satelite Images (MOES, Govt. of India, Rs.78.00 Lakhs)
44. Synthesis and Characterization of Functional Organometallic Polymers (ISIRD, SRIC, IIT-KGP, Rs.0.00 Lakhs)
45. Synthesis and Characterization of Main-Chain Metal-Containing Conjugated Functional Polymers for Application in Alternative Energy Source (DST, Rs.23.00 Lakhs)
46. Synthesis and structural characterization of organolanthanide complexes and their applications (DST, New Delhi, Rs.39.40 Lakhs)
47. Synthesis of Inorganic Fullerene-type MoS₂ and WS₂ Nanoparticles and Study of their Lubrication Properties (ISIRD, IIT Kharagpur, Rs.4.15 Lakhs)
48. Synthetic studies towards small ring macrolides (CSIR, Rs.16.00 Lakhs)
49. Total synthesis of chlorocyclinones PPAR antagonists of natural origin (CSIR, New Delhi, Rs.18.00 Lakhs)
50. Total synthesis of mayamycin, an angucyline C-glycoside (DST, New Delhi, Rs.51.00 Lakhs)
51. Trivalent and divalent lanthanide complexes bearing macro-cyclic ligands for activation of CO₂ and catalyses (DST, Rs.40.00 Lakhs)

Consultancy Projects

1. Asymmetric Synthesis of Novel Heterocarbocycles (TCG LifeSceineces: Chembiotek, Saltlake, Kolkata, Rs.6.61 Lakhs)

Patents (filed / granted)

1. Metal nanoparticle based sensors for hydrogen peroxide, uric acid and cholesterol and the preparation thereof
2. Polyunsaturated fatty acids from animal visera
3. Pyrrole-based Diphosphines and their Oxidized Products
4. Ultra-sensitive simultaneous electrochemical determination of arsenic, mercury and copper

Visits Abroad by Faculty Members

1. Chattaraj, Pratim Kumar - Inv. Speaker, International congress, TACC 2012 (Theory and application of computational chemistry) (Pavia, Italy,) 2-7, September 2012
2. Biradha, Kumar - Visting Sceintist (University of South Florida, USA,) 23-05-2012 to 09-06-2012
3. Chattaraj, Pratim Kumar - Inv. Speaker, ACS symposium on Theory and Simulation in Energy and Fuel Production and Utilization (Philadelphia, PA, USA,) August 19-23rd, 2012
4. Chattaraj, Pratim Kumar - Invited speaker, BITs 2nd New Energy Forum (NEF-2012) (Guangzhou, Guangdong Province, China,) Oct.19-21, 2012
5. Ayyappan, Anoop - Visiting Professor (Univeristy of Muenster,) 5 weeks

6. Biradha, Kumar - Conference, invited lecture (Madrid, Spain,) Aug 19-30
7. Biradha, Kumar - Conference, Invited Lecture (Bologna, Italy,) Jan 19-21
8. Biradha, Kumar - GRC conference (GRC conference, Waterville Valley, New Hampshire, USA,) 10th to 15th June, 2012

Invited Lectures by Faculty Members

1. substrate binding and cleavage by beta-secretase *by* Mishra, Sabyashachi (IIT Guwahati (Theoretical Chemistry Symposium))
2. Amino acid based hydrophobically modified polyelectrolytes: Self-aggregation, Drug Solubilization, a *by* Dey, Joykrishna (Hyderabad)
3. Hydrophobically modified amphiphilic copolymers for encapsulation and sustained released of camptoth *by* Dey, Joykrishna (IIT Guwahati)
4. Design, Synthesis, and In vitro Evaluation of PEG Based Amphiphilic Copolymers as Nanocarriers for *by* Dey, Joykrishna (Vidyasagar University)
5. Nanomedicine: General Concept *by* Dey, Joykrishna (SVRM College, Guntur, AP)
6. CRSI Borze Medal Lecture: A journey to explore the electrochemical applications...materials *by* Raj, C Retna (BHU Varanasi)
7. In search of ideal cathodic catalyst for direct methanol fuel cell *by* Raj, C Retna (BHU Varanasi)
8. Functional nanomaterials for sustainable energy conversion *by* Raj, C Retna (Hyderabad, ELAC 2013)
9. The art of biosensing with functional nanomaterials *by* Raj, C Retna (CLRI, Chennai)
10. Noble metal nanostructure: A versatile tool for bio and environmental analysis *by* Raj, C Retna (Pondichery University)
11. Introduction to Computational Chemistry *by* Ayyappan, Anoop (Normala College, Muvattupuzha, Kerala)
12. Introduction to Computational Chemistry *by* Ayyappan, Anoop (Sir Syed College, Thaliparamba, Kerala)
13. Survey of Computational Chemistry Methods *by* Ayyappan, Anoop (College of Engineering Kannur, Kerala)
14. Unfolding and Proton Transfer Paths in a Thermally Unstable Mutant of Human Carbonic Anhydrase II *by* Taraphder, Srabani (Theoretical Chemistry Symposium, IIT Guwahati)
15. Dynamics of Enzymatic Proton Transfer Reactions *by* Taraphder, Srabani (Indo-US Research Conclave of Indo-US Science & Technology Forum, Pune)
16. Recent Developments in Quantum Chemistry *by* Chattaraj, Pratim Kumar (Santiago, Chile.)
17. ACS Meeting on Theory and Simulation in Energy and Fuel Production and Utilization *by* Chattaraj, Pratim Kumar (Philadelphia, PA, USA)
18. Theory and application of computational chemistry *by* Chattaraj, Pratim Kumar (Pavia, Italy)
19. BITs 2nd New Energy Forum (NEF-2012) *by* Chattaraj, Pratim Kumar (Guangzhou, Guangdong Province, China)
20. Electronic Structure Approaches to Atoms, Molecules, Clusters and Solids *by* Chattaraj, Pratim Kumar (University of Hyderabad, Hyderabad, India)
21. New Emerging Trends in Chemistry *by* Chattaraj, Pratim Kumar (The IIS University, Jaipur)
22. INSPIRE Internship Program sponsored by DST, Govt. of India *by* Chattaraj, Pratim Kumar (School of Biotechnology, KIIT University, Bhubaneswar, India)
23. Recent Developments in Chemistry (Sponsored by three National Science Academies) *by* Chattaraj, Pratim Kumar (Visva-Bharati, Santiniketan, India)
24. 3rd DAE-BRNS Symposium on Atomic, Molecular and Optical Physics *by* Chattaraj, Pratim Kumar (IISER Kolkata, India)
25. Mapping the Materials Genome at the Center for Informatics and the School of Natural Sciences *by* Chattaraj, Pratim Kumar (Shiv Nadar University (SNU), Delhi, India)
26. INSA Lecture (100 Lectures by INSA Fellows) *by* Chattaraj, Pratim Kumar (North Bengal University, India)
27. Frontiers in Chemical Sciences-2013 *by* Chattaraj, Pratim Kumar (Vidyasagar University, Midnapore, India)
28. Hydrogen Bonded Coordination Polymers and Gels: Guest, Anion, and Cation Exchange Dynamics *by* Biradha, Kumar (GRC, Waterville Valley, New Hampshire, USA)
29. Crystal Engineering of Functional materials *by* Biradha, Kumar (ACS on Campus at IACS, Kolkata)

30. Chemoenzymatic synthesis of small ring carbocycles from α -substituted β -oxoesters by Nanda, Samik (Agra for NOST 2012 meeting)
31. Synthetic studies towards resorcylic acid lactones (RALs) by Nanda, Samik (IIT, Guwahati, NFCS symposium)
32. Scaffold oriented synthesis (SOS), a new strategy for accessing natural products and new chemotypes by Nanda, Samik (Dehradun, 78th Annual meeting of IAS)
33. Analytical Challenges in Unraveling the Environmental Proxies from the Antarctic Ice Samples by Rajakumar Ananthakrishnan (CECRI, Karaikudi)
34. Recent Trends in the Visible Light Assisted Photocatalysis for Environmental by Rajakumar Ananthakrishnan (CECRI (CSIR Laboratory), Karaikudi)
35. Palladium mediated transformations by Ray, Jayanta Kumar (International Symposium on Adv Chemistry)
36. Palladium mediated Cyclization and C-H activation by Ray, Jayanta Kumar (KIIT Bhubaneswar)
37. A Journey to the Centre of Ribonucleases by Pathak, Tanmaya (Jadavpur University (National Seminar on Recent Advances in Chemistry))
38. A Journey to the World of Modified Carbohydrates and Nucleosides by Pathak, Tanmaya (National Institute of Technical Teachers' Training and Research, Bhopal, Madhya Pradesh)
39. Molecules to Medicine by Pathak, Tanmaya (Two Day National Level Seminar on "Chemistry-from the Past to the Future" at Dumdum Motijhil College, Kolkata)
40. Medicinal Chemistry: An Overview by Pathak, Tanmaya (North Bengal University, West Bengal (organised by the Indian Academy of Sciences, Bangalore))
41. Click Chemistry by Pathak, Tanmaya (North Bengal University, West Bengal (organised by the Indian Academy of Sciences, Bangalore))
42. Organocatalysis with and for the natural products by Mal, Dipak Ranjan (Contai P. K. College)

Papers Published in Journals

1. 1,3,5-Trisubstituted benzenes as fluorescent photoaffinity probes for human carbonic anhydrase II capture By Partha Sarathi Addy , Baisakhee Saha , N. D. Pradeep Singh , Amit K. Das , Jacob T. Bush , Clarisse Lejeune , Christopher J. Schofield and Amit Basak *Chem Comm* 49, 1930-1932 (2013)
2. 1,3,5-Trisubstituted benzenes as fluorescent photoaffinity probes for human carbonic anhydrase II capture By Sarathi Addy, Partha Saha, Baisakhee Pradeep Singh, N. D. Das, Amit K. Bush, Jacob T. Lejeune, Clarisse Schofield, Christopher J. Basak, Amit *Chemical Communications* (2013), 49(19), 1930-1932 49, 1930 (2013)
3. 1-(Hydroxyacetyl)pyrene a new fluorescent phototrigger for cell imaging and caging of alcohols, phenol and adenosine. By Avijit Jana , Biswajit Saha , Mohammed Iqbal and Sudip Ghosh, N.D. Pradeep Singh *Photochem. Photobiol. Sci* 11, 1558-1566 (2012)
4. 3D-QSAR Studies on the Inhibitory Activity of Trimethoprim Analogues against Escherichia coli Dihydrofolate Reductase By R. Vijayaraj, M. L. V. Devi, V. Subramanian, P. K. Chattaraj *Chem. Biol. Drug Design.* 79, 935 (2012)
5. A (T-P) Phase Diagram of Hydrogen Storage on (N₄C₃H)₆Li₆ By R. Das, P. K. Chattaraj *J. Phys. Chem. A* 116, 3259 (2012)
6. A chemo-enzymatic route to differentially protected aryl naphthalenes By Panja, Arpita Ghosh, Deboki Basak, Amit *Bioorganic & Medicinal Chemistry Letters* 23, 893 (2013)
7. A convenient procedure for bis-esterification of cyclic anhydrides By Jana, A. K. Karmakar, R. Dinda, B. K. Mitra, P. Ghosh, K. Karmakar, R. Mal, D. *Journal of the Indian Chemical Society* 89, 975-979 (2012)
8. A facile Garratt-Braverman cyclization route to intercalative DNA-binding bis-quinones By Addy, Partha Sarathi Dutta, Sansa Biradha, Kumar Basak, Amit *Tetrahedron Letters* 53, 19 (2012)
9. A Novel Approach for Efficient Immobilization and Stabilization of Papain on Magnetic Gold Nanocomposites By B. Sahoo, S. K. Sahu, D. Bhattacharya, D. Dhara*, P. Pramanik* *Colloids and Surfaces B: Biointerfaces* 101, 280–289 (2013)
10. A novel approach for efficient immobilization and stabilization of papain on magnetic gold nanocomposites By Banalata Sahoo, Sumanta Kumar Sahu, Dipsikha Bhattacharya, Dibakar Dhara, Panchanan Pramanik *Colloids and Surfaces B: Biointerfaces* 101, 280-289 (2013)

11. A Photoswitchable and Photoluminescent Organic Semiconductor Based On Cation– π and Carboxylate–Pyridinium Interactions: A Supramolecular Approach By S. Roy, S. P. Mondal, S. K. Ray and Kumar Biradha *Angew. Chem. Int. Ed.* 51, 12012-12015 (2012)
12. A rapid room temperature chemical route for the synthesis of graphene: metal-mediated reduction of graphene oxide By R.S. Dey, S. Hajra, R.K. Sahu, C.R. Raj, M.K. Panigrahi *Chemical Communications* 48, 1787 (2012)
13. A rapid room temperature chemical route for the synthesis of graphene: metal-mediated reduction of graphene oxide By Dey, R. S. Hajra, S. Sahu, R. K. Raj, C. R. Panigrahi, M. K. *Chem. Commun.* 48, 1787 (2012)
14. A review on- emergence of antibiotic resistant Staphylococcus aureus and role of chitosan nanoparticle in drug delivery. By Chakraborty, S. P., Pramanik, P., Roy, S. *International Journal of Life Science and Pharma Research* 2(1), L96-L115 (2012)
15. A Tripyrrolylmethane-Based Macrobicyclic Triazacryptand: X-ray Structure, Size-Selective Anion Binding, and Fluoride-Ion-Mediated Proton–Deuterium Exchange Studies By Tapas Guchhait, Ganesan Mani, Carola Schulzke, and Anakuthil Anoop *Inorganic Chemistry* 51 (21) 11635–1164 (2012)
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17. Aerobic ligand-free domino Suzuki coupling—Michael addition reaction catalyzed by in situ generated palladium nanoparticles in water: a general method for the synthesis of benzo[c]chromene derivatives By Atiur Ahmed, Yasin Nuree, Jayanta K. Ray* *Tetrahedron Letters* 54,665 (2013)
18. Aggregation Behavior of Triton X-100 with a Mixture of Two Room Temperature Ionic Liquids: Can We Identify the Mutual Penetration of Ionic Liquids in Ionic Liquid Containing Micellar Aggregates? By V. G. Rao, S. Mandal, S. Ghosh, C. Banerjee, N. Sarkar *J. Phys. Chem. B*, 116, 13868–13877 (2012)
19. An alternate mode of binding of the polyphenol quercetin with serum albumins when complexed with Cu(II). By Singha Roy, A., Tripathy, D. R., Ghosh, A.K., Dasgupta, S. *J. Luminescence* 132, 2943–2951 (2012)
20. An interesting competition between Garratt-Braverman cyclization in bis-diene-allene sulfones: synergy between experiment and theory By Mondal, Sayantan Basak, Amit Jana, Saibal Anoop, Anakuthil *Tetrahedron* 68, 7202 (2012)
21. An interesting competition between 6π -electro- and Garratt–Braverman cyclization in bis-diene-allene sulfones: synergy between experiment and theory By Sayantan Mondal, Amit Basak, Saibal Jana, Anakuthil Anoop *Tetrahedron* 68, 7202-7210 (2012)
22. Anion Influence in Directing and Altering the Stereo Chemistry of the Double [2+2] Reaction of bis-pyridyl Dienes in their Silver Complexes: A Green Synthetic Route By R. Santra, M. Garai, D. Mondal and Kumar Biradha *Chem. Eur. J.* 19, 489-493 (2013)
23. Aqueous route for the synthesis of magnetite nanoparticles under atmospheric air: functionalization of surface with fluorescence marker By Nagaprasad Puvvada, Dhritabrata Mandal, Pravas Kumar Panigrahi and Amita Pathak *Toxicology Research* Vol 1, pp 196 (2012)
24. Asymmetric aldol approach to dibenzylbutyrolactone lignans: Synthesis of (–)-(7'S)-hydroxymatairesinol and (–)-(7'S)-hydroxyarctigenin By S. Hajra, A. Mandal, S. Hazra *Tetrahedron: Letters* 54, 2171 (2013)
25. Asymmetric syntheses of cochliomycin A and zeaenol By Nandan Jana and Samik Nanda *Eur. J. Org. Chem* 4313-4320 (2012)
26. Asymmetric total synthesis of (–)-rasfonin By Rajib Bhuniya and samik Nanda *Tetrahedron* 69, 1153-1165 (2013)
27. Asymmetric total synthesis of 5-epi-cochliomycin C By Jana, N. Das, D. Nanda Samik *Tetrahedron* 69 2900-2908 (2013)
28. Azido carbonyl compounds as DNA cleaving agents By Nilanjana Chowdhury, Sansa Dutta, S.karthik, Swagata Dasgupta, Anakuthil Anoop, N.D. Pradeep Singh *Journal of Photochemistry and Photobiology B: Biology* 115, 25-34 (2012)
29. Azido carbonyl compounds as DNA cleaving agents By Nilanjana Chowdhury, Sansa Dutta, S. Karthick, Anakuthil Anoop, Swagata Dasgupta, N.D. Pradeep Singh *Journal of Photochemistry and Photobiology B: Biology* 115, 25-34 (2012)
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31. Book Review of The Importance of Pi-Interactions in Crystal Engineering By Kumar Biradha *Cryst. Growth & Design*, 12, 5834 (2012)
32. Bromine-mediated cyclization of 1,4-diaryl buta-1,3-diyne to 1,2,3-tribromo- 4-aryl naphthalene By Raju Singha, Sukla Nandi, Jayanta K. Ray* *Tetrahedron Letters* 53,6531 (2012)
33. Bromodimethylsulfonium bromide as a potential candidate for photocatalytic selective oxidation of benzylic alcohols using oxygen and visible light By Sarifuddin Gazi and Rajakumar Ananthkrishnan *RSC Advances* (2) 7781 (2012)
34. C5Li7+ and O2Li5+ as Noble Gas Trapping Agents By S. Pan, M. Contreras, J. Romero, A. Reyes, G. Merino, and P. K. Chattaraj *Chem. Eur. J.* 19, 2322 (2013)
35. Catalytic and enantioselective synthesis of dopamine D1 antagonist, ecopipam By Hajra, S. Bar, S. *Tetrahedron: Asymmetry* 23, 151 (2012)
36. Characterization and scanning electron microscopic investigation of crosslinked freeze dried gelatin matrices for study of drug diffusivity and release kinetics By Thakur, Goutam Mitra, Analava Basak, Amit Sheet, Debdoot *Micron* 43, 311 (2012)
37. Charge based DFT Descriptors for Diels-Alder Reactions By K. Gupta, S. Giri and P. K. Chattaraj *J. Phys. Org. Chem.* 26, 187 (2013)
38. Chemical and Mechano Responsive Metal Organic Gels of bis(benzimidazole) Based Ligands with Cd(II) and Cu(II) Halide Salts: Self Sustainability, Gas and Dye Sorptions By S. Samai and Kumar Biradha *Chemistry of Materials* 24, 1165-1173 (2012)
39. ChemInform Abstract: [Ru(bpy)3]2+ Aided Photocatalytic Synthesis of 2-Arylpyridines via Hantzsch Reaction under Visible Irradiation and Oxygen Atmosphere. By Rajakumar Ananthkrishnan, Sarifuddin Gazi *ChemInform* 43 (2012)
40. Conjugate Addition of Indoles and Pyrroles to Dihydranonaphthalenes in Water: Synthesis of 3,4-Fused Tetrahydro- β -carbolines By Malhotra, R. Ghosh, R. Dey, T. K. Chakrabarti, S. Ghosh, R. Dutta, S. . Asijaa, S. Roy, S. Dutta, S. Basu,* S. Hajra,* S. *Eur. J. Org. Chem.* 772 (2013)
41. Controllable architecture of CdS and CuS by single-source precursor-mediated approach and their photocatalytic activity By Ashish K. Sahoo and Suneel K. Srivastava *Journal of Nanoparticle Research* 15, 1591-1606, (2013)
42. Crystal Engineering of Topochemical Solid State Reactions By Kumar Biradha and R. Santra *Chem. Soc. Rev.* 42, 950-967. (2013)
43. Cytotoxic and necrotic responses in human amniotic epithelial (WISH) cells exposed to organophosphate insecticide phorate By Saquib, Q., Musarrat, J., Siddiqui, M.A., Dutta, S., Dasgupta, S., Giesy, J.P., Al-Khedhairi, A.A. *Mutat. Res.: Genet. Toxicol. Environ. Mutagen.* 744, 125-134. (2012)
44. Design and Synthesis of Mixed Valent Coordination Networks Containing Pyridine Appended Terpyridyl, Halide, and Dicarboxylates By K. Banerjee and Kumar Biradha *Crystal Growth & Design* 12, 4264-4274 (2012)
45. Design, synthesis and crystal structure determination of dinuclear copper-based potential chemotherapeutic drug entities in vitro DNA binding, cleavage studies and an evaluation of genotoxicity by micronucleus test and comet assay By Farukh Arjmand, Mohd Muddassir, Yusra Zaidi and Debashis Ray *MedChemComm* 4, 394-405 (2013)
46. Development of 1-Hydroxy-2(1H)-quinolone based photoacid generators and photoresponsive polymer surfaces By Mohammed Iqbal, Rakesh Banerjee, Dibakar Dhara, Anakuthil Anoop, N. D. Pradeep Singh *Chemistry - A European Journal* 18, 11968, (2012)
47. Development of 1-Hydroxy-2(1H)-quinolone based photoacid generators and photoresponsive polymer surfaces By Mohammed Iqbal, Rakesh Banerjee, Dibakar Dhara, Anakuthil Anoop, N. D. Pradeep Singh *Chemistry - A European Journal* 18(38) 11968- (2012)
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49. Diiminic Schiff Bases: An Intriguing Class for Copper Nanoparticle Induced Fluorescence Study By Mainak Ganguly,[a] Anjali Pal,[b] Yuichi Negishi,[c] Tarasankar Pal *Chemistry--A European Journal* (2012)
50. Dimensional Control of Block Copolymer Nanofibers with a π -Conjugated Core: Crystallization-Driven Solution Self-Assembly of Amphiphilic Poly(3-hexylthiophene)-b-poly(2-vinylpyridine) By J. Gwyther, J. B. Gilroy, P. Rupar, D. J. Lunn, E. Kynaston, S. K. Patra, G. Whittell, M. A. Winnik, and I. Manners* *Chem. Eur. J (Accepted)* (2013)

51. Dinuclear and heptanuclear nickel(II) complexes: Anion coordination induced ligand arm hydrolysis and aggregation around a nickel(II) core By Alope Kumar Ghosh, Antonio Bauza, Valerio Bertolasi, Antonio Fontera and Debashis Ray *Polyhedron* 53, 32-39 (2013)
52. Dinucleosides with non-natural backbones: A new class of Ribonuclease A and Angiogenin inhibitors. By Debnath J., Dasgupta S., Pathak, T. *Chem. Eur. J.* 18, 1618 – 1627. (2012)
53. Divergent asymmetric synthesis of hexahydrobenzophenanthridine dopamine D1 agonists, A-86929 and dihydrexidine By R. Malhotra, S. Chakrabarti, A. Ghosh, R. Ghosh, T. K. Dey, S. Dutta, S. Dutta, S. Roy, S. Basu,* S. Hajra,* *Tetrahedron: Asymmetry* 24, 278 (2013)
54. Does Crystal or Gel Matters to Stereo Chemistry of a Reaction? Silver Complexation Promoted Solid-state [2+2] Reaction of an Unsymmetrical Olefin By S. Samai, P. Ghosh and Kumar Biradha *Chemical Communications (special issue on Emerging investigators 2013)* in press (2012)
55. Effect of Dispersion on the Diffusion Zone in Two-phase Laminar Flows in Microchannels. By Chakraborty D., Bose N., Sasmal S., Dasgupta S., Maiti T. K., Chakraborty S. DasGupta S. *Analytica Chimica Acta*, 710, 88-93. (2012)
56. Effect of Microsolvation on Hydrogen Trapping Potential of Metal Ions By R. Das, S. Bandaru, V. C Dmello and P. K. Chattaraj *Chem. Phys.* 415, 256 (2013)
57. Effect of temperature on morphology of triethanolamine-assisted synthesized hydroxyapatite nanoparticles By Nagaprasad Puvvada, Pravas Kumar Panigrahi, Himani Kalita, Keka R. Chakraborty, Amita Pathak *Applied Nanoscience* Vol 2 (2012)
58. Efficacy of highly water-dispersed fabricated nano ZnO against clinically isolated bacterial strains. By Shouvik Mitra, Prasun Patra, Sourov Chandra, Panchanan Pramanik, Arunava Goswami *Appl Nanosci* 2, 231-238 (2012)
59. Electrochemistry of surface wired cytochrome c and bioelectrocatalytic sensing of superoxide By Susmita Behera, Ramendra Sundar Dey, Mansa Kumar Rana and C. Retna Raj *J. Chemical Sciences* press (2013)
60. Evaluation of copper iodide and copper phosphate nanoparticles for their potential cytotoxic effect. By Dipranjan Laha, Debalina Bhattacharya, Arindam Pramanik, Chitta Ranjan Santra, Panchanan Pramanik, Parimal Karmakar *Toxicol. Res.* 1, 131-136 (2012)
61. Exploring the fluorescence switching phenomenon of curcumin encapsulated niosomes: in vitro real time monitoring of curcumin release to cancer cells By Nagaprasad Puvvada, Shashi Rajput, B. N. Prashanth Kumar, Mahitosh Mandal and Amita Pathak *RSC Advances* 3, 2553-2557 (2013)
62. Exploring the scope of Bergman Cyclization mediated cascade reaction of alkenyl enediyne: synthesis of [5]helicene and amino acid appended [4]helicenes By Roy, Snigdha Basak, Amit *Tetrahedron* 69, 2184 (2013)
63. Fabrication of Magnetic Mesoporous Manganese Ferrite Nanocomposites as Efficient Catalyst for Degradation of Dye Pollutants By B. Sahoo, S. K. Sahu, S. Nayak, D. Dhara, P. Pramanik* *Catalysis Science & Technology* 2, 1367–1374 (2012)
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71. Garratt-Braverman cyclization, a powerful tool for C-C bond formation By Mondal, Sayantan Mitra, Tapobrata Mukherjee, Raja Addy, Partha Sarathi Basak, Amit *Synlett* 23, 2582 (2012)
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73. Gold and Palladium Combined for the Sonogashira Coupling of Aryl and Heteroaryl Halides By Biswajit Panda, Tarun K. Sarkar *Synthesis* 45, 817 (2013)
74. Gold Catalysis: Regio- and Stereoselective Total Synthesis of Xyloketal D and G and the Related Natural Product Alboatrin By Biswajit Panda, Tarun K. Sarkar *J.Org.Chem.* 78, 2413 (2013)
75. Gold Catalyzed Benzannulation of Electronically Rich/Rich and Deficient/Deficient Oxoalkynes with Alkynes By Biswajit Panda, Tarun K. Sarkar *Synthesis* 45, in press (2013)
76. Green Synthesis of Graphene By S. K. Srivastava and I. Srivastava *Journal of Nanoscience and Nanotechnology* 2013 (0)
77. Heterotrimetallic Compounds Containing Mo – Li – M [M = K, Rb, and Cs] Clusters: Synthesis, Structure, Bonding, Aromaticity and Theoretical Investigations of Li₂M₂ [M = K and Rb] and Cs₄ Rings By D. Deb, S. Duley, S. Radenkovic, P. Bultinck, P. K. Chattaraj, M. Bhattacharjee *Phys. Chem. Chem. Phys.* 14, 15579 (2012)
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Department of Civil Engineering

Head

Prof. Lingadahally Ramachandra	upto	31.12.2012
Prof. Subhasis Dey	from	01.01.2013

Professors

Baidya, Dilip Kumar	<i>Ph.D.(IISc Bangalore)</i> , Reliability in Geotechnical Engg Pile foundations Soil Dynamics
Barai, Sudhir Kumar	<i>Ph.D.(IISc Bangalore)</i> , Soft Computing Applications, Structural Health Monitoring, Recycled Construction Materials, Fracture in Concrete
Bhattacharya, Baidurya	<i>Ph.D. (Johns Hopkins Univ)</i> , Computational materials science, Risk and reliability analysis of infrastructure systems
Bhattacharyya, Sriman Kumar	<i>Ph.D.(IIT Kharagpur)</i> ,
Das Gupta, Shambhu Pada	<i>Ph.D.(IIT Kanpur)</i> , constitutive modelling Soil-Structure Interaction Foundation Dynamics
Desai, Venkappayya R	<i>Ph.D.(Clemson Univ)</i> , Integrated watershed management, Hydrology, Hydraulics
Dey, Subhasish	<i>Ph.D.(IIT Kharagpur)</i> , Turbulence, Fluvial Hydraulics, Applied Hydrodynamics
Dhang, Nirjhar	<i>Ph.D.(IIT Kharagpur)</i> , Concrete, Dynamics and Control of Railway Bridges, Biomechanics
Ghangrekar, Makarand Madhao	<i>Ph.D (IIT Bombay)</i> , Microbial Fuel Cells, UASB reactor for anaerobic wastewater treatment, Water and Wastewater Treatment, Bioenergy recovery during waste management, Wastewater reuse
Gupta, Ashok Kumar	<i>Ph.D.(IIT Bombay)</i> , Water and Wastewater Treatment, Environmental Impact Assesment, Air Quality Management, Environmental Planning
Ramachandra, Lingadahally	<i>Ph.D.(IIT Chennai)</i> , Stability of Structures, Nonlinear Vibrations, Shell analysis
Reddy, Kusam Sudhakar	<i>Ph.D.(IIT Kharagpur)</i> , Pavement analysis, Pavement Design, Pavement Evaluation, Pavement Materials
Sen, Dhruvajyoti	<i>Ph.D.(IIT Delhi)</i> , Water resources engineering, Numerical techniques in civil engineering hydraulics

Associate Professors

Dash, Sujit Kumar	<i>Ph.D.(IIT Madras)</i> , Reinforced soil structures, Shallow foundation, Seismic soil liquefaction
Maitra, Bhargab	<i>Ph.D.(IIT Bombay)</i> , 1. Transportation Planning, 2. Traffic Operations and Management, 3. Public Transportation System
Maity, Damodar	<i>Ph.D.(IIT Kharagpur)</i> , Seismic Analysis of Dam, Health Monitoring of Structures, Cost Effective Housing
Roy, Debasis	<i>Ph.D.(Univ.of British Colo)</i> , Geotechnical Earthquake Engineering, Ground Improvement, Insitu testing of Geomaterials
Sen Gupta, Aniruddha	<i>Ph.D.(Illinois Univ)</i> , Geotechnical Earthquake Engineering, Landslide Hazard Mitigation, Mechanics of Materials, Soil-Structure Interaction

Assistant Professors

Banerjee, Biswanath	<i>Ph.D.(IISc., Bangalore)</i> , Computational Mechanics, Inverse Problems
Chakraborty, Sushanta	<i>Ph.D.(IIT Kharagpur)</i> , Fibre Reinforced Plastic Composite Structures
Deb, Arghya	<i>Ph.D.(Princeton Univ)</i> , Failure and Debonding in concrete, Impact loading on concrete structures, Discrete Element Modelling
Deb, Kousik	<i>Ph.D.(IIT, Kanpur)</i> , Soil-Structure Interaction, Ground Improvement, Geosynthetic-Reinforced Earth, Numerical Modeling, Soil Arching, Foundation/Embankment on Soft Soil, Geotechnical Earthquake Engineering, Dynamic Analysis of Rigid Pavement
Dhar, Anirban	<i>Ph.D.(IIT, Kanpur)</i> , Groundwater Contamination and Remediation, Water Resources Systems Analysis, Environmental Fluid Mechanics, Computational Hydraulics, Applied Optimization Theory, Geostatistics
Goel, Sudha	<i>Ph.D.(Johns Hopkins Univ)</i> , ENVIRONMENTAL RISK ASSESSMENT, WATER QUALITY AND TREATMENT, SOLID WASTE MANAGEMENT, ENVIRONMENTAL ENGINEERING
Hossain, Shaikh Jahangir	<i>Ph.D.(IIT Kharagpur)</i> , computational mechanics, Finite Element Method, Nonlinear Mechanics
Maity, Rajib	<i>Ph.D.(IISc. Bangalore)</i> , Hydroclimatology, Water Resources Engineering, Stochastic Hydrology, Watershed Development, Soft Computing in Hydrology, Monsoon rainfall
Mitra, Nilanjan	<i>Ph.D.(UW, SEATTLE)</i> , micromechanics, Fluid Structure Interaction, Shock wave, Probabilistic modeling, Computational mechanics, composite structures, reinforced concrete structures
Mitra, Sudeshna	<i>Ph.D.(ASU, Phoenix)</i> , Transportation Safety, Crash Data Analysis, Statistical and Econometric Applications, Transportation Planning, Traffic Engineering
Pal, Anjali	<i>Ph.D (Calcutta Univ.)</i> , (1) Environmental Engineering and Science (2) Nanoscience (3) Analytical Science
Shaws, Amit	<i>Ph.D.(IISc Bangalore)</i> , Computational Mechanics, Ballistic Response of Nano-Composite Armour, Impact Mechanics, Underwater blast
Verma, Shubha	<i>Ph.D.(IIT Bombay)</i> , Environmental Engineering, Air Pollution, Aerosol Modelling and Climate Impacts

Senior Lecturer

Verma, Shubha	<i>Ph.D.(IIT Bombay)</i> ,
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Faculty Appointments

Anjali Pal	Associate Professor
Paramita Bhattacharya	Assistant Professor
Chakraborty, Debarghya	Assistant Professor
Biligiri Krishna Prapoorna	Assistant Professor
Sudha Goel	Associate Professor
Reddy H P	Assistant Professor

Deb, Kousik Associate Professor

Deb, Arghya Associate Professor

Faculty Retirement

Prof. S. P. Dasgupta Professor

Faculty Re-employment

Prof. S. P. Dasgupta Professor

Brief Description of on-going activities

EnvE: Microbial Fuel Cells: Application for wastewater treatment and energy recovery, Onsite treatment of domestic sewage from small community, Studies on granulation in UASB reactor treating low strength wastewater to enhance efficiency of the reactor, Water quality and health assessment, Biological treatment of solid waste, Factors affecting the use of chlorine in water supply systems; Nanoparticle synthesis, their characterization and application; Photodegradation of organic pollutants; Adsorbilization/adsorption; Monitoring and modelling of tropospheric solid state polydisperse aerosols and ozone and assessment of pulmonary deposition in Kolkata urban region; Monitoring and modelling of ambient air quality in residential, commercial and industrial regions of Kolkata; Removal of Fluoride from ground water using low cost adsorbents; Removal of Arsenic from ground water using low cost adsorbent; Photocatalytic degradation of dye containing effluents using Ag⁺ doped TiO₂.

SE: Recycled construction materials, Stability of plates and shells, Biomechanics, Reliability of bridge structures, Low cost housing, Seismic analysis of dams, Fluid-structure Interactions, Structural Health Monitoring, Finite Element Model updating

TE: Cell filled low cost rural roads, Analysis and Evaluation of Concrete and flexible pavements, Specifications for bituminous mixes and Urban transportation planning.

HWRE: Investigations of effect of lateral flow on turbulent submerged jets, Study of coherent turbulent structure over gravel beds and bed-forms, development and comparative study of flood inundation models, drought characterization and forecasting, development and comparison of different models for flood forecasting.

GTE: Erosion control and mechanical stabilization of soils using natural fibers, ground improvement, soil-microbe interaction, insitu testing, geotechnical earthquake engineering, landslides and slope stabilisation

Thrust Areas

1. EnE: Water and Wastewater treatment, Solid Waste Engineering, Environmental Microbiology, Environmental Impact Assessment, Air Pollution Modeling, Bio-energy
2. SE: Reliability engineering, nonlinear mechanics, structural health monitoring, fluid-structure interaction.
3. HWRE: Submerged Jets, Coherent Turbulent Structure, Sediment Transport and Scour, Numerical Study of Surface Flow, Hydrological Model.
4. TE: Pavement Design, Traffic Planning and Design, Low-cost Road Construction.
5. GTE: Geotechnical earthquake engineering, slope stability, ground improvement, microbe-soil interaction, static and cyclic soil-structure interaction and foundation strengthening of monumental structures.

New Acquisitions

1. Seismic piezocone
2. Insitu testing vehicle
3. MASW system for shear wave velocity profiling
4. Resonant column for small strain dynamic testing system for soil
5. Digital direct shear apparatus for soil testing
6. Carry Eclipse Fluorescence Spectrophotometer
7. GC, Autolab potentiostat/Galvanostat; Online water quality analyzer, etc.

International Collaborations

Scientific collaboration between Duke University, NC, USA (Professor Tuan Vo-Dinh) and Department of Civil Engineering, IIT Kharagpur (Dr. Anjali Pal)

"Center for highway and airport pavement engineering" sponsored by Indo-US scientific technology between Worcester Polytechnic Institute, Worcester, MA, USA and IIT Kharagpur (Dr. M Amarnatha Reddy)

Visiting Scientist to the University of Alberta, Edmonton, Canada during June – July, 2012 for Research Collaboration (Dr. Anjali Pal)

Doctoral and MS Degrees Awarded

1. Tumpa Hazra : Improvement of solid waste management system considering direct and indirect costs(Ph.D.)
2. Manaswini Behera : Performance of microbial fuel cell under different operating conditions and employing earthenware as separator(Ph.D.)
3. Ratul Das : Hydrodynamics of mobile sand-bed and immobile-gravel bed(Ph.D.)
4. Raghvendra Singh : Yield and residual shear strengths of non-plastic soils(Ph.D.)

Member - Professional Bodies

1. Pal, Anjali, *Life Member* - Chemical Research Society of India
2. Pal, Anjali, *Life Member* - Indian Society for Surface Science and Technology
3. Pal, Anjali, *Member* - Materials Research Society of India
4. Pal, Anjali, *Life Member* - Indian Society for Radiation and Photochemical Sciences
5. Roy, Debasis, *Member* - Canadian Geotechnical Society
6. Roy, Debasis, *Life Member* - India Geotechnical Society
7. Roy, Debasis, *Associate Member* - American Society of Civil Engineers
8. Roy, Debasis, *Regular* - Bureau of Indian Standards, Committee 39-10
9. Roy, Debasis, *Associate Member* - Earthquake Engineering Research Institute
10. Goel, Sudha, *REGULAR* - MEMBER, AMERICAN WATER WORKS ASSOCIATION
11. Goel, Sudha, *Senior Member* - APCBEES
12. Goel, Sudha, *Senior Member* - IEI Committee of Kharagpur Chapter
13. Goel, Sudha, *REGULAR* - MEMBER, INSTITUTION OF ENGINEERS (INDIA)
14. Ghangrekar, Makarand Madhao, *Life Member* - Indian Association for Environmental Management
15. Ghangrekar, Makarand Madhao, *Life Member* - Institution of Engineers (India)
16. Ghangrekar, Makarand Madhao, *Life Member* - Indian Society for Technical Education
17. Ghangrekar, Makarand Madhao, *Member* - International Water Association
18. Reddy, M Amaranatha, *Annual member* - Association of Asphalt Pavement Technologies
19. Reddy, M Amaranatha, *Life Member* - Indian Roads Congress
20. Bhattacharya, Baidurya, *Member* - International Association for Structural Safety and Reliability (IASSAR), Subcommittee on Structural Reliability and Optimization (SC3)
21. Bhattacharya, Baidurya, *Member* - American Society of Civil Engineers

22. Bhattacharya, Baidurya, *Special Invitee* - National Disaster Management Authority, Steering Committee on Geophysical Hazard and Working Committee of Experts on Vulnerability Analysis and Risk Assessment
23. Verma, Shubha, *Member* - Indian Aerosol Science and Technology Association
24. Verma, Shubha, *Organizational Committee India Working Group* - International Global Atmospheric Chemsitry (IGAC)
25. Verma, Shubha, *Member* - American Geophysical Union
26. Maity, Rajib, *Life Member* - The Indian Science Congress Association (ISCA)
27. Maity, Rajib, *Life Member* - Indian Society for Hydraulics (ISH)
28. Maity, Rajib, *Member* - American Geophysical Union (AGU)
29. Maity, Rajib, *Member* - International Association of Hydrological Sciences (IAHS)
30. Deb, Kousik, *Member* - International Society for Soil Mechanics and Foundation Engineering
31. Deb, Kousik, *Life Member* - Indian Geotechnical Society
32. Mitra, Nilanjan, *Associate* - American Concrete Institute
33. Dhar, Anirban, *Life Member* - Indian Society for Hydraulics (ISH)
34. Dhar, Anirban, *Life Member* - Indian Association of Hydrologists
35. Dhar, Anirban, *Life Member* - The Indian Science Congress Association (ISCA)
36. Dhar, Anirban, *Member* - International Association of Hydrological Sciences (IAHS)
37. Dhar, Anirban, *Member* - International Association for Hydro-Environment Engineering and Research (IAHR)
38. Baidya, Dilip Kumar, *Regular* - Member, Int Soc for Soil Mechanics and Geotechnical Engineering
39. Baidya, Dilip Kumar, *Life* - Member, Indian Geotechnical Society
40. Baidya, Dilip Kumar, *Life* - Indian society for Rock Mechanics and Tunelling Technology
41. Reddy, Kusam Sudhakar, *Member* - NRRDA Executive Council
42. Reddy, Kusam Sudhakar, *Member* - Indian Roads Congress Committee on Asset Management
43. Barai, Sudhir Kumar, *Life Member* - Indian Concrete Institute (ICI), Chennai
44. Barai, Sudhir Kumar, *Life Member* - The Indian Society for Technical Education (ISTE)
45. Barai, Sudhir Kumar, *Life Member* - The Indian Science Congress Association (ISCA)
46. Barai, Sudhir Kumar, *Life Member* - American Society for Civil Engineers India Section (ASCE IS)
47. Barai, Sudhir Kumar, *Associate Member* - The International Society of Structure and Multidisciplinary Optimization (ISSMO)
48. Barai, Sudhir Kumar, *Member* - International Association of Engineers (IAENG)
49. Barai, Sudhir Kumar, *Life Member* - Indian Society for Construction Material and Structures (ISCMS)
50. Barai, Sudhir Kumar, *Life Member* - Indian Roads Congress (IRC)
51. Barai, Sudhir Kumar, *Member* - International Association for Life-Cycle Civil Engineering (IALCCE)
52. Barai, Sudhir Kumar, *Life Member* - Institute of Smart Structures and Systems (ISSS)
53. Barai, Sudhir Kumar, *Life Member* - Indian Association for Structural Engineering (IASE)
54. Barai, Sudhir Kumar, *Member* - International Association for Bridge Maintenance and Safety (IABMS)
55. Barai, Sudhir Kumar, *Senior Member* - RILEM
56. Barai, Sudhir Kumar, *Professional Member* - Association for Computing Machinery (ACM)
57. Barai, Sudhir Kumar, *Life Member* - Indian Association for Computational Mechanics (IACM)
58. Barai, Sudhir Kumar, *Member* - Young Researchers Committee, World Federation for Soft Computing (WFSC)
59. Sen, Dhruvajyoti, *Regular* - Indian Society of Hydraulics
60. Sen, Dhruvajyoti, *Regular* - International Association of Hydraulic Research
61. Sen Gupta, Aniruddha, *Associate Member* - American Society of Civil Engineers
62. Sen Gupta, Aniruddha, *Member* - Sigma Xi - The Scientific Research Society
63. Sen Gupta, Aniruddha, *Member* - Chi Epsilon - Civil Engineering Honor Society

Member - Editorial Board

1. Barai, Sudhir Kumar (2007) *Member* - International Journal of Multimedia and Ubiquitous Engineering

2. Barai, Sudhir Kumar (2009) *Member* - Journal of Information Technology in Construction
3. Barai, Sudhir Kumar (2012) *Member* - Advances in Concrete Construction
4. Bhattacharya, Baidurya (2010) *Associate Editor* - Journal of Bridge Engineering
5. Bhattacharya, Baidurya (0) *Editorial Board Member* - International Journal of Engineering Under Uncertainty: Hazards, Assessment and Mitigation
6. Desai, Venkappayya R (2013) *Reviewer* - Jrnl of Hydrometeorology
7. Desai, Venkappayya R (2013) *Reviewer* - Sadhana -Academic proceedings in Engineering Science
8. Desai, Venkappayya R (2009) *Reviewer* - Jrnl of Irrigation and Drainage
9. Dey, Subhasish (2011) *Associate Editor* - Journal of Hydro-Environment Research
10. Dey, Subhasish (2011) *Associate Editor* - Acta Geophysica
11. Dey, Subhasish (2011) *Associate Editor* - International Journal of Sediment Research
12. Dey, Subhasish (2011) *Associate Editor* - Journal of Numerical Mathematics and Stochastics
13. Dey, Subhasish (2011) *Member of Editorial Board* - International Review of Civil Engineering
14. Dey, Subhasish (2011) *Associate Editor* - Journal of Hydraulic Engineering
15. Dey, Subhasish (2011) *Member of Editorial Board* - Flow Measurement and Instrumentation
16. Dey, Subhasish (2011) *Associate Editor* - Sedimentology
17. Dey, Subhasish (2011) *Member of Editorial Board* - Engineering Applications of Computational Fluid Mechanics
18. Dey, Subhasish (2013) *Associate Editor* - Journal of Hydraulic Research
19. Ghangrekar, Makarand Madhao (2009) *Editorial Board member* - International Journal of Wastewater Treatment and Green Chemistry (IJWTGC)
20. Ghangrekar, Makarand Madhao (2009) *Associate Editor* - Renewable and Sustainable Energy (RSE)
21. Ghangrekar, Makarand Madhao (2009) *Editorial Advisory Board Member* - Chemical Bulletin, Romania, series of Chemical and Environmental Engineering
22. Maity, Rajib (2009) *Associate Editor* - Journal of Civil, Environmental, and Architectural Engineering
23. Pal, Anjali (2008) *Co-Editor* - Research Journal of Chemistry and Environment
24. Pal, Anjali (2007) *Editorial Advisory Board* - Recent Patents on Nanotechnology
25. Roy, Debasis (2010) *Associate Editor* - Geomechanics and Engineering
26. Roy, Debasis (2010) *Associate Editor* - IST Transaction of Civil Engineering and Construction Management
27. Sen Gupta, Aniruddha (2012) *Member of Editorial Board* - International J. of Applied Engineering & Technology
28. Sen, Dhruvajyoti (2006) *Associate Editor* - Australian Journal of Water Resources

Awards & Honours

1. Bhattacharya, Baidurya () *Adjunct Faculty, Dept of Civil and Environmental Engineering, Newark, DE 19716, USA*
2. Gupta, Ashok Kumar (2012) *Awarded the Shiksha Rattan Puraskar, award by the IIFS, New Delhi*
3. Mitra, Nilanjan (2012) *DAAD Research Stay Fellowship*
4. Maity, Rajib (2012) *Emerging Leaders Fellowship by Australia India Institute at the University of Melbourne, Australia*
5. Deb, Kousik (2012) *Fast Track Project Grant for Young Scientists - 2012 from Science and Engineering Research Council (SERC), Department of Science and Technology (DST), India*
6. Baidya, Dilip Kumar (2012) *IGS Chennai Chapter Biannual Prize for Best Paper on Deep Foundation/Retaining Structure for the year 2010-11*
7. Deb, Kousik (2012) *IIT Roorkee Shamsher Prakash Research Award 2012 for Outstanding Research Contribution in Geotechnical Engineering by Young Indian Engineer/Scientist/Researcher below 45 years age*
8. Shaws, Amit (2012) *Outstanding Young Faculty Award, IIT Kharagpur*
9. Maity, Rajib (2012) *Prof. R. J. Grade Research Award by the Executive Council of Indian Society for Hydraulics for the year 2012*
10. Mitra, Nilanjan (2013) *Raman Fellowship*
11. Mitra, Sudeshna (2013) *Raman Fellowship*
12. Maity, Rajib (2012) *Selected as ASCE 2011 Outstanding Reviewer by the Editor of Journal of Hydrologic Engineering, American Society of Civil Engineers (ACSE)*

13. Bhattacharya, Baidurya (2012) *Speaker, Indo-American Frontiers of Engineering Symposium, National Academy of Engineering, Bethesda, MD, USA*

Fellowships

1. Mitra, Sudeshna (2013) *Raman Fellowship*
2. Mitra, Sudeshna (2013) *DAAD Research Stay Fellowship*

Sponsored Research Projects

1. A molecular mechanics investigation of the mechanical properties of amine functionalized CNT in epoxy matrix (ASL, DRDO, Hyderabad, Rs.29.00 Lakhs)
2. A multi-scale investigation of the strength and durability of carbon nanotube based nano-electrode arrays used as biological sensors (DBT, Rs.19.00 Lakhs)
3. A Numerical and Experimental Study of FRP Enhanced Concrete (DST, Rs.17.14 Lakhs)
4. Advanced Research Laboratory on Safety and Uncertainty Analyses of Infrastructure Systems (BARC, Mumbai, Rs.150.00 Lakhs)
5. Aerosol Chemical and Optical characteristics over an urban coastal city in the Ganges Delta (SRIC, Rs.3.00 Lakhs)
6. Application of geocell reinforcement for performance improvement of anchored foundations under uplift (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
7. Arresting delamination propagation of sandwich composite panels with initial face/core debond subjected to inplane compression load (SRIC-ISIRD, Rs.5.00 Lakhs)
8. Assessment of Various Strategies of Seating Arrangements for Indian Rail Coaches from the view point of Occupant's Safety (RDSO through Center for Railway Research, Rs.29.52 Lakhs)
9. Bridge scour estimation, measurement and protection and use of various time systems like TDR, TTS and SA (RDSO, Rs.152.00 Lakhs)
10. Characterization of Ballistic Performance of Ceramic-Metal Composite Armour against Armour Piercing (AP) Projectile (SRIC, Rs.5.00 Lakhs)
11. Consultancy Services to Study the Ramps on Bally Side from Old G. T. Road to Sister Nivedita Bridge on NH-2 near Kolkata in West Bengal (NHAI, Govt. of India, Rs.0.00 Lakhs)
12. Creep and warping (including gauge widening) analysis of hot running loco wheels towards development of design guidelines against gauge widening (RDSO, Rs.49.79 Lakhs)
13. Damage assessment of aircraft structures from limited vibration data (ARDB, GOI, Rs.8.45 Lakhs)
14. Determination of leishmanicidal potential of metal nanoparticles and their conjugates (Calcutta University, Rs.2.00 Lakhs)
15. Developing a Suitable Methodology for Identifying Accident Prone Sites in the Presence of Limited Data (ISIRD, IIT Kharagpur, Rs.5.00 Lakhs)
16. Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-Learning (MHRD, Rs.8.00 Lakhs)
17. Development of a video course on 'Probability methods for Civil Engineering' (National Programme on Technology Enhanced Learning (NPTEL), Ministry of Human Resources & Development, Rs.5.00 Lakhs)
18. Development of a video course on 'Numerical methods for Civil Engineering' (National Programme on Technology Enhanced Learning (NPTEL), Rs.2.50 Lakhs)
19. Development of a video course on Groundwater Hydrology (National Programme on Technology Enhanced Learning (NPTEL), Ministry of Human Resource Development, Rs.0.00 Lakhs)
20. Development of a video course on Transportation Economics (National Programme on Technology Enhanced Learning (NPTEL), MHRD, Govt. of India, Rs.0.00 Lakhs)
21. Development of Design Methodology for Chemically Treated Bamboo Reinforced Concrete members for Low Cost Housing (BMTPC, GOI, Rs.16.80 Lakhs)
22. Development of durable water repellent jute geotextile (Jute Manufacturers Development Council, Rs.168.72 Lakhs)
23. Development of e-courses for B.Tech. (Agricultural Engineering) Degree Programme, Soil Mechanics (National Agricultural Innovation Project (NAIP), Rs.0.50 Lakhs)

24. Development of Guidelines for Use of Different Types of Bus in India- Phase I (HUBNER, Germany, Rs.0.00 Lakhs)
25. Development of microbial fuel cell for direct electricity recovery during waste water treatment (DST, Rs.61.00 Lakhs)
26. Development of Provisions for Design of Steel Concrete Railway Bridge for normal speed and special provision for high speed passenger traffic (RDSO, Rs.118.95 Lakhs)
27. Development of Public Transport for Dammam Urban Area in Saudi Arabia (Gulf Engineering House, Rs.0.00 Lakhs)
28. Development of Public Transport for Zajan Territory in Saudi Arabia (Gulf Engineering House, Rs.0.00 Lakhs)
29. Effects of Fines on Behavior of Geosynthetic-Reinforced Sands (Indian Institute of Technology Kharagpur, Rs.5.00 Lakhs)
30. Efficiency study of Damodar left bank irrigation system (Ministry of Water Resources, Government of India, Rs.46.96 Lakhs)
31. ELECTROCOAGULATION IN CONTINUOUS-FLOW SYSTEMS FOR REMOVAL OF DRINKING WATER CONTAMINANTS (DST-WTI, Rs.35.90 Lakhs)
32. Energy efficiency, community based water and waste water treatment systems for development in India (DST, New Delhi, Rs.17.50 Lakhs)
33. Experimental & Numerical Studies on Deep Excavation under Static & Seismic Conditions (SERB, DST, New Delhi, Rs.73.00 Lakhs)
34. Experimental and Numerical Studies on Stone Column-Supported Embankments Resting on Soft Soil (Department of Science and Technology, SERB, India, Rs.18.90 Lakhs)
35. Exploratory investigation on Development of Damage Mechanics based Methodologies for Lifting of Aeroengine Components (DMRL, Rs.10.00 Lakhs)
36. Feasibility Study for Proposed Grade Separated Intersection at the Junction of Belghoria Expressway and Kalyani-Dumdum Expressway (KMDA, Govt. of West Bengal, Rs.0.00 Lakhs)
37. First order seismic microzonation of Kolkata area (Ministry of Earth Sciences, Government of India, Rs.62.10 Lakhs)
38. Ganga River Basin - Environment Management Plan (MoEF, Rs.30.00 Lakhs)
39. Guidelines for Bicycle Infrastructure Design and Policy (HSMI, HUDCO, Rs.17.20 Lakhs)
40. HYDRODRIL (European Union, Rs.200.00 Lakhs)
41. Hydrologic sensitivity to Cryosphere-Aerosol interaction in Mountain Processes (DST, India; RCN, Norway, Rs.0.00 Lakhs)
42. Improving mechanical performance and delamination resistance in sandwich composite panels (Department of Science and Technology (DST/SERC), India, Rs.25.00 Lakhs)
43. Managing change in Soil Moisture and Agricultural Productivity under a Global Warming scenario using a Catchment Scale Climate Change Assessment Frame (Australia-India Strategic Research Funds (AISRF), Rs.33.00 Lakhs)
44. Multi-scale modeling of defects and interfacial phenomena in CNT-based nanocomposites (DST, Rs.21.00 Lakhs)
45. NPTEL Phase II, Video Course Development on Advanced Foundation Engineering (Ministry of Human Resource Development (MHRD), Govt. of India, Rs.2.50 Lakhs)
46. Optimization of rib pattern in steel rebars to achieve enhanced fatigue life and good bond strength (Tata Steel, Rs.10.65 Lakhs)
47. Pilot Phase of the National Mission Project on Pedagogic Development for the course Hydraulics (National Mission Project on Education through ICT, Ministry of Human Resource Development, GOI, Rs.0.00 Lakhs)
48. Pilot Phase of the National Mission Project on Pedagogic Development for the course 'Water Resources Engineering' (National Mission Project on Education through ICT, Ministry of Human Resource Development, Government, Rs.5.00 Lakhs)
49. Pilot Phase of the National Mission Project on Pedagogic Development for the course 'Solid Mechanics' (National Mission Project on Education through ICT, MHRD, Govt. of India, Rs.0.00 Lakhs)
50. Pilot Phase of the National Mission Project on Pedagogic Development for the course 'Transportation Engineering' (National Mission Project on Education through ICT, MHRD, Govt of India, Rs.0.00 Lakhs)
51. Preparation of Ganga River Basin Management Plan (National River Conservation Directorate, MOEF, INDIA, Rs.0.00 Lakhs)
52. Production of Lignocellulosic Fuels: from Lab to Pilot Scale (PLF) (DBT, Rs.345.84 Lakhs)

53. Seismic Evaluation of Aged Concrete Gravity Dams (ISRD, IIT Kharagpur, Rs.3.00 Lakhs)
54. Seismic Hazard Assessment, Microzonation and Evaluation of Vulnerability, Risk & Socio-Economic Impacts for the City of Kolkata (Ministry of Earth Sciences, New Delhi, Rs.370.99 Lakhs)
55. Smarter Water Resource Management, Disaster Mitigation & Diabetic Retinopathy (WDD) (IBM, Rs.0.00 Lakhs)
56. Strengthening the Research & Postgraduate Teaching in the Areas of Structural, Geotechnical, Environmental & Transportation Engg. (Department of Science and Technology, New Delhi, Rs.245.00 Lakhs)
57. Submicron aerosols in east India: sources, chemical characteristics, climate impacts (DST, Rs.14.00 Lakhs)
58. Swaralipi: a system for scripting Tagore's musical notes and transcoding (SNLTR, Govt. of West Bengal, Rs.9.00 Lakhs)
59. Synthesis and characterization of mono and bimetallic nanoparticles on supported systems and their application for the degradation of organic pollutant (IIT Kharagpur (under ISIRD), Rs.5.00 Lakhs)
60. Theoretical and Experimental Investigations on the Stability and Chaotic Behavior of Non-Smooth Flexible, Curved and Twisted Pipe subjected to Flow (IIT- Kharagpur (ISIRD-SRIC Scheme), Rs.1.00 Lakhs)
61. Underwater Ballistic Response of Marine Grade Sandwich Composite Panels (Naval Research Board, INDIA, Rs.0.00 Lakhs)
62. Underwater non-contact explosive response of marine grade sandwich composite panels (Naval Research Board (NRB/DRDO), India, Rs.72.00 Lakhs)
63. Virtual Lab - Soft Computing Tools in Engineering (MHRD, New Delhi, Rs.42.90 Lakhs)

Consultancy Projects

1. Advice- L&T ECC division Chennai (L&T ECC division Chennai, Rs.1.37 Lakhs)
2. Bituminous Mix Design for NH-54 in the state of Assam (M/s Punjilloyd Ltd, Assam, Rs.0.56 Lakhs)
3. Calibration of fifth wheel bump integrator- ARUR (ARUR, Rs.0.50 Lakhs)
4. Characterisation of different normal, modified bitumen and emulsions of SHELL (M/s Shell India Markets Pvt Ltd, Gurugram, Rs.5.51 Lakhs)
5. Design Scheme for Launching of PSC Girder (ITD Cementation India Limited, Rs.1.00 Lakhs)
6. Development of reliability based criteria for containment design (BARC, Rs.10.00 Lakhs)
7. Development of suitable probability density functions for characterization of wave speed measurements in concrete (CMERI, Rs.2.00 Lakhs)
8. Development plan preparation for Korba urban area, Chhattisgarh, (The Director, Directorate of Town & Country Planning, R.D.A., Rs.29.91 Lakhs)
9. Establishment of Indian Institute of Corporate Affairs (Ministry of Corporate Affairs, N. Delhi, Rs.160.70 Lakhs)
10. Evaluation & modification of tank foundations at JSL (EMTF) (BOC India Ltd, Kolkata, Rs.3.00 Lakhs)
11. Evaluation of different subgrade soils using JG soil modifier (Jindal Steel, Rs.6.72 Lakhs)
12. Evaluation of elastic modulus and complex modulus of CRMB binder (M/s Gammon India Pvt Ltd, Muzzaffarpur, Rs.0.55 Lakhs)
13. EVALUATION OF MATERIAL AND CONCRETE MIX DESIGN (NIT Raipur, Rs.2.20 Lakhs)
14. Evaluation of modified bitumen and bitumen emulsions (Miscellaneous Agencies, Rs.1.00 Lakhs)
15. Evaluation of railway ballast, road aggregates and other pavement materials for different agencies (Miscellaneous Agencies, Rs.1.25 Lakhs)
16. Evaluation of Subgrade soils using Stabilig soil modifier (M/s Satbilig Road Solutions Pvt Ltd, Gurgaon, Rs.1.69 Lakhs)
17. Impact Assessment of Light and Sound show at Khandagiri and (Deputy Secretary, Department of Tourism and Culture (Tourism),, Rs.6.74 Lakhs)
18. Inspection & Testing of 100-m Transmission Tower at AIR, Kohima (TMTA) (All India Radio & Doordarshan, Kolkata, Rs.3.00 Lakhs)
19. – Checking design and drawing of UASB type sewage treatment plant (CDST) (Apporv Air Control, Jaipur, Rs.3.25 Lakhs)

20. Kamakhya Resort and Spa, Dharmsala (Kamakhya Resorts Pvt. Ltd., Rs.2.50 Lakhs)
21. Liquefaction Study of the Site for Steel Complex at Gokulpur (SSCG) (Rashmi Metaliks, Ltd, Kolkata, Rs.86034.00 Lakhs)
22. Mathematical model study for Ghatal Master Plan (WAPCOS, Rs.22.00 Lakhs)
23. Mathematical model study for Kandi project (WAPCOS, Rs.14.00 Lakhs)
24. Mix Design for the work- Improvement of Rajbandh Area on NH-2 in the state of W.B (PWD, West Bengal, Rs.2.50 Lakhs)
25. Model Study for CW system equipment package for Vallur Thermal Power Project (3X500 MW) and for Barh STPP, Stage-II (2X660 MW) (WPIL Limited, Kolkata, Rs.29.00 Lakhs)
26. Optimized properties of galvanized steel (Tata Steel, Rs.6.00 Lakhs)
27. P K Sinha Centre Project (PKS) (Dr. Prabhakant Sinha, Rs.0.00 Lakhs)
28. Performance evaluation study in respect of work - Keliaghai-Kapaleswari-Baghai Drainage basin scheme - (Phase-II, 2012- 2013) (Flood Management Programme, Govt. of INDIA and Govt. of West Bengal, Rs.0.00 Lakhs)
29. Performance Evaluation Study on Flood Control Scheme for Kapaleswari-Keliaghai-Baghai (KKB) Drainage Basin for Phase-II, 2012-2013 (Govt. of West Bengal, Rs.20.00 Lakhs)
30. Physical, Chemical, Instrumental analysis and Bacteriological Examination of Water (Office of the AGE E/M (AF) Salua, Rs.2.25 Lakhs)
31. Planning and design of transportation facilities for info park in Kochi (Cannon Design International Pvt. Ltd., Rs.2.20 Lakhs)
32. Planning of transportation facilities within the premise of the proposed IT campus of TCS at Bhubaneswar (Cannon Design International Pvt. Ltd., Rs.3.63 Lakhs)
33. Preparation of Air Quality Evaluation Report of Haldia. (HEL, Kolkata, Rs.10.11 Lakhs)
34. Preparation of Aizawl Master Plan (PAMP) (Aizawl Development Authority, Rs.70.22 Lakhs)
35. Preparation of city development plan for Burdwan planning area (BDAP) (BDA, Burdwan, Rs.11.23 Lakhs)
36. Preparation of detailed design for Chromium Effluent Treatment Plant (Saruabil Chromite Mines,M/s Misrilal Mines (P) Ltd., Jajpur Road, Rs.22.47 Lakhs)
37. Preparation of DPR for MCL coal Transportation roads of IB valley Project (Mahanadi Coalfields Limited, Sambalpur, Rs.27.12 Lakhs)
38. Preparation of DPR for Repair/renovation of SH 8 (PWD West Bengal, Rs.9.50 Lakhs)
39. Preparation of Feasibility Study Report on Establishment of Common Effluent Treatment Plant(s) in Sukinda Valley Area (State Pollution Control Board Orissa, Rs.22.06 Lakhs)
40. Preparation of Zonal Developmental Plan for 14 Planning Zones of Bhubaneswar Development Plan Area (Bhubaneswar Development Authority, Rs.391.63 Lakhs)
41. Proof checking of design basis report of the prefab roof for printing plant (ABP Pvt. Ltd., Kolkata, Rs.1.10 Lakhs)
42. Proof Checking of Design of Conveyer Gallery Structures J3-C3 and J3-C4 in between Trestles TR1 and TR2 and Foot Over Bridge (S.K. Samanta & Co. (P) Ltd.,Kolkata, Rs.6.61 Lakhs)
43. Proof Checking of Pavement Design (M/s Sheladia Associates, Rs.1.00 Lakhs)
44. Proof Checking of pavement design for NH-34 (HCC Ltd, Malda, W.B, Rs.2.00 Lakhs)
45. Quality Investigation of materials (Various Govt. Agencies, Rs.5.50 Lakhs)
46. Rectification of defects in PSC girder of Bridge No. 557 across river Kuakhai near Cuttack (Expert_SPA(JV), Bhubaneswar, Rs.4.41 Lakhs)
47. Review and scrutiny of seismic designs for earth structures (Sardar Sarovar Narmada Nigam Limited, Gandhinagar, Rs.7.20 Lakhs)
48. Revision/Amendment of the Landuse and Development Control Planfor Old Haldia Planning Area (HDA, Haldia, Rs.55.15 Lakhs)
49. Seismic Vulnerability Assessment of Building Types in India (NDMA, Rs.25.20 Lakhs)
50. Stability & Strength Test for Q-0, Dunguri Lime Stone Quarry (SFDL) (ACC Ltd, Bargarh Cement Works, Bargarh, Orissa, Rs.165000.00 Lakhs)
51. Storm water outflow drainage plan and subsurface drainage plan (Keventer Projects Ltd., Kolkata, Rs.6.18 Lakhs)
52. Strengthening of Weak Formation and Rehabilitation Work in Malda Division of Eastern Railway (WFAW) (Eastern Railway, Rs.8.65 Lakhs)
53. Structural Health Assessment of HP Housing at Taraatola (HPCL, Rs.0.00 Lakhs)
54. subsurface investigation and design of ground improvement for Paradip Port Stack Yard (Paradip Port Trust, Rs.12.36 Lakhs)

55. Technical Review of Current 24X7 Water Distribution Project in Mysore (JUSCO, Rs.39.70 Lakhs)
56. Technical Vetting of 150 Mts. Tower Specifications (Prasar Bharati, Kolkata, Rs.1.37 Lakhs)
57. Testing of sample of water, concreting purpose (CIVTECT (I) PVT. LTD, Kolkata, Rs.0.12 Lakhs)
58. Testing of water sample for the proposed Institute Campus of Nation Institute of Biomedical Genomics, Kalyani (Kalaikunda Air field, Rs.1.65 Lakhs)
59. Third Party Inspection of Construction of Pravasi Bharatiya Kendra (MOIA, Rs.88.24 Lakhs)
60. Tokisud flood protection embankment vetting (GVK Coal, Rs.7.08 Lakhs)
61. Traffic Impact Study and Planning of Transportation Facilities for the Proposed Smart City in Kochi (Cannon Design International Pvt. Ltd., Rs.7.00 Lakhs)
62. Vertical turbine type cw pump suction problems due to pump-system interaction (WPIL Limited, Kolkata, Rs.5.70 Lakhs)
63. Vetting design of elevated canal structure (Scott Wilson Pvt. Ltd., Rs.25.00 Lakhs)
64. Vetting the Design of DNMC Canal and Associated Hydraulic Structures (Scott Wilson India Private Limited (SWIPL), Rs.24.00 Lakhs)
65. Wastewater and solid waste sampling for food processing industry (Basukinath Pvt. Ltd., Rs.0.17 Lakhs)

Visits Abroad by Faculty Members

1. Maity, Rajib - BOYSCAST Fellowship (Purdue University, USA,) 11 Aug 2011 to 30 Dec 2011
2. Maity, Rajib - Research Collaboration (University of New South Wales, Sydney, Australia,) 22-26 June 2012
3. Dey, Subhasish - Short course (Taichung, Taiwan,) 1 to 4 July 2012
4. Dey, Subhasish - Invited lecture (Taipei, Taiwan,) 5 July 2012
5. Dey, Subhasish - Field visit (New Zealand,) 9 to 15 December, 2012
6. Mitra, Nilanjan - Attend World conference in earthquake engineering conference (Lisbon, Portugal,) 6 days
7. Mitra, Nilanjan - Attend World conference in computational mechanics (Sao Paulo, Brazil,) 10 days
8. Mitra, Nilanjan - Avail DAAD Research Stay fellowship (Darmstadt, Germany,) 2 months
9. Pal, Anjali - Research Collaboration (University of Alberta, Edmonton, Canada,) June - July, 2012
10. Sen Gupta, Aniruddha - To Attend 2nd Intl Conf. on Geotechnique, Construction Materials and Environment (Kuala Lumpur, Malaysia,) Nov. 14-16, 2012
11. Mitra, Sudeshna - Exploring Academic Collaboration (TU-Darmstadt,) June 2012
12. Dey, Subhasish - Invited lecture in Thirty-first International School of Hydraulics (Warsaw, Poland,) 27 to 31 May 2012

Invited Lectures by Faculty Members

1. Turbulent flow, sediment transport and scour *by* Dey, Subhasish (National Chung Hsing University, Taiwan)
2. Turbulence in mobile bed streams *by* Dey, Subhasish (National Taiwan University, Taiwan)
3. Turbulence in mobile bed streams *by* Dey, Subhasish (The University of Auckland, New Zealand)
4. Turbulence in mobile bed streams *by* Dey, Subhasish (IIT Guwahati)
5. Environmental Protection Solid Waste Management *by* Goel, Sudha (ITI Midnapore - NCC Cadets of 3 districts of WB)
6. Dye wastewater treatment by adsolubilization and advanced oxidation processes mediated by nanopartic *by* Pal, Anjali (Raipur, Chattisgarh)
7. Women in Engineering: to BE or not to BE *by* Goel, Sudha (Indo-US Symposium on Women in Engineering sponsored by Society of Women Engineers, USA, in Bengaluru)
8. Environment Week celebrations by NCC cadets of IITKgp *by* Goel, Sudha (IIT Kharagpur)
9. Dye wastewater treatment by adsolubilization and advanced oxidation processes *by* Pal, Anjali (NIT, Shrinagar)

10. Dye wastewater treatment by adsorbilization and advanced oxidation processes by Pal, Anjali (College of Engineering and Management, Kolaghat)
11. Chitosan: An efficient smart biopolymer for surfactant removal and synergism on dye adsorption by Pal, Anjali (IIT Kharagpur)
12. Hydroclimatic Teleconnection in the Context of Climate Forcing on Hydrologic Variables: An Indian... by Maity, Rajib (Australia India Institute, Melbourne University, Melbourne, Australia)
13. Evolutionary Computation for Financial Modelling by Barai, Sudhir Kumar (IIT Kharagpur)
14. Industrial Growth through Skill Building by Barai, Sudhir Kumar (PDU, Gandhinagar)
15. How to Make Good Technical Presentation and Technical Paper Writing by Barai, Sudhir Kumar (GTU, Ahmedabad, India)
16. High Performance Computational Intelligence Tool for Structural Optimization by Barai, Sudhir Kumar (GTU, Ahmedabad, India)
17. High Performance Computational Intelligence Tool for Structural Optimization by Barai, Sudhir Kumar (NIT Warangal)
18. Real-time rainfall monitoring and runoff simulation for Kolkata by Sen, Dhruvajyoti (IIT Bombay)
19. Investigation into Sliding Mechanism and Proposed Mitigation Measures at Lanta Khola Landslide in N by Sen Gupta, Aniruddha (National Workshop on Landslide Hazard and Risk Assessment, Geological Survey of India Technical Institute (GSITI), Hyderabad)
20. Frontiers in Road Safety Research by Mitra, Sudeshna (SVNIT, Surat)
21. Aerosols and their climate impacts: scenario over Indian subcontinent and ocean by Verma, Shubha (Indian Institute of Technology Madras)

Books Published

1. Kumar S. and Barai S V: Concrete Fracture Models and Applications, Springer *published by* Springer (2011)

Papers Published in Journals

1. 2-D Finite Element Analysis of Rigid Pavement Considering Dynamic Vehicle-Pavement Interaction Effects By V. A. Patil, V. A. Sawant and Kousik Deb *Applied Mathematical Modelling, Elsevier* 37(4), 1282-129 (2013)
2. 3-D Finite Element Analysis for Dynamic Response of Rigid Pavement Subjected to Moving Load By V. A. Sawant, V. A. Patil and Kousik Deb *Journal of Structural Engineering* Accepted (2013)
3. 3-D Finite Element Dynamic Analysis of Rigid Pavement Using Infinite Elements By V. A. Patil, V. A. Sawant and Kousik Deb *International Journal of Geomechanics, ASCE* Accepted (2013)
4. A comprehensive risk assessment framework for offsite transportation of inflammable hazardous waste By Arup Das, A K Gupta and T N Mazumder *Journal of Hazardous Materials* 227-228, pages 88-96 (2012)
5. A high-resolution shallow water model using unstructured quadrilateral grids By Soumendra N. Kuiry, Dhruvajyoti Sen, Yan Ding *Computers & Fluids* Vol. 68, pp 16-28 (2012)
6. A Pseudo-Spring Based Fracture Model for SPH Simulation of Impact Dynamics By Sukanta Chakraborty and Amit Shaw *International Journal of Impact Engineering* 58, 84 - 95 (2013)
7. A Review of Experimental Investigations into the Seismic Behaviour of Concrete Gravity Dams By Parsuram Nayak and Damodar Maity *Dam Engineering* XXII (3), pp. 171– (2012)
8. Analysis of Stone Column-Supported Geosynthetic-Reinforced Embankments By Kousik Deb and Sunil Ranjan Mohapatra *Applied Mathematical Modelling, Elsevier* 37(5), 2943-2960 (2013)
9. Application of statistical experimental design to optimize the photocatalytic degradation of a thiazin dye using silver ion doped titanium dioxide By C Sahoo and A K Gupta *Journal of Environmental Science and Health, Part A* 48, pp 694-705 (2013)
10. Application of silicagel factory waste for methyl orange dye removal By S. Koner, Anjali Pal, A. Adak *International Journal of Environment and Waste Management* In press (2012)

11. Behaviour of geosynthetic reinforced unpaved roads under cyclic loading By Ravi K., Dash, S.K., Vogt S. And Braeu, G. *Indian Geotechnical Journal* DOI 10.1007/s40098-0 (2013)
12. Characterizing drought using the reliability-resilience-vulnerability concept, special issue on Data Driven Approaches to Droughts By Maity, Rajib, A. Sharma, D Nagesh Kumar and K. Chanda *Journal of Hydrologic Engineering*, accepted (2013)
13. Coupled Gravity Dam-Foundation Analysis using a Simplified Direct Method of Soil-Structure Interaction By A. Burman, Parsuram Nayak, P. Agrawal, , Damodar Maity *Soil Dynamics and Earthquake Engineering* 34, pp. 62–68 (2012)
14. Damage Assessment of Truss Structures from Changes in Natural Frequencies using Ant Colony Optimization By Aditi Majumdar, Dipak Kumar Maiti and Damodar Maity *Applied Mathematics and Computation* 218, pp. 9759-9772 (2012)
15. Depth-averaged model including velocity deformation for unsteady open channel flows By Langhi M, Hosoda T and Dey S *Journal of Japan Society of Civil Engineers (JSCE)* 68, pp. I_67-I_72 (2012)
16. Diiminic Schiff bases: an intriguing class of compounds for a copper-nanoparticle-induced fluorescence study By M. Ganguly, Anjali Pal, Y. Negishi, T. Pal *Chem.- Eur. J.* 2012 18, 15845-15855 (2012)
17. Dynamic Response of the Foundations Resting on a Two-layered Soil Underlain by a Rigid Layer By Mandal A, Baidya D K, and Roy D *geotechnical and Geological Engineering* 30, 775-786 (2012)
18. Effect of Imperfections in the Bond on the Strength of FRP Wrapped cylindrical concrete columns By Jamatia, R., Hussain, T., Deb, A. and Bhattacharyya, S.K *Composites Part B: Engineering* Accepted (2013)
19. Effect of transverse steel on the performance of RC T-beams strengthened in shear zone with GFRP sheet By Panda, K. C., Bhattacharyya, S. K., and Barai, S. V. *Construction and Building materials* 79-90 (2013)
20. Estimation of Design Parameters for Braced Excavation: Numerical Study By S.S. Chowdhury, K. Deb and A. Sengupta *Intl J. of Geomechanics* (2013)
21. Evolutionary Approach for Optimal Stability Analysis of Geosynthetic-Reinforced Stone Column-Supported Embankments on Clay By Kousik Deb, Anirban Dhar and Pradeep Bhagat *KSCE Journal of Civil Engineering, Springer* 16(7), 1185-1192 (2012)
22. Evolutionary approach for optimal stability analysis of geosynthetic-reinforced stone column-supported embankments on clay By K. Deb, A. Dhar, and P. Bhagat *KSCE Journal of Civil Engineering* 16(7),1185-1192 (2012)
23. EXTENT AND RATE OF BIODEGRADATION OF DIFFERENT ORGANIC COMPONENTS IN MUNICIPAL SOLID WASTE By Prashanth Kandakatla, Bandana Mahto and Sudha Goel *International Journal of Environment and Waste Management* 11(4):350-364 (2013)
24. Finite Element Analysis of Rigid Pavement on a Nonlinear Two Parameter Foundation Model By V. A. Sawant, V. A. Patil and Kousik Deb *International Journal of Geotechnical Engineering, J. Ross Publication, U.S.A.* 6, 275-286. (2012)
25. Flood inundation simulation in Ajoy River using MIKE-FLOOD By Prashant Kadam and Dhruvajyoti Sen *ISH Journal of Hydraulic Engineering* Volume 18, p.129-141 (2012)
26. Free surface profiles of undular hydraulic jumps By Bose S K, Castro-Orgaz O and Dey S *Journal of Hydraulic Engineering (ASCE)* 138, pp. 362-366 (2012)
27. Gravel-bed hydrodynamics: A double-averaging approach By Dey S and Das R *Journal of Hydraulic Engineering (ASCE)* 38, pp. 707-725 (2012)
28. Heterogeneous photocatalysis of real textile wastewater – Evaluation of reaction kinetics and characterization By C Sahoo, A K Gupta and Indu M S *Journal of Environmental Science and Health, Part A* 47, 2109-2119 (2012)
29. High Performance Computational Intelligence Tool for Structural Optimization By Atul Narayan and S V Barai *The Indian Journal of Technical Education* 121-128 (2012)
30. Identification of PM2.5 sources affecting a semi-arid coastal region using a chemical mass balance model, By P. Subramoney, S. Karnae, Z. Farooqui, K. John, A. K. Gupta *Aerosol and Air quality research* 13 (1), pp 60-71 (2013)
31. Instability theory of sand-ripples formed by turbulent shear flows By Bose S K and Dey S *Journal of Hydraulic Engineering (ASCE)* 38, pp. 752-756 (2012)
32. Integrated land and water resources management framework for Hirakud canal sub-command (India) using grey systems analysis By U. Mandal, A. Dhar, and S. N. Panda *Journal of Water Resources Planning and Management, ASCE, doi:10.1061/(ASCE)WR.1943-5452.0000300* (2013)

33. Investigation onto feasibility of an adsorbent for chromium abatement with its extended application for real mine drainage water By K Perikamana, Indu M S Pillai, A K Gupta and Ayoob S *Journal of Environmental Science and Health, Part A* 48, 67-78 (2013)
34. Is the von Kármán constant affected by sediment suspension? By Castro-Orgaz O, Giráldez JV, Mateos L and Dey S *Journal of Geophysical Research, Earth Surface (AGU)* 117, pp. F04002 (2012)
35. Large Scale Parameter Estimation Problems in Frequency-Domain Elastodynamics Using an Error in Constitutive Equation Functional By Biswanath Banerjee, Timothy F Walsh, Wilkins Aquino, Marc Bonnet *Computer Methods in Applied Mechanics and Engineering* Volume 253, pp 60-72 (2013)
36. Localized failure in FRP wrapped cylindrical concrete columns By Dandapat, R., Deb, A., and Bhattacharyya, S.K. *ACI Structural Journal* 109(4),445-456 (2012)
37. Methylene Blue–Cu₂O Reaction Made Easy in Acidic Medium By M. Basu, A. K. Sinha, M. Pradhan, S. Sarkar, A. Pal, C. Mondal, T. Pal *J. Phys. Chem. C* 116, 25741–25747 (2012)
38. Morphometric analysis of the drainage in Koina watershed of ironiferous sector of Chiria mining area, Jharkhand using RS-GIS technique By S. K. Tripathy, V. K. Mali, R. Damdapat, K. Pathak, V. R. Desai *Mining Engineers Journal* 13(11), 22-29 (2012)
39. Multistep-ahead River Flow Prediction using LS-SVR at Daily Scale By Bhagwat P. P., and Rajib Maity *Journal of Water Resource and Protection* 4, 528-539 (2012)
40. Nano silver impregnation on commercial TiO₂ and a comparative photocatalytic account to degrade malachite green By S. Saha, J. M. Wang, Anjali Pal *Separation and Purification Technology* 89, 147-159 (2012)
41. Non-contact near-field underwater explosion induced shock-wave loading of submerged rigid structures: nonlinear compressibility effects in fluid structure interaction. By Ghoshal, R., Mitra, N. *Journal of Applied Physics* 112(2), 024911 (2012)
42. Numerical Study of a Failure of a Wall By A Sengupta *Intl. J. of Geotechnical & Geological Engg* Vol. 30, pp. 1025-10 (2012)
43. On the significance of omitted variables in intersection crash modeling. By Mitra, S., Washington, S. *Accident Analysis and Prevention* 49:439-448 (2012)
44. Pareto frontier analysis based decision making tool for transportation of hazardous waste, By A. Das, T N Mazumder and A K Gupta *Journal of Hazardous Materials* 227-228, page341-352 (2012)
45. Performance improvement of railway ballast using geocells By Dash, S.K. and Amol, S. *Indian Geotechnical Journal* Vol.42, No.3, pp.186 (2012)
46. Predicting the Flexural Strength of Steel Fiber Reinforced Concrete Beams using Artificial Neural Networks By Shailendra Kumar and S V Barai *Journal of Engineering, Science and Management Education* 639-647 (2012)
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48. Prediction of Monthly Rainfall on Homogeneous Monsoon Regions of India Based on Large Scale Circulation Patterns using Genetic Programming By Kashid S. S and Rajib Maity *Journal of Hydrology* 454-455, pp. 26-41 (2012)
49. Prediction of performance of exterior beam-column connections with headed bars subject to load reversal By Kang, T.H-K., Mitra, N. *Engineering Structures* 41, 209-217 (2012)
50. Probabilistic Simulation of Surface Soil Moisture using Hydrometeorological Inputs By Das S. K. and Rajib Maity *ISH Journal of Hydraulic Engineering* accepted (2013)
51. Purification of Gold Organosol by Solid Reagent By M. Ganguly, Anjali Pal, T. Pal *J. Phys. Chem. C* 116, 9265-9273 (2012)
52. Rapid Environmental Impact Assessment (EIA) using Remote Sensing and Geographic Information Systems (GIS) – A case study of River Ib Barrage, Odisha By Debiprasad Taudia and S Goel *Journal of Geomatics* (2013)
53. Reliability coupled Sensitivity based Design Approach for Gravity Retaining Walls By GuhaRay, A. and Baidya, D.K *Journal of the Institution of Engineers, India : Series A* accepted (2013)
54. Shear behaviour of RC T-beams strengthened with U-wrapped GFRP sheet. By Panda, K. C., Bhattacharyya, S. K., and Barai, S. V. *Steel and Composite Structures, An International Journal* 149-166 (2012)

55. Soil-Structure Interaction Analysis of Beams Resting on Multilayered Geosynthetic-Reinforced Soil By Kousik Deb *Interaction and Multiscale Mechanics: an International Journal, Techno Press* 5(4) (2012)
56. Sources and radiative effects of wintertime black carbon aerosols in an urban atmosphere in east In By S. Verma, S.K. Pani, S.N. Bhanja *Chemosphere* 90 (2013)
57. Synergistically improved adsorption of anionic surfactant and crystal violet on chitosan hydrogel beads By Anjali Pal, S. Pan, S. Saha *Chemical Engineering Journal* 217. 426-434 (2013)
58. Synthesis of Highly Fluorescent Silver Clusters on Gold(I) Surface By M. Ganguly, Anjali Pal, Y. Negishi, T. Pal *Langmuir* 29, 2033-2043 (2013)
59. System Identification with Noisy Data By U K Dewangan and S V Barai *International Journal of Advanced Technology in Civil Engineering* 82-87 (2012)
60. Testing of recycled aggregate concrete by non-destructive tests By Chakradhara Rao, M., Bhattacharyya, S.K., Barai, S.V *International Journal of SEWC* 56-62 (2012)
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62. Turbulence in mobile-bed streams By Dey S, Das R, Gaudio R and Bose S K *Acta Geophysica (Springer)* 60, pp. 1547-1588 (2012)
63. Turbulent unsteady flow profiles over an adverse slope By Bose S K and Dey S *Acta Geophysica (Springer)* 61, pp. 84-97 (2013)
64. Vibration Based Structural Damage Detection Technique using Particle Swarm Optimization with Incremental Swarm Size By Bhardwaj Nanda, Damodar Maity and Dipak Kumar Maiti *International Journal of Aeronautical & Space Science* 13(3), pp. 323-331 (2012)
65. WILLINGNESS-TO-PAY FOR SOLID WASTE MANAGEMENT SERVICE ATTRIBUTES: KOLKATA MUNICIPAL CORPORATION AREA, INDIA AS A CASE STUDY By T Hazra, S Goel, and B Maitra *International Journal of Environment and Waste Management* (2013)
66. Wintermonsoon aerosol optical and mass size distribution characteristics in an urban atmosphere in east India By S. Verma, S. N. Bhanja, S. K. Pani, A. Misra, D. Bharath, A. Mukherjee *Science of the total Environment* STOTEN-D-13-01044 (2012)

Papers Presented in Conferences

1. Aerosol Radiative Forcing Over India During the Winter Monsoon Due to Emissions from Source Categories and Geographical Regions, By Shubha Verma, AOGS - AGU (WPGM) Joint Assembly, Singapore, (2012)
2. An Alternative Method of HotSpot detection with Crash data in the presence of Limited Information, By Bandyopadhyaya, R., Mitra, S, *Transportation Research Board Annual Conference*, Washington, D.C, (2013)
3. Analysis of Failure probability of a Gravity Retaining wall based on simulated parametric approach, By GuhaRay, A, Ghosh S and Baidya D K, *Indian Geotechnical Conference*, New Delhi, (2012)
4. Binomial logistic regression model for probabilistic assessment of failure of reinforced concrete beam-column joints subjected to seismic action, By Mitra, N., *15th World Conference in Earthquake Engineering*, Lisboa, Portugal, (2012)
5. Chitosan: An efficient smart biopolymer for surfactant removal and synergism on dye removal, By Anjali Pal, S. Pan, S. Saha, *International Conference on Rubber and Rubber-like Materials (ICRRM-2013)*, IIT Kharagpur, (2013)
6. Compressive Strength and Durability of Recycled Aggregate Concrete, By Chakradhara Rao, M., Bhattacharyya, S.K., and Barai, S.V., *International conference on sustainability Challenges & Advances in Concret Technology (SCACT 2012)*, Coimbatore, Tamilnadu, India, (2012)
7. Damage Assessment of Beam Structures from Change in Curvature Mode Shape using Unified Particle Swarm Optimization Technique, By Bharadwaj Nanda, Damodar Maity and Dipak Kumar Maiti, *4th International Congress on Computational Mechanics and Simulation (ICCMS-12)*, IIT Hyderabad, India, (2012)
8. Dye wastewater treatment by adsorbilization and advanced oxidation processes, By Anjali Pal, *National Workshop on application of different techniques for waste water management under current scenario*, College of Eng. & Manag., Kolaghat, (2013)

9. Effect of Location of Surcharge on Braced Excavation under Different Excavation Widths, *By* Subha Sankar Chowdhury, Kousik Deb and Aniruddha Sengupta, *Indian Geotechnical Conference*, New Delhi, India, (2012)
10. ELECTROCOAGULATION OF DRINKING WATER IN CONTINUOUS FLOW MODE, *By* KRUTTIKA APSHANKAR, ITI SHARMA, AYON MOHON GHOSH, SUDHA GOEL, *9th All India People's Technology Congress by FOSET*, Science City, Kolkata, (2013)
11. Evaluating Seasonal Aerosol Loading and Its Attribution to Emissions from Indo-gangetic Plain at a Pollution Outflow Vent Into Bay of Bengal Using General Circulation Model Simulations and Multiple Me, *By* Shantanu Pani and Shubha Verma, *AOGS - AGU (WPGM) Joint Assembly*, Singapore, (2012)
12. Evidence of non-universality of von Kármán's k, *By* Gaudio R and Dey S, *Thirty-first International School of Hydraulics*, Warsaw, Poland, (2012)
13. Experimental investigation on shear strengthening of RC T-beams with GFRP sheet in shear zone, *By* Panda, K. C., Bhattacharyya, S. K., and Barai, S. V., *International conference on sustainability Challenges & Advances in Concret Technology (SCACT 2012)*, Coimbatore, Tamilnadu, India, (2012)
14. Finite element method based analysis of single anchored rubber dam, *By* Prasad Choudhari, V. R. Desai, A. Swetha Reddy, *Hydro-2012 Conference on Hydraulics, Water Resources, Coastal & Environmental Engineering*, IIT Bombay, Mumbai, (2012)
15. Floating stone columns in soft clay with unreinforced and geocell reinforced sand cushion, *By* Bora, M. C. and Dash, S.K., *Indian Geotechnical Conference*, New Delhi, (2012)
16. FRP Strengthened Reinforced Concrete Beams A Brief overview on Shear Strength Models, *By* Panda, K. C., Bhattacharyya, S. K., and Barai, S. V., *UKERI Concrete Congress Innovations in Concrete Construction (UCC 2013)*, Jalandhar, Punjab, India, (2013)
17. Hydrodynamics of undular free surface flows, *By* Dey S, Bose S K and Castro-Orgaz O, *Thirty-first International School of Hydraulics*, Warsaw, Poland, (2012)
18. Influence of local hydrometeorological variables on basin scale drought status, *By* Chanda K., and Rajib Maity, *5th International Congress of Environmental Research (ICER)*, UMT, Terengganu, Malaysia, (2012)
19. Influence of Mesoscale and Long Range Transport on Seasonal Aerosol Surface and Columnar Loading on East Coast of India, *By* Shubha Verma and Shantanu Pani, *AOGS - AGU (WPGM) Joint Assembly*, Singapore, (2012)
20. Monitoring of seasonal effect on the antibiotic resistance pattern in pathogens isolated from river Hooghly, Kolkata, *By* Tandra Mohanta and S Goel, *National conference on Clean Water and Health*, New Delhi, (2013)
21. Multistep-Ahead Stream Flow Prediction using Least Square-Support Vector Regression, *By* Bhagwat P. P., and Rajib Maity, *Conference on Hydraulics, Water Resources, Coastal and Environmental Engineering (HYDRO-2012)*, IIT Bombay, Mumbai, India, (2012)
22. Natural Base Isolation System for Earthquake Protection, *By* S. Bandyopadhyay, A. Sengupta, G.R. Reddy, *2nd Intl Conf. on Geotechnique, Construction Materials and Environment*, Kuala Lumpur, Malaysia, (2012)
23. Nonlinear compressibility effects of medium in simulation of submerged rigid plates subjected to underwater explosion, *By* Mitra, N., Ghoshal, R., *10th World Congress on Computational Mechanics*, Sao-Paulo, Brazil, (2012)
24. Nonlinear Response of Aged Concrete Dams Adjacent to Reservoir, *By* Parsuram Nayak and Damodar Maity, *4th International Congress on Computational Mechanics and Simulation*, IIT Hyderabad, India, (2012)
25. Numerical simulation of soil-pile system subjected to horizontal dynamic loading, *By* Bhowmik, D, Baidya, D K, and Dasgupta, S P, *Indian Geotechnical Conference*, IIT Delhi, (2012)
26. Optimal sensor placement for damage detection using continuous ant colony optimization, *By* Aditi Majumdar, Bharadwaj Nanda, Dipak Kumar Maiti and Damodar Maity, *4th International Congress on Computational Mechanics and Simulation*, IIT Hyderabad, India, (2012)
27. Parameters influencing the performance of geocell-reinforced foundation system: A brief review, *By* Biswas, A., Dash, S.K. and Krishna, M. A., *Indian Geotechnical Conference*, New Delhi, (2012)
28. Performance of Sand & Shredded Rubber Tire Mixture as a Natural Seismic Base Isolator, *By* S. Bandyopadhyay, A. Sengupta, G.R. Reddy, *7th Intl Conf. on Case Histories in*

- Geotechnical Engineering and Symposium in Honor of Clyde Baker*, Chicago, Illinois, USA, (2013)
29. Performance of sand and rubber composite as a natural base isolation system for earthquake protection, *By S. Bandyopadhyay, A. Sengupta, G.R. Reddy, ACUN6 –Composites and Nanocomposites in Civil, Offshore and Mining Infrastructure*, Melbourne, Australia, (2012)
 30. Probabilistic Simulation of Surface Soil Moisture using Hydrometeorological Inputs, *By Das S. K. and Rajib Maity, Conference on Hydraulics, Water Resources, Coastal and Environmental Engineering (HYDRO-2012)*, IIT Bombay, Mumbai, India, (2012)
 31. Remote Sensing and Geographic Information Systems (GIS) applications – A case study of River Ib Barrage, Odisha, *By Debiprasad Taudia and S Goel, HYDRO-2012*, IIT Bombay, (2012)
 32. Research Needs in Road Traffic Safety, *By Mitra, S, Women Engineers Leading Global Innovation*, Bangalore, India, (2012)
 33. Shrinkage behaviour of soils, *By Hussain, M. and Dash, S.K., Indian Geotechnical Conference*, New Delhi, (2012)
 34. Slope Stability Analysis Using Finite Element Method and Limit Equilibrium Methods, *By S. P. Acharya, A. Burman, R. R. Sahay and Damodar Maity, 4th International Congress on Computational Mechanics and Simulation (ICCMS-12)*, IIT Hyderabad, India, (2012)
 35. Spatio-temporal analysis of drought predictability across India, *By Rajib Maity and Chanda K., 5th International Congress of Environmental Research (ICER)*, UMT, Terengganu, Malaysia, (2012)
 36. Stability of Earth Retention System in Dry Cohesionless Soil under Static & Seismic Conditions, *By S. S. Chowdhury, K. Deb and A. Sengupta, 4th Intl Conference on Computational Methods in Structural Dynamics and Earthquake Engineering*, Kos Island, Greece, (2013)
 37. Strain analysis of RC T-beams side bonded in shear with GFRP sheet, *By Panda, K. C., Bhattacharyya, S. K., and Barai, S. V., International Conference on Rehabilitation and Restoration of Structures (BTCM 2013)*, IIT Madras, Chennai, India, (2013)
 38. Structural Optimization using Artificial Immune System (AIS), *By S S Botu and S V Barai, 10th World Congress on Computational Mechanics (WCCM 2012)*, São Paulo, Brazil, (2012)
 39. Women at Work-A Balancing Act, *By Bhattacharya, P., Das, A., Mitra, S., REGIONAL CONFERENCE OF THE INTERNATIONAL NETWORK OF WOMEN ENGINEERS & SCIENTISTS*, New Delhi, India, (2012)

Department of Computer Science & Engineering

Head

Prof. Jayanta Mukhopadhyay

Professors

Basu, Anupam	<i>Ph.D.(IIT Kharagpur),</i>
Chakrabarti, Partha Pratim	<i>Ph.D.(IIT Kharagpur),</i> Artificial Intelligence, CAD for VLSI & Embedded Systems, Design of Algorithms, Reliable and Fault Tolerant Systems
Das, Partha Pratim	<i>Ph.D.(IIT Kharagpur),</i> Image Processing, Software Engineering, Language Translation, Object-Oriented Analysis & Design
Dasgupta, Pallab	<i>Ph.D.(IIT Kharagpur),</i> VLSI CAD & Electronic Design Automation, Formal Verification
Ghose, Sujoy	<i>Ph.D.(IIT Kharagpur),</i> System Intelligence, Networking, Algorithms
Gupta, Arobinda	<i>Ph.D.(Iowa),</i> Distributed Systems, Mobile Computing
Kumar, Rajeev	<i>Ph.D.(Sheffield),</i> Programming Language & Software Engineering, Multiobjective Optimization & Evolutionary Computing, EDA & Embedded Systems, Multimedia Systems & Video Transcoding, Education Standards & Quality
Majumder, Arun Kumar	<i>Ph.D.(Cal),Ph.D.(Florida),</i> Database and Multimedia Systems, Information Security, Medical Informatics and Telemedicine
Mall, Rajib	<i>Ph.D.(IISc Bangalore),</i> program analysis and testing
Mandal, Chittaranjan	<i>Ph.D.(IIT Kharagpur),</i> VLSI CAD, Networking, Formal Verification
Mukhopadhyay, Jayanta	<i>Ph.D.(IIT Kharagpur),</i> Image Processing, Medical Informatics, Bio-informatics
Pal, Ajit	<i>Ph.D.(Calcutta Univ),</i> CAD for Low Power Embedded systems Computer Networks
Pal, Sudebkumar Prasant	<i>Ph.D.(IISc Bangalore),</i> Design and analysis of algorithms, Computational and combinatorial geometry
Roychowdhury, Dipanwita	<i>Ph.D.(IIT Kharagpur),</i> 1. Cryptography 2. Cellular Automata 3.Error Correcting Code 4. VLSI
Sarkar, Dipankar	<i>Ph.D.(IIT Kharagpur),</i>
Sarkar, Sudeshna	<i>Ph.D.(IIT Kharagpur),</i> Machine learning, Natural Language Processing, Data Mining
Sengupta, Indranil	<i>Ph.D.(Calcutta Univ),</i> VLSI design and testing, Cryptography and network security, Reversible computing

Associate Professors

Bhowmick, Partha	<i>Ph.D.(ISI, Kolkata),</i> Algorithmic Art, Geometric Algorithms, Computer Graphics, Visual Pattern Recognition, Digital Geometry, Combinatorial Image Analysis
Das, Abhijit	<i>Ph.D.(IISc Bangalore),</i> Cryptography, Computational Number Theory, Parallel and Distributed Implementations
Ganguly, Niloy	<i>Ph.D.(BESU, Calcutta),</i> Peer-to-peer Networks, Online Social

	networks, Network Theory, Wireless Internet, Delay Tolerant Networks
Mitra, Pabitra	<i>Ph.D.(ISI Calcutta)</i> , Machine Learning, Data Mining, Information Retrieval
Mukhopadhyay, Debdeep	<i>Ph.D.(IIT Kharagpur)</i> , Computer Architecture and Security, Cryptology, VLSI, Embedded systems for Cryptographic Systems, Side Channel Analysis

Assistant Professors

Chakraborty, Rajat Subhra	<i>Ph.D.(CWR Univ.USA)</i> , Hardware Design for Security, Digital Watermarking, VLSI Design and Methodologies
Dey, Soumyajit	<i>Ph.D.(IIT Kharagpur)</i> , Formal Methods for Embedded System Design and Verification, High Performance Architecture, Assistive Technologies, For more information: http://cse.iitkgp.ac.in/~soumya/
Mitra, Bivas	<i>Ph.D.(IIT Kharagpur)</i> ,
Mitra, Pralay	<i>Ph.D.(IISc. Bangalore)</i> , Computational Biology, Bioinformatics
Mukherjee, Animesh	<i>Ph.D.(IIT Kharagpur)</i> , Complex systems, language dynamics, social computation, web social media

Lecturer

Dey, Partha Sarathi	<i>M.Tech.(IIT Kharagpur)</i> , Multi Core Architecture, Operating System, VLSI, Embedded Systems
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Faculty Appointments

Pralay Mitra	Assistant Professor
Bivas Mitra	Assistant Professor
Sourangshu Bhattacharya	Assistant Professor
Pawan Goyal	Assistant Professor
Soumyajit Dey	Assistant Professor

Brief Description of on-going activities

Artificial Intelligence, Bioinformatics, Combinatorial and Computational Geometry, Computer Graphics, Computer Networks, Cryptography, Hardware Security, Computer Architecture, Databases, Embedded Systems, Fault Tolerant Computing, Formal Verification, Image Processing and Computer Vision, Mobile Computing, Multimedia, Natural Language Processing, Object Oriented Design Tools, Parallel and Distributed Processing, Real Time Systems, Software Engineering, Speech Recognition and Synthesis, VLSI Design and CAD tools, Quantum Information and Computation

Thrust Areas

1. Artificial Intelligence
2. VLSI Design and CAD tools
3. Cryptography
4. Hardware and Embedded Security
5. Natural Language Processing
6. Image Processing
7. Complex and Social Networks

International Collaborations

"Design and Implementation of Wireless Embedded Sensor Networks Based Old Age Home Monitoring" under India-Taiwan Programme of Cooperation in Science and Technology. Rajib Mall and Pabitra Mitra

New perspectives for computational social science, DST, India and Ministry of External Affairs, Italy, University of Rome, Italy, Animesh Mukherjee

Understanding, Leveraging and Deploying Online Social Networks, Joint project with MPI-SWS, Saarbrücken, Niloy Ganguly.

Joint Publication with TU Dresden, Germany, Duke University, USA, University of Nice, France, University of Bielefeld, Germany, UFOP, Ouro Preto, Brazil, ETH Zurich, MPI-SWS, Saarbrücken. Niloy Ganguly

Joint Publication with researchers from Georgia Tech, USA, Case Western Reserve, USA, NTU Singapore, Debdeep Mukhopadhyay.

Joint Publications with researchers in Stanford University, Georgia Tech, Carleton University, Canada, ISI Kolkata, (Collaborators: Arindam Khan, Mridul Aanjaneya, Subhas C Nandy, Arijit Bishnu), Sudebkumar P. Pal

Joint Publication with Yeditepe University, Turkey, Rajat Subhra Chakraborty and Debdeep Mukhopadhyay

Joint Publication with University of Nebraska Omaha, Niloy Ganguly and Animesh Mukherjee

Joint organization of workshop Proofs 2013 along with CHES 2013, Santa Barbara USA.

Lectures by Visiting Experts

1. Annotating Images with Words, Phrases and Sentences *by* Prof. C. V. Jawahar (IIIT Hyderabad)
2. Turning Inspiration into Critical Customer Assets *by* Dr Sugato Chakraborty (Manager of Strategic Initiatives Xerox Research India)
3. Design Automation for Digital Microfluidic Biochips: From Fluidic-Level Toward Chip-Level *by* Dr. Tsung-Yi Ho (Department of Computer Science and Information Engineering National Cheng Kung University Taiwan)
4. ARM Architecture Fundamentals *by* Mrinmoy Ghosh (Scientist ARM)
5. CloudAdvisor: A Recommendation-as-a-Service Platform for Cloud Configuration and Pricing *by* Dr Tridib Mukherjee (Xerox Research Centre India)
6. An Adaptive and Self-Healing Approach *by* Dr. Swaroop Ghosh (Faculty University of South Florida USA)
7. Trace Collection and Fault Localization for Data-centric Programs *by* Diptikalyan Saha (IBM Research)
8. Bounded Model Checking and HW - SW Co-verification *by* Dr. M. K. Srivas (Faculty Computer Science Department Chennai Mathematical Institute)
9. Automation in process industry and Computer Science in Automation with an interesting example *by* Dr. Arya Bhattacharya (Head Automation Division Tata Steel)
10. Block Cipher Modes for Disk Encryption *by* Debrup Chakraborty (CINVESTAV-IPN Mexico)
11. Quantifying Semantics and Contextualizing Distributional Similarity *by* Chris Biemann (Professor Technische Universität Darmstadt)
12. Computational Creativity *by* Prof. Philippe Pasquier (Assistant Professor SIAT Simon Fraser University)

13. Diffusion in Social Networks *by* Vineet Chaoji (Scientist Advertising Sciences Yahoo! Labs Bangalore)
14. Network effects of risk behavior change following prophylactic interventions *by* Dr. Ravi Sundaram (Associate Professor Northeastern University College of Computer and Information Science Boston, USA)
15. Learning in a Small World *by* Dr. Balaraman Ravindran (Associate Professor Department of Computer Science & Engineering Indian Institute of Technology, Madras)
16. Entity-relationship Search at Web Scale *by* Dr. Soumen Chakrabarti (Associate Professor Department of Computer Science & Engineering Indian Institute of Technology, Bombay)
17. Towards Practical and Efficient Distributed Trust *by* Dr. Aniket Kate (Head Cryptographic Systems Research Group Saarland university Germany)
18. Approximation Algorithms for Unsplittable Flow and Interval Coloring Problems *by* Arindam Pal (Department of CSE IIT Delhi)
19. The Theory of Graph Games: Mixing Chess, Soccer and Poker *by* Dr. Krishnendu Chatterjee (Institute of Science and Technology Austria)
20. Precision Timed Computing in the Synchronous Setting *by* Dr Partha Sarathy Roop (Dept. of Electrical and Computer Engineering Univ of Auckland New Zealand)
21. How to Unleash Massive Parallelism of your Laptop? A Massively Parallel Priority Queue Data Structure on GPUs *by* Prof. Sushil K. Prasad (Professor Computer Science Department Georgia State University)

Doctoral and MS Degrees Awarded

1. Prमित Roy : Misbehavior Detection in Vanet Using Secondary Information(MS)
2. Chandan Karfa : Formal Verification of Behavioural Transformations During Embedded System Design(PhD)
3. Satrajit Ghosh : Improvements of Linearization-Based Algebraic Attacks on Block Ciphers(MS)
4. Debjit Pal : Automated Mixed-Signal Verification Using Monitors and Simulation Relations(MS)
5. Sujoy Sinha Roy : Design and Analysis of Elliptic Curve Cryptosystems on FPGAs(MS)
6. Sumit Das : Computational Approach Improving Fluency in Bangla Sentence Generation(MS)
7. Animesh Srivastava : Impact of Attacks on Correlated P2P Network Topology: A Complex Network Approach(MS)
8. Joydeep Chandra : Topology and its Effects on the Performance of Peer-to-Peer Networks(PhD)
9. Biswajit Das : Automatic Speech Recognition of Aging Speech in Bengali(MS)
10. Subhankar Mukherjee : Assertions: From a Mixed-Signal Perspective(PhD)
11. Pravanjan Choudhury : New Multiprocessor Scheduling Techniques for Dynamic Task Graphs(PhD)
12. Chandan Misra : A software system for transcribing and rendering indic music system(MS)
13. Soumen Bag : Processing and analysis of Bangla optical characters using geometric and topological features(PhD)
14. Saptarshi Ghosh : Online Social Networks: Evaluation and Search(PhD)
15. Biswanath Barik : Performance Enhancement of Bengali-Hindi Machine Translation Through Syntactic Analysis Refinement(MS)
16. Dinesh Dash : Geometric algorithms for coverage in wireless sensor networks(PhD)
17. Sk. Subidh Ali : Differential Fault Analysis of Block Ciphers(PhD)
18. Srobona Mitra : Formal Methods for Aiding Verification of Local Design Changes in Digital Integrated Circuits(PhD)
19. Arnab Sarkar : New Approaches in Real-Time Proportional Fair Multi-Processor Scheduling(PhD)
20. Sourya Bhattacharyya : (MS)
21. Sirsendu Mohanta : (MS)
22. Debi Prasad Dogra : Algorithms for Video Assisted Analysis of Infant Neurological Examinations(PhD)
23. Sourasis Das : Formal Methods for Improving Test and Assertion Coverage(MS)

Member - Professional Bodies

1. Kumar, Rajeev, *Senior Member* - IEEE
2. Kumar, Rajeev, *Senior Member* - ACM
3. Ganguly, Niloy, *Regular* - IEEE Comsoc
4. Ganguly, Niloy, *Member* - ACM
5. Mukhopadhyay, Debdeep, *Member* - ACM-SIGDA
6. Das, Partha Pratim, *Member* - Association for Computing Machinery
7. Das, Partha Pratim, *Member* - VLSI Society of India
8. Majumder, Arun Kumar, - Senior Member Institution of Electrical and Electronic Engineers USA
9. Dey, Partha Sarathi, *Regular* - IEEE Computer Society
10. Chakrabarti, Partha Pratim, *Senior Member* - IEEE
11. Chakrabarti, Partha Pratim, *Member* - ACM
12. Sengupta, Indranil, *Member* - IEEE
13. Mukhopadhyay, Jayanta, *Life member* - Telemedicine Society of India
14. Mukhopadhyay, Jayanta, *Senior* - IEEE
15. Mukhopadhyay, Jayanta, *Life Member* - Indian Association for Medical Informatics (IAMI)
16. Dasgupta, Pallab, *Regular* - ACM
17. Dasgupta, Pallab, *Senior* - IEEE
18. Roychowdhury, Dipanwita, *Life member* - CRSI (Cryptology Research Society of India)
19. Roychowdhury, Dipanwita, *Regular* - IEEE
20. Sarkar, Sudeshna, *member* - ACM
21. Mandal, Chittaranjan, *Regular* - IEEE
22. Chakraborty, Rajat Subhra, *Member* - IEEE

Member - Editorial Board

1. Chakrabarti, Partha Pratim (0) *Member* - Journal of IETE
2. Chakrabarti, Partha Pratim (0) *Member* - Journal of the Computer Society of India
3. Mukhopadhyay, Jayanta (2009) *Member* - Journal of Visual Communication and Image Representation

Awards & Honours

1. Mukhopadhyay, Debdeep (2013) *Award from M/S Intellectual Ventures based on reviewer scores for an invention proposal Architecture specific high-speed block cipher implementation*
2. Ganguly, Niloy (2012) *Best Paper Award --- Joydeep Chandra, Ingo Scholtes, Niloy Ganguly, Frank Schweitzer, A Tunable Mechanism for Identifying Trusted Nodes in Large Scale Distributed Networks, 11th IEEE TrustCom-2012,*
3. Chakraborty, Rajat Subhra (2012) *Cash Award from M/S Intellectual Ventures based on reviewer scores for an invention proposal titled Multi-level Inline Data Deduplication*
4. Dasgupta, Pallab (2012) *IESA Technomenter Award*
5. Chakraborty, Rajat Subhra (2012) *Patenting bonus cash award from M/S Intellectual Ventures for an invention proposal titled Multi-level Inline Data Deduplication*

Fellowships

1. Dasgupta, Pallab (2013) *Fellow of Indian National Academy of Engineering*
2. Mukhopadhyay, Debdeep (2012) *IndoUS Research Fellowship, 2012*

Sponsored Research Projects

1. 3-D Image Sensor for Capturing Minute Surface Details and Visualization by Geometric Modeling (DST, Rs.33.00 Lakhs)
2. Aakash development laboratory at IIT Kharagpur (MHRD, Rs.0.00 Lakhs)
3. An Open Source Web Browser for Blind People (DIT, Govt. of India, Rs.29.94 Lakhs)
4. Anwesan: A Search engine for Bengali literary works (SNLTR, Rs.10.00 Lakhs)
5. AUTOSAFE -- Architecture Aware Timing Analysis and Optimization of safety Critical Automotive Software (IGSTC, Rs.291.12 Lakhs)
6. Building Collaborative Download Framework for Wired and Wireless Networks (DST, Rs.42.00 Lakhs)
7. Building Delay Tolerant Peer-to-peer network (DIT, Rs.55.00 Lakhs)
8. Building Reliable Embedded Real-Time Systems (DST-Indo Brazil Project, Rs.33.66 Lakhs)
9. Creating Accessible Study Materials for Print Impaired Students (MHRD, Rs.53.00 Lakhs)
10. Cross language information access Phase II (Ministry of Communications and Information Technology, Rs.138.73 Lakhs)
11. Deployment of telemedicine project (II) - DOTP (WEBEL Electronic Communications Systems Ltd., Rs.0.00 Lakhs)
12. Design and Analysis of a Light Weight Cryptographic System on FPGAs (ISRO India, Rs.9.12 Lakhs)
13. Design and Analysis of Side Channel Attack resistant symmetric Key Cryptosystems (Department of Science & Technology, New Delhi, Rs.9.24 Lakhs)
14. Design and development of integrated security risk management for an enterprise network (Department of Information Technology, Govt of India, Rs.48.00 Lakhs)
15. Design of an Integrated Scheme for Error Correction and Message Authentication, (SAC Ahmedabad, KCSTC IIT Kharagpur, Rs.6.00 Lakhs)
16. Design of Finite Field Controller (CAIR DRDO, Rs.0.00 Lakhs)
17. Design of Side Channel Attack Resistant Programmable Block Ciphers on FPGAs (DIT India, Rs.73.20 Lakhs)
18. Development of a Web-enabled e-Healthcare System for Neonatal Patient Care Services (eNPCS) (PCS) (MCIT, Govt. of India, Rs.39.70 Lakhs)
19. Development of Bangla Linux and Standardized Bangla Keyboard (Society for Natural Language Technology Research, Rs.7.50 Lakhs)
20. Development of Elliptic Curve Hardware Engine on Reconfigurable Platform (CAIR, DRDO, Bangalore, Rs.6.96 Lakhs)
21. Development of spatio-temporal access control models (Department of Science and Technology, Govt. of India, Rs.16.18 Lakhs)
22. Development of Web enabled e-Healthcare System for Neonatal Patient Care Services (eNPCS) (Department of Information Technology, Government of India, Rs.39.70 Lakhs)
23. Encryption – Encryption in Compressed Domain, (SAC Ahmedabad, (KCSTC IIT Kharagpur), Rs.12.00 Lakhs)
24. Enhancing Cloud Efficiency through P2p Based Architecture (CSIR, Rs.24.00 Lakhs)
25. Extending the Scope of Equivalence Checking in Complex Embedded System Design Verification (DST, Rs.840000.00 Lakhs)
26. Fault diagnosis in digital systems (under Synopsys CAD Lab) (Synopsys India, Rs.40.00 Lakhs)
27. GM Collaborative Research Laboratory on ECS for Education (General Motors, Rs.184.00 Lakhs)
28. Hardware Security: Ensuring TRUST in Integrated Circuits (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
29. ICT for computational social science (DST, Rs.1380000.00 Lakhs)
30. Image analysis for preservation and archiving of Indian Cultural Heritage (DST, Rs.23.00 Lakhs)
31. Indian Language Machine Translation Phase II (Ministry of Communications and Information Technology, Rs.40.00 Lakhs)
32. Integrated Vehicle Health Management for Automotive Engine Applications (NPMASS, Rs.259.60 Lakhs)
33. Intel Embedded Innovation Lablet (Intel India, Rs.12.00 Lakhs)
34. Intel Embedded Innovation Lablet (Intel, Rs.12.00 Lakhs)
35. Investigation of Cryptanalytic Techniques (Headquarters, Integrated Defence Staff, Ministry of Defence, Govt of India, Rs.44.30 Lakhs)

36. Leveraging Bipartite network to investigate the dynamical properties of socio-technical systems (Samsung GRO, Rs.4000000.00 Lakhs)
37. Leveraging Simulation Dumps and Failure Traces for Formal Property Verification (INTEL Technology India Pvt. Ltd, Bangalore, Rs.10.00 Lakhs)
38. Linux kernel development and support (Nucleodyne Systems Inc., USA, Rs.12.00 Lakhs)
39. Machine Learning based Model-building Attack on PUFs (Centre for Artificial Intelligence and Robotics (CAIR), Defence Research and Development Organisation, Rs.9.60 Lakhs)
40. Modeling and Validation of Interlocking for Railway Signalling Systems (Ministry of Railways, Rs.34.60 Lakhs)
41. New perspectives for computational social science (DST, India and Ministry of External Affairs, Italy, Rs.2.00 Lakhs)
42. Optimal solutions and applications for the next generation wireless Internet. (VEICET, Rs.45.00 Lakhs)
43. Pattern Recognition Algorithms for Bioinformatics (DST, Rs.24.50 Lakhs)
44. POWER ATTACKS ON STREAM CIPHERS AND CACHE MEMORY ATTACKS (DRDO New Delhi, Rs.45.00 Lakhs)
45. Preprocessing and Analysis of Degraded Documents (MCT, GOI, Rs.34.00 Lakhs)
46. Programming and Data Structures Virtual Lab (MHRD, Rs.20.00 Lakhs)
47. Regression Testing of Object-Oriented Programs (DST, New Delhi, Rs.10.54 Lakhs)
48. Safety messaging in vehicular networks (General Motors India, Rs.0.00 Lakhs)
49. SocioWeb: Social computation to enhance Web and network applications (ISIRD, SRIC IIT Kharagpur, Rs.5.00 Lakhs)
50. software Tools for Cryptanalysis of Stream Cipher (SAG, DRDO, New Delhi, Rs.19.85 Lakhs)
51. Special Manpower Development Project (DIT, Rs.90.00 Lakhs)
52. Speech Based Computer Interface (Intel, Rs.10.00 Lakhs)
53. Strategies for power reduction during VLSI circuit testing (DIT, Government of India, Rs.31.00 Lakhs)
54. Study of Hardware Malware Vulnerabilities and Mitigation Techniques for FPGAs (completed) (Centre for Artificial Intelligence and Robotics (CAIR), Defence Research and Development Organisation, Rs.9.00 Lakhs)
55. Understanding, Leveraging and Deploying Online Social Networks (DST-IMPECS, Rs.60.00 Lakhs)
56. Virtual Lab (VLS) on Computer Organization (MHRD, Rs.30.00 Lakhs)
57. Virtual Lab for Computer Organisation & Architecture (MHRD, Rs.56.00 Lakhs)
58. VLSI Design of Elliptic Curve Cryptosystem tolerant Against Power Attacks (SRIC, IIT Kharagpur, Rs.4.40 Lakhs)

Consultancy Projects

1. Analytics of Group Dynamics of Mobile Users (Xerox Corporation, Rs.79.20 Lakhs)
2. Approaches to Efficient & Safe C++ Generic Programming Interface for a Legacy C Library - ESGP [Jul, 2011-Jun, 2012] (Interra Systems India Private Limited, Rs.6.89 Lakhs)
3. Approaches to Efficient & Safe C++ Generic Programming Interface for a Legacy C Library – Phase II - ESCP [Jul, 2012-Jun, 2013] (Interra Systems India Private Limited, Rs.7.02 Lakhs)
4. Architecture and Algorithmic Optimizations for Speech based Communication Interfaces on Mobile Devices (Intel India, Rs.57.00 Lakhs)
5. Cache Timing Attack on Clefia (NTT Labs, Japan, Rs.20.00 Lakhs)
6. Core Banking for OSCB (OSCB, Rs.50.00 Lakhs)
7. Core Banking Systems Implementation (Orissa State Cooperative Bank Ltd., Bhubaneswar, Rs.56.25 Lakhs)
8. Design of PSEC-KEM (NTT Labs, Japan, Rs.9.40 Lakhs)
9. Design of PSEC-KEM algorithm on prime fields (NTT Labs, India, Rs.20.00 Lakhs)
10. Drafting Revised Guidelines for UG Engineering Program Accreditation (NBA, Rs.0.00 Lakhs)
11. Formal Equivalence and Simulation Relations for AMS Behavioral Models (Semiconductor Research Corporation, USA, Rs.45.00 Lakhs)
12. Formal methods for power intent verification (MPIV) (Synopsys (India) Pvt. Limited, RMZ Infinity, Tower A, Old Madras Road, Bangalore-560016, Rs.25.00 Lakhs)
13. Formal Verification of Post Silicon Bug Fixes (INTEL Technology India Pvt. Ltd, Bangalore, Rs.22.06 Lakhs)
14. General Motors ECS CRL Projects (General Motors, Rs.60.00 Lakhs)

15. GM Collaborative Research Laboratory on Electronics, Controls and Software: Projects (General Motors, Rs.425.00 Lakhs)
16. HARDWARE TROJAN ATTACK TEST BED ON FPGA BASED SYSTEMS (Reconnoiter Technology & Research Pvt. Ltd, Rs.20.00 Lakhs)
17. Hardware Trojan Attack Testbed on FPGA based Systems (Reconnoiter Technology and Research, Pune, India, Rs.20.00 Lakhs)
18. IT Consultancy (CITM) (UCO Bank, Rs.15.00 Lakhs)
19. IT Consultant at NIC (National Insurance Company Limited, Rs.3.12 Lakhs)
20. Platform Architecture Modeling for Exploring Power Management Strategies (Intel, Rs.16.00 Lakhs)
21. Roadmap for ERP Solutions at Kolkata Port Trust (Kolkata Port Trust, Rs.4.50 Lakhs)
22. Sanyog Phase II: A portable communication Tool for the Speech & Neuro Motor Impaired People (Media Lab Asia, New Delhi, Rs.71.12 Lakhs)
23. SIDE-CHANNEL ATTACK (SCA) EVALUATION OF PSEC-KEM (NTT Labs Japan, Rs.14.20 Lakhs)
24. Synopsys CAD Laboratory (Synopsys, Rs.172.72 Lakhs)
25. Technical Consultancy Services on IT Matters (UCO Bank, Kolkata, Rs.6.00 Lakhs)

Technology Transferred

1. CAIR, DRDO - ECC Processor : Rs. 6.96 Lakh

Patents (filed / granted)

1. A cache Timing Attack resistant Prefetching Architecture
2. Architecture for Processing Fingerprint Images
3. Architecture specific high-speed block cipher implementation
4. Method and Apparatus for Extracting Assume Properties
5. Method and Apparatus for Operational-Level Functional and Degradation Fault Analysis
6. Method and Apparatus for Providing a Binary Fingerprint Image
7. Method and Apparatus to Reduce False Minutiae from a Binary Fingerprint Image
8. Method and apparatus to reduce false minutiae from a binary fingerprint image
9. MULTI-LEVEL INLINE DATA DEDUPLICATION
10. PROTECTION OF INTELLECTUAL PROPERTY (IP) CORES THROUGH A DESIGN FLOW
11. Shruti: Vernacular Speech Recognition System in Bengali

Visits Abroad by Faculty Members

1. Chakrabarti, Partha Pratim - India-UK Science & Innovation Council Meeting (London, UK,) April 17-18, 2012
2. Mukhopadhyay, Debdeep - Research fellow (funded with fellowship from IUSTF-2012) (NYU-Poly, USA,) 3 months
3. Mukherjee, Animesh - Organizing Dynamics on and of Complex Networks - V (Vienna, Austria,) September 12-16
4. Mukherjee, Animesh - Invited talk (Dresden, Germany,) 13-19 May
5. Chakraborty, Rajat Subhra - To deliver keynote speech in IEEE WRTLT12 workshop (Niigata, Japan,) 18-25 November 2012
6. Mukhopadhyay, Debdeep - Presented Paper at CHES 2012 (K.U Leuven, Belgium,) 4 days
7. Dasgupta, Pallab - DFG sponsored Academic Collaboration (Technical University of Munich, Germany,) May 25 -- July 13, 2012
8. Chakraborty, Rajat Subhra - To deliver an invited keynote speech at the 2011 IEEE WIFS workshop (Foz do Iguacu, Brazil,) 27th November 2011 to 2nd December 2011
9. Mukhopadhyay, Debdeep - Presentation for Project Collaboration (Telecom ParisTech, France,) 1 day
10. Mukhopadhyay, Debdeep - Presented Paper at DTIS 2013 (Abu Dhabi,) 4 days
11. Sengupta, Indranil - Oral presentation of a paper at the DTIS-2013 Symposium (Abu Dhabi, UAE,) March 26-28, 2013

12. Mukhopadhyay, Debdeep - Invited talk for Shannon Fellowship Colloquium (TU Darmstadt, Germany,)
13. Mukhopadhyay, Debdeep - Tutorial on Hardware Security (IEEE WIFS, Brazil,)
14. Roychowdhury, Dipanwita - To attend conference ACRI 2012 (Santorini Greece,) September 24 - 27
15. Sengupta, Indranil - Oral presentation of a paper at the DICTAP 2012 Conference (Bangkok, Thailand,) May 16-18, 2012
16. Sarkar, Sudeshna - Invited to attend Microsoft faculty summit (Redmond, USA,) July 15 - 17, 2012
17. Sarkar, Sudeshna - To present paper in UMAP 2012 (Montreal, Canada,) July 18-20, 2012
18. Mukherjee, Animesh - Invited talk (Frankfurt, Germany,) May 2012
19. Mukherjee, Animesh - Invited talk (MPI-PKS, Dresden, Germany,) May 2012
20. Mukherjee, Animesh - Invited talk (Frankfurt, Germany,) December 2012
21. Mukherjee, Animesh - Invited talk (Technical University of Darmstadt, Germany,) May 2012

Invited Lectures by Faculty Members

1. Statistical physics of language dynamics *by* Mukherjee, Animesh (IMSC, Chennai)
2. Opinion formation on time-varying social networks *by* Mukherjee, Animesh (MPI-PKS, Dresden, Germany)
3. Opinion formation on time-varying social networks *by* Mukherjee, Animesh (Technical University of Darmstadt, Germany)
4. From naming to color naming *by* Mukherjee, Animesh (Goethe University, Frankfurt, Germany)
5. From naming to color naming *by* Mukherjee, Animesh (ISI Kolkata)
6. From naming to color naming *by* Mukherjee, Animesh (S. N. Bose National Center for Basic Sciences, Kolkata)
7. Opinion formation through language games *by* Mukherjee, Animesh (IIT Kharagpur (IMPECS Workshop))
8. Algorithms for computational social science *by* Mukherjee, Animesh (INAE Annual Convention, CBRI, Roorke)
9. Opinion formation through language games *by* Mukherjee, Animesh (Goethe University, Frankfurt, Germany)
10. Shift of research interest in Computer Sciences over the last 50 years: What citation analysis refle *by* Mukherjee, Animesh (Heritage Institute of Technology, Kolkata)
11. Digital Color Restoration of Heritage Murals *by* Mukhopadhyay, Jayanta (Bangalore)
12. Digital Image Analysis of Stone Inscriptions *by* Mukhopadhyay, Jayanta (Bangalore)
13. Digital distances and their applications in image processing *by* Mukhopadhyay, Jayanta (Bangalore)
14. Gait Recognition *by* Mukhopadhyay, Jayanta (Tumkur)
15. Extraction of contextual information from Echo-Cardiogram Video *by* Mukhopadhyay, Jayanta (Mumbai)
16. Telemedicine For Public Health: A Retrospective *by* Mukhopadhyay, Jayanta (Kolkata)
17. Telemedicine Projects in West Bengal and Tripura: A retrospective *by* Mukhopadhyay, Jayanta (Bhubaneswar)
18. Testing Techniques for Hardware Trojan Detection at IEEE WRTL 2012 Workshop *by* Chakraborty, Rajat Subhra (Niigata, Japan)
19. Reversible Watermarking (tutorial) at ICISS 2012 Conference *by* Chakraborty, Rajat Subhra (Guwahati, India)
20. Parallel Computational Lithography *by* Das, Partha Pratim (Workshop on "Selected Topics in Computer Science", Heritage Institute of Technology, Kolkata, Jul. 12-13, 2012)
21. Video Assisted Analysis of Infant Neurological Examinations *by* Das, Partha Pratim (Workshop on "Selected Topics in Computer Science", Heritage Institute of Technology, Kolkata, Jul. 12-13, 2012)
22. Kinectic Vision – Looking Deep into Depth *by* Das, Partha Pratim (Annual Technical Seminar, A K Choudhury School of Information Technology, Calcutta University, Kolkata, Dec. 07, 2012)

23. Custom Single-Purpose Processor Design *by* Das, Partha Pratim (Workshop on “Embedded System Design: Recent Trends & Techniques”, A K Choudhury School of Information Technology, Calcutta University, Kolkata, Mar. 08-10, 2013)
24. Reasoning with Formal Specifications *by* Dasgupta, Pallab (Tech. Univ of Munich, Germany)
25. Formal Verification in Informal Worlds *by* Dasgupta, Pallab (Embedded Tutorial at ISED 2012, Kolkata)
26. Formal Verification in Informal Worlds *by* Dasgupta, Pallab (Chennai Mathematical Institute)
27. How secured the Cryptosystems are on FPGA Platform *by* Roychowdhury, Dipanwita (University of Calcutta, Kolkata)
28. Cellular Automata and Cryptography *by* Roychowdhury, Dipanwita (Bengal Engineering and Science University, Kolkata)
29. Design of Symmetric Key Cryptography *by* Roychowdhury, Dipanwita (D.M. College of Science, Manipur)
30. Robust audio watermarking schemes for secure sharing of audio files *by* Sengupta, Indranil (Tezpur University)
31. Side Channels in Cryptography *by* Mukhopadhyay, Debdeep (IIT Madras (SPACE 2012))
32. Information Security from a Hardware Perspective *by* Mukhopadhyay, Debdeep (WIFS 2011, Brazil)

Books Published

1. Behrouz A. Forouzan and Debdeep Mukhopadhyay: Cryptography and Network Security *published by* Tata Mc Graw Hills (Indian Edition) (2010)
2. Abhijit Das: Computational Number Theory *published by* Taylor and Francis / CRC (2013)
3. Abhijit Das and C. E. Veni Madhavan: Public Key Cryptography: Theory and Practice *published by* Pearson Education (2009)
4. Ajit Pal: Microcontrollers: Principles and Applications *published by* PHI Learning Private limited (2011)
5. J. Mukhopadhyay, P. Bhowmick, P. P. Das, S. Chattopadhyay, and B. N. Chatterji: Digital Geometry in Image Processing *published by* CRC Press (2013)
6. Mukherjee, A. Choudhury, M. Peruani, F. Ganguly, N. Mitra, B. (Eds.): Dynamics On and Of Complex Networks, Volume 2, Applications to Time-Varying Dynamical Systems *published by* Birkhauser, Springer (2013)
7. Sudip Roy and Ajit Pal: Impact of Leakage Power Reduction on Parametric Yield *published by* LAP LAMBERT Academic Publishers (2013)

Short-Term Courses, Training Programmes and Workshops organised

1. Micro Controller & Embedded Systems (5 Days)
2. Spec2Layout Training Programme (10 weeks (13-08-2012:19-10-2012))

Papers Published in Journals

1. A Combinatorial Algorithm to Construct 3D Isothetic Covers *By* N. Karmakar, A. Biswas, P. Bhowmick, and B. B. Bhattacharya. *International Journal of Computer Mathematics* Accepted (2012)
2. A Fault Analysis Perspective for Testing of Secured SoC Cores *By* Subidh Ali, Bodhisatwa Majumdar, Debdeep Mukhopadhyay *IEEE Design & Test* (0)
3. A Generalized Tamper Localization Approach for Reversible Watermarking Algorithms (to appear) *By* R. Naskar and R. S. Chakraborty *ACM Transactions on Multimedia Computing Communications and Applications* (0)
4. A Multi-Objective Perspective for Operator Scheduling using Fine-Grained DVS Architectures *By* Rajdeep Mukherjee, Priyankar Ghosh, Pallab Dasgupta, Ajit Pal *International Journal of VLSI design & Communication Systems (VLSICS Journal)* Vol.4, No.1, 105-122 (2013)
5. A report on software engineering education workshop *By* Rakesh Shukla, Ashish Sureka, Rushikesh Joshi, Rajib Mall *ACM SIGSOFT Software Engineering Notes* 37(3): 26-31 (2012)

6. A Robust Method for Ventriculomegalay Detection from Neonatal Brain Ultra Sound Images By P. Mondal, J.Mukherjee, S.Sural, A. K.Majumdar, B. Majumdar, S. Mukherjee, A. Singh *Journal of Medical Sciences* Vol. 36, 2817-2828 (2012)
7. Algorithms for computing diffuse reflection paths in polygons By Subir Kumar Ghosh, Partha Pratim Goswami, Anil Maheshwari, Subhas Chandra Nandy, Sudebkumar Prasant Pal, Swami Sarvattomananda *The Visual Computer* 28(12), 1229-1237 (2012)
8. Algorithms for Generating Ordered Solutions for Explicit AND/OR Structures By Priyankar Ghosh, Amit Sharma, P. P. Chakrabarti, Pallab Dasgupta *Journal of Artificial Intelligence Research* 44, pp 275-333 (2012)
9. An embedded system for aiding navigation of visually impaired persons By A. Kumar, R. Patra, M. Mahadevappa, J. Mukhopadhyay, and A.K. Majumdar *Current Science* 104 (3), 302-306 (2013)
10. An IR-based Evaluation Framework for Web Search Query Segmentation By Rishiraj Saha Roy, Niloy Ganguly, Monojit Choudhury, Srivatsan Laxman *ACM SIGIR* (2012)
11. Analysis of Adductors Angle Measurement in Hammersmith Infant Neurological Examinations Using Mean Shift Segmentation and Feature Point Based Object Tracking By D. P. Dogra , A. K. Majumdar, S. Sural, J.Mukherjee, S.Mukherjee, A.Singh *Computers in Biology and Medicine* Vol. 42, 925-934 (2012)
12. Approximate Partitioning of 2D Objects into Orthogonally Convex Components By M. Dutt, A. Biswas, and P. Bhowmick *Computer Vision and Image Understanding* 117(4):326-341 (2013)
13. Assertion Aware Sampling Refinement: A Mixed-Signal Perspective By Subhankar Mukherjee and Pallab Dasgupta *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems* 31 (11) 1772-1775 (2012)
14. Block DCT to Wavelet Transcoding In Transform Domain By K. Viswanath, J. Mukherjee, and P. K. Biswas *Signal Image and Video Processing* 6(2), 179-195 (2012)
15. Boosting Profiled Cache Timing Attacks With Apriori Analysis By Chester Rebeiro, Debdeep Mukhopadhyay *IEEE Transactions on Information and Forensics Security (IEEE TIFS)* 7(6), 1900-1905 (2012)
16. Branch Target Buffer Energy Reduction Through Efficient Multiway Branch Translation Techniques By Sumanta Pyne, Ajit Pal *Journal of Low Power Electronics (JOLPE)* V8, N5, pp. 604-623 (2012)
17. CAR30: A new scalable stream cipher with rule 30 By Sourav Das, Dipanwita Roy Chowdhury *Cryptography and Communications* 5(2): 137-162 (2013) 5(2): 137-162 (2013)
18. CAvium - Strengthening Trivium Stream Cipher Using Cellular Automata. By Sandip Karmakar, Debdeep Mukhopadhyay, Dipanwita Roy Chowdhury *Journal of Cellular Automata* 7(2): 179-197 (2012)
19. Circular Arc Segmentation by Curvature Estimation and Geometric Validation By S. Pal, R. Dutta, and P. Bhowmick. *International Journal of Image and Graphics* Accepted (2012)
20. Cognos: Crowdsourcing Search for Topic Experts in Microblogs By Saptarshi Ghosh, Niloy Ganguly, Naveen Sharma, Fabricio Benevenuto, Krishna Gummadi *ACM SIGIR* (2012)
21. Cohesive Coverage Management: Simulation Meets Formal Methods By Aritra Hazra, Priyankar Ghosh, Pallab Dasgupta and P. P. Chakrabarti *Journal of Electronic Testing: Theory and Applications* 28 (4), 449-468 (2012)
22. Computational intelligence in software cost estimation: an emerging paradigm By Tirimula Rao Benala, Satchidananda Dehuri, Rajib Mall *ACM SIGSOFT Software Engineering Notes* 37(3): 1-7 (2012)
23. Computing Minimal Debugging Windows in Failure Traces of AMS Assertions By Subhankar Mukherjee and Pallab Dasgupta *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems* 31 (11) 1776-1780 (2012)
24. Correlations in complex networks under attack By A Srivastava, B Mitra, N Ganguly, F Peruani, *Physical Review E* 86 (3), 036106 (2012)
25. Cryptosystem for secret sharing scheme with hierarchical groups By Atanu Basu, Indranil Sen Gupta and Jamuna Kant Sing *International Journal of Network Security* 375-384 (2013)
26. Design of a high performance Binary Edwards Curve based processor secured against side channel analysis By Ayantika Chatterjee and Indranil Sengupta *Integration, the VLSI Journal* 45(3):331-340 (2012)
27. Design, Analysis of Cryptographic Algorithms and their Implementations By Debdeep Mukhopadhyay *Annals of INAE* 2011 (0)

28. Differential fault analysis of AES: towards reaching its limits *By* Subidh Ali, Debdeep Mukhopadhyay, Michael Tunstall *Journal of Cryptographic Engineering* (2012)
29. Diffuse reflection diameter and radius for convex-quadrilateralizable polygons *By* Arindam Khan, Sudebkumar Prasant Pal, Mridul Aanjaneya, Arijit Bishnu and Subhas C. Nandy *Discrete Applied Mathematics* 161(10-11):1496-1505 (2013)
30. Effects of a Soft Cut-off on Node-degree in the Twitter Social Network *By* S. Ghosh, A. Srivastava, N. Ganguly *Computer Communications* 35(7) (2012)
31. Emergence of fast agreement in an overhearing population: The case of the naming game *By* Maity, S. K., Mukherjee, A., Tria, F. and Loreto, V. *Euro. Phys. Lett.* (in press) (2013)
32. Formal Methods for Early Analysis of Functional Reliability in Component-Based Embedded Applications *By* Aritra Hazra, Priyankar Ghosh, S G Vadlamudi, P P Chakrabarti, Pallab Dasgupta *IEEE Embedded System Letters* 5(1), pp 8-11 (2013)
33. Formal Verification of Architectural Power Intent *By* Aritra Hazra, Sahil Goyal, Pallab Dasgupta and Ajit Pal *IEEE Transactions on Very Large Scale Integration Systems (TVLSI)* V21, N1, pp. 78-91 (2013)
34. Framework for multiple-fault diagnosis based on multiple fault simulation using particle swarm optimization *By* Subhadip Kundu, Aniket Jha, Santanu Chattopadhyay, Indranil Sen Gupta and Rohit Kapur *IEEE Transactions on VLSI Systems* (2013)
35. Functional Link Artificial Neural Networks for Software Cost Estimation *By* B. Tirimula Rao, Satchidananda Dehuri, Rajib Mall *International Journal of Applied Evolutionary Computation* 3(2): 62-82 (2012)
36. Generation of Random Digital Simple Curves with Artistic Emulation *By* P. Bhowmick and R. Klette. *Journal of Mathematical Imaging and Vision* Accepted (2012)
37. Hardware Trojan Detection by Multiple-Parameter Side-Channel Analysis (to appear) *By* S. Narasimhan, D. Du, R. S. Chakraborty, S. Paul, F. Wolff, C. Papachristou, K. Roy and S. Bhunia *IEEE Transactions on Computers* (0)
38. Hardware Trojan Insertion by Direct Modification of FPGA Configuration Bitstream (to appear) *By* R. S. Chakraborty, I. Saha, A. Palchoudhuri and G. K. Naik *IEEE Design & Test of Computers* (0)
39. Hierarchical Method Combining Gait and Phase of Motion with Spatiotemporal Model for Person Reidentification *By* A. Roy, S. Sural, and J. Mukherjee *Pattern Recognition Letters* 33 (14), 1891-1901 (2012)
40. Histogram–Bin–Shifting based Reversible Watermarking for Color Images (to appear) *By* R. Naskar and R. S. Chakraborty *IET Image Processing* (0)
41. How many protein-protein interaction types exist in nature? *By* Leonardo Garma, Srayanta Mukherjee, Pralay Mitra, Yang Zhang *PLoS ONE* e38913 (2012)
42. Hyperspheres of Weighted distances in arbitrary dimension *By* J. Mukherjee *Pattern Recognition Letters* 34 (2), 117-123 (2013)
43. On the origin of the hierarchy of color names *By* Loreto, V., Mukherjee, A. and Tria, F. *Proceedings of the National Academy of Sciences (PNAS)* 109(18), 6819--6824 (2012)
44. Opinion formation in time-varying social networks: The case of the naming game *By* Maity, S. K., Venkat, M. T. and Mukherjee, A. *Phys. Rev. E* 86, 036110 (2012)
45. Partial Bitstream Protection for Low-cost FPGAs with PUFs, Obfuscation & DPSR-LD *By* Sezer Goren, Ozgur Ozkurt, Abdullah Yildiz, H. Fatih Ugurdag, Rajat Subhra Chakraborty and Debdeep Mukhopadhyay *Computers and Electrical Engineering* (2012)
46. Partial encryption and watermarking scheme for audio files with controlled degradation of quality *By* Kamalika Datta and Indranil Sengupta *Multimedia Tools and Applications* 64(3):649-669 (2013)
47. Post-Silicon Debugging of PMU Integration Errors using Behavioral Models *By* Antara Ain, Subhankar Mukherjee, Pallab Dasgupta and Siddhartha Mukhopadhyay *Integration, the VLSI Journal* (2012)
48. POWER-SIM : An SOC Simulator for Estimating Power Profiles of Mobile Workloads *By* Priyankar Ghosh, Aritra Hazra, Rahul Gonnabhaktula, Niraj Bhilegaonkar, Pallab Dasgupta, Chittaranjan Mandal and Krishna Paul *Journal of Low-Power Electronics* 8 (3), 293-303 (2012)
49. SAT based Timing Analysis for Fixed and Rise/Fall Gate Delay Models *By* Suchismita Roy, P P Chakrabarti, Pallab Dasgupta *Integration, The VLSI Journal* 45(4), pp 357-364 (2012)
50. Secure Dual-Core Cryptoprocessor for Pairings Over Barreto-Naehrig Curves on FPGA Platform *By* Santosh Ghosh, Debdeep Mukhopadhyay, Dipanwita Roy Chowdhury *IEEE Trans. VLSI Syst.* 21(3): 434-442 (2013)

51. Secured hierarchical secret sharing using ECC based signcryption By Atanu Basu, Indranil Sen Gupta and Jamuna Kant Sing *Security and Communication Networks* 752-763 (2013)
52. Smart Association Control In Wireless Mobile Environment Using Max-Flow By Sourav Dandapat, Bivas Mitra, Romit Roy Choudhury, Niloy Ganguly, *IEEE Transactions on Network and Service Management* Vol9, No1, (2012)
53. Some insights on Recent Spate of Accidents in Indian Railways By Saptarshi Ghosh, Avishek Banerjee, Niloy Ganguly *Physica A*, (2012)
54. Symbolic Event Propagation Based Minimal Test Set Generation for Robust Path Delay Faults By Arijit Mondal, P P Chakrabarti, Pallab Dasgupta *ACM Transactions on Design Automation of Electronic Systems* 17(4), (2012)
55. Symbolic-Event-Propagation-Based Minimal Test Set Generation for Robust Path Delay Faults By Arijit Mondal, P. P. Chakrabarti, Pallab Dasgupta *ACM Transactions on Design Automation of Electronic Systems* 17 (4) (2012)
56. Synchronizing AMS Assertions with AMS Simulation: From Theory to Practice By Subhankar Mukherjee, Pallab Dasgupta, Siddhartha Mukhopadhyay, Scott Little, John Havlicek and Srikanth Chandrasekaran *ACM Transactions on Design Automation of Electronic Systems* 17 (4) (2012)
57. Theoretical Modeling of Elliptic Curve Scalar Multiplier on LUT Based FPGAs for Area & Speed By Sujoy Sinha Roy, Chester Rebeiro, Debdeep Mukhopadhyay *IEEE TVLSI* (2012)
58. Two-stage Database Intrusion Detection by Combining Multiple Evidence and Belief Update By S. Panigrahi , S. Sural, A. K. Majumdar *Information Systems Frontiers* Vol. 15(1), 35- 53 (2013)
59. Understanding and Combating Link Farming in the Twitter Social Network, By S. Ghosh, B. Viswanath, F. Kooti, N. Sharma, G. Korlam, F. Benevenuto, N. Ganguly, K. Gummadi *ACM World Wide Web Confere (WWW)* (2012)
60. Understanding Evolution of Inter-Group Relationships using Bipartite Networks By Ghosh, S., Saha, S., Srivastava, A., Kuerger, T., Ganguly, N. and Mukherjee, A. *IEEE Journal on Selected Areas in Communications* (in press) (2013)
61. Why are basic color names basic? By Mukherjee, A., Loreto, V. and Tria, F. *Advances in Complex Systems* 15, 1150016 (1-13) (2012)

Papers Presented in Conferences

1. A Generalized Theory for Formal Assertion Coverage, By Sourasis Das, Ansuman Banerjee and Pallab Dasgupta, *IEEE Asian Test Symposium (ATS)*, , (2012)
2. A Hybrid Dependency Parser for Bangla, By Dhar, Arnab and Chatterji, Sanjay and Sarkar, Sudeshna and Basu, Anupam, *Proceedings of the 10th Workshop on Asian Language Resources, at COLING 2012*, Mumbai, India, (2012)
3. A new authentication protocol for multi-tag RFID applicable to passive tag, By Subhasish Dhal and Indranil Sen Gupta, *2nd International Conference on Communication, Computing and Security*, Bhubaneswar, India, (2012)
4. A Web Enabled System Designed for Managing Hammersmith Infant Neurological Examination, By Romil Roy, Arindam Roy, Bandana Majumdar, Jayanta Mukhopadhyay, Arun Kumar Majumdar, Arunava Biswas and Arun Singh, *Indian Conference on Medical Informatics and Telemedicine (ICMIT-2013)*, Kharagpur, India, (2013)
5. Algorithms for On-Chip Solution Preparation Using Digital Microfluidic Biochips, By Sudip Roy, P. P. Chakrabarti, Bhargab B. Bhattacharya, *ISVLSI 2012*, USA, (2012)
6. An approach to solve tracking and message blocking problems in RFID, By Subhasish Dhal, Ajay Kant Singh and Indranil Sen Gupta, *4th International Conference on Communications Security and Information Assurance (CSIA)*, New Delhi, India, (2013)
7. An ATE assisted DFD technique for volume diagnosis of scan chains, By Subhadip Kundu, Santanu Chattopadhyay, Indranil Sen Gupta and Rohit Kapur, *50th Design Automation Conference*, Austin, TX, USA, (2013)
8. An Efficient High Speed Implementation of Flexible Characteristic-2 Multipliers on FPGAs, By Debapriya Basu Roy, underline{Debdeep Mukhopadhyay}, *VDAT*, , (2012)
9. An efficient model-guided framework for alignment of brain MR image sequences, By P. Mondal, J. Mukhopadhyay, S. Sural, and P.P. Bhattacharyya, *IEEE Int. Conf. on Systems, Man and Cybernetics, SMC 2012*, Seoul, Korea, (2012)

10. An Efficient SMS-Based Framework for Public Health Surveillance, By P. Mondal, P. Desai, S.K. Ghosh, and J. Mukherjee, *IEEE EMBS Special Topic Conference on Point-of-Care Healthcare Technologies (IEEE POCHT 2013)*, Bangalore, (2013)
11. An Efficient Technique for De-Noising Sentences using Monolingual Corpus and Synonym Dictionary., By Sanjay Chatterji, Dipesh Chatterjee, Sudeshna Sarkar, *COLING 2012, 24th Intl Conference on Computational Linguistics*, Mumbai, India, (2012)
12. An Embedded System for Automatic Classification of Neonatal Cry, By B. Saha, P. K. Purkait, J. Mukhopadhyay, A. K. Majumdar, B. Majumdar, and A. K. Singh, *IEEE EMBS Conference on Point of Health Care Technologies (PoCHT)*, Bangalore, (2013)
13. An Evaluation of Human Perception For Neonatal Cry Using a Database of Cry and Underlying Cause, By 2. S. Gorain, J. Mukhopadhyay, B. K. Arya, B. Saha, A. K. Singh, B. Majumdar, S. D. Bhattacharya and A. K. Majumdar, *Indian Conference on Medical Informatics and Telemedicine (ICMIT)*, IIT Kharagpur, (2013)
14. An evolution-based approach to de novo protein design and remodeling of protein interactions in Mycobacterium tuberculosis genome, By Pralay Mitra, David Shultis, Yang Zhang, *Modeling of Protein Interactions*, Lawrence, Kansas, USA, (2012)
15. An evolutionary approach to reversible logic synthesis using output permutation, By Kamalika Datta, Indranil Sen Gupta, Hafizur Rahaman and Rolf Drechsler, *7th International Design and Test Symposium*, Doha, Qatar, (2012)
16. An improved reversible circuit synthesis approach using clustering of ESOP cubes, By Kamalika Datta, Gaurav Rathi, Indranil Sen Gupta and Hafizur Rahaman, *10th Reed-Muller Workshop*, Toyoma, Japan, (2013)
17. An improvement of linearization-based algebraic attacks, By Satrajit Ghosh and Abhijit Das, *InfoSecHiComNet 2011*, Haldia, India, (2011)
18. Anytime Algorithms for Bi-Objective Heuristic Search, By Priyanka Ghosh, P. P. Chakrabarti, Pallab Dasgupta, *25th Australasian Joint Conference on Artificial Intelligence*, Sydney, Australia, (2012)
19. Anytime Algorithms for Mining Groups with Maximal Coverage, By S G Vadlamudi, P P Chakrabarti, Sudeshna Sarkar, *10th Australasian Data Mining Conference (AusDM)*, Sydney, Australia, (2012)
20. Anytime Column Search, By S G Vadlamudi, Piyush Gaurav, Sandip Aine, P. P. Chakrabarti, *25th Australasian Joint Conference on Artificial Intelligence*, Sydney, Australia, (2012)
21. Applications of reversible logic in cryptography and coding theory, By Kamalika Datta and Indranil Sen Gupta, *26th International Conference on VLSI Design*, Pune, India, (2013)
22. Assessment of Vascular Health using Photoplethysmograph and a Two-Pulse Synthesis Model for Patients under Hemodialysis with End Stage Renal Disease, By Dharitri Goswami, Jayanta Mukhopadhyay and Koel Chaudhury, *Indian Conference on Medical Informatics and Telemedicine (ICMIT-2013)*, Kharagpur, India, (2013)
23. Autonomous certification with list-based revocation for secure V2V communication, By Anup Kumar Bhattacharya, Abhijit Das, Dipanwita Roy Chowdhury, Arvind Iyer and Debojyoti Bhattacharya, *ICISS 2012*, Guwahati, India, (2012)
24. Batch verification of ECDSA signatures, By Sabyasachi Karati, Abhijit Das, Dipanwita Roychowdhury, Bhargav Bellur, Debojyoti Bhattacharya and Aravind Iyer, *AfricaCrypt 2012*, Ifrane, Morocco, (2012)
25. CASTREAM: A New Stream Cipher Suitable for Both Hardware and Software, By Sourav Das, Dipanwita Roy Chowdhury, *ACRI 2012*, Santorini, Greece, (2012)
26. Core Based Architecture to Speed Up Optimal Ate Pairing on FPGA Platform, By Santosh Ghosh, Ingrid Verbauwhede, Dipanwita Roy Chowdhury, *Pairing 2012*, Cologne, Germany, (2012)
27. Countermeasures of Side Channel Attacks on Symmetric Key Ciphers Using Cellular Automata, By Sandip Karmakar, Dipanwita Roy Chowdhury, *ACRI 2012*, Santorini, Greece, (2012)
28. CSHR: Selection of Cryptographically Suitable Hybrid Cellular Automata Rule, By Kaushik Chakraborty, Dipanwita Roy Chowdhury, *ACRI 2012*, Santorini, Greece, (2012)
29. Debugging Assertion Failures in Software Controllers using a Reference Model, By Kajori Banerjee, Santhosh Prabhu M and Pallab Dasgupta, *6th ACM India Software Engineering Conference (ISEC)*, , (2013)
30. Design and implementation of rotation symmetric S-boxes with high nonlinearity and high DPA resilience, By Bodhisatwa Mazumdar, Debdeep Mukhopadhyay and Indranil Sen

- Gupta, *6th International Symposium on Hardware-Oriented Security and Trust (HOST)*, Austin, TX, USA, (2013)
31. Design and Implementation of Rotation Symmetric S-boxes with High Nonlinearity and High DPA Resilience, *By* Bodhisattwa Majumdar, Debdeep Mukhopadhyay, Indranil Sengupta, *Hardware Security and Oriented Trust (HOST)*, Texas USA, (2013)
 32. Differential Fault Analysis of Twofish, *By* Sk Subidh Ali and Debdeep Mukhopadhyay, *Inscrypt*, CHina, (2012)
 33. Effect of Malicious Hardware Logic on Circuit Reliability, *By* S. Burman, A. Palchaudhuri, R. S. Chakraborty, D. Mukhopadhyay and P. Singh, *International Symposium on VLSI Design and Test (VDAT)*, Shibpur, India, (2012)
 34. Effect of Malicious Hardware Logic on Circuit Reliability, *By* Sanjay Burman, Ayan Palchaudhuri, Rajat Subhra Chakraborty, Debdeep Mukhopadhyay,, Pranav Singh, *VDAT*, , (2012)
 35. Efficient FPGA implementation of Montgomery multiplier using DSP blocks, *By* Arpan Mondal, Santosh Ghosh, Abhijit Das and Dipanwita Roychowdhury, *VDAT 2012*, Shibpur, India, (2012)
 36. Execution ordering in AND/OR Graphs with Failure Probabilities, *By* Priyanka Ghosh, P. P. Chakrabarti, Pallab Dasgupta, *5th Annual Symposium on Combinatorial Search, SOCS 2012*, USA, (2012)
 37. Exploiting negative control lines in the optimization of reversible circuits, *By* Kamalika Datta, Gaurav Rathi, Robert Wille, Indranil Sen Gupta, Hafizur Rahaman and Rolf Drechsler, *5th International Conference on Reversible Computing*, Victoria, Canada, (2013)
 38. FactMod 2012 Workshop on Matrix Factorization Techniques for User Preference and Skills Modeling at UMAP 2012, *By* Maunendra Sankar Desarkar, Sudeshna Sarkar, *FactMod 2012 Workshop on Matrix Factorization Techniques for User Preference and Skills Modeling at UMAP 2012*, Montreal, Canada, (2012)
 39. Finding Critical Components in Embedded Control Systems Sensitive to Quality-Faults, *By* Vishal Shrivastav, S. G. Vadlamudi, P. P. Chakrabarti, Dipankar Das, Purnendu Sinha, *3rd International Symposium on Electronic System Design (ISED)*, Kolkata, India, (2012)
 40. Formal Verification of Hardware/Software Power Management Strategies, *By* Rajdeep Mukherjee, Pallab Dasgupta, Ajit Pal and Subhankar Mukherjee, *IEEE International Conference on VLSI Design (VLSID)*, , (2013)
 41. Fuzzy Inference Rule based Reversible Watermarking for Digital Images, *By* R. Naskar and R. S. Chakraborty, *International Conference on Information Systems Security (ICISS)*, Guwahati, India, (2012)
 42. Generating Expander Graphs Using Cellular Automata, *By* Debdeep Mukhopadhyay, *ACRI*, Greece, (2012)
 43. GPU-based Implementation of 128-bit Secure Eta Pairing Over a Binary Field, *By* Utsab Bose, Anup Kumar Bhattacharya and Abhijit Das, *AfricaCrypt 2013*, Cairo, Egypt, (2013)
 44. Group theory based reversible logic synthesis, *By* Kamalika Datta, Indranil Sen Gupta and Hafizur Rahaman, *5th International Conference on Computers and Devices for Communication (CODEC)*, Kolkata, India, (2012)
 45. Hardware Prefetchers Leak: A Revisit of SVF for Cache-Timing Attacks, *By* Sarani Bhattacharya, Chester Rebeiro and Debdeep Mukhopadhyay, *Hardware and Architectural Support for Security and Privacy, Co-held with MICRO12*, Canada, (2012)
 46. High resolution 3-D MR image reconstruction from multiple views, *By* P. Mondal, J. Mukherjee, S. Sural, and P.P. Bhattacharyya, *ndian Conference on Computer Vision, Graphics, and Image Processing, ICVGIP-2012*, Mumbai, India, (2012)
 47. High speed cryptoprocessor for eta pairing on 128-bit secure supersingular elliptic curves over characteristic two fields, *By* Santosh Ghosh, Dipanwita Roy Chowdhury and Abhijit Das, *CHES 2011*, Nara, Japan, (2011)
 48. How do warm colors affect visual attention?, *By* R. Pal, J. Mukherjee, and P. Mitra, *ndian Conference on Computer Vision, Graphics, and Image Processing, ICVGIP-2012*, Mumbai, India, (2012)
 49. Image retargeting using controlled shrinkage, *By* R. Pal, J. Mukherjee, and P. Mitra, *ndian Conference on Computer Vision, Graphics, and Image Processing, ICVGIP-2012*, Mumbai, India, (2012)
 50. Improved Differential Cache Trace Attacks on SMS4, *By* Phuong Ha Nguyen, Chester Rebeiro, Debdeep Mukhopadhyay and Huaxiong Wang, *Proceedings of Inscrypt 2012*, China, (2012)

51. Improved Histogram Bin Shifting based Reversible Watermarking, By P. Nagaraju, R. Naskar and R. S. Chakraborty, *International Conference on Intelligent System and Signal Processing (ISSP)*, Anand, Gujarat, India, (2013)
52. Improved secure dynamic key management scheme with access control in user hierarchy, By Atanu Basu, Indranil Sen Gupta and Jamuna Kant Sing, *2nd International Conference on Digital Information and Communication Technology and its Applications (DICTAP)*, Bangkok, Thailand, (2012)
53. Information Dissemination Dynamics in Delay Tolerant Network: A Bipartite Network Approach, By Saha, S., Ganguly, N., and Mukherjee, A., I, *ACM MobiOpp*, Zurich, Switzerland, (2012)
54. Lightweight Cipher Implementations on Embedded Processors, By Sagar Khurana, Souvik Kolay, Chester Rebeiro and Debdeep Mukhopadhyay, *DTIS*, Abu Dhabi, (2013)
55. Lossless Secret Image Sharing based on Generalized-LSB Replacement, By R. Naskar and R. S. Chakraborty, *ACM Research in Applied Computation Symposium (RACS)*, San Antonio, Texas, USA, (2012)
56. Lower bounds for Ramsey numbers for complete bipartite and 3-uniform tripartite subgraphs, By Tapas Mishra and Sudebkumar Prasant Pal, *Seventh International Workshop on Algorithms and Computation (WALCOM 2013)*, LNCS 7748, pp. 257-264, IIT Kharagpur, (2013)
57. Methodology to visualize electronic health record for chronic diseases on small display screens, By S. Paul, J. Mukhopadhyay, A.K. Majumdar, B. Majumdar, and S. Das Bhattacharya, *International Conference on Advances in Computing, Communications and Informatics (ICACCI 12)*, Chennai, India, (2012)
58. Model Building attacks on Physically Unclonable Functions using Genetic Programming (short paper), By I. Saha, R. R. Jeldi and R. S. Chakraborty, *IEEE International Symposium on Hardware-Oriented Security and Trust (HOST)*, Austin, Texas, USA, (2013)
59. Model Checking Controllers with Predicate Inputs, By Santhosh Prabhu M and Pallab Dasgupta, *IEEE International Conference on VLSI Design (VLSID)*, , (2013)
60. Model Checking of Global Power Management Strategies in Software with Temporal Logic Properties, By Rajdeep Mukherjee, Subhankar Mukherjee and Pallab Dasgupta, *6th ACM India Software Engineering Conference (ISEC)*, , (2013)
61. Multi-Objective Low-power CDFG Scheduling using Fine-Grained DVS Architecture in Distributed Framework, By Rajdeep Mukherjee, Priyankar Ghosh, Neerati Sravan Kumar, Pallab Dasgupta and Ajit Pal, *International Symposium on Electronic System Design (ISED)*, , (2012)
62. New variants of algebraic attacks based on structured Gaussian elimination, By Satrajit Ghosh and Abhijit Das, *SCC 2012*, Castro Urdiales, Spain, (2012)
63. On the origin of the hierarchy of color names, By Loreto, V., Mukherjee, A. and Tria, F., *Evolang*, Kyoto, Japan, (2012)
64. Operator Scheduling Revisited : A Multi-Objective Perspective for Fine-Grained DVS Architecture, By Rajdeep Mukherjee, Priyankar Ghosh, Pallab Dasgupta and Ajit Pal, *2nd International Conference on Advances in Computing and Information Technology*, , (2012)
65. Parallel-Distributed Software Implementation of Buchberger Algorithm, By Praloy Biswas and Dipanwita Roy Chowdhury, *ICHPC 2013 International Conference on High Performance Computing*, Barcelona, Spain, (2013)
66. Parallelization of the Lanczos Algorithm on Multi-core Platforms, By Souvik Bhattacharjee and Abhijit Das, *ICDCN 2010*, Calcutta, India, (2010)
67. Particle swarm optimization based BIST design for memory cores in mesh based network-on-chip, By Bibhas Ghoshal, Subhadip Kundu, Indranil Sen Gupta and Santanu Chattopadhyay, *16th International Symposium on VLSI Design and Test (VDAT)*, Kolkata, India, (2012)
68. Planning with Action Prioritization and new Benchmarks for Classical Planning, By Kamalesh Ghosh, Pallab Dasgupta and S. Ramesh, *25th Australasian Joint Conference on Artificial Intelligence*, , (2012)
69. Prediction Schemes for Compensating Variable Delay for Improving Performance of Real-Time Control Tasks., By Saptarshi Roy, Amit Patra, Partha Pratim Chakrabarti, Purnendu Sinha, Dipankar Das, *International Conference on VLSI Design 2013*, India, (2013)
70. Preference Relation Based Matrix Factorization for Recommender Systems, By Maunendra Sankar Desarkar, Sudeshna Sarkar, and Roopam Saxena, *20th International Conference on User Modeling, Adaptation and Personalization, UMAP 2012*, Montreal, Canada, (2012)

71. Pushing the Limits of High-Speed GF(2^m) Elliptic Curve Scalar Multiplication on FPGAs, By Chester Rebeiro, Sujoy Sinha Roy, Debdeep Mukhopadhyay, *CHES*, Leuven, Belgium, (2012)
72. Real-time Retrieval System for Heritage Images, By S. Mishra, Jit Mukherjee, P. Mondal, M.A. Shashaank, Jayanta Mukherjee, *International Conference on Emerging Research in Electronics, Computer Science and Technology (ICERECT 2012)*, Mandya, Karnataka, India, (2012)
73. Reliability Annotations to Formal Specifications of Context-Sensitive Safety Properties in Embedded Systems, By Aritra Hazra, Priyanka Ghosh and Pallab Dasgupta, *Forum on Specification and Design Languages (FDL)*, (2012)
74. Repairing Bengali Verb Chunk s for Improved Bengali to Hindi Machine Translation, By Chatterji, Sanjay and Datta, Nabanita and Dhar, Arnab and Barik, Biswanath and Sarkar, Sudeshna and Basu, Anupam, *Proceedings of the 10th Workshop on Asian Language Resources, at COLING 2012*, Mumbai, India, (2012)
75. Reversible circuit synthesis using evolutionary algorithm, By Kamalika Datta, Indranil Sen Gupta and Hafizur Rahaman, *5th International Conference on Computers and Devices for Communication (CODEC)*, Kolkata, India, (2012)
76. Reversible circuit synthesis using particle swarm optimization, By Kamalika Datta, Indranil Sen Gupta and Hafizur Rahaman, *3rd International Symposium on Electronic System Design (ISED 2012)*, Kolkata, India, (2012)
77. Reversible logic implementation of AES algorithm, By Kamalika Datta, Vishal Shrivastav, Indranil Sen Gupta and Hafizur Rahaman, *Design and Technology of Integrated Systems (DTIS 2013)*, Abu Dhabi, UAE, (2013)
78. Role of Power Grid in Side Channel Attack and Power-Grid-Aware Secure Design, By Xinmu Wang, Wen Yueh, Debapriya Basu Roy, Saibal Mukhopadhyay, Debdeep Mukhopadhyay, and Swarup Bhunia, *DAC*, (2013)
79. Runtime delays in Indian railways: Is traffic the cause?, By Ghosh, S., Srivastava, H., Agarwal, S. and Mukherjee, A., *ACM DEV*, Bangalore, India, (2013)
80. SIMD-based Implementations of Eta Pairing Over Finite Fields of Small Characteristics, By Anup Kr. Bhattacharya, Abhijit Das, Dipanwita Roy Chowdhury, Bhargav Bellur, Aravind Iyer, *SECURITY 2012*, Rome, Italy, (2012)
81. Software Effort Prediction Using Fuzzy Clustering and Functional Link Artificial Neural Networks, By Tirimula Rao Benala, Rajib Mall, Satchidananda Dehuri, V. L. Prasanthi, *SEMCCO*, Bhubaneswar, (2012)
82. Translations of Ambiguous Hindi Pronouns to Possible Bengali Pronouns, By Sanjay Chatterjee, Arnab Dhar, Sudeshna Sarkar, Anupam Basu, *Proceedings of the 10th Workshop on Asian Language Resources, at COLING 2012*, Mumbai, India, (2012)
83. Understanding how dominance affects the emergence of agreement in a social network: The case of Naming Game, By Maity, S. K. and Mukherjee, A., *ASE/IEEE Socialcom*, Amsterdam, The Netherlands, (2012)
84. Understanding Information Dissemination Dynamics in Delay Tolerant Networks using Theory of Bipartite Networks, By Saha, S., Ganguly, N., and Mukherjee, A., *Comsnets PhD Forum*, Bangalore, India, (2012)
85. User based Collaborative Filtering with Temporal Information for Purchase Data., By Maunendra Sankar Desarkar, Sudeshna Sarkar, *KDIR 2012, 4th Intl Conference on Knowledge Discovery and Information Retrieval*, Barcelona, Spain, (2012)
86. Using Randomizers for Batch Verification of ECDSA Signatures, By Sabyasachi Karati, Abhijit Das, Dipanwita Roy Chowdhury, Bhargav Bellur, Debojyoti Bhattacharya, Aravind Iyer, *IACR Cryptology ePrint Archive 2012: 582 (2012)*, IACR Cryptology ePrint Archive 2012: 582, (2012)
87. Way-finding Electronic Bracelet for Visually Impaired People, By S. Bhatlawande, M. Mahadevappa and J. Mukhopadhyay, *IEEE EMBS Special Topic Conference on Point-of-Care Healthcare Technologies (IEEE POCHT 2013)*, Bangalore, (2013)
88. Workload Driven Power Domain Partitioning, By Arun Dobriyal, Rahul Gonnabattula, Pallab Dasgupta and Chittaranjan Mandal, *VLSI Design and Test (VDAT) Conference*, (2012)

Department of Electrical Engineering

Head

Prof. Jayanta Pal

Professors

Barua, Alok	<i>Ph.D.(IIT Kharagpur)</i> , BIST for Pipelined ADC Fault Diagnosis of Analog and Mixed Signal Circuit In-Situ Measurement
Bhattacharya, Tapas Kumar	<i>Ph.D.(IIT Kharagpur)</i> ,
Chakraborty, Chandan	<i>Ph.D.(IIT Kharagpur)</i> , Electric Machines, Industrial Drives, Power Converters, Renewable Energy
Das, Debapriya	<i>Ph.D.(IIT Delhi)</i> , Microgrid Operation, Power System Operation and Control, Electric Power Distribution System.
Das, Sarit Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Control Systems
Dutta, Pranab Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Biomedical Image Processing, Signal processing, Optoelectronics
Kastha, Debaprasad	<i>Ph.D.(Tennessee)</i> , Wind Electrical Systems, Switched Mode Power Supplies, Machine Drives
Kishore, N K	<i>Ph.D.(IISc Bangalore)</i> , High Voltage and Insulation Engg., Renewable Energy, Power System Transients
Maka, Srinivasu	<i>Ph.D.(IIT Kharagpur)</i> , Biomedical System Engineering, Control Systems & Instrumentation Engineering
Mohan, Bosukonda Murali	<i>Ph.D.(IIT Kharagpur)</i> , Computational Intelligence in Control Systems, Orthogonal Functions Applications in Control Systems, Control Systems
Mukhopadhyay, Siddhartha	<i>Ph.D.(IIT Kharagpur)</i> , Aerospace Tracking Control and Guidance, Industrial Instrumentation Control and Automation, Behavioral Modeling CAD and Testing of Analog and Mixed Signal VLSI Systems, Failure Diagnostics Prognostics and Tolerance for Vehicular and Industrial Systems, Modeling Estimation and Control of Switching Circuits and systems, Dynamic Systems Estimation and Control
Pal, Jayanta	<i>Ph.D.(IIT Roorkee)</i> , Controller Design, Model Order Reduction, Power Systems Control, Genetic Algorithm Applications, Fractional Order Systems, Magnetic Levitation
Patra, Amit	<i>Ph.D.(IIT Kharagpur)</i> , Power Management Circuits, VLSI Design, Fault Tolerant Control
Pradhan, Ashok Kumar	<i>Ph.D (Sambalpur Univ.)</i> , Power System Protection - Wide Area Measurement System- Smart Grid- Applied Signal Processing
Ray, Goshaidas	<i>Ph.D.(IIT Delhi)</i> , Robust Stabilization, Time-Delay System, Decentralized Control and State Estimation., Intelligent Control., Network control System
Routray, Aurobinda	<i>Ph.D.(Sambalpur Univ)</i> , Cognitive Modelling and Human Monitoring, Embedded Systems Design for Real Time Signal and Image Processing, Data Driven Diagnostics and Prognostics
Sen Gupta, Sabyasachi	<i>Ph.D.(IIT Kharagpur)</i> ,
Sen, Siddhartha	<i>Ph.D.(IIT Kharagpur)</i> , Fractional Order Systems, MEMS Capacitive Accelerometer, Control Allocation
Sinha, Avinash Kumar	<i>Ph.D.(Pilani)</i> , Electrical Power Systems

Associate Professor

Poddar, Gautam *Ph.D.(IIT Bangalore)*, Medium voltage converter with high frequency isolation

Assistant Professors

Bajpai, Prabodh *Ph.D.(IIT Kanpur)*, 1. Renewable Energy Systems, 2. Power System Restructuring

Bhattacharya, Tanmoy *Ph.D.(IIT Bangalore)*, Power Converters and Machine Drives

Biswas, Karabi *Ph.D.(IIT Kharagpur)*, Sensor Design, Development of Instrumentation System, Study of Fractional Order Systems

Chatterjee, Dheeman *Ph.D.(IIT Kanpur)*, Power System Dynamics, Grid Integration of Renewables, FACTS controllers

Chattopadhyay, Souvik *Ph.D (IIT Bangalore)*, Digital Control of Power Converters, Soft-switched dc dc converters

Deb, Alok Kanti *Ph.D.(IIT Delhi)*, Control Systems, Computational Intelligence

Kapat, Santanu *Ph.D.(IIT Kharagpur)*, Anti Windup Linear/Nonlinear Control of Power Electronics Converters, Bifurcation Analysis for Digital Pulse Width Modulated (DPWM) Converters, Sensorless Control of High Frequency Power Management Circuits, Digital Linear and Nonlinear Control: Theory and Applications, Sliding Mode Control with Time Optimal Switching Surface, FPGA-based Reconfigurable Embedded Control for Portable Applications, Microbial fuel cell based energy harvesting for wireless applications

Mukherjee, Anirban *Ph.D. (IIT Kharagpur)*, Computational Biology, Biomedical Signal Processing

Patra, Sourav *Ph.D.(IIT Kharagpur)*, Robust control, Nonlinear control

Saritha, B *Ph.D.(IIT Madras)*, Grid integration of renewable sources, Electrical machines and drives

Brief Description of on-going activities

From classical to modern, from milli watts to tens of kilo watts, from conventional to non-conventional, the electrical engineering department investigates these all. The range of investigation for this department is one of the broadest in this institute. The major on going activities are categorized as follows: Machine Drives and Power Electronics: * Magnetic Levitation * Superconducting magnetic energy storage * Variable frequency AC-Drives * Simulation of power electronic circuits * Resonant Converters * Design of integrated circuits for Power Management * Nonlinear phenomena in Power Electronics * Automotive Electronics * Diagnostic of drives * Drive fatigue analysis Control and Dynamic Systems: * Neuro-fuzzy controllers * Control of chaotic systems * Discrete event and hybrid systems * Fault-tolerant control of aero-space systems * Attitude control of satellites and launch vehicles * Robust stabilization using periodic controllers * Reduced order modeling * Control of Variable Air-Volume Air-Conditioning Systems * Bifurcation theory of hybrid dynamical systems * Delta domain digital control analysis and design * Neural networks applications in control * Genetic algorithm applications in control * Decentralized control of large scale systems * Nonlinear dynamics * Fractional order system and their applications Power and Energy Systems: * Wind turbines * Power system dynamics * Real-time digital simulation of power systems * Power system protection * Intelligent relaying * State estimation of power systems * Condition and Diagnostic Monitoring of Power Apparatus * Energy audit and management * Power system planning and optimisation * Wavelet Application to Power system Transients * Neural Net Application to Partial Discharge Phenomenon * Electric Field Computations, Lightning Protection, Material Characterization * FACTS Instrumentation and Signal Processing: * Laser based profile measurement * Image based measurement systems * Motion estimation using MRI and colour Doppler imaging * Non-Linear and Statistical Signal Processing * Real Time Algorithms for Detection and Diagnostics * Condition monitoring of machines and power apparatus * Testing of analog and digital VLSI circuits * Fault detection and diagnosis of analog circuits * Control and instrumentation of bio-reactors * Fibre-optic

components and sensors * Biomedical signal processing * Analysis of ECG signals * Sensors fusion * Multimedia Security * Convex Optimization and LMI applications to Signal Processing * Design and development of MEMS accelerometer * Seismic signal processing, active noise control * Fast algorithms for real time signal processing

Thrust Areas

1. This department has identified the following topics as the thrust areas of investigations:
Efficient Power Converters & Drives, Microgrid & Renewable Energy, Embedded Sensors & Systems, Estimation & Control of Industrial & Aerospace Systems

International Collaborations

Collaboration is going on through DST, India, and Research Council UK (RCUK) supporting a project on Stability and Performance of Photovoltaics. This is a joint collaboration involving IIT Bombay, IIT Kanpur, IIT Kharagpur and Solar Energy Centre, New Delhi from India, and Imperial College, London, Loughborough University, Northumbria Photovoltaics Application Centre (NPAC), Northumbria University, Strathclyde University from UK.

Lectures by Visiting Experts

1. Matrices applied to Signal Systems and Control *by* Prof. Biswa N. Datta (Distinguished Research Professor, Northern Illinois University, USA)
2. Cyber-Physical World: A Perspective from Pervasive Computing and Smart Environments *by* Dr. Sajal K. Das (University Distinguished Scholar Professor Director, Center for Research in Wireless Mobility and Networking(CReWMaN) Department of Computer Science and Engineering, The University of Texas at Arlington, USA)
3. Zero-sum Risk-sensitive Stochastic Differential Games *by* Dr. Arnab Basu (Associate Professor, IIM Bangalore)
4. Subspace Projection based analysis of Stressed Speech *by* Dr. Samarendra Dandapat (Professor, Electronics & Electrical Engg. (EEE)Dean Administration, IIT Guwahati)
5. Wide-Area Modeling, Monitoring and Control of Large Power Systems Using Synchrophasors *by* Dr. Aranya Chakraborty (Assistant Professor, Department of Electrical Engg, North Carolina State University, USA)
6. Electronics in Aerospace Systems *by* Prof P R Mahapatra (Department of Aerospace Engineering, IISc, Bangalore)
7. Drives & Automation *by* Dr. Samsul Ekram (Sr. Manager, CG Global R&D Centre, Crompton Greaves Ltd, Mumbai)

Doctoral and MS Degrees Awarded

1. Raj Kumar Biswas : Fractional Optimal Control Problems(Ph.D)
2. Sibsambhu Kar : Analysis of Electroencephalograph Signals for Detecting Fatigue in Human Drivers(Ph.D)
3. Aditya Bihar Kandali : Classification of Discrete Emotions in Speech Using Prosodic And Spectral Features: Intra And Cross-Lingual Studies in Five Native Languages of Assam(Ph.D)
4. Anirban Krishna Bhattacharyya : Estimation of Signal Models for Aerospace and Industrial Applications(MS)
5. Antara Ain : Validation and debugging of integrated circuits using behavioral models(MS)
6. Shrabani Ghosh : New Models and Methods for Tracking of Ballistic Targets during Endo-atmospheric Engagements(Ph.D)
7. M Shahin : Modeling, Analysis and Control of Long Term Arterial Blood Pressure Regulation System(Ph.D)
8. Malaya Kumar Sahu : Hybrid Converter Based Shunt Active Compensators For Medium Voltage Applications(Ph.D)

Member - Professional Bodies

1. Chakraborty, Chandan, *Senior Member* - IEEE
2. Chakraborty, Chandan, *Member-at-large* - IEEE Industrial Electronics Society
3. Pradhan, Ashok Kumar, *Senior Member* - IEEE, USA
4. Pradhan, Ashok Kumar, *Life member* - Indian Society Of Tecnical Education (ISTE)
5. Mukherjee, Anirban, *Member* - IEEE
6. Chatterjee, Dheeman, *Member* - IEEE
7. Deb, Alok Kanti, *Regular* - IEEE
8. Biswas, Karabi, *Regular* - IEEE
9. Biswas, Karabi, *Member* - IEEE
10. Biswas, Karabi, - System Society of India
11. Biswas, Karabi, *Regular* - System Society of India
12. Bajpai, Prabodh, *Associate Member* - The Institution of Engineers (India)
13. Bajpai, Prabodh, *Member* - IEEE, USA
14. Saritha, B, *Member* - IEEE
15. Bhattacharya, Tanmoy, *Member* - IEEE
16. Kapat, Santanu, *Member* - IEEE
17. Sinha, Avinash Kumar, *Member* - IEEE, USA
18. Sen, Siddhartha, *Member* - IEEE
19. Barua, Alok, *Senior Member* - IEEE
20. Barua, Alok, *Life Member* - System Society of India
21. Patra, Amit, *Member* - IEEE
22. Pal, Jayanta, *Life Member* - Systems Society of India
23. Mohan, Bosukonda Murali, *Member* - Asian Control Association
24. Mohan, Bosukonda Murali, *Member* - IFAC (International Federation of Automatic Control)
Technical Committee on Computational Intelligence in Control
25. Mohan, Bosukonda Murali, *Life Member* - Systems Society of India
26. Mohan, Bosukonda Murali, *Senior Member* - IEEE (USA)
27. Mohan, Bosukonda Murali, *Member* - Automatic Control and Dynamic Optimization Society
28. Mukhopadhyay, Siddhartha, *Life member* - System Society of India
29. Mukhopadhyay, Siddhartha, *Member* - IEEE
30. Mukhopadhyay, Siddhartha, *Member* - National Committee on IVHM
31. Kishore, N K, *Senior* - IEEE
32. Kishore, N K, *Life Member* - System Society of India
33. Dutta, Pranab Kumar, *Member* - IEEE
34. Kastha, Debaprasad, *Regular* - IEEE
35. Routray, Aurobinda, *Member* - SIAM, USA
36. Routray, Aurobinda, *Member* - IEEE, USA

Member - Editorial Board

1. Chakraborty, Chandan (2008) *Associate Editor (2008~)* - IEEE Industrial Electronics Magazine
2. Chakraborty, Chandan (2006) *Associate Editor (2006~)* - IEEE Transactions on Industrial Electronics
3. Chakraborty, Chandan (2008) *Member, Editorial Board (2008~)* - IET Power Electronics
4. Chakraborty, Chandan (2012) *Editor (2012~)* - IEEE Power Engineering Letters
5. Chakraborty, Chandan (2013) *Editor-in-Chief (2013~)* - IE Tech News (ITeN)
6. Chakraborty, Chandan (2013) *Chair (2013-14)* - Power Electronics Technical Committee, IEEE Industrial Electronics Society
7. Chakraborty, Chandan (2013) *ADCOM Member (2012-13)* - IEEE Industrial Electronics Society
8. Chakraborty, Chandan (2010) *Editor (2010~)* - IEEE Transactions on Sustainable Energy
9. Das, Sarit Kumar (2013) *Editor* - IETE J Education
10. Deb, Alok Kanti (2012) *Reviewer* - Neurocomputing
11. Deb, Alok Kanti (2012) *Reviewer* - IEEE Trans. on Industrial Electronics

12. Mohan, Bosukonda Murali (2012) *Member* - Int. J. Control, Automation & Systems
13. Mohan, Bosukonda Murali (2011) *Member* - J. Control Engineering & Technology
14. Mohan, Bosukonda Murali (2010) *Member* - Int. J. Engineering Science, Advanced Computing & Bio-Technology
15. Mohan, Bosukonda Murali (2013) *Member* - Advances in Fuzzy Systems
16. Mohan, Bosukonda Murali (2011) *Member* - Current Trends in Systems & Control Engineering
17. Mohan, Bosukonda Murali (2010) *Member* - Int. J. Mathematics & Engineering with Computers
18. Mohan, Bosukonda Murali (2007) *Associate Editor* - Int. J. Automation & Control
19. Patra, Amit (0) *Member, Editorial Board* - International Journal of Electrical Engineering Education
20. Pradhan, Ashok Kumar (2009) *Member, Editorial Board* - International Journal of Power and Energy Conversion (IJPEC),
21. Saritha, B (2011) *Member* - International Journal of Power Electronics
22. Sinha, Avinash Kumar (2007) *Member, Board of Advisors* - The ICFAI Journal of Science and Technology

Awards & Honours

1. Mohan, Bosukonda Murali (2010) *Distinguished Alumnus, EE Dept, Engg College, Osmania Univ*
2. Sinha, Avinash Kumar (2010) *IBM Open Collaborative Faculty Award*

Fellowships

1. Mukherjee, Anirban (2012) *BOYSCAST*

Sponsored Research Projects

1. A Study of the Impacts of Increased Penetration of Wind Power on Power System Stability (DST, India, Rs.19.00 Lakhs)
2. Advanced Control and Failure Prognosis and Diagnosis of Industrial Processes for Steelmaking Using Data Fusion-Phase I. (completed) (DIT, New Delhi, Rs.58.92 Lakhs)
3. Artificial Heart Development Programme- Phase II (HDP) (DST, New Delhi, Rs.25.24 Lakhs)
4. AVLSI Consortium (Multiple Organisations in India and Abroad, Rs.200.00 Lakhs)
5. Centre for Railway Research (CRR) (Govt. of India, Rs.0.00 Lakhs)
6. DC-AC conversion and grid side paralleling (DST, Rs.60.00 Lakhs)
7. DC-DC conversion for solar PV including MPPT & battery charge controller (DST, Rs.80.00 Lakhs)
8. Design & Feasibility Study of Versatile Low-cost Functional Electrical Stimulator (FES) for Hemiplegics (National Institute for the Orthopaedically Handicapped (NIOH)(Min. of Social Justice & Empowerment,, Rs.20.00 Lakhs)
9. Design and Development of an On-board Intelligent Embedded Platform for detection of weak failure modes and prognosis of severe faults in locomotives (Indian Railway, Rs.180.00 Lakhs)
10. Design and Development of an On-board Intelligent Embedded Platform for detection of weak failure modes and prognosis of severe faults in locomotives (Research Design and Standards Organisation (RDSO), Lucknow, Rs.177.33 Lakhs)
11. Design and Fabrication of of SOI based MEMS Accelerometer (DFS) (DST, Rs.30.00 Lakhs)
12. Design of an Embedded System for On-board Assessment of the Level of Alertness in Human Driver (DIT, Rs.39.00 Lakhs)
13. Design of Robust Biochemical Network (CSIR, HRDG, New-Delhi, Rs.11.48 Lakhs)
14. Design, Development and Fabrication of Power Management Integrated Circuits (Tagore Technologies, USA, Rs.5.00 Lakhs)
15. DETECTION AND DIRECTION OF HIGH IMPEDENCE FAULT (DEPARTMENT OF SCIENCE AND TECHNOLOGY, NEW DELHI, Rs.13.00 Lakhs)

16. Developing Fractional Order Circuit Element (Fractance) (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
17. Development of Electrowetting based Microfluidic device with Controller for Clinical Diagnoses (DBT, Rs.41.45 Lakhs)
18. Development of Electrowetting based Microfluidic device with Controller for Clinical Diagnoses (DBT, India, Rs.50.00 Lakhs)
19. Development of Railway Bridge Health Monitoring System with Wireless Sensor Network (RDSO, Ministry of Railways, Rs.187.02 Lakhs)
20. Educational Component of GM Collaborative Research Laboratory (General Motors, Rs.125.00 Lakhs)
21. Fast Fixed Point Algorithms for Identifying Alertness and Emotions (Samsung Advanced Institute of Technology(SAIT) South Korea, Rs.0.00 Lakhs)
22. High Frequency, High Efficiency Hybrid DC-DC Converter (Maxim Corporation, Rs.15.00 Lakhs)
23. IBM Open Collaborative Faculty Award (IBM, Almaden Research centre, USA, Rs.7.00 Lakhs)
24. Identification of Motifs in Integrated Cellular Networks (CSIR, Rs.14.00 Lakhs)
25. Integrated Vehicle Health Management (IVHM) for Automotive Engine Applications under National Programme on Micro and Smart Systems (NPMASS) (On-going) (ADA, Bangalore, Rs.277.30 Lakhs)
26. Intelligent Reservoir Characterization (ONGC, Rs.48.00 Lakhs)
27. Kinematic State Estimation of Multiple Aerospace Targets using Airborne Radar (Completed) (LRDE, DRDO, Bangalore, Rs.9.96 Lakhs)
28. Modelling and design of polymer coated ion selective constant phase element (CPE) sensor (DST, Rs.14.40 Lakhs)
29. National Programme on Micro and Smart Systems (ADA, Bangalore, Rs.259.60 Lakhs)
30. ON-Chip DC-DC converter for PoL application (MAXIM India, Rs.15.00 Lakhs)
31. Online monitoring system for OHE traction parameters (RDSO, Ministry of Railways, Rs.254.02 Lakhs)
32. Online monitoring system for OHE traction parameters (Indian Railways, Rs.249.00 Lakhs)
33. Protecting Power Systems using Wide area measurements (DEPARTMENT OF SCIENCE AND TECHNOLOGY, NEW DELHI, Rs.18.00 Lakhs)
34. Real Time Digital Simulator (TDS) (Centre for Development of Advanced Computing, Trivandrum, Govt. of India, Rs.5.47 Lakhs)
35. Renewable Hybrid Energy Power Plant for Telecom station in Isolated Sites (Vodafone Essar-East Limited, Kolkata, Rs.95.00 Lakhs)
36. Robust Control and Optimization of Power Output from Stand-Alone Wind Energy Conversion Systems for Isolated Telecom Base Stations (Vodafone Essar-IIT Kgp Center of Excellence in Telecommunications (VEICET), Rs.15.00 Lakhs)
37. Setting up an Advanced Facility for Research in Reliability Engineering (On-going) (BARC, Mumbai, Rs.150.00 Lakhs)
38. Speed Sensorless Control of Induction Motor Drive with Limited Switching Frequency and Operation into the Field Weakening Region for Traction Applicat (IIT Kharagpur (ISIRD Project), Rs.5.00 Lakhs)
39. Stability and Performance on Photovoltaics (DST, Rs.163.50 Lakhs)
40. STATCOM with neutral compensation (TCO) (Centre for Development of Advanced Computing, Trivandrum, Govt. of India, Rs.4.00 Lakhs)
41. Testing & characterization of In-House Development of MEMS Capacitive Accelerometer (TCA) (ISRO-IIT Kharagpur Cell, Rs.5.00 Lakhs)
42. Virtual HV Laboratory (MHRD, Rs.60.00 Lakhs)
43. Virtual Lab on Embedded Systems (MHRD, Rs.55.00 Lakhs)
44. Virtual Laboratory on Analog Signals, Networks and Measurement Laboratory (MHRD, Govt. of India, Rs.67.00 Lakhs)

Consultancy Projects

1. A New Application of AMS CAD: Smart Grid, (Synopsys CAD Lab) (On-going) (, Rs.0.00 Lakhs)
2. Active single phase inverter control (SPIC) (Keltron, Trivandrum, Kerala - 695 564, Rs.3.00 Lakhs)

3. Behavioral Modeling and Top-Down Design of Switching Converter ICs (On-going) (National Semiconductor Corporation, USA, Rs.40.00 Lakhs)
4. Bus Paralleling Controller with CAN Interface (CANI) (Centre for Development of Advanced Computing, Trivandrum, Govt. of India, Rs.1.50 Lakhs)
5. Concurrent Virtual Test for Power Converter ICs using Behavioral Modeling (On-going) (National Semiconductor Corporation, USA, Rs.30.00 Lakhs)
6. Data-Driven Methods for Fault Diagnosis and Prognosis using Operating Parameters (General Motors India Science Lab, Rs.0.00 Lakhs)
7. Development of Digital Hardware for M2M Applications (Fountainhead Software Solutions, Rs.2.00 Lakhs)
8. Development of Substation Automation System Phase-I (Monitoring) (Damodar Valley Corporation, Rs.25.70 Lakhs)
9. DISTRIBUTION SYSTEM LOSS CALCULATION AND POSSIBLE IMPROVEMENT (NESCO, BALASORE, ODISHA, Rs.5.00 Lakhs)
10. Estimation of Technical Transmission and Distribution Losses of North Eastern Electricity Supply Company of Orissa Limited (NESCO Balasore, Orissa, Rs.5.85 Lakhs)
11. Formal Design Intend Modelling and Verification of Mixed Signal Behaviors (On-going) (Semiconductor Research Council (SRC), USA, Rs.0.00 Lakhs)
12. General Motors Collaborative Research Laboratory (General Motors, Rs.375.00 Lakhs)
13. GM-CRL on ECS (Thrust Area Leader) (Completed) (, Rs.0.00 Lakhs)
14. High frequency compensator for high power applications (HPHC) (Veeral Control Pvt. Ltd., Bharat Heavy Electricals (BHEL) Ltd, Rs.2.00 Lakhs)
15. High Voltage Power Supply (Veeral Controls P. Ltd., Rs.4.00 Lakhs)
16. High Voltage Power Supply (HVPS) (Veeral Control Pvt. Ltd. Gandhinagar, Rs.4.00 Lakhs)
17. Lightning Impulse Test on 6.5 MVA, 33/6.6 kV Transformer (Synergy Power Equipment Pvt. Ltd., Jamshedpur, Rs.0.80 Lakhs)
18. Natural Harmonic Compensation of Medium Voltage Converters (NHCM) (C-DAC, Trivandrum, Rs.8.60 Lakhs)
19. On Board Diagnostics of Automotive Engines (completed) (GM-IIT Kharagpur Collaborative Research Laboratory, Rs.500.00 Lakhs)
20. Resonant Frequency Converter II (Megatherm Electronics Pvt. Ltd., Rs.2.00 Lakhs)
21. Sensorless high voltage single phase front-end converter (SHVC) (Signotron India pvt. Ltd., Kolkata, Rs.2.00 Lakhs)
22. Solar inverter for grid connected and standalone mode with MPPT (MPPT) (Signotron India pvt. Ltd., Kolkata, Rs.2.50 Lakhs)
23. Universal auxiliary converter for railways rolling stock (UACR) (Indian Railways and C-DAC, Trivandrum, Rs.5.00 Lakhs)

Patents (filed / granted)

1. A Real-Time Embedded System for Spark/Arc Detection in Low Voltage Electrical Distribution System
2. A Real-Time Self-Learning System for Object Detection and Recognition
3. A Vision Based Embedded Platform for On-board Assessment of Level of Drowsiness in Human Drivers
4. Fault Tolerant Control for Vector Controlled Induction Motor Drive
5. Single Current Sensor Based Speed Sensorless Vector Controlled Induction Motor Drive
6. State estimation, diagnosis and control using equivalent time sampling

Visits Abroad by Faculty Members

1. Chakraborty, Chandan - To attend ADCOM Meeting of IEEE IES and present paper in ISIE 2012 (Hungzhou, China,) May 28 to June 3, 2012
2. Chakraborty, Chandan - To attend Officers Meeting of IEEE IES and present paper in ICIT2013 conference (Cape Town, South Africa,) February 22-28, 2013
3. Biswas, Karabi - To present paper in conference (NICE, France,) 20-08-2012 to 27-08-2012
4. Bajpai, Prabodh - IEEE R10 AGM (Chaing Mai, Thailand,) MARCH 1-4, 2013
5. Mukherjee, Anirban - BOYSCAST FELLOWSHIP (TU DARMSTADT,) 2012
6. Ray, Goshaidas - To Present Paper (Montreal, Canada,) 26-30th. June, 2012

7. Ray, Goshaidas - To Present Paper (Bangladesh, Dhaka,) 19th-25th, December, 2012
8. Chakraborty, Chandan - To attend ADCOM Meeting of IEEE IES and present paper in IECON 2012 (Montreal, Canada,) October 23 to November 1, 2012
9. Bajpai, Prabodh - paper presentation in ICPEs 2012 (Hong Kong, China,) April 12-15, 2012
10. Pradhan, Ashok Kumar - Conference (San Diego, USA,) one week, July 2012
11. Biswas, Karabi - Research Work (Saarland University, Germany,) 17th May 2012, 10th July, 2012

Invited Lectures by Faculty Members

1. Renewable integration and energy storage *by* Bajpai, Prabodh (IMI Kolkata)
2. Hybrid Renewable Energy Systems *by* Bajpai, Prabodh (Materials Science Centre, IIT Kharagpur)
3. Recent trends in Power system deregulation *by* Bajpai, Prabodh (JNTU Kakinada, A.P., India)
4. Hybrid Controller for Renewable Energy Power Plant in Stand-alone sites *by* Bajpai, Prabodh (India Habitat Centre, Lodhi Road, New Delhi)
5. Synchronization Measures in Nonlinear Time Series *by* Routray, Aurobinda (Calcutta University)
6. Field Trial of Analog Signals, Networks and Measurement Virtual Laboratory *by* Deb, Alok Kanti (Dream Institute of Technology, Kolkata)
7. Field Trial of Analog Signals, Networks and Measurement Virtual Laboratory *by* Deb, Alok Kanti (VNIT Nagpur)
8. Field Trial of Analog Signals, Networks and Measurement Virtual Laboratory *by* Deb, Alok Kanti (NIT Raipur)
9. Smart Sensors *by* Sen, Siddhartha (C V Raman College of Engineering, Bhubaneswar)
10. Smart Sensors *by* Sen, Siddhartha (Dept. of Radiophysics, Calcutta University)
11. MEMS and Microsystems *by* Sen, Siddhartha (C V Raman College of Engineering, Bhubaneswar)
12. Wind Power Generator Topologies *by* Kastha, Debaprasad (Amrita School of Engineering, Coimbatore)
13. Wind Energy system and Control *by* Kastha, Debaprasad (NIT Rourkela)
14. Prognostics and Health Management (PHM) Conference 2012, *by* Mukhopadhyay, Siddhartha (GE India Technology Centre, Bangalore)
15. IEEE CSS Symposium (Cyber Physical System: State-of-art and Future Challenges) *by* Mukhopadhyay, Siddhartha (Bangalore)
16. PROTECTION USING WIDE AREA MEASUREMENTS *by* Pradhan, Ashok Kumar (IIT KANPUR)
17. Wide Area Measurements BASED Monitoring and Protection *by* Pradhan, Ashok Kumar (SRM UNIVERSITY CHENNAI)
18. CHANGING POWER SYSTEM SCENARIO *by* Pradhan, Ashok Kumar (VSSUT BURLA ODISHA)

Short-Term Courses, Training Programmes and Workshops organised

1. Tata Power Course (2 weeks)

Papers Published in Journals

1. A Design Example of a Fractional-Order Kerwin–Huelsman–Newcomb Biquad Filter with Two Fractional Capacitors of Different Order *By* Madhab Tripathy, Karabi Biswas, and Siddhartha Sen *Circuits System Signal Processing* DOI 10.1007/s00034 (2013)
2. A Fault Detection Technique for Series Compensated Line during Power Swing *By* Paresh K. Nayak, A.K. Pradhan, and P. Bajpai *IEEE Transactions on Power Delivery* (2013)
3. A New Model Reference Adaptive Controller for Four Quadrant Vector Controlled Induction Motor Drives *By* A. V. Ravi Teja, S. Maiti, C.Chakraborty, and Y. Hori *IEEE Transactions on Industrial Electronics* 59, 3757-3767 (2012)

4. A simple algorithm to implement active power loss allocation schemes in radial distribution systems By S.Mishra , D.Das and S.Paul *Journal of Inst. of Eng. , India, Series-B* January, pp. 1-10 (2013)
5. A Single-Inductor Multiple-Output Switcher with Simultaneous Buck, Boost and Inverted Outputs By P. Patra, A. Patra and N. Misra *IEEE Trans. on Power Electronics* 99, 1936-1951 (2012)
6. Adaptive Speed Observer for a Stand-alone Doubly Fed Induction Generator Feeding Nonlinear and Unbalanced Loads By M. Pattnaik, D. Kastha *IEEE Trans. Energy Convers* 27, 4, 1018-1026 (2012)
7. An Adaptive Speed Sensorless Induction Motor Drive With Artificial Neural Network for Stability Enhancement By S. Maiti, V. Verma, C. Chakraborty, Y. Hori *IEEE Transactions on Industrial Informatics* 8, 757-766 (2012)
8. An iterative algorithm for maximizing robust performance in H-infinity loop-shaping design By M. Osinuga, S. Patra and A. Lanzon *International Journal of Robust and Nonlinear Control* 23, 919-931 (2013)
9. An optimal PMU placement technique for power system observability By B K Saha Roy, A K Sinha and A K Pradhan *Electric Power and Energy Systems* vol.42, pp 71-77 (2012)
10. An optimization-based design framework for steering steady states and improving robustness of Glycolysis-Glycogenolysis Pathway By S. Panja, S. Patra, A. Mukherjee, M. Basu, S. Sengupta and P. K. Dutta *IEEE Transactions on Biomedical Engineering* Vol. 60(2), 554-561 (2013)
11. Assessment of psychomotor performance in α CaMK-II-4R tau mice: an insight into human tauopathies By BP Nayak, CSK Murthy, Y Tatebayashi, A Routray *Future Neurology* 7 (6), 773-783 (2013)
12. Automatic Defect Detection on Hot Rolled Flat Steel Products By Santanu Ghorai, Anirban Mukherjee, M. Gangadharan and Pranab K. Dutta *IEEE Trans. Instrumentation and Measurement* vol. 62, no. 3 (2012)
13. Control Allocation for an Over-Actuated Satellite Launch Vehicle By Arun Kishore W.C., Dasgupta S., Ray G. and Sen S. *Aerospace Science and Technology (to appear)* doi:10.1016/j.ast20 (2013)
14. DC Motor Based WT Emulator Using LabVIEW for Wind Energy Conversion System Setup in Laboratory By N.C.Sahoo, A.S.Satpathy, N.K.Kishore and B.Venkatesh *International Journal of Electrical Engineering Education* APRIL (2013)
15. Decoupled compensation for multi-channel output gain margin improvement of continuous-time MIMO plant By A. Ghosh and S.K. Das *IET Control Theory Appl.* Vol.6, pp1735-1740 (2012)
16. Design and performance study of fractional order KHN biquad filters with two different exponents By Tripathy M.C., Biswas K. and Sen S *Circuits, Systems and Signal Processing (to appear)* doi.10.1007/s00034-0 (2013)
17. Design of a set of controllers for an n-link robot manipulator By Leena G , K.B. Dutta and Goshaidas Ray *Int. J of Automation and Control* vol.6, (2012)
18. Differential power based symmetrical fault detection during power swing By J Ganeswara Rao, A K Pradhan *IEEE Transaction on Power Delivery* vol. 27, p1557-1564 (2012)
19. Directional Relaying of Series-compensated Line Using an Integrated Approach By M. BISWAL, B. B. PATI and A. K. PRADHAN *Electric Power Components and Systems* 40pp691-710 (2012)
20. Effect of initialization on a class of fractional order systems: experimental verification and dependence on nature of past history and system parameters By Saha D., Mondal D. and Sen S. *Circuits, Systems and Signal Processing (to appear)* doi 10.1007/s00034-0 (2013)
21. Estimation of Autocorrelation Space for Classification of Bio-medical Signals By Mihir Narayan Mohanty, Aurobinda Routray *LNCS Springer Verlag LNCS 7677*, 607-704 (2012)
22. Estimation of dc Performance of a Lateral Power MOSFET Using Distributed Cell Model By Jyotirmoy Ghosh, Siddhartha Mukhopadhyay, Amit Patra, Barry Culpepper, Tawen Mei *IEEE Transactions* 1451-1456 (2012)
23. Evolutionary Neural Networks for Strategic Bidding in Electricity Markets By Ashish R. Hota, Prabodh Bajpai and Dilip Pratihari, *International Journal of Energy Sector Management* vol.1, issue1 (2012)
24. FPGA based Chip Emulation System for Test Development of Analog and Mixed Signal Circuits: A Case Study of DC-DC Buck Converter By R Bhattacharya, S Biswas, S Mukhopadhyay *Measurement*, 1997-2020 (2012)

25. Harmonic Compensation with Zero Sequence Load Voltage Control in a Speed Sensorless DFIG Based Stand Alone VSCF Generating System By M. Pattnaik, D. Kastha *IEEE Trans. on Industrial Electronics* In Press (2013)
26. Hybrid Automata Modeling of SI Gasoline Engines towards State Estimation for Fault Diagnosis By S. Sengupta, S. Mukhopadhyay, A. K. Deb and P. Kallappa *International Journal of Engines, SAE, USA* (2012)
27. Hybrid Renewable Energy Systems for Power Generation in Stand-alone Applications: A Review By P. Bajpai and Vaishalee Dash *Renewable and Sustainable Energy Reviews*, Vol. 16, Issue 1, (2012)
28. H_∞ Load frequency control of interconnected power systems with communication delay By Rajeeb Dey, S Ghosh, Goshaidas Ray, and A Rakshit *International Journal of Electrical Power and Energy Systems*, vol.42, 672-684 (2012)
29. Improved Estimation of Kinematic State of Re-entry Ballistic Targets with Modeling of Colored and Nonstationary Seeker Noise By Shrabani Ghosh, Anirban Krishna Bhattacharyya, Siddhartha Mukhopadhyay, Aurobinda Routray *IEEE Transactions* 3186-3206 (2012)
30. Improving load regulation in current mode control through inductor current filtering By Santanu Kapat, Amit Patra, Soumitro Banerjee *International Journal of Power Electronics* 4 (1) 71-93 (2012)
31. LEDs : A Study from Illuminance Perspective By Gururaj S Puneekar, Suhas, Pratap Singh, N K Kishore, *Journal of Electrical Engineering* Volume 12, pp37-42. (2012)
32. Linearity Improvement of Source Degenerated Transconductance Amplifiers By Kar S.K and Sen S. *Analog Integrated Circuits and Signal Processing* vol.74, pp.399-407 (2013)
33. Load frequency control of interconnected power systems via low order H_∞ loop shaping controller By Patra S., Sen S. and Ray G. *International Journal of Power and Energy Systems* vol.32, pp.167-173 (2012)
34. Local stabilization of uncertain linear time-invariant plant with bounded control inputs: parametric H_∞ loop-shaping approach By Patra S., Sen S. and Ray G. *IET Control Theory and Applications* vol.6, pp. 1567-76 (2012)
35. Multi-objective particle swarm optimization based on fuzzy-pareto-dominance for possibilistic planning of electrical distribution systems incorporating distributed generation By S. Ganguly, N.C.Sahoo and D.Das *Fuzzy Sets and Systems* Vol.213, pp.47-73, (2013)
36. Multi-objective planning of electrical distribution systems incorporating sectionalizing switches and tie-lines using particle swarm optimization By N.C.Sahoo, S.Ganguly and D.Das *Swarm and Evolutionary Computation* Vol.3, pp. 15-32 (2012)
37. Multi-objective planning of electrical distribution systems using dynamic programming By S. Ganguly, N.C.Sahoo and D.Das *Electrical Power and Energy Systems* Vol.46, pp. 65-78 (2013)
38. New State and Measurement Models for Endo-Atmospheric Tracking of Ballistic Targets using Seeker Measurements By Shrabani Ghosh, Siddhartha Mukhopadhyay, Aurobinda Routray *Aerospace and Electronic Systems, IEEE Transactions on* 48,1192-1209 (2012)
39. One-dimensional discontinuous map analysis of DC-DC Converters under voltage-controlled pulse-skipping modulation By S. Kapat, S. Banerjee and A. Patra *International Journal of Bifurcation and Chaos* 22 (03) (2012)
40. Packaging of Single-Component Fractional Order Element By Debasmita Mondal and Karabi Biswas *IEEE TRANSACTIONS ON DEVICE AND MATERIALS RELIABILITY* Vol. 13, pp. 73-80 (2012)
41. Parallel Connected Shunt Hybrid Active Power Filters Operating at Different Switching Frequencies for Improved Performance By A. Bhattacharya, C.Chakraborty, and S. Bhattacharya *IEEE Transactions on Industrial Electronics* 59, 4007-4019 (2012)
42. Post-Silicon Debugging of PMU Integration Errors using Behavioral Models By Antara Ain, Pallab Dasgupta, Siddhartha Mukhopadhyay and Subhankar Mukherjee *VLSI Journal* (2012)
43. Rational Approximation and Analog Realization of Fractional Order Transfer Function with Multiple Fractional Powered Terms By Munmun Khanra, Jayanta Pal and Karabi Biswas *Asian Journal of Control* DOI: 10.1002/asjc.56 (2013)
44. Reactive Power Allocation for Loss Minimization in a Stand alone Variable Speed Constant Frequency Double Output Induction Generator By D. P. Bagarty, D. Kastha *IET Power Electronics Journal* In Press (2013)
45. Recent advances on power distribution system planning By S. Ganguly, N.C.Sahoo and D.Das *Journal of Energy Systems* January, pp.1-26 (2013)

46. Robust Controller with State-Parameter Estimation for Uncertain Network Control System By Arun K Sharma *IET Control Theory and Application* vol.6, pp.2775-2784 (2012)
47. Robust Stability Criterion for Markovian Jump Systems with Nonlinear Perturbations and Mode-dependent Time-delays By Ramakrishnan Goshaidas Ray *International Journal of General Systems* 41, pp.373-393 (2012)
48. Symmetry-Breaking Bifurcation in Series-Parallel Load Resonant DC-DC Converters By K. Mandal, S. Banerjee and C. Chakraborty *IEEE Transactions on Circuits and Systems-I* 60, 778-787 (2013)
49. Synchronizing AMS Assertions with AMS Simulation: From Theory to Practice By Subhankar Mukherjee, Pallab Dasgupta, Siddhartha Mukhopadhyay, Scott Little, John Havlicek and Srikanth Chandrasekaran *In ACM Transactions* (2012)
50. Testing of MEMS capacitive sensor through electro-static actuation By Kar S.K., Swamy K. B. M., Mukherjee B. and Sen S. *Microsystem Technologies* vol. 19, pp.79-87 (2013)
51. Unbalance and Harmonic Voltage Compensation for a Standalone Variable Speed Constant Frequency Double Output Induction Generator Supplying Nonlinear and Unbalanced Loads By M. Pattnaik, D. Kastha *IET Electric Power Application Journal* In Press (2013)

Papers Presented in Conferences

1. A Capacitor-less Low Drop-out (LDO) Regulator with Improved Transient Response for System-on-Chip Applications, By Lovaraju, C. Maity, A. Patra, A., *VLSI Design and 2013 12th International Conference on Embedded Systems (VLSID), 2013 26th International Conference on*, Pune, India, (2013)
2. A hybrid multilevel inverter topology with third harmonic injection for grid connected photovoltaic central inverters, By S.K.Chattopadhyay, C.Chakraborty, and B.C.Pal, *IEEE ISIE 2012*, Hungzhou, China, (2012)
3. A new approach for sensitivity improvement of MEMS capacitive accelerometer using electrostatic actuation, By B. Mukherjee., K.B.M. Swamy and S. Sen, *International Conference on Sensing Technology (ICST 2012)*, Kolkata, (2012)
4. A real time algorithm for detection of spectacles leading to eye detection, By Manish Singvi, Anirban Dasgupta, Aurobinda Routray, *Intelligent Human Computer Interaction (IHCI), 2012 4th International Conference on*, IIT Kharagpur India, (2012)
5. A real time facial expression classification system using Local Binary Patterns, By SL Happy, Anjith George, Aurobinda Routray, *Intelligent Human Computer Interaction (IHCI), 2012 4th International Conference on*, IIT Kharagpur India, (2012)
6. A Software for Stability Analysis of Switching Electronic Circuits, By K. Mandal, S. Banerjee, and C. Chakraborty, *National Conference on Nonlinear Systems and Dynamics (NCNSD-2012)*, Pune,, (2012)
7. A video database of human faces under near Infra-Red illumination for human computer interaction applications, By SL Happy, Anirban Dasgupta, Anjith George, Aurobinda Routray, *Intelligent Human Computer Interaction (IHCI), 2012 4th International Conference on*, IIT Kharagpur India, (2012)
8. A Web Based Analog Signals, Networks and Measurement Laboratory, By Alok Kanti Deb and Tanmoy Dam, *Int. Conf. on Soft Computing, Artificial Intelligence, Pattern Recognition, Biomedical Engineering and Associated Technologies (SAP-BEATS)*, Jodhpur, India, (2013)
9. Advanced virtual embedded system laboratory, By , R Mohanty, Aurobinda Routray, Sanata Clara, CA, (2012)
10. An integrated approach for directional relaying of the double-circuit line, By A. K. Pradhan and P. Jena, *IEEE PES General Meeting,,* San-Diego, (2012)
11. Bifurcations in Frequency Controlled Load Resonant DC-DC Converters, By K. Mandal, S. Banerjee, C. Chakraborty, and M. Chakraborty, *IEEE International Symposium on Circuits and Systems (ISCAS)*, Seoul, South Korea,, (2012)
12. Browse Conference Publications Intelligent Human Computer In ... Help A biomedical approach to retrieve information on drivers fatigue by integrating EEG, ECG and blood biomarkers during simulat, By Bibhukalyan Prasad Nayak, Sibsambhu Kar, Aurobinda Routray, Akhaya Kumar Padhi, *Intelligent Human Computer Interaction (IHCI), 2012 4th International Conference on*, IIT Kharagpur India, (2012)

13. Cascaded H-Bridge & neutral point clamped hybrid asymmetric multilevel inverter topology for grid interactive transformerless photovoltaic power plant, *By S.K.Chattopadhyay, C.Chakraborty, and B.C.Pal, IEEE IECON 2012, Montreal, Canada, (2012)*
14. Classification of brain states using principal components analysis of cortical EEG synchronization and HMM, *By Aurobinda Routray, Sibsambhu Kar, Acoustics, Speech and Signal Processing (ICASSP), 2012 IEEE International Conference on, Kyoto Japan, (2012)*
15. Delay dependent non-fragile robust control for a class of uncertain stochastic nonlinear systems, *By Ramakrishnan Goshaidas Ray, Int. conf. on Industrial and Information Systems (ICIIS)-2012, Chennai, (2012)*
16. Design and Implementation of a High-Speed, Power-Efficient, Modified Hybrid-Mode Sense Amplifier for SRAM Applications, *By Bhattacharya, D. Maity, A. Patra, A., VLSI Design and 2013 12th International Conference on Embedded Systems (VLSID), 2013 26th International Conference on, Pune, India, (2013)*
17. Design of an ultra-low powered DC-DC buck converter for wireless sensor networks, *By Soumik Sarkar, Ashis Maity, Amit Patra, Microelectronics and Electronics (PrimeAsia), 2012 Asia Pacific Conference on Postgraduate Research in, Hyderabad, India, (2012)*
18. Design of Delta Sigma Modulators for Integrated Sensor Applications, *By Dushyant Juneja, Sougata Kar, Procheta Chatterjee, and Siddhartha Sen, ETEIC-2012, Agra, (2012)*
19. Development of SI-Engine based Extended MVEMs for use in Estimators for Engine Health Management, *By Jonathan Vasu, Alok Kanti Deb, Siddhartha Mukhopadhyay and Kallappa Pattada, SAE International, 2012-01-1990, USA, (2012)*
20. Effect of sleep deprivation on estimated distributed sources for Scalp EEG signals: A case study on human drivers, *By Aritra Chaudhuri, Aurobinda Routray, Sibsambhu Kar, Intelligent Human Computer Interaction (IHCI), 2012 4th International Conference on, IIT Kharagpur India, (2012)*
21. Embedded Reconfigurable Augmented DC-DC Boost Converter for Fast Transient Recovery, *By Mishra, N. Jha, N. Kapat, S. Patra, A., VLSI Design and 2013 12th International Conference on Embedded Systems (VLSID), 2013 26th International Conference on, Pune, India, (2013)*
22. Estimation of Saccadic Ratio from eye image sequences to detect human alertness, *By Supratim Gupta, Aurobinda Routray, Intelligent Human Computer Interaction (IHCI), 2012 4th International Conference on, IIT Kharagpur India, (2012)*
23. Flux Programmed Hybrid Mode Operation of a Doubly Fed Induction Generator for Wind Power Application, *By S. Mukherjee, D. Kastha, IEEE Int. Conf.on Power Electronics, Drives and Energy Systems, (PEDES), Bengaluru, India, (2012)*
24. High-Frequency Three-Phase Inverter Employing New Six-Pulse-Modulation (SPM) Technique for Rural Electrification/Micro-Grid/DER/EV Applications, *By Prasanna U. Rajagopal, Akshay K. Rathore, Chandan Chakraborty, IEEE ICIT 2013, Cape Town, (2013)*
25. Interference rejection in delay line based quadrature band-pass $\Sigma\Delta$ modulators, *By Kumar YB Nithin, Edoardo Bonizzoni, Amit Patra, Franco Maloberti, Circuits and Systems (ISCAS), 2012 IEEE International Symposium on, Seoul, South Korea, (2012)*
26. Measurement of PERCLOS using eigen-eyes, *By Tapan Pradhan, Ashutosh Nandan Bagaria, Aurobinda Routray, Intelligent Human Computer Interaction (IHCI), 2012 4th International Conference on, IIT Kharagpur India, (2012)*
27. Nonlinear Transient Modeling of a Diesel Engine, *By A. Chakrabarti, D. Kastha, B. M. Mohan, B Das and P.R.Kasari, Int. Conf. on Advances in Power Electronics and Control System, Amsterdam, Netherlands, (2012)*
28. Optimal Sizing of PV-FC-Battery Hybrid System With Energy Based Approach and PSO, *By Ishita Biswas, and Prabodh Bajpai, 17Tth National Power System Conference, (NPSC), IIT BHU, VARANASI, INDIA, (2012)*
29. Prediction Schemes for Compensating Variable Delay for Improving Performance of Real-Time Control Tasks, *By Roy, S. Patra, A. Chakrabarti, P.P. Sinha, P. Das, D., VLSI Design and 2013 12th International Conference on Embedded Systems (VLSID), 2013 26th International Conference on, Pune, India, (2013)*
30. Price-based Indirect Control of Storage Devices in a Smart Grid, *By Ashish R. Hota, and Prabodh Bajpai, 17Tth National Power System Conference, (NPSC), IIT BHU, Varanasi, India, (2012)*
31. Reciprocal Convex Approach to Delay-Dependent Stability of Uncertain Discrete-Time Systems with Time-Varying Delay, *By K. Ramakrishnan and Goshaidas Ray, American Control Conference, Fairmont Queen Elizabeth, Montreal,, (2012)*

32. Robust filter design for a class of uncertain systems with time-varying state-delays, *By* Ramakrishnan Goshaidas Ray, *7th. Int. Conf. on Elect. And Computer Engineering*, DHAKA, (2012)
33. Robust compensation of discrete-time plant using 2-periodic controller, *By* S.K. Das and S. Chakraborty, *Robust control and design, IFAC*, Aalborg, Denmark, (2012)
34. Sizing Optimization of PV-FC-Battery System with Hybrid PSO-EO Algorithm, *By* Ishita Biswas, Vaishalee Dash and Prabodh Bajpai, *IEEE INDICON*, Kochi, Kerala, India, (2012)
35. SOI MEMS Based Over-Sampling Accelerometer Design with $\Delta\Sigma$ Output, *By* Dushyant Juneja, Sougata Kar, Procheta Chatterjee, and Siddhartha Sen, *V DAT*, Shibpur, Howrah, (2012)
36. Two-Path Quadrature Cascaded Band-Pass Sigma-Delta Modulators, *By* Kumar, N.Y.B. Bonizzoni, E. Patra, A. Maloberti, F., *VLSI Design and 2013 12th International Conference on Embedded Systems (VLSID), 2013 26th International Conference on*, Pune, India, (2013)
37. Variance Optimization of CMOS OpAmp Performances using Experimental Design Approach, *By* Arnab Khawas and Siddhartha Mukhopadhyay, *ISVLSI 2012*, , (2012)
38. Video & EOG based investigation of pure saccades in human subjects, *By* Aritra Chaudhuri, Anirban Dasgupta, Aurobinda Routray, *Intelligent Human Computer Interaction (IHCI), 2012 4th International Conference on*, I I T Kharagpur India, (2012)

Department of Electronics & Electrical Communication Engineering

Head

Prof. Chinmay Kumar Maiti upto 15.06.2012
Prof. Swapna Banerjee from 16.06.2012

Professors

Bandyopadhyay, Kalyan Kumar *Ph.D.(Jadavpur University)*, satellite communication

Banerjee, Swapna *Ph.D.(IIT Kharagpur)*, VLSI based embedded system design for signal/image processing, Biomedical Instrumentation, Device modeling, Low power circuits, Mixed-signal design

Biswas, Prabir Kumar *Ph.D.(IIT Kharagpur)*, Image Processing, Computer Vision, Automated Visual Inspection, Multimedia Network, Pattern Recognition, Sensor Network

Chakraborty, Ajoy *Ph.D.(IIT Kharagpur)*, EMI/EMC, Electromagnetics, Antennas

Chakraborty, Mrityunjoy *Ph.D.(IIT Delhi)*, Digital Signal Processing, Adaptive Signal Processing, VLSI Signal Processing, Compressive Sensing

Chattopadhyay, Santanu *Ph.D.(IIT Kharagpur)*, Network-on-Chip Design and Test, Low Power Digital Testing, Thermal Aware Testing, Fault Diagnosis

Dutta, Debasish *Ph.D.(IIT Kharagpur)*, Optical Networks, Wireless Networks

Garg, Ramesh *Ph.D.(IIT Kanpur)*, Electromagnetics

Maiti, Chinmay Kumar *Ph.D.(IIT Kharagpur)*, Microelectronics, Silicon Heterostructures, Online Laboratories, High-k Gate dielectrics, Memristors, Protein Electronics, Technology CAD, Graphene Electronics

Pathak, Sant Sharan *Ph.D.(IIT Delhi)*,

Rajakumar, Ratnam Varada *Ph.D.(IIT Kharagpur)*,

Ray, Ajoy Kumar *Ph.D.(IIT Kharagpur)*,

Sanyal, Subrata *Ph.D.(IIT Kharagpur)*,

Sen Gupta, Somnath *Ph.D.(IIT Bombay)*, Computer Vision, Video Coding

Associate Professors

Bhattacharya, Amitabha *Ph.D.(IIT Kharagpur)*, RF & Microwave Communication

Bhattacharyya, Tarun Kanti *Ph.D.(Jadavpur Univ)*, MEMS and Microsystems, RF and Analog VLSI, Thinfilms, Nano- electronics, Nano-scale Biosystems Engineering

Chakrabarti, Indrajit *Ph.D. (IIT Kharagpur)*, VLSI Design for Image and Video Processing and Communication

Datta, Raja *Ph.D.(IIT Kharagpur)* , Computer Communication Networks, Mobile Ad Hoc Networks, Optical WDM Networks, Distributed Systems, Wireless Sensor Networks

Dhar, Anindya Sundar *Ph.D.(IIT Kharagpur)*, VLSI Architecture Design

Ghosh, Bratin *Ph.D.(Univ. of Manitoba)*, Applied Electromagnetics

Mahapatra, Sudipta *Ph.D.(IIT Kharagpur)*, Parallel and Distributed Systems, Image and Video Compression, Optical and Wireless Networks

Mandal, Pradip *Ph.D.(IISc Bangalore)*, Design Automation of CMOS Analog circuits and Systems, On-chip power management system, Analog Interface circuits for high speed data link, Analog circuits for signal acquisition system

Roy, Rajarshi *Ph.D (Brooklyn Univ.)*, Communication Networks, Cooperative

Communication, Queuing Theory and Stochastic Processes, Optimization and network control, Performance Evaluation and optimal resource allocation problems, Learning and Self-organization and Emergent Phenomena in random environment, Social Networks, Network Coding, Cognitive Radio, Wireless communication and Geometry

Saha, Goutam

Ph.D.(IIT Kharagpur), Biomedical Signal Processing, Speech Processing, Audio based Surveillance, Biometric Authentication

Assistant Professors

Chakraborty, Paritosh Kumar *Ph.D (IIT Kharagpur)*, 1. Solid State Science and Technology, 2. Multi-Valued Logic Algebra and Related Aspects

De, Arijit

Ph.D.(Syracuse Univ), Electromagnetics, EMI/EMC, RF/Microwave, Digital Signal Processing, Array Processing, Computational Methods

Guha, Prasanta Kumar

Halder, Achintya

Ph.D.(Georgia Tech., Atlanta),

Layek, Ritwik Kumar

Ph.D., Texas A&M Univ., College Station, Genomic Signal Processing/ Systems Biology, Digital Image Processing, Linear Control Theory, Computer Vision, Stochastic Process

Mukhopadhyay, Sudipta

Ph.D. (IIT Kanpur), Medical Image and Signal Processing, Content based Medical Image Retrieval, Video Processing, Continuous Authentication

Roy, Rajat

Ph.D.(Univ. of Mumbai), Numerical computation of wave functions

Varshney, Shailendra Kumar

Ph.D.(University of Delhi), Speciality fibers-Photonic crystal fibers, Fiber optic sensors, Fiber devices for next generation communication, Plasmonics, Nanophotonics

Visiting Assistant Professor

Mandal, Mrinal Kanti

Ph.D.(IIT Kharagpur),

Scientific Officer

Sahoo, Ghanashyam

Ph.D (Jadavpur Univ.), EMI effect on Electro Med Devices & Exposer to Mobile Base Station & RF Radiation on Biological Body

Faculty Re-employment

Sudipta Mukhopadhyay

Associate Professor

Brief Description of on-going activities

The following research activities are currently carried out in the department: a) Biomedical Instrumentation: Main thrust is towards the design and development of an embedded system-on-chip solution for an adaptive intelligent biomedical system. Already a low cost Doppler Ultrasonography system has been designed and presently attempt is being made towards design of an Ultrasound Imaging system. For this the architecture for the real time signal processing is being implemented in Xilinx FPGA. Also a non-invasive blood glucose monitor based on laser induced photo acoustic spectroscopy is under development. Another research interest is for early detection of oral cancer via image processing. b) Analog/Mixed Signal Design: Currently the research group is engaged in designing an 8 bit 160 MSPS pipelined 0.25 μ m CMOS ADC and work is also going on the design of an ADC 0.18 μ m BiCMOS technology with enhanced performance. c) Communication Systems: Research is being carried out to design a QPSK demodulator and a 9-channel Transmultiplexer for Space application. d) Fibre Optics and Networking: The current research involves dispersion compensation of 40 Gb/s optical transmission system with optical phase conjugation and distributed Raman amplifier as well as with chirped fibre Bragg grating. In the optical networking area, innovative schemes have

been developed for guaranteeing WDM network survivability and IP-over-WDM integrated routing. Work is in progress for development of efficient contention resolution schemes for packet switched optical networks and their analytical modelling. e) Development of a RISC DSP for Modems. f) Development of a dual standard baseband processor for 3G Wireless Systems. g) Data Compression: Work is being carried out for the design of efficient strategies for low bit rate video coding. h) Joint Dispersion and nonlinearity compensation for WDM Transmission systems using Optical Phase conjugation and Distributed Raman Amplifier. i) EMI/EMC: Studies have been performed on different wire antennas (e.g dipole, inverted L, T, I, C-antennas) as Electromagnetic Interference (EMI) sensors. The Method of Moment based numerical technique has been used to evaluate the antenna factor of different wire antennas in different EMI test environments including Gigahertz Transverse Electromagnetic (GTEM) cell. j) Filters: Design, simulation and fabrication of lowpass Microstrip filters with cut-off frequency of 5.0GHz. Bandpass waveguide filters over X and Ku-band of frequencies. X-band filter has passband of 9.50GHz to 10.50GHz and Ku-band filter has passband of 13.90GHz to 14.60GHz. k) MCMT: Multiple Cavity Modeling Technique (MCMT) have been applied to study different waveguide based passive microwave circuits like waveguide diaphragms, filters, power dividers. The technique have also been applied successfully for the radiator problems like widow radiators, Slot radiators both in transmitting and receiving mode. l) Development of block floating point based schemes for implementing adaptive filters in digital hardware m) Architectural optimization of algorithms for signal processing and wireless communication. n) Formulation of efficient algorithms for designing CMOS operational amplifiers. o) Automated Visual Inspection of Industrial Objects, VLSI Architecture for low bit rate Video Coding, Medical Image Processing, Gesture Recognition from Video Sequences, Face recognition, Content based Retrieval of Texture Images, Fuzzy Neural Network. p) Fault tolerant design of Network on Chip systems. q) Optimal solutions are being developed for the next generation wireless Internet, including intelligent algorithms for implementing vertical handoff, traffic modelling and prediction, design and implementation of rate control algorithm for online video streaming and efficient strategies for implementing flow mobility in MIPv6 protocols.

Thrust Areas

1. MEMS & Semiconductor Technology
2. Broadband Communication Networks
3. VLSI Circuits and Systems
4. Design and Development of Embedded Systems for Computer Vision, Image, and Signal Processing

Doctoral and MS Degrees Awarded

1. Gourav Sarkar : Pre-Quantization for Efficient Realization of Automatic Speaker Recognition System and its Real Time Implementation(MS)
2. Tamal Das : Design and Implementation of Embedded Switched-Capacitor DC-DC Converters(MS)
3. Amartya Mazumdar : VLSI Implementation of 2D Mellin Transform for scale Analysis of Images(MS)
4. Deep Bera : Implementation of Digital Scan Conversion and Speckle Reduction Imaging units in DSP for Ultrasound System(MS)
5. Indranil Hatai : Design and Development of a Multi-Standard Baseband Modem for Software Defined Radio Architecture(MS)
6. Nilanjan Chattaraj : Design of Random Access Analog Memory (RA2M) for Video Application(MS)
7. Ashraf Hossain : Lifetime and coverage studies on wireless sensor networks(PhD)
8. Sumit Kumar Chatterjee : Low power motion estimation algorithms and architectures for efficient video compression(PhD)
9. Kaushik Bhattacharyya : Design and Implementation of Switched Capacitor based Embedded DC-DC Buck Converter(PhD)
10. B. Bala Narsaiah : Enhanced Medium Access Control Protocols for Hybrid IEEE 802.11x - 802.16x Networks and their Performance Analyses(Ph.D.)
11. B. Lakshmi : High Speed VLSI CORDIC Architectures(PhD)
12. Sanjay Kumar Soni : Deterministic Propagation Channel Modeling for Urban Scenario(Ph.D.)

Member - Professional Bodies

1. Bhattacharyya, Tarun Kanti, *Member* - IEEE
2. Saha, Goutam, *Regular* - IEEE, USA
3. Roy, Rajarshi, *to be renewed*. - IEEE
4. Mahapatra, Sudipta, *Life member* - CSI, India
5. Mahapatra, Sudipta, *Member* - IEEE, USA
6. Mandal, Pradip, *Member* - IEEE
7. Chakrabarti, Indrajit, *Member* - IEEE
8. Mukhopadhyay, Sudipta, *Member* - Signal Processing Society, IEEE
9. Mukhopadhyay, Sudipta, *Corresponding Member* - RSNA
10. Mukhopadhyay, Sudipta, *Senior Member* - IEEE
11. Mukhopadhyay, Sudipta, *Member* - SPIE
12. Ghosh, Bratin, *Senior Member* - Institute of Electronics and Electrical Engineers (IEEE)
13. Datta, Raja, *Regular Fellow* - OSI
14. Datta, Raja, *Senior Member* - IEEE
15. Bhattacharya, Amitabha, *Regular* - IEEE
16. Biswas, Dhruves, *Senior member* - IEEE, Electron Devices Society, Microwave Theory & Techniques Society, Communication Society
17. Varshney, Shailendra Kumar, *Member* - Optical Society of India
18. Varshney, Shailendra Kumar, *Regular* - IEEE
19. Varshney, Shailendra Kumar, *Member* - IEEE
20. Varshney, Shailendra Kumar, *Member* - Optical Society of America
21. Halder, Achintya, *Regular* - IEEE
22. Chakraborty, Ajoy, *Fellow* - Institute of Engineers
23. Chakraborty, Ajoy, *Senior* - IEEE
24. Chakraborty, Ajoy, *Senior* - SEMCE(I)
25. Banerjee, Swapna, *Senior Member* - IEEE
26. Banerjee, Swapna, *Presidents nominee* - NIT Council
27. Garg, Ramesh, *Fellow* - IEEE
28. Dutta, Debasish, *Senior Member* - IEEE
29. Dutta, Debasish, *Life Member* - IE
30. Dutta, Debasish, *Senior Member* - IEEE
31. Sahoo, Ghanashyam, *LIFE MEMBER* - EMC SOCIETY OF INDIA (SEMCE- I)
32. Maiti, Chinmay Kumar, *Senior Member* - IEEE
33. Sanyal, Subrata, *Member* - IEEE
34. Biswas, Prabir Kumar, *Senior Member* - Institute of Electrical and Electronics Engineers, USA
35. Chakraborty, Mrityunjoy, *Senior Member* - IEEE
36. Chakraborty, Mrityunjoy, *Member* - IET (formerly IEE, UK)
37. Sarkar, Binay Kumar, *Life Member* - EMC Society of India
38. Sarkar, Binay Kumar, *Senior Member* - IEEE, USA
39. Bandyopadhyay, Kalyan Kumar, *Fellow* - The Institution of Electronics and Telecommunication Engineers
40. De, Arijit, *Member* - IEEE

Member - Editorial Board

1. Bhattacharyya, Tarun Kanti (2012) *Editorial board member* - Journal of ISSS
2. Chakraborty, Mrityunjoy (2012) *Associate Editor* - IEEE Transactions on Circuits and Systems, Part I
3. Datta, Raja (2011) *Member* - International Journal of BioSciences and Technology
4. Datta, Raja (2011) *Member* - International Journal of Embedded and Real-Time Communication Systems (IJERCTS)
5. Dutta, Debasish (2013) *Editor* - IEEE Communications Surveys and Tutorials
6. Garg, Ramesh (2012) *Member* - RF & Microwave Computer Aided Engineering
7. Garg, Ramesh (2012) *Member* - IETE J of Education

8. Roy, Rajarshi (2011) *Member* - International Journal of Wireless and Mobile Networks (IJWMN)
9. Varshney, Shailendra Kumar (2012) *Editorial board member* - Journal of Photonics

Awards & Honours

1. Chakraborty, Mrityunjoy (2012) *APSIPA Distinguished Lecturer*
2. Chakraborty, Mrityunjoy (2013) *APSIPA Distinguished Lecturer*
3. Bhattacharyya, Tarun Kanti (2012) *IBM Faculty Award*
4. Saha, Goutam (2013) *In Top 100 of DST Lockheed Martin India Innovation Growth Program 2013*
5. Chattopadhyay, Santanu (2012) *Supreme Engineering Faculty Award*
6. Garg, Ramesh (2013) *visitors Nominee for NITs*

Sponsored Research Projects

1. 3-D Image Sensor for Capturing Minute Surface Details and Visualization by Geometric Modelling (DST, Govt. of India, Rs.30.00 Lakhs)
2. Advanced Adaptive Filtering for Sensor Networks and Sparse System Applications (Indo-Spanish Collaborative Project, Sponsor : DST and MICIIN, Govt. of Spain, Rs.21.00 Lakhs)
3. An embedded low cost portable CW Doppler Ultrasonography System (DST, New Delhi., Rs.24.79 Lakhs)
4. Analysis and Design of wide band compact rectangular patch antenna embedded on cylindrical pin structure (ISRO, Bangalore, Rs.18.75 Lakhs)
5. Analysis of different conducting & dielectric structures as EMI sensors (ISRO, Rs.22.31 Lakhs)
6. Automatic Speaker Recognition over VoIP (Vodafone Essar IIT Kharagpur Centre for Excellence in Telecommunication, Rs.18.00 Lakhs)
7. AVLSI Consortium (Multiple Industrial Organisation, Rs.0.00 Lakhs)
8. Bridge Health Monitoring with Wireless Sensor Network (Indian Railways, Rs.193.00 Lakhs)
9. Content base Image Retrieval for Medical Images (DIT, Rs.29.00 Lakhs)
10. Creation of Multimedia based Courseware for E&IT students to be implemented by IIT Kharagpur (DIT, Rs.115.00 Lakhs)
11. Degradation and Breakdown of Metal gate/High-k/III-V Semiconductor Structures (DST New Delhi, Rs.32.36 Lakhs)
12. Degradation and breakdown of metal gate/high-K/III-V semiconductor structures (DST, New Delhi, Rs.3.23 Lakhs)
13. Design & development of non-invasive blood glucose measuring system (Department of Information Technology, Rs.27.00 Lakhs)
14. Design & Fabrication of high sensitivity micro machined Silicon tunneling accelerometer with micro-g resolution (ISRO, IIT Kharagpur Cell 721302, Rs.37.00 Lakhs)
15. Design and Development of high speed miniaturized RF MEMS switched capacitor (ISRO, Rs.19.70 Lakhs)
16. Design and Development of non-invasive blood glucose measuring system (DIT, New Delhi, Rs.27.00 Lakhs)
17. Design and development of specialised antenna for remote communication with submerged devices (ARDE, Pune, Rs.9.76 Lakhs)
18. Design and full-wave Greens Function analysis of a coax-fed two layer dielectric resonator antenna (CSIR, New Delhi, Rs.13.08 Lakhs)
19. Design and full-wave Greens Function analysis of the ultrawideband multilayer dielectric resonator antenna (Department of Science and Technology, Rs.54.80 Lakhs)
20. Design Automation of Analog VLSI (MCIT, DIT, Govt. of India, New Delhi, Rs.45.08 Lakhs)
21. Design of Planar Compact High Performance RF/Microwave Filters for Satellite Applications (ISRO- IIT Kharagpur Cell, Rs.8.94 Lakhs)
22. Design of radiation hardened data converters (ISRO, STC, I.I.T Kharagpur Cell., Rs.31.00 Lakhs)
23. Design, Simulation and Development of Mm-wave six port receiver-- completed (ISRO, Rs.9.90 Lakhs)

24. Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning (MHRD, Rs.0.00 Lakhs)
25. Development and Realization of Silicon Tunneling Accelerometer (ISRO Inertial Systems Unit (IISU), Rs.35.00 Lakhs)
26. Development of a Lung Sound Analyzer (Institute of Pulmocare & Research, Rs.7.00 Lakhs)
27. Development of Interference Mitigation methods through Base Station Cooperation in Next Generation Wireless Broadband Mobile Communication Networks (MCIT, DIT, new Delhi, Rs.90.60 Lakhs)
28. Development of MBE cluster tool based epitaxial nano-semiconductor infrastructure and process integration facility for high performance RF/microwave c (Department of Information Technology, GOI and ATDC, IIT Kharagpur, Rs.4979.92 Lakhs)
29. Development of MEMS based Accelerometers for Aerospace Application (NPMASS) (NPMASS, ADA, Bangalore, Rs.449.00 Lakhs)
30. Development of readout system for Muon system in CBM experiment at FAIR (NSC) (VECC, Kolkata/Govt. of India, Rs.50.00 Lakhs)
31. Development of MEMS based components for RF applications (NPMASS, Rs.166.00 Lakhs)
32. Digital Electronic Circuits Virtual Laboratory (MHRD, Rs.50.00 Lakhs)
33. Dual-band reconfigurable antenna tunable over a wide range (DEAL, Dehradun, Rs.9.71 Lakhs)
34. Energy Efficient Communication (ISRO, Rs.1.00 Lakhs)
35. Energy Efficient Radio for next generation cellular (VEICET, Rs.185.00 Lakhs)
36. Energy Efficient Routing (ISRO, Rs.0.00 Lakhs)
37. Enhancement of Transport Layer Performance for Inter Planetary Network (Indian Space Research Organization and KCSTC, Rs.11.00 Lakhs)
38. Enhancement of Transport Layer Performance for Inter Planetary Network (ETP) (SAC, ISRO, Rs.5.00 Lakhs)
39. Error Resilient Schemes for Satellite TV Systems (ISRO, Rs.12.00 Lakhs)
40. Fault diagnosis techniques for yield enhancement (Synopsys, USA, Rs.25.00 Lakhs)
41. Feasibility Study of Microwave Imaging for Material Resource Exploitation in Planetary Mission (ISRO, IIT Kharagpur Cell, Rs.26.16 Lakhs)
42. FPGA based design and development of H.264 Codec (ISRO, Rs.14.80 Lakhs)
43. GaN/InGaN based light emitting diodes, solar cells and photoelectrochemical (PEC) devices by MOCVD epitaxial process (Department of Science & Technology, Govt. of India, Rs.657.00 Lakhs)
44. Green Cellular Network (VEICET, Rs.20.00 Lakhs)
45. Handset Normalization and Reduction of Noise and Distortion for Voice Authentication (ISRO, India, Rs.11.00 Lakhs)
46. Iron disilicide heterojunction solar cells (Dept. of Science & Technology, Govt. of India, Rs.15.36 Lakhs)
47. Iron Disilicide Heterojunction Solar Cells (DST, Rs.15.00 Lakhs)
48. Ka Band Propagation Experiments over Indian tropical Region for Improvement of Ka Band Satellite Communication (ISRO, IIT Kharagpur Cell, Rs.26.73 Lakhs)
49. MEMS based micropropulsion devices for micro satellite program (ISRO, Rs.123.00 Lakhs)
50. Microelectronics and VLSI Engineering Online Laboratory (MHRD, Rs.100.00 Lakhs)
51. Modelling, simulation and fabrication of Split Ring Resonators (VRDE, Ahmadnagar, Rs.9.83 Lakhs)
52. Multiple Access Array Antenna system at S band using Digital Beam Forming Techniques (DBT) (SAC, ISRO, Rs.5.00 Lakhs)
53. Multiple Access array antenna system at s-band using digital beamforming techniques--- completed (ISRO, Rs.24.50 Lakhs)
54. NMEICT Talk to 10,000 Teachers (MHRD, Rs.6600.00 Lakhs)
55. Non-invasive blood glucose measurement system: Prototype development, Evaluation & Testing (ICMR, New Delhi, Rs.21.78 Lakhs)
56. Optimal Solutions and Applications for the Next Generation Wireless Internet (VEICET-Vodafone-Essar, Rs.46.00 Lakhs)
57. Planar inverted F-antenna for mobile communication (Ministry of Science and Technology, Rs.8.00 Lakhs)
58. Railway Bridge Health Monitoring System with Wireless Sensor Networks (Indian Railways, Govt. of India, Rs.187.02 Lakhs)

59. RCS measurement of complex targets in Time Domain (MCT) (Defence Lab, Jodhpur, Rs.9.90 Lakhs)
60. Remote Triggered Laboratories (MHRD, Rs.48.00 Lakhs)
61. RF MEMS Components (ADA, Bangalore, Rs.187.00 Lakhs)
62. Signal Processing and Machine Learning for Pervasive Healthcare (Intel Bangalore, Rs.15.00 Lakhs)
63. Special Manpower Development Programme for VLSI Design & related Software (Ministry of Communication and Information Technology, New Delhi, Rs.145.27 Lakhs)
64. Studies on GPR Wave Propagation through Soil (LRDE, Bangalore, DRDO, Rs.9.95 Lakhs)
65. Studies on Retro-Directive Array for Space Applications(RAA) (ISRO, Bangalore, Rs.33.47 Lakhs)
66. Studies on the Construction and Performance Evaluation of Multiplexed Binary Offset Carrier Spreading Modulation for Improved Satellite Radio Navigati (ISRO, IIT Kharagpur Cell, Rs.12.00 Lakhs)
67. Study of CDMA codes for satellite navigation (SCN) (ISRO-KCSTC, Rs.5.00 Lakhs)
68. Synthesis of functional groups for imobilization of functional proteins on MEMS based micro-sensor surfaces (Indo-Trento Program for Advanced Research, Rs.164.00 Lakhs)
69. Synthesis of satellite footprints patterns from planar array antennas by combination of paticles swarm optimization and FFT (ISRO, Rs.16.80 Lakhs)
70. Technology Business Incubation (TBI) (Department of Science and Technology, GOI and SRIC, IIT Kharagpur, Rs.20.00 Lakhs)
71. Technology CAD (TCAD) Online Laboratory (MHRD, Rs.50.00 Lakhs)
72. Test Simulator for Satellite Based AIS (TSS) (SAC, ISRO, Rs.7.00 Lakhs)
73. Test Simulator for Satellite based AIS-- completed (ISRO, Rs.16.85 Lakhs)
74. Thermal aware Testing of VLSI Circuits and Systems (Dept. of Information Technology, Govt. of India, Rs.49.91 Lakhs)
75. Upgrading Facilities for MEMS design activities at National resource centre (NPMASS, ADA, Bangalore, Rs.36.00 Lakhs)
76. Virtual Lab Simulation - Digital Electronic Circuits (MHRD, Rs.50.00 Lakhs)
77. Virtual Lab Simulation - Digital Signal Processing Lab. (MHRD, Rs.50.00 Lakhs)

Consultancy Projects

1. Design of methodology for robust analogue building blocks (Sankalp Semiconductor Pvt. Ltd., Rs.1.65 Lakhs)
2. Design of monopulse Ka-band antenna and waveguide system (VEM Technologies Ltd., Hyderabad, Rs.10.25 Lakhs)
3. Design of Software-only High Definition Video Codec based on H.264 (Intellisys Technologies and Research Limited, Kolkata, Rs.13.23 Lakhs)
4. Design of switch capacitor based embedded DC-DC buck converter (Maxim India Integrated Circuit Pvt. Ltd., Rs.10.32 Lakhs)
5. Developing Pedagogical Methods (Subject: Network Theory) (MHRD, Govt. of India, Rs.2.00 Lakhs)
6. Efficient and Reliable Transport Protocol for Mobile Ad Hoc Networks (Defence Electronics Applications Lab (DEAL), DRDO, Dehradun, Rs.9.75 Lakhs)
7. Real Time Image Processing for Conveyor Belt Health Monitoring (PHOENIX Conveyor Systems, Rs.22.00 Lakhs)
8. Studies on GPR wave Propagation through Soil (LRDE, DRDO, Rs.1.72 Lakhs)

Patents (filed / granted)

1. A CALLER AUTHENTICATION SYSTEM FOR COMPUTER BASED VOIP CALLS
2. A LOW-COST BIOMETRIC AUTHENTICATION SYSTEM FOR ONLINE CERTIFICATION COURSE
3. An Energy and QoS Aware Method for Vertical Handover among Heterogeneous Wireless Networks
4. An Improved Molecular Beam Epitaxy Multi Chamber Cluster Tool And Processes For Integration Of Multiple Growth Combination Of Group III-V Semiconductor Heterostructures

5. An integrated automated system for assessing and monitoring the cardiac status and pulse rate
6. Fiber optic corrosion sensor
7. Heart Sound Analyzer
8. Lung Sound Analyzer
9. Method of video coding the movement of a human face from a sequence of images

Visits Abroad by Faculty Members

1. Chakraborty, Mrityunjoy - INDO-Spanish Joint Project (Universidad Carlos III de Madrid,) October 23-Nov. 4, 2012
2. Varshney, Shailendra Kumar - Present paper in IEEE Photonics Conference (San Francisco,) 23-28 Sept. 2012
3. Bhattacharya, Amitabha - To attend EUROEM-2012 Conference (Toulouse, France,) 2nd-6th July, 2012
4. Bhattacharya, Amitabha - To attend IEEE APS-2012 Conference (Chicago, USA,) 8th - 13th July, 2012
5. Dutta, Debasish - Research Collaboration (Monash University, Malaysia Campus,) March 27-29, 2013
6. - Presenting my paper in INEC 2013 conference (Singapore,) 2nd-4th January, 2013
7. Chakraborty, Mrityunjoy - To attend IEEE ISCAS 2012 (Seoul, South Korea,) May 20-23, 2012
8. Chakraborty, Mrityunjoy - INSA-JSPS fellowship (Kyoto University, Kyoto, Japan,) May 24-June 13, 2012
9. Maiti, Chinmay Kumar - To attend REV2012 (Sydney Australia,) Feb 6-8, 2013
10. Datta, Raja - To present a research paper in International Conference on Distributed Computing and Networking (Hong Kong,) January 2 to January 7, 2012
11. Layek, Ritwik Kumar - To present a paper in 51th IEEE Conference on Decision and Control(CDC) (Maui, Hawaii, USA,) 8-16 Dec, 2012
12. Mukhopadhyay, Sudipta - To attend SPIE Medical Imaging 2013 (Orlando, Florida,) 9th to 14th Feb, 2013
13. Biswas, Dhrubesh - Invitation towards collaboration between National Chiao Tung University (National Chiao Tung University, Taiwan,) 17-12-2012 to 21-12-2012
14. Biswas, Dhrubesh - Invited Talk (University of Jyväskylä, Agora Center, University of Jyväskylä, Finland,) 08-10-2012 to 12-10-2012
15. Bhattacharyya, Tarun Kanti - Collaborative research under ITPAR program (FBK Trento, Italy,) 15th May 2012 - 15th June 2012
16. Biswas, Prabir Kumar - ACM ICPC World Final (Warsaw, Poland,)
17. Biswas, Prabir Kumar - IEEE Intl. Conference on Image Processing (Florida, USA,)
18. Bhattacharyya, Tarun Kanti - To present the annual progress report and to participate in 19th CBM meeting under FAIR project (GSI Darmstadt, Germany,) 5 Days
19. Roy, Rajarshi - To attend, present papers in 4th Nordic Workshop on system and network optimization in wireless (Akashotelli, Yllas, Lapland, Finland.,) 2nd-6th April, 2013
20. Biswas, Prabir Kumar - IEEE Picture Coding Symposium (Krakow, Poland,)
21. Datta, Raja - To present a research paper and to be Session Chair of IEEE WCNC (Shanghai, China,) total 4 hours in 7-10 April 2013

Invited Lectures by Faculty Members

1. Decoding cellular dynamics *by* Layek, Ritwik Kumar (IIT Kharagpur (Medical Imaging Workshop))
2. Embedded system design for Bio-medical system instrumentation *by* Banerjee, Swapna (Birla Institute of Technology, Mesra, Jharkhand.)
3. QoS Aware Fuzzy Rule Based Vertical Handoff Decision Algorithm for Heterogeneous Wireless Networks *by* Mahapatra, Sudipta (IGIT Sarang)
4. Advance in RF and Microwave Technologies. *by* Sarkar, Binay Kumar (Indian Institute of Space Science and Technology, Trivandapuram)
5. Radar- An efficient sensor. *by* Sarkar, Binay Kumar (Indian School of Mines, Dhanbad)

6. Automatic Speaker Recognition on VoIP *by* Saha, Goutam (Special Interest Group (SIG) Meeting at Delhi on VAS and its policies)
7. Hollow-core photonic crystal fibers *by* Varshney, Shailendra Kumar (CGCRI Kolkata)
8. Photonic Crystal fibers and its applications *by* Varshney, Shailendra Kumar (Material Science Center, IITKGP)
9. Micro and Nano Technology for Harsh Environment *by* Bhattacharyya, Tarun Kanti (IIT Bombay)
10. MEMS based inertial sensors and interfacing electronics *by* Bhattacharyya, Tarun Kanti (IIT Delhi)
11. Design and implementation of micro-machined cantilever structures for MEMS- based digital inverter *a by* Bhattacharyya, Tarun Kanti (CMET Pune)
12. MEMS based micropropulsion systems for space application *by* Bhattacharyya, Tarun Kanti (IISC Bangalore)
13. Nanotechnology *by* Bhattacharyya, Tarun Kanti (IETE Zonal Seminar Ranchi)
14. Sparse Adaptive Filters : an Overview and Some New Results *by* Chakraborty, Mrityunjoy (Kyoto University, Kyoto, Japan)
15. Recent Advances in Sparse System Identification *by* Chakraborty, Mrityunjoy (Niigata University, Japan)
16. Adaptive Sparse System Identification : Recent Trends and Some New Results *by* Chakraborty, Mrityunjoy (Kansai University)
17. A SPT Treatment to the Realization of the Sign-LMS based Adaptive Filters *by* Chakraborty, Mrityunjoy (Tokyo Metropolitan University, Tokyo)
18. Sparse Adaptive Filters : Recent Trends and Some New Results *by* Chakraborty, Mrityunjoy (Universidad Carlos III de Madrid)
19. Adaptive Identification of Sparse Systems : Recent Trends and Some New Results *by* Chakraborty, Mrityunjoy (Universidad Carlos III de Madrid)
20. Image Enhancement using Stochastic Resonance *by* Biswas, Prabir Kumar (Siddaganga Institute of Technology, Tumkur)
21. Recent Trends in Computer Networking *by* Datta, Raja (North Eastern Regional Institute of Science and Technology, Arunachal Pradesh)
22. Communication Technologies *by* Datta, Raja (Calcutta Electric Supply Corporation (CESC), Kolkata)
23. Evolving Computer Networks with special emphasis to Wireless Sensor Networks *by* Datta, Raja (Defence Research and Development Lab, DRDO, Hyderabad)
24. Recent trends in Networking *by* Datta, Raja (National Institute of Technology (NIT) Agartala)

Books Published

1. Avik Dutt and S.K. Varshney: Capillary Optical Fibers: Design and Applications *published by* LAP LAMBERT Academic Publishing (2012)
2. R. Garg, I. Bahl, and M. Bozzi: Microstrip Lines and Slotlines, Third Edition *published by* Artech House (2013)

Short-Term Courses, Training Programmes and Workshops organised

1. Advanced DSP Design Techniques (July 2-6, 2012)
2. Advances in VLSI Signal Processing (Dec. 20 - 24, 2011)
3. Electromagnetic Environmental Effects Management (Dec. 11 – Dec. 20, 2012)
4. ISRO Scientists Refresher program on Basic Theoretical topics of RF and Microwaves (14 days)
5. Microwave Fundamental & its applications to Radar and Avionics (Two weeks (21-05-12 to 02-06-12))
6. QIP Short Term Course On Microwave Fundamentals & its applicaions in Radar and Avionics (May 21 – June 2, 2012)
7. Refresher Program on Basic Theoretical Topics of RF and Microwave (Jan. 14 – Jan. 27, 2013)
8. Telecommunication Networks & Security for BSF Officers (September 26 to October 1, 2011)
9. Telecommunication Networks with State of the art Hands on Experiments (June 20 to June 27, 2011)

Papers Published in Journals

1. A Block Floating Point Realization of the Adaptive Decision Feedback Equalizer By R. Shaik and M. Chakraborty *Signal Processing* pp. 1162-1171, May (2013)
2. A complementary microstrip-slot line stub configuration for group delay engineering By M. K. Mandal, D. Deslandes, and K. Wu *Microwave and Wireless Comp. Lett.* 22 (2012)
3. A discrete time continuous level VLSI architecture in current mode to implement discrete Haar wavelet transform By A. S. Reddy and A. S. Dhar *Analog Integrated Circuits and Signal Processing* vol. 73, pp. 353-362 (2012)
4. A fast VLSI architecture of a hierarchical block matching algorithm for motion estimation By K. Ghosh and A. S. Dhar *Journal of Real-Time Image Processing* online (2013)
5. A Framework for Multiple Fault Diagnosis based on Multiple Fault Simulation using Particle Swarm Optimization By S. Kundu, A. Jha, S. Chattopadhyay, I. Sengupta, R. Kapur *IEEE Transactions on VLSI* Accepted (0)
6. A Heuristic Approach to Automated Nipple Detection in Digital Mammograms By M. Jas, S. Mukhopadhyay, & J. Chakraborty N. Sadhu & N. Khandelwal *Journal of Digital Imaging* Epub Feb 20 (2012)
7. A high performance SPIHT based image and video codec for surveillance By Bibhuprasad Mohanty, Pramod Verma and Sudipta Mahapatra *IJSISE* In press (2013)
8. A Joint Parametric Prediction Model for Wireless Internet Traffic using Hidden Markov Model By Sumit Maheshwari, Sudipta Mahapatra, C.S Kumar, Vasu K, *Wireless Network* 1 (1-15) (2012)
9. A metaheuristic approach for optical network optimization problem, By Urmila Bhanja, Sudipta Mahapatra *Journal of Applied Soft Computing* ASC 13/981-997 (2013)
10. A Novel Windowing Technique for Efficient Computation of MFCC for Speaker Recognition By Sahidullah, Md and Saha, Goutam *IEEE Signal Processing Letters* 20(2), 149-152 (2013)
11. A SPT Treatment to the Realization of the Sign-LMS based Adaptive Filters By S. Chaudhary, P. Mukherjee, M. Chakraborty and S. S. Rath *IEEE Transactions on Circuits and Systems, Part I* pp. 2025-2033, Sept. (2012)
12. A Survey on Application Mapping Strategies for Network-on-Chip Design By P. K. Sahu and S. Chattopadhyay *Journal of Systems Architecture* 59, pp. 60-76 (2013)
13. A system for behavior prediction based on neural signals By Mathew, Jacob Sahoo, Laxmikanta Saha, Goutam *Neurocomputing* 97, 214-222 (2012)
14. A variable RF carrier modulation scheme for ultralow power wireless body-area network By A. Ghosh, A. Halder, A. S. Dhar *IEEE Systems Journal* vol6, pp.305-316 (2012)
15. An Energy and QoS Aware FUZZY-TOP Vertical Handover Decision Mechanism for Heterogeneous Wireless Networks By Vasu K, Sumit Maheshwari, Sudipta Mahapatra, C.S. Kumar *IET networks (Accepted)* (0)
16. An Energy-Efficient Communication in Multihop Wireless Networks using Ternary Encoding and Silent Symbols By R. N. Ghosh, K. Sinha, D. Datta and B. P. Sinha *Intl. J. Commun. Networks and Distributed Systems* In Press (2013)
17. An evolutionary programming algorithm for survivable routing and wavelength assignment in transparent optical networks By Urmila Bhanja, Sudipta Mahapatra, Rajarshi Roy *International Journal of Information Sciences* 222 (634-647) (2013)
18. An evolutionary programming algorithm for survivable routing and wavelength assignment in transparent optical networks By Urmila Bhanja, Sudipta Mahapatra and Rajarshi Roy *Information Sciences* 222, 634-647 (2013)
19. An FPGA-based architecture of DSC_SRI units specially for blind ultrasound systems By Rakesh Biswas, Kishor Sarawadekar, Srinivas Varna, Swapna Banerjee, *J Real-Time Image Proc* DOI 10.1007/s11554-0 (2012)
20. AODV based Technique for Quick and Secure Local Recovery from Link Failures in MANETs By Sajal Sarkar and Raja Datta *International Journal of Communication Networks and Distributed Systems* Accepted (2012)
21. Application Mapping onto Mesh based Network-on-Chip using Discrete Particle Swarm Optimization By P. K. Sahu, T. Shah, K. Manna, S. Chattopadhyay *IEEE Transactions on VLSI* Accepted (0)
22. Application of Digital Image Processing in Tool Condition Monitoring: A Review By S Dutta, S K Pal, S Mukhopadhyay, R Sen *CIRP Journal of Manufacturing Science and Technology* Accepted in March (2013)

23. Area Efficient, High Speed EBCOT Architecture for Digital Cinema By Kishor Sarawadekar, Student Member, Swapna Banerjee, Senior Member *ISRN Signal Processing* Vol. 2012, 9 pages (2012)
24. Bipolar Resistive Switching in Al/HfO₂/In_{0.53}Ga_{0.47}As MIS Structures By M. K. Hota, C. Mukherjee, T. Das, and C. K. Maiti *ECS Journal of Solid State Science and Technology* vol. 1 (6), pp. N149 (2012)
25. Capillary optical fibers: design and applications for attaining a large effective mode area, By A. Dutt, S. Mahapatra, and S.K. Varshney *J. Opt. Soc. Am. B* 28, 1431 (2011)
26. Computer Aided Detection and Analysis of Pulmonary Nodule from CT Images: A Survey By Ashis Kumar Dhara, Sudipta Mukhopadhyay and Niranjana Khandelwal *IETE Journal of Technical Review* Vol. 29, pp. 165-175 (2012)
27. Content-Based Image Retrieval System for Differential Diagnosis of Lung Cancer By Ashis Kumar Dhara, Chanukya Krishna Chama, Sudipta Mukhopadhyay, Niranjana Khandelwal *Indian Journal of Medical Informatics* Vol 5, No 2 (2012)
28. Content-based texture image retrieval using fuzzy class membership By Sudipta Mukhopadhyay, Jatindra Kumar Dash, Rahul Das Gupta *Pattern Recognition Letters* Vol. 34, Pp 646-654 (2013)
29. Design and Implementation of an Area and Power Efficient Switched-Capacitor Based Embedded DC-DC Converter By Biswajit Maity, Soumya Gangula and Pradip Mandal *Journal of Low Power Electronics* 8 (2012)
30. Design of Bidirectional Coupling Circuit for Broadband Power-Line Communications By Syed Samser Ali, A. Bhattacharya and D. R. Podder *Journal of Electromagnetic Analysis and Applications* Vol. 4, pp. 162-166, (2012)
31. Design of Conformal Loop Antennas By B. Ghosh, S.K. Moinul Haque and P. Halder *IET, Microwaves, Antennas and Propagation* accepted (2013)
32. Design of tunable couplers using magnetic fluid filled three-core optical fibers By A. Dutt, S.K. Varshney, and S. Mahapatra *IEEE Photonics Technology Letters* 24, 164-166 (2012)
33. Direct Nanoscale Observation of Resistance Switching with Au nano-dots Embedded Nb₂O₅ by Scanning Tunneling Microscopy By M. K. Hota, M.K. Bera and C. K. Maiti *Nanoscience and Nanotechnology Letters* vol. 4, no.4, pp. 39 (2012)
34. Dispersion Characteristics of All-Glass Photonic Crystal Fiber By Sanjaykumar Gowre, Sudipta Mahapatra, S. K. Varshney, P. K. Sahu *Optik (Accepted)* (0)
35. DNA functionalized carbon nanotube network as humidity sensors By Ambarish Paul, Bidhan Pramanick, Baidurya Bhattacharya and T K. Bhattacharyya *IEEE Journal of Sensors* In press (2013)
36. Effect of Different Metallic Nano-inclusions (Ag, Al, Au and Cu) and Gain assistance for Isotropic left-handed Photonic material in Blue Light region By M. Rajput, R.K. Sinha, and S.K. Varshney *Optics and Laser Technology* 49, 256-263 (2013)
37. Effects of substrate strain and electrical stress on lattice dynamics, defects, and traps in strained-Si/Si_{0.81}Ge_{0.19} n-type metal-oxide-semiconductor field effect transistors By C. Mukherjee, S. Sengupta, C. K. Maiti, and T. K. Maiti *J. Appl. Phys.* vol. 111, pp. 104507 (2012)
38. Efficient Fog Removal from Video By A. K. Tripathi and S. Mukhopadhyay *Signal Image and Video Processing* Thu, 13 Sep (2012)
39. Electrical properties and noise characterization of HfO₂ gate dielectrics on strained SiGe layers By S. Mallik, C. Mukherjee, C. Mahata, M. K. Hota, C. K. Maiti, C. K. Sarkar, G. K. Dalapati, H. GaO, M. K. Kumar and D. Z. Chi *Thin Solid films* vol. 522, pp. 267– (2012)
40. Electro-thermal analysis of an embedded boron diffused microheater for thruster applications By Pijus Kundu, Tarun Kanti Bhattacharyya, Soumen Das *Microsystem Technologies* in press (2013)
41. Electroplated nickel based micro-machined disk resonators for high frequency applications By Ritesh Ray Chaudhuri and Tarun K Bhattacharyya *Microsystem Technologies* 19(4) pp. 525-535 (2013)
42. End-to-End Path Protection Considering Four Wave Mixing in Multi-Domain WDM Optical Networks By Jaisingh Thangaraj, Shriphal Meena and Raja Datta *Springer Journal of Optics*, 10.1007/s12596-013-0117-1. DOI (2013)
43. Enhancement of Dark and Low Contrast Images using Stochastic Resonance By Rajlaxmi Chouhan, R. K. Jha, P. K. Biswas *IET Image Processing* In press (2012)

44. Equal energy dissipation in wireless sensor network: A solution to energy-hole problem By Ashraf Hossain, S. Chakrabarti, P. K. Biswas *Computers and Electrical Engineering* 10.1016/j.compelecen (2013)
45. Evaluation of accumulated FWM power at lightpath ends in wavelength-routed optical networks By A. Adhya and D. Datta, Vol. 4, Issue 4, pp. 314–325, April 2012. *IEEE/OSA J. of Optical Communications and Networking* Vol. 4, pp.314–325 (2012)
46. Fault Detection and Intervention in Biological Feedback Networks By R. Layek, A. Datta *Journal of Biological Systems* 20(4), 441-458 (2012)
47. Flexible metal-insulator-metal capacitors on polyethylene terephthalate plastic substrates By M. K. Hota, M. K. Bera and C. K. Maiti *Semicond. Sci. Technol.* vol. 27, pp. 105001 (2012)
48. Frequency dependent dielectric response of HfTaOx based metal-insulator-metal capacitors By M. K. Hota, C. K. Sarkar and C. K. Maiti *Semicond. Sci. Technol.* vol. 27, pp. 085002 (2012)
49. FWM aware Evolutionary Programming Algorithm for Transparent Optical Networks By Urmila Bhanja, Sudipta Mahapatra, Rajarshi Roy *Photonic Network Communication*, 23/285-299 (2012)
50. Gain Enhancement of Reflector -based Impulse Radiating Antenna: An Innovative Approach By D.K.Singh, D.C.Pande, A.Bhattacharya *Progress in Electromagnetic Research C* Vol. 38, pp. 153-164 (2013)
51. Graphene oxide-based flexible metal–insulator–metal capacitors By A. Bag, M. K. Hota, S. Mallik and C. K. Maiti *Semicond. Sci. Technol.* vol. 28, pp. 055002 (2013)
52. Guided Modes in a Metamaterial-Filled Circular Waveguide By B. Ghosh, A.B. Kakade *Electromagnetics* 32, 465-480 (2012)
53. High Throughput Turbo Decoder Using Pipelined Parallel Architecture and Collision Free Interleaver By S.M. Karim and I. Chakrabarti *IET Communications* vol. 6, no. 11 (2012)
54. How We Choose One over Another: Predicting Trial-by-Trial Preference Decision By Bhushan, Vidya Saha, Goutam Lindsen, Job Shimojo, Shinsuke Bhattacharya, Joydeep *PLoS ONE* 7(8) p. e43351 (2012)
55. Improvement of Performance of Dynamically Reconfigurable Switched Capacitor Based Non-Overlap Rotational Time Interleaved Embedded DC-DC Converter By Kaushik Bhattacharyya and Pradip Mandal *Journal of Low Power Electronics* 8 (2012)
56. Improvement of Power Efficiency and output voltage Ripple of Embedded DC-DC converters with Three Step Down ratios By Kaushik Bhattacharyya, P. V. Ratna Kumar and Pradip Mandal *Journal of Circuits, Systems, and Computers* 21 (2012)
57. Influence of flow rate on different properties of diamond-like nanocomposite thin films grown by PECVD By TS Santra, TK Bhattacharyya, FG Tseng, TK Barik *AIP Advances* 2(2), pp-022132-10 (2012)
58. Keyframe quantization error reduction in distributed video coding By N.Vijaykumar and S.Sengupta *IET Electronics Letters* Vol.48, pp.628-629 (2012)
59. Limitation on Effective Area of Bent Large-Mode-Area Leakage Channel Fibers By K. Saitoh, S.K. Varshney, K. Sasaki, L. Rosa, M. Koshihara, M. Pal, S.K. Bhadra *J. Lightwave Technology* 29, 2609 (2011)
60. Logo Detection Using Dynamic Stochastic Resonance By Rajib Kumar Jha, P. K. Biswas, S. Shrivastav *Signal, Image and Video Processing* DOI:10.1007/s11760-0 (2012)
61. Measures of Divergence of Oriented Patterns for the Detection of Architectural Distortion in Prior Mammograms By Rangaraj M. Rangayyan, Shantanu Banik, Jayasree Chakraborty, Sudipta Mukhopadhyay, and J. E. Leo Desautels *International Journal of Computer Assisted Radiology and Surgery* Accepted in Sept (2012)
62. Meteorological Approach for Detection and Removal of Rain from Videos By A. K. Tripathi and S. Mukhopadhyay *IET Computer Vision* Accepted (2012)
63. Microelectromechanical system cantilever-based frequency doublers By Joydeep Basu and Tarun K Bhattacharyya *Journal of Intelligent Material Systems and Structures* 24(2), pp 240-246 (2013)
64. Miniaturization of Slot Antennas By B. Ghosh, S.K. Moinul Haque and N.R. Yenduri *IEEE Antennas and Wireless Propagation Letters* accepted (2013)
65. Nanowire Embedded Hydrogen Peroxide Monopropellant MEMS Thruster By Kundu, P. Sinha, A. K. Bhattacharyya, T. K. Das, S. *IEEE Journal of Microelectromechanical Systems (JMEMS)* 22 (2) , pp 406-417 (2013)
66. Natural Silk Fibroin Protein-based Transparent Bio-memristor By M. K. Hota, M. K. Bera, B. Kundu, S. C. Kundu, and C. K. Maiti *Adv. Funct. Mater.* vol. 22, 4493-4499 (2012)

67. New Fuzzy Texture Features for Robust Detection of Moving Objects By P.Chiranjeevi and S.Sengupta *IEEE Signal Processing Letters* Vol.19,pp.603-606 (2012)
68. Oxidative Stress Response Pathways: Modeling and Fault Analysis By S. Sridharan, R. Layek, A. Datta and J. Venkatraj *BMC Genomics* 13(Suppl 6):S4 (2012)
69. P-TCP: A Prediction Based Secure Transmission Control Protocol for Wireless Ad Hoc Networks By Uttam Ghosh and Raja Datta *IETE Journal of Research* Accepted (2013)
70. PDMS Membrane based SU-8 Micropump for Drug Delivery System By 1. Bidhan Pramanick, P. K. Dey, Soumen Das, and T. K. Bhattacharyya *Journal of ISSS* Volume 2 (2013)
71. Pipelined VLSI architecture using CORDIC for transform domain equalizer By A. Banerjee and A. S. Dhar *Journal of Signal Processing Systems* vol. 70, pp. 39-48 (2013)
72. Position mutated hierarchical particle swarm optimization and its application in synthesis of unequally-spaced antenna arrays By R. Bhattacharyya, T. K. Bhattacharyya, and R. Garg *IEEE Trans on Antennas & Propagation* vol 60, pp.3174-3181 (2012)
73. QoS Aware Fuzzy Rule Based Verti-cal Handoff Decision Algorithm Incorporating a New Evaluation Model for Wireless Heterogeneous Networks By Vasu K, Sumit Maheshwari, Sudipta Mahapatra, C.S. Kumar *EURASIP Journal for Wireless Communications and Networking 2012*, Vol. 2012:322 (2012)
74. Removal of fog from images: A review By A. K. Tripathi and S. Mukhopadhyay *IETE Technical Review* pp 148 -156, vol. 2 (2012)
75. Removal of rain from videos: A review By A. K. Tripathi and S. Mukhopadhyay *Signal Image and Video Processing* September (2012)
76. Robust Detection of Moving Objects in Video Sequences through Rough Set Theory Framework By P.Chiranjeevi and S.Sengupta *Image and Vision Computing* In press (2012)
77. Selection of Ideal Feed Profile for Asymptotic Conical Dipole Fed Impulse Radiating Antenna By Dhiraj K. Singh, Devendra C. Pande and A. Bhattacharya *Progress in Electromagnetic Research C* Vol. 35, pp. 95-109 (2013)
78. Single Image Fog Removal Using Anisotropic Diffusion By A. K. Tripathi and S. Mukhopadhyay *IET Image Processing* vol. 6 pp. 966 – 9 (2012)
79. Spatially Correlated Background Subtraction based on adaptive background maintenance By P.Chiranjeevi and S.Sengupta *Journal of Visual Communication and Image Representation* Vol.23, pp.948-957 (2012)
80. Statistical Measures of Orientation of Texture for the Detection of Architectural Distortion in Prior Mammograms of Interval Cancer By Jayasree Chakraborty, Rangaraj M. Rangayyan, Shantanu Banik, Sudipta Mukhopadhyay, and J. E. Leo Desautels *Journal of Electronic Imaging* vol. 21, no. 3 (2012)
81. Studies on switching mechanisms in Pd-nanodot embedded Nb2O5 memristors using scanning tunneling microscopy By M. K. Hota, M. K. Bera, S. Verma and C. K. Maiti *Thin solid films* vol. 520, 6648–665 (2012)
82. Temperature Effect on the Sensitivity of a Highly Sensitive Micro-Machined Displacement Sensor By Tania Mukherjee and Tarun K Bhattacharyya *Advanced Materials Research* 622, 1396-400 (2013)
83. Towards Data Based Adaptive Control By A. Datta, R. Layek, H. Nounou, M. Nounou, N. Mohsenizadeh and S. P. Bhattacharyya *Int. Jour. of Adaptive Control and Signal Processing- Spl Issue:Robust Adaptive Control* 27(1-2), 122-135 (2013)
84. UV emission from left handed material through second harmonic generation: Optical nanoantenna and Imaging application By M. Rajput, R.K. Sinha, S. Rawal, and S.K. Varshney *IEE Micro and Nano Letters* 6, 175 (2011)
85. Variable Ordering for Shared Binary Decision Diagrams targeting Node Count and Path Length Optimisation using Particle Swarm Optimization Technique By A. Mitra and S. Chattopadhyay *IET Computers and Digital Techniques* 6, pp. 352-361 (2012)
86. Video Stabilization using Maximally Stable External Region Features By Manish Okade, P. K. Biswas *Multimedia Tools and Applications* DOI:10.1007/s11042-0 (2012)
87. VLSI architecture for parallel radix-4 CORDIC By B. Lakshmi and A. S. Dhar *Microprocessors and Microsystems* vol. 37, pp. 79-86 (2013)

Papers Presented in Conferences

1. 3D texture analysis of solitary pulmonary nodules using co-concurrence matrix from volumetric lung CT images, *By* Ashis Kumar Dhara, Sudipta Mukhopadhyay and Niranjana Khandelwal, *SPIE Medical Imaging 2013*, Orlando, Florida, USA, (2013)
2. A Diagnosability Metric for Test Set Selection Targeting Better Fault Detection, *By* S. Kundu, S. Chattopadhyay, I. Sengupta, R. Kapur, *International Conference on VLSI Design*, , (2012)
3. A Measurement Based Approach for Linear Circuit Modeling and Design, *By* R. Layek, H. Nounou, M. Nounou, A. Datta and S. P. Bhattacharyya, *51th IEEE Conference on Decision and Control*, Maui, Hawaii, USA, (2012)
4. A miniature, high sensitivity, surface micro-machined displacement sensor with high resolution, *By* Tania Mukherjee and Tarun K Bhattacharyya, *IEEE/ASME International Conference on Advanced intelligent Mechatronics (AIM)*, , (2012)
5. A power efficient and constant -gm 1.8 Volt CMOS operational transconductance amplifier with rail to rail input and out put range for charge pump phase lock loop, *By* Manas Kumar Hati and Tarun K Bhattacharyya, *IEEE International conference on devices , circuits and systems (ICDCS)*, , (2012)
6. A Zero-Attracting Proportionate Normalized Least Mean Square Algorithm, *By* Rajib Lochan Das and M. Chakraborty, *APSIPA ASC 2012*, Los Angeles, USA, (2012)
7. An Analytical Framework for Evaluating MIPv6 Protocols Applying Transport Engineering Concepts, *By* Vasu K, Sudipta Mahapatra, C.S Kumar, *ACM MSWiM 2012, Vol. 1, Pages 53-60*, Paphos, Cyprus, (2012)
8. An Atlas Based Approach to Segmenting MLO View Mammograms, *By* Mainak Jas, Jayasree Chakraborty, Sudipta Mukhopadhyay, *ICIEV12*, Dhaka, Bangladesh, (2012)
9. Analysis of circular Patch antenna as an EMI sensor, *By* A.K.Srivastava, S.Ghosh & B.K.Sarkar, *2012 IEEE students Conference on Electrical. Electronics & computer Science*, india, (2012)
10. Application Mapping onto Mesh-of-Tree based Network-on-Chip using Discrete Particle Swarm Optimization, *By* P. K. Sahu, A. Sharma, S. Chattopadhyay, *IEEE International Symposium on Electronic System Design*, , (2012)
11. Automated Lung Field Segmentation in CT images using Mean Shift Clustering and Geometrical Features, *By* Chanukya Krishna Chama, Sudipta Mukhopadhyay, Prabir Kumar Biswas, Ashis Kumar Dhara, Niranjana Khandelwal and Mahendra Kumar, *SPIE Medical Imaging 2013*, Orlando, Florida, USA, (2013)
12. Automatic localization of the nipple in mammograms using Gabor filters and the Radon transform, *By* J. Chakraborty, S. Mukhopadhyay, R. M. Rangayyan, A. Sadhu, and P. M. Azevedo-Marques, *SPIE Medical Imaging 2013*, Orlando, Florida, USA, (2013)
13. BER-based power budget evaluation for optical interconnect topologies in NoCs, *By* I. Datta, D. Datta and P. Pande, *International Symposium on Circuits and Systems, ISCAS 2012*, Seoul, S. Korea, (2012)
14. Boolean Network Model of Oxidative Stress Response Pathways, *By* S. Sridharan, R. Layek, A. Datta and J. Venkatraj, *American Control Conference*, Montreal, Canada, (2012)
15. Bulk Binding Update Procedure for PMIPv6 Based Intelligent Transportation Systems, *By* Vasu K, Sudipta Mahapatra, C.S Kumar, *CoNeCo*, Coimbatore, India., (2012)
16. Carbon Nanotube Integration on a fully processed CMOS MEMS wafers and their NO₂ response, *By* S Santra, P K Guha , S K Ray, S Z Ali, F Udrea, J W Gardner, *Nano2012*, Greece, (2012)
17. Confidence Based Power Aware Testing, *By* T. Maiti, S. Kundu, A. Dutta, S. Chattopadhyay, *IEEE International Symposium on Electronic System Design*, , (2012)
18. Content-based image retrieval for interstitial lung diseases using classification confidence, *By* Jatindra K. Dash, Sudipta Mukhopadhyay, Nidhi Prabhakar, Mandeep Garg, Niranjana Khandelwal, *SPIE Medical Imaging 2013*, Orlando, Florida, USA, (2013)
19. Design and implementation of micro-machined cantilever structures for MEMS- based digital inverter and electron tunneling sensor (Plenary talk), *By* T K Bhattacharyya, *International symposium on Physics and Technology of sensors (ISPTS)*, Pune, (2012)
20. Design of 1 Volt Band Gap reference without native MOS transistor in 0.18 um CMOS technology, *By* P Arivazhagan and T K Bhattacharyya, *Third International Conference on Computing Communication and Networking Technology (ICCCNT)*, , (2012)
21. Design of a fault-tolerant conditional sum adder, *By* A. Mukherjee and A. S. Dhar, *International Symposium on VLSI Design and Test*, Shibpur, Howrah, INDIA, (2012)

22. Design of a self-reconfigurable adder for fault-tolerant VLSI architecture, By A. Mukherjee and A. S. Dhar, *International Symposium on Electronic Systems Design*, Howrah, INDIA, (2012)
23. Design of a single balanced diode mixer with high LO/RF and LO/IF isolation in C-band test loop translator, By Maity, Budhadeb, Sethy, Prabira Kumar Bandyopadhyay, K., *2012 IEEE International Conference on Advanced Communication Control and Computing Technologies (ICACCCT)*, Ramanathapuram, India, (2012)
24. Design of Push-Pull Dynamic Leaker Circuit for a Low Power Embedded Voltage Regulator, By Biswajit Maity and Pradip Mandal, *16th International Symposium on VLSI Design and Test*, BESU, Shibpur, India, (2012)
25. Detection of Architectural Distortion Using Coherence in Relation to the Expected Orientation of Breast Tissue, By Rangaraj Rangayyan, Jayasree Chakraborty, Shantanu Banik, Sudipta Mukhopadhyay and Leo Desautels, *CBMS 2012*, Rome, Italy, (2012)
26. Detection of Masses in Mammograms Using Region Growing Controlled by Multilevel Thresholding, By Jayasree Chakraborty, Sudipta Mukhopadhyay, Veenu Singla, Niranjan Khandelwal and Rangaraj Rangayyan, *CBMS 2012*, Rome, Italy, (2012)
27. Development of Laboratory Purpose High Pulsed Power Source for HPM Applications, By Subhrodeep Pal and A. Bhattacharya, *International Conference on EMI/EMC (INCEMIC 2012)*, Bangalore, India, (2012)
28. Digital video broadcast services to hand held devices and a simplified DVB-H receiver subsystem, By Manas Kumar Hati, Tarun K Bhattacharyya, *National Conference on Communication(NCC)*, , (2012)
29. Dispersion engineering and mid-IR Supercontinuum generation in As₂S₃ step-index fiber, By C.S Sheela, S.K. Varshney, and S. Mahapatra, *2012 IEEE Photonics*, San Francisco, USA, (2012)
30. Dynamic Resource Allocation in SINR constrained cognitive radio network with imperfect channel states, By S. Maulik, A. De, A. Bhattacharya, R. Roy, *4th nordic workshop on system and network optimization in wireless*, Yllas, Lapland, Finland., (2013)
31. Efficient approaches to overcome non-convexity issues in analog design automation, By Supriyo Maji, Pradip Mandal, *International Symposium on Quality Electronic Design*, USA, (2012)
32. Effective Reconstruction of small dielectric objects in Microwave Imaging, By E.Mallikarjun and A. Bhattacharya, *IEEE International Symposium on Antennas and Propagation*, Chicago, USA, (2012)
33. Effects of active layer thickness on the performance of polycrystalline p-β-FeSi₂(Al)/Si heterojunction solar cells, By A. Bag, S. Mallik, and C. K. Maiti, *Proc. 1st National Conference on Micro and Nano Fabrication (mnf 2013)*, Bangalore, (2013)
34. Electrical and Charge Trapping Properties of HfO₂/Al₂O₃ Bilayer Gate Dielectrics on In_{0.53}Ga_{0.47}As Substrates, By A. K. Ghosh, T. Das, C. Mukherjee, A. S. Bandyopadhyay, G.K Dalapati, D. Chi and C. K. Maiti, *19th IEEE International Symposium on the Physical and Failure Analysis of Integrated Circuits (IPFA 2012)*, Singapore, (2012)
35. Energy Efficient Cell Planning using Centroidal Voronoi Diagram (poster), By Purnendu Karmakar, R. V. Rajakumar and Rajarshi Roy, *4th Nordic workshop on system and network optimization in wireless*, Yllas, Lapland, Finland, (2013)
36. Error analysis of NC-BFSK for cooperative diversity with correlated Links (poster), By Swaminathan Ramabadrnan, M.D. Selvaraj and Rajarshi Roy, *4th Nordic Workshop on system and network optimization in wireless*, Yllas, Lapland, Finland., (2013)
37. Fast Camera Motion Estimation Using Discrete Wavelet Transform on Block Motion Vectors, By Manish Okade, P. K. Biswas, *IEEE Picture Coding Symposium*, Krakow, Poland, (2012)
38. Fast Video Stabilization in the Compressed Domain, By Manish Okade, P. K. Biswas, *Intl. Conf. on Multimedia and Expo*, Melbourne, Australia, (2012)
39. FPGA Based Pipelined Implementation of Fast 2-D 4x4 Inverse Transform of H.264, By R. Mukherjee, W. Hari Prasad, P. Dheeraj, I. Chakrabarti and S. Sengupta, *7th International Conference on Computer and Electrical Engg (ICECE 2012)*, Dhaka, Bangladesh, (2012)
40. Generalized mechanism of SOTDMA and probability of reception for satellite based AIS, By Anindya Harchoudhury, K.Bandyopadhyay, B.K.Sarkar & A. Bhattacharya, *CODEC-2012*, KOLKATA, (2012)
41. Generalized Mechanism of SOTDMA and Probability of Reception for Satellite-based AIS, By Anindya Harchowdhury, Kalyan Bandyopadhyay, Binoy Kumar Sarkar and A.

- Bhattacharya, *International Conference on Computers and Devices for Communication (CODEC)*, Kolkata, India, (2012)
42. Generalized Mechanism of SOTDMA and Probability of Reception for Satellite-based AIS, By Anindya Harchowdhury, Kalyan Bandyopadhyay, Binay Kumar Sarkar, Amitabha Bhattacharya, *5th International Conference on Computers and Devices for Communication, CODEC-2012.*, Kolkata, (2012)
 43. Idea to Silicon : Challenges in Analog/Mixed Signal, By Pradip Mandal, Prajit Nandy and Mrinal Das, *16th International Symposium on VLSI Design and Test*, BESU, Shibpur, India, (2012)
 44. Image Denoising using Dynamic Stochastic Resonance in Wavelet Domain, By Rajlaxmi Chouhan, R. K. Jha, P. K. Biswas, *IEEE Intl. Conf. on Intelligent Systems Design and Applications*, Coimbatore, (2012)
 45. Interfacial layer thickness dependent photovoltaic properties of polycrystalline p- β -FeSi₂ (Al)/n-Si (100) heterojunctions, By A. Bag, S. Mallik, and C. K. Maiti, *Proc. International Conference on Solar Energy Photovoltaic (ICSEP 2012)*, Bhubaneswar, (2012)
 46. Internal Noise Induced Contrast Enhancement of Dark Images, By Rajib Kumar Jha, Rajlaxmi Chouhan, P. K. Biswas, K. Aizawa, *IEEE Intl. Conf. on Image Processing*, Florida, USA, (2012)
 47. Low Frequency Noise in Iron Disilicide Heterojunction Solar Cells, By A. Bag, C. Mukherjee, S. Mallik, C. Mahata and C. K. Maiti, *19th IEEE International Symposium on the Physical and Failure Analysis of Integrated Circuits (IPFA 2012)*, Singapore, (2012)
 48. Measurement of radiated emission using different EMI sensors in the laboratory environment, By S. Ghosh, A. K. Srivastava & B. K. Sarkar, *INCEMIC-2012*, Bangalore, (2012)
 49. Measurement of Spiculation Index in 3D for Solitary Pulmonary Nodules in Volumetric Lung CT Images, By Ashis Kumar Dhara, Sudipta Mukhopadhyay, Naved Alam and Niranjana Khandelwal, *SPIE Medical Imaging 2013*, Orlando, Florida, USA, (2013)
 50. Microelectromechanical Longitudinal Resonator for Frequency Reference Applications, By Chaudhuri, R. R. Bhattacharyya, T. K., *26th International Conference on VLSI Design and 12th International Conference on Embedded Systems (VLSID)*, Pune, (2013)
 51. MIPv6 Protocols: A Survey and Comparative Analysis, By Vasu K, Sudipta Mahapatra, C. S. Kumar, *CoNeCo*, Coimbatore, India., (2012)
 52. Modal Analysis of Relector backed printed bow-tie Antenna, By D. K. Singh, D. C. Pande, A. Bhattacharya, *EUROEM*, Toulouse, France, (2012)
 53. Modified Capacitive Loaded Two Crossed Bowtie Antenna for GPR Applications, By A. Bhattacharya and Surajit Kundu, *Antenna and Propagation Symposium (APSYP 2012)*, Cochin, India, (2012)
 54. Modified Demons Deformation Algorithm for Non-Rigid Image Registration, By A. Mishra, P. Mondal and S. Banerjee, *4th international conference on Intelligent Human Computer Interaction*, IIT, Kharagpur, India., (2012)
 55. Motion Estimation in Medical Video Sequence Using Affine Transformation, By Pulak Mondal and Swapna Banerjee, *IEEE International Symposia on Computer Based Medical System (CBMS-2012)*, Rome, Italy, (2012)
 56. Online Dynamic Resource Allocation in Interference Temperature Constrained Cognitive Radio Network Using Reinforcement Learning (poster), By Soumya Maulik, Rajarshi Roy, Arijit De, Amitabha Bhattacharya, *SPCOM*, IISc, Bangalore, (2012)
 57. Optical Parametric Amplification in Chalcogenide Step Index Fiber over Infrared Region, By S. Singh, S. Varshney, and P. Datta, *Photonics 2012*, IIT Madras, (2012)
 58. Particle Swarm Optimization based technique for Network-on-Chip testing, By K. Manna, P. Khaitan, S. Chattopadhyay, I. Sengupta, *IEEE Emerging Applications of Information Technology*, (2012)
 59. Performance analysis of double correlated selection combining for cooperative diversity systems, By R. Swaminathan, M. D. Selvaraj, and Rajarshi Roy, *National Communication Conference, Digital Object Identifier: 10.1109/NCC.2013.6487899*, Indian Institute of Technology, Delhi., (2013)
 60. Performance Analysis of Triple Correlated Selection Combining for Cooperative Diversity Systems, By Swaminathan Ramabadrana, Rajarshi Roy, M. D. Selvaraj, *IEEE International Conference on Communications*, Budapest, Hungary, (2013)
 61. Performance Evaluation of Reliability Aware Photonic Network-on-Chip Architectures, By P. K. Kaliraj, P. Sieber, A. Ganguly, I. Datta and D. Datta., *Third International Green Computing Conference, IGC*, San Jose, California, USA, (2012)

62. Permittivity Reconstruction of Dielectric Objects on Experimental Data in Microwave Imaging, By E.Mallikarjun and A. Bhattacharya, *Antenna Test and Measurement Symposium (ATMS-2013)*, Kolkata, India, (2013)
63. Phonon and Lattice Dynamics in Tri-gate FinFETs on (100) and (110) Si Substrates, By C. Mukherjee, and C. K. Maiti, *IEEE 28th International conference on Microelectronics (MIEL)*, Serbia, (2012)
64. Physics-based compact lumped circuit model of PIFE using a retarded partial element equivalent circuit, By R bhattacharya, S Srikanth, R Garg, TK Bhattacharyya, *IEEE Asia-Pacific Conference on Antennas and propagation(APCAP)*, , (2012)
65. Polycrystalline p- β -FeSi₂(Al) on n-Si(100): Heterojunction Thin-Film Solar Cells, By A. Bag, S. Mallik, C. Mahata, and C. K. Maiti, *10th IEEE International Conference on Semiconductor Electronics 2012 (ICSE 2012)*, Kuala Lumpur, (2012)
66. Printed Rugby Ball Monopole Antenna for 315/433/868/915 MHz ISM/SRD Bands, By A. Bhattacharya, Ajith K K and Mridul Kanti Sinha, *Antenna and Propagation Symposium (APSYM 2012)*, Cochin, India, (2012)
67. Radix Based Digital Calibration Technique for Pipeline ADC using Nyquist Sampling of Sinusoid, By Sounak Roy, B.D. Sahoo and Swapna Banerjee, *IEEE International Symposium on Circuits and Systems (ISCAS 2012)*, Seoul, South Korea, (2012)
68. Rectangular Patch antenna for EMI/EMC measurement using surface Integral equation, By a.K.Srivastava, S.Ghosh & B.K.Sarkar, *ICMARS, Jodhpur*, Jodhpur, India, (2012)
69. Sampled analog VLSI architecture to implement discrete Daubechies wavelet transform, By A. S. Reddy and A. S. Dhar, *Int. Conf. Emerging Technol. Trends Electron., Commun. Networking*, Surat, INDIA, (2012)
70. Sampled analog VLSI architecture using OP-AMP based switched capacitor circuits to implement discrete Haar wavelet transform, By A. S. Reddy and A. S. Dhar, *Int. Conf. Emerging Technol. Trends Electron., Commun. Networking*, Surat, INDIA, (2012)
71. Selective suppression of the fundamental mode in a dual-mode photonic crystal fiber, By A. Maity and S. Varshney, *Photonics 2012*, IIT Madras, (2012)
72. SOI CMOS Integrated Zinc Oxide Nanowire for Toluene Detection, By S Santra, P K Guha , S K Ray, F Udrea, J W Gardner, *NEC 2013*, Singapore, (2013)
73. Spectral compatibility of BOC(5,2) modulation with existing GNSS signal, By S. B. Sekar, S. Sengupta, K. Bandyopadhyay, *Position Navigation and Location Symposium (PLANS)*, Myrtle Beach, South Carolina, (2012)
74. Spur Suppression in Frequency Synthesizer using Switched Capacitor Array, By Debashis Mandal, Pradip Mandal, and Tarun Kanti Bhattacharyya, *International SoC Design Conference (ISOCC)*, Jeju Island, Korea (South), (2012)
75. Spurs Suppression in frequency Synthesizer using switched capacitor array, By Debashis Mandal, Pradip Mandal and T K Bhattacharyya, *IEEE International SoC Design Conference*, , (2012)
76. Studies on Lattice Vibration, Impurity and Defects in MIS Structures Using Hf-based Dielectrics on Si and SiGe Substrates, By C. Mukherjee, S. Mallik, M. K. Hota, T. Das and C. K. Maiti, *19th IEEE International Symposium on the Physical and Failure Analysis of Integrated Circuits (IPFA 2012)*, Singapore, (2012)
77. Synthesis of thinned uniformly-excited time-modulated linear arrays using an improved invasive weed optimization algorithm, By R Bhattacharya, S Saha,TK Bhattacharyya, *IEEE Antennas and propagation Society International Symposium (APSURSI)*, , (2012)
78. Techniques for Reducing Parasitic Loss in Switched-Capacitor based DC-DC Converter, By Avishek Biswas, Monodeep Kar and Pradip Mandal, *28th IEEE Applied Power Electronics Conference & Exposition*, Long Beach, California, USA, (2013)
79. VLSI architectural design of zoomable real time spectrum analyzer, By S. Sarkar and A. S. Dhar, *INDICON 2012*, Kochi, INDIA, (2012)
80. Wavelet based Contrast Enhancement of Dark Images using dynamic Stochastic Resonance, By Rajlaxmi Chouhan, R. K. Jha, P. K. Biswas, *Indian Conference on Computer Vision, Graphics and Image Processing*, Mumbai, (2012)

Department of Geology & Geophysics

Head

Prof. Biswajit Mishra upto 31.12.2012
Prof. Debashish Sengupta from 01.01.2013

Professors

Bhattacharya, Abhijit *Ph.D.(IIT Kharagpur),*
Bhattacharya, Amit Kumar *Ph.D.(IIT Kharagpur),*
Bhowmik, Santanu Kumar *Ph.D.(Jadavpur Univ), Metamorphic Petrology, Geochronology*
Das, Subhasish *Ph.D.(IIT Kharagpur), Sedimentology, Basin Tectonics*
Gupta, Anil Kumar *Ph.D.(BHU, Varanasi),*
Gupta, Saibal *Ph.D.(Cantab), Structural Geology, Metamorphic Petrology, Tectonics*
Mamtani, Manish A *Ph.D.(MSU, Baroda), Structural Geology, Microtectonics*
Mishra, Biswajit *Ph.D.(IIT Kharagpur), Ore Geology and Metamorphic Petrology*
Nath, Sankar Kumar *Ph.D.(IIT Kharagpur), Earthquake and Engineering
Seismology, Seismic Hazard Vulnerability & Risk Assessment and
Microzonation, Seismic Prospecting, Geophysical Signal
Processing, Geophysical Tomography, Computational
Geophysics, Sequence Stratigraphy*
Panigrahi, Mruganka Kumar *Ph.D.(IIT Kharagpur), Economic Geology, Crustal Fluids, Computer
Applications*
Sarkar, Anindya *Ph.D (Gujrat Univ.), Stable Isotope
Geochemistry, Sedimentology, Palaeoclimatology*
Sen Gupta, Debashish *Ph.D.(PRL, Ahamdabad), Modeling of Environmental Radioactivity and
Nuclear Geophysics and its applications*
Sharma, Shashi Prakash *Ph.D.(BHU, Varanasi), Electrical and EM Geophysics, Integrated
Geophysical Research, Modeling and Inversion, Groundwater
Geophysics*
Tripathy, Subhasish *Ph.D.(IIT Bombay), Environmental Geochemistry, Waste Utilization*

Associate Professor

Mohanty, William Kumar *Ph.D.(Delhi Univ.), Seismology, Seismic Hazard Assessment, Gravity
& Magnetic Methods of Prospecting, Reservoir Characterization*

Assistant Professors

Basu, Arindam *Ph.D.(The Univ. of Hong Kong), Rock Mechanics, Engineering
Geology*
Mukherjee, Abhijit *Ph.D.(Univ. of Kentucky, USA), Surface water-sea water-groundwater
interaction, Mine-site hydrology, Physical Chemical and Isotope
Hydrogeology, Contaminant Fate and Transport, Environmental
Geochemistry, Effect of Climate Change*
Pruseth, Kamal Lochan *Ph.D.(IIT Kharagpur), Sulfide Phase Equilibria, Experimental
Petrology, Ore Geology*
Ray, Sanghamitra *Ph.D.(Calcutta Univ), Vertebrate paleobiology, Gondwana stratigraphy
and sedimentation*
Sengupta, Probal *Ph.D.(IIT Kharagpur), Seismology, Geoexploration, Seismic
prospecting*
Singh, Arun *Ph.D.(NGRI), Seismic anisotropy: Mantle deformation
Patterns, Lithospheric Structure and geodynamics, Teleseismic
tomography*

Singh, Chandrani	<i>Ph.D.(NGRI)</i> , Reservoir Triggered Seismicity, Attenuation characteristics of seismic waves, Seismotectonics
Upadhyay, Dewashish	<i>Ph.D.(Univ. of Bonn, Germany)</i> , Geochemistry, Igneous Petrology, Cosmochemistry

Brief Description of on-going activities

Tectonic evolution of craton – mobile belt ensembles in parts of the Indian shield; Gold mineralization in greenstone belts of Dharwar Craton; Metamorphic remobilization of massive sulphide deposits; Studies on Indian microvertebrates, Lithospheric structure across Himalaya, Deformation at Collisional boundaries, Stable isotopes in Himalayan foreland sediments; Paleogene climate of Kutch, Rajasthan, Environment in ancient sedimentary basins in India; Seismic Hazard assessment and microzonation in the NE India and metropolitan cities, Improvement of rock index test methods and mechanical characterization of rock materials, Groundwater potential assessment and pollution by natural and anthropogenic causes; Waste utilizations, wasteland development and acid marine drainage; Natural radiation hazard estimation. Studies on Indian monsoon (both modern and ancient) and paleoclimate studies of the Indian subcontinent and paleoceanography of the Indian Ocean.

Thrust Areas

1. Seismology
2. Paleoclimatology (Paleontology, Geochemistry)
3. Crustal Evolution and Metallogeny
4. Environmental Hazards and Mitigation

New Acquisitions

1. Very Low Frequency-Resistivity equipment- manufactured by Geonics Canada

Lectures by Visiting Experts

1. Granulites - my story (DN Wadia medal lecture-2012) (4th October 2012) *by* Prof. S. K. Sen ()
2. India-Asia collision and evolution of Neotethys (1st March 2013, Prof. Tara Charan Bagchi Lecture Series) *by* Prof. Jonathan Aitchison (Head, School of Geosciences, University of Sydney)
3. Petroleum Platforms of Louisiana Shelf: Island Habitats for Foraminifers (4th October 2012) *by* Prof. Barun Sengupta (LSU, USA)
4. Uranium resources of India towards meeting the energy needs (22nd March 2013, Prithvi-2013) *by* Dr. A. K. Sarangi (GM (Corporate Planning), Uranium Corporation of India Limited)
5. Exploration, Mining & beneficiation of bauxite (22nd March, 2013, Prithvi-2013) *by* Dr. M. Kumar (CEO, Vedanta)
6. Delineation of basement depth and thrust-fault location using gravity-magnetic data in Mizoram area (23rd March, 2013, Prithvi-2013) *by* Dr. G. K. Ghosh (Oil India Limited)
7. Estimation of earth velocity model- bridging the gap between geology and geophysics (8th March 2013) *by* Dr. D. P. Sinha (EnerGeo India Ltd.)
8. Crustal structure of the Shillong plateau and the Bay of Bengal, gleaned from broadband seismic tomography (23rd March 2013, Prithvi-2013) *by* Prof. V. K. Gaur (Indian Institute of Astrophysics)

Doctoral and MS Degrees Awarded

1. Vishnu C. S. : Fabric analysis and anisotropy quantification in massive quartzite- implications to rock mechanics (Provisional Certificate issued on 6th December 2012)(Ph.D.)
2. Debarati Mukherjee : Taphonomy, phylogeny and paleobiology of a new Hyperodapedon (Archosauromorpha; Rhynchosauria) from the Upper Triassic of central India (Provisional Certificate used in September 2012))(Ph.D.)

Member - Professional Bodies

1. Sarkar, Anindya, *Member* - Indo-US organizing committee on frontiers of science, 2009
2. Sarkar, Anindya, *Member* - Research Advisory Council, Birbal Sahni Institute, Lucknow, 2008-09
3. Sarkar, Anindya, *Member* - Search and selection committee, Presidency University, 2011-12
4. Sarkar, Anindya, - Member, PAMC, Ocean Science and Resources, MOES, 2012
5. Sarkar, Anindya, *Member* - International Geological Correlation Program (IGCP) Project
6. Sarkar, Anindya, - Member, PAMC, Earth Science, DST, 2012
7. Sarkar, Anindya, *Member* - Indian Society of Mass Spectrometry
8. Ray, Sanghamitra, *Member* - The Palaeontological Association, UK
9. Ray, Sanghamitra, *Member* - Society of Vertebrate Paleontology, USA
10. Basu, Arindam, *Life Member* - Indian Society of Engineering Geology (Indian National Group of International Association for Engineering Geology and Environment)
11. Basu, Arindam, *Member* - International Society for Rock Mechanics (through the National Group of India)
12. Upadhyay, Dewashish, *Member* - European Association of Geochemistry
13. Pruseth, Kamal Lochan, *Member* - European Association of Geochemistry
14. Mukherjee, Abhijit, - Geological Society of America
15. Mukherjee, Abhijit, - International Association of Hydrogeologists
16. Mukherjee, Abhijit, *Life Member* - Indian Science Congress Association
17. Mishra, Biswajit, *Life Fellow* - Geological Society of India
18. Mishra, Biswajit, *Fellow* - Society of Economic Geologists (SEG), USA
19. Mishra, Biswajit, *National representative* - IMA-COM (International Mineralogical Association-Commission on Ore Mineralogy)
20. Mishra, Biswajit, *Member* - INSA National Committee of IUGS-SCL-INQUA
21. Nath, Sankar Kumar, *Regular Member* - Member Registration No. 8810 : The Mining Geological & Metallurgical Institute of India (MGMI)
22. Nath, Sankar Kumar, *Life Member* - Life Member (No. 10283967): American Geophysics Union (AGU).
23. Nath, Sankar Kumar, *Senior Member* - Member (No. 16472): The Seismological Society of America (SSA).
24. Nath, Sankar Kumar, *Senior Life Member* - Life Member (L/141): The Indian Society of Theoretical and Applied Mechanics
25. Nath, Sankar Kumar, *Senior Life Fellow* - Life Fellow (No.236): The Geological, Mining and Metallurgical Society of India (GMMSI)
26. Nath, Sankar Kumar, *Senior Fellow* - Life Fellow: The Society of Geoscientists and Allied Technologists (SGAT).
27. Das, Subhasish, *Member* - Research Board of Advisors, American Biographical Institute, USA
28. Das, Subhasish, *Life Member* - Indian Association of Sedimentologists, Aligarh
29. Das, Subhasish, *Member* - Wadia Institute of Himalayan Geology, Dehradun
30. Panigrahi, Mruganka Kumar, *Member* - Association of Applied Geochemists
31. Panigrahi, Mruganka Kumar, *Member* - Society for Geology Applied to Mineral Deposits
32. Panigrahi, Mruganka Kumar, *Member* - Society of Resource Geology
33. Sharma, Shashi Prakash, *Regular* - Association of Exploration Geophysicist, Hyderabad, India
34. Sharma, Shashi Prakash, *Regular* - National Academy of Sciences, Allahabad, U.P.

Member - Editorial Board

1. Basu, Arindam (2012) *Member: Fast Track Articles* - Journal of the Geological Society of India
2. Bhowmik, Santanu Kumar (2011) *Editorial Advisory Board* - Indian Journal of Geosciences
3. Bhowmik, Santanu Kumar (2012) *Member, Editorial Board* - Journal of the Virtual Explorer
4. Gupta, Saibal (0) *Member, Editorial Board* - Indian Journal of Geology
5. Gupta, Saibal (0) *Member, Editorial Board* - Himalayan Geology
6. Mamtani, Manish A (2010) *Editorial Board Member (2008-2010)* - Journal of the Geological Society of India

7. Mamtani, Manish A (2012) *Member - Fast Track Articles* - Journal of the Geological Society of India
8. Mohanty, William Kumar (2012) *Member Editorial Board* - Journal of the Geological Society of India
9. Mohanty, William Kumar (2010) *Member Editorial Board* - Prakruti Vikash
10. Mukherjee, Abhijit (2011) *Guest Editor* - Applied Geochemistry
11. Mukherjee, Abhijit (2011) *Associate Editor* - Applied Geochemistry
12. Mukherjee, Abhijit (2011) *Associate Editor* - Journal of Hydrology
13. Mukherjee, Abhijit (2008) *Guest Editor* - Journal of Contaminant Hydrology
14. Panigrahi, Mruganka Kumar (2010) *Member, Advisory Editorial Board* - Resource Geology
15. Sarkar, Anindya (2012) *Associate Editor* - Journal of Earth System Science, Springer
16. Singh, Arun (2012) *Editorial Board: GEOPHYSICS* - The Scientific World

Awards & Honours

1. Nath, Sankar Kumar (2009) "*A.S. Arya – IIT Roorkee Disaster Prevention Award*" for outstanding contributions in the field of Disaster Prevention/Mitigation
2. Mamtani, Manish A (2005) *Alexander von Humboldt Fellowship*
3. Bhattacharya, Abhijit (1986) *Alexander von Humboldt Fellowship*
4. Sarkar, Anindya (2010) *Benjamin Meaker Professor, Inst. of Advanced Studies and Dept. of Chemistry, Bristol University*
5. Nath, Sankar Kumar (2003) *Bharat Jyoti Award by India International Friendship Society*
6. Singh, Arun (2011) *C. S. I. R. Young Scientist Award in Earth, Atmosphere, Ocean and Planetary Sciences*
7. Singh, Chandrani (2008) *Certificate of Commendation from NGRI for having five SCI publications in one year*
8. Nath, Sankar Kumar (2006) *D. N. Thakur Award (Gold Medal) for 2005-2006 in Earth Sciences by the Mining, Geological and Metallurgical Institute of India*
9. Singh, Chandrani (2006) *Department of Science and Technology (DST) Young Scientist Best Presentation Award*
10. Mukherjee, Abhijit (2005) *Dissertation Enhancement Award, University of Kentucky*
11. Nath, Sankar Kumar (2005) *Dr. J Coggin Brown Memorial Gold Medal in Geological Sciences by the Mining, Geological and Metallurgical Institute of India*
12. Gupta, Anil Kumar (2006) *Dr. J. Coggin Brown Memorial (Gold) Medal for Geological Sciences by the MGMI*
13. Mamtani, Manish A (2006) *Europe Research Fellowship by the Alexander von Humboldt Foundation (Germany)*
14. Mukherjee, Abhijit (2005) *Fermi Grant, Department of Geological Sciences, University of Kentucky*
15. Mukherjee, Abhijit (2004) *Graduate Research Award in Hydrogeology, Geological Society of America*
16. Mamtani, Manish A (2007) *H. H. Read Memorial Gold Medal Award by the Society of Geoscientists and Allied Technologists, Bhubaneswar*
17. Mishra, Biswajit (1987) *IIT Silver Jubilee Research award*
18. Nath, Sankar Kumar () *Included in the Marquis Whos Who in the World 2013 30th Pearl Anniversary Edition*
19. Sarkar, Anindya (1990) *Indian National Science Academy (INSA) young scientists Medal*
20. Singh, Chandrani (2010) *Indian Science Congress Young Scientist Award in Earth Science category*
21. Mishra, Biswajit (1986) *INSA Young Scientist award*
22. Mohanty, William Kumar (2006) *International Center for Theoretical Physics (ICTP), Trieste, Italy, Junior Associateship*
23. Singh, Chandrani (2012) *Invitation to organise a session in the International Conference of Numerical Analysis and Applied Mathematics 2012 (ICNAAM 2012), in Kos, Greece.*
24. Sarkar, Anindya (1999) *JSPS Fellow, Tokyo Univ.*
25. Mamtani, Manish A (2002) *K. Naha Award for Structural Geology by the Geological Society of India*
26. Singh, Chandrani () *Manuscript reviewer for Bulletin of Seismological Society of America, Journal of Earth System Science, Current Science and Journal of Oceanography and Marine Science*

27. Singh, Arun (2004) *National Eligibility Test, JRF*
28. Mamtani, Manish A (2010) *National Geoscience Award (in Basic Geosciences) by the Ministry of Mines (Government of India)*
29. Mishra, Biswajit (2005) *National Mineral Award*
30. Sarkar, Anindya (1999) *National Mineral Award*
31. Gupta, Anil Kumar (2000) *National Mineral Award by the Ministry of Mines*
32. Nath, Sankar Kumar (1999) *National Mineral Award by the Ministry of Mines and Steel*
33. Mukherjee, Abhijit (1999) *National Scholarship, Govt. of India*
34. Basu, Arindam (2006) *Postdoctoral Fellowship by FAPESP @ University of Sao Paulo, Brazil*
35. Basu, Arindam () *Postgraduate Studentship by CRCG during MPhil and PhD studies @ University of Hong Kong, HKSAR*
36. Mishra, Biswajit (2000) *PRL Award in Earth Sciences*
37. Gupta, Anil Kumar (2004) *Prof. T.M. Harris Medal by the Birbal Sahni Institute of Palaeobotany, Lucknow*
38. Singh, Chandrani (2010) *Selected as only member from India in the International Advisory Board Members for BITs 1St Annual World Congress of Hydraulic Fracturing & Acidizing, Xian, China*
39. Nath, Sankar Kumar (2004) *SGAT Award of Excellence by the Society of Geoscientists and Allied Technologists*
40. Nath, Sankar Kumar (2002) *Shanti Swarup Bhatnagar Prize*
41. Nath, Sankar Kumar (2005) *UGC National Hari OM Ashram Trust Awards: Homi J. Bhabha Award for Applied Sciences - 2004*
42. Sarkar, Anindya (2010) *Visiting Professor, Purdue University*
43. Sarkar, Anindya (2010) *Visiting Scientist, NORDSIM, Swedish Museum of Natural History*
44. Sarkar, Anindya (2004) *Visiting Scientist, University College London*

Sponsored Research Projects

1. Anatomy of the Himalayan orogeny using direct S waves (ISIRD, Rs.4.50 Lakhs)
2. Characterization of Seismicity in the Kumaun Himalaya for Hazard Assessment (MOES(Ministry of Earth Sciences Govt. of India), Rs.7.00 Lakhs)
3. Characterization of Seismicity in the Kumaun Himalaya for Hazard Assessment (MOES(Ministry of Earth Sciences Govt. of India), Rs.0.00 Lakhs)
4. Crust formation and terrane amalgamation in eastern India—constraints from enclaves in the Chhotanagpur Gneissic Complex (Indian Institute of Technology, Kharagpur, Rs.5.00 Lakhs)
5. Crustal seismic attenuation characteristics in Nepal Himalaya and southern Tibet from Lg Q inversion (ISIRD, Rs.4.00 Lakhs)
6. Deciphering the history of hydrothermal activity and controls on uranium mineralization at Koppunuru: constraints from mineral chemistry, stable isoto (BRNS, Rs.29.83 Lakhs)
7. Establishment of Electron Probe Micro Analyzer (EPMA) National Facility IIT, Kharagpur (DST, Rs.573.18 Lakhs)
8. Evaluating the potential of Malani Igneous Suite rocks, Rajasthan for Uranium mineralization using petrological and geochemical proxies (BRNS, Rs.35.00 Lakhs)
9. First Order Seismic Microzonation of Kolkata Area Based on Deep & Shallow Geotechnical and Geophysical Investigations (Ongoing) (Ministry of Earth Sciences, Govt. of India, Rs.62.10 Lakhs)
10. Geophysical Syurvey using Gravity and Magnetic methods in South Purulia Shear Zone (BRNS, Department of Atomic Energy, Rs.19.63 Lakhs)
11. Groundwater-Sea water interaction at a coastal aquifer adjoining the Bay of Bengal: implications on flux and solute exchange (ISR, SRIC IIT Kharagpur, Rs.5.00 Lakhs)
12. Indian Geoid low: A feasibility study (MOES(Ministry of Earth Sciences Govt. of India), Rs.22.80 Lakhs)
13. Indo-US joint pilot project on Himalayan glaciers, aerosols and climate change sponsor Indo-US forum, US\$ 25000/- (2009-2011; on-going). (Indo-US forum, Rs.12.50 Lakhs)
14. Influence of S-fugacity on the minimum temperature of melting in the system Pb-Fe-Zn-S: implication on sulfide ore remobilization by partial melting (SRIC-ISIRD, Rs.5.00 Lakhs)
15. Investigation of the basement structure of the Bengal Basin using Gravity and Seismic data (ISIRD IIT Kharagpur, Rs.3.00 Lakhs)
16. Isotopes of water in India (2008-2013; on-going) (DST, Rs.12.00 Lakhs)

17. Microzonation and Evaluation of Vulnerability and Socio-Economic Impacts for the City of Kolkata including Greater Kolkata (MOES, Rs.432.71 Lakhs)
18. National stable Isotope facility project at IIT, Kharagpur, sponsored by DST (outlay ~Rs. 200 lacs, 2004-2010; on-going). (DST, Rs.230.00 Lakhs)
19. Predicting crack initiation stress by porosity and evaluating microstructural control on crack initiation: a study on granite (DST, New Delhi, Rs.18.56 Lakhs)
20. Quantitative assessment of weathering grades of rock materials (ISIRD, IIT Kharagpur (Completed), Rs.0.00 Lakhs)
21. Reservoir Characterization using Artificial Intelligent Techniques (Soft Computing) (Oil & Natural Gas Corporation Ltd. (ONGC), Dehradun, Rs.45.72 Lakhs)
22. Seismic Hazard and Risk Assessment of Darjeeling-Sikkim Himalaya (Ongoing) (Ministry of Earth Sciences, Govt. of India, Rs.40.00 Lakhs)
23. Seismic Hazard Assessment, Microzonation, and Evaluation of Vulnerability & Risk of the Urban Kolkata (Ongoing) (Ministry of Earth Sciences, Govt. of India, Rs.432.71 Lakhs)
24. Seismic Vulnerability Assessment of Building types in India. (Fund Received, Execution initiated) (NDMA, Ministry of Home Affairs, Govt. of India, Rs.25.20 Lakhs)
25. Seismicity monitoring, Maintenance of the Existing 16 Station Sikkim Strong Motion Array and Probabilistic Seismic Hazard Assessment of Darjeeling-Si (MOES, Rs.62.50 Lakhs)
26. Strong Motion Seismometry, Probabilistic Seismic Hazard, Vulnerability and Risk Microzonation of Darjeeling-Sikkim Himalaya (New Project to commence) (MoES, Rs.75.00 Lakhs)
27. Structural, mineralogical and geochemical appraisals of the Pur-Banera basin, Rajasthan for assessing its uranium potential (BRNS, Rs.34.10 Lakhs)
28. Testing models for mountain building in the northeastern Himalaya (Royal Society, Rs.0.00 Lakhs)
29. The exhumation factor in the genesis of inverted metamorphic sequences – an evaluation from structure, metamorphism, fluid inclusions and earthqu (DST, Rs.14.22 Lakhs)
30. The Indian Continental Shelf as a potential source of Phosphate (Ministry of Earth Sciences, Rs.93.00 Lakhs)
31. The relationship between anisotropy of magnetic susceptibility, strength anisotropy and microstructure in rocks devoid of mesoscopic foliations (DST, New Delhi, Rs.21.02 Lakhs)
32. The relationship between anisotropy of magnetic susceptibility, strength anisotropy and microstructure in rocks devoid of mesoscopic foliations (DST, New Delhi (Completed), Rs.21.02 Lakhs)
33. The Thermal Evolution of Peninsula India: Past behaviors and Future Potential. (Australia – India Strategic Research Fund (AISRF) and Department of Science and Technology (DST), Rs.13.59 Lakhs)
34. Thermal History of the Inverted Metamorphic Sequence from the Northwestern Arunachal Pradesh: Constraints from Microstructure, Thermobarometry and P-T (CSIR, Rs.18.72 Lakhs)
35. Vertebrate microfossils from the Tiki Formation of the Rewa Gondwana basin: an integrated study on Upper Triassic biodiversity (SERB, DST India, Rs.25.00 Lakhs)

Consultancy Projects

1. HYDROLOGICAL STUDIES AT BANGUR CHROMITE MINES (Govt of Orissa, Rs.11.30 Lakhs)
2. GEOPHYSICAL AND HYDROGEOLOGICAL STUDY AT PROPOSED PROJECT SITE AT DURMUT, BLOCK : RAGHUNATHPUR-I, PURULIA. (Reliance Industries, Rs.18.25 Lakhs)
3. Ground Vibration study on Inganijharan Iron and Manganese Mines in District Keonjhar, Orissa (Bhanja Minerals Pvt. Ltd., Rs.2.48 Lakhs)
4. Integrated geological and geophysical study around Tangarapada area, Orissa (The Industrial Development Corporation of Orissa Ltd. (IDCOL) Government of Orissa, Rs.10.68 Lakhs)
5. LA-ICPMS Analytical facility (Various users, Rs.3.00 Lakhs)
6. LA-ICPMS Analytical Facility (Various users, Rs.3.00 Lakhs)
7. Probabilistic Assessment of Tsunamigenic Earthquake Originating from Burmese-Andaman Arc System (BAAS) and West Sunda Arc (WSA) (Nuclear Power Corporation of India, Limited, Government of India, Rs.0.00 Lakhs)
8. Probabilistic seismic hazard analysis for Kakrapara Atomic Power Plant (KAPS-1,2) (Nuclear Power Corporation of India Limited, Government of India, Rs.10.75 Lakhs)

9. Seismic Hazard Analysis (SHA) and preparation of seismic hazard curves (SHC) for smelter and CPP area of Aditya Aluminium at Lapanga, Sambalpur, Oriss (Aditya Aluminium, Rs.4.30 Lakhs)
10. Site Specific seismic hazard study of west Sikkim region for the Rangit II Hydro- Electric project (M/S Gammon India Limited, Mumbai, India, Rs.4.16 Lakhs)

Visits Abroad by Faculty Members

1. Mohanty, William Kumar - To attend Annual International Conference on Geological and Earth (GEOS 2012) (Singapore,) 3rd-4th December 2012
2. Upadhyay, Dewashish - Collaborative research work (University of Muenster, Germany,) May to July 2011
3. Mishra, Biswajit - For collaborative research (School of Earth & Environmental Sciences, University of Adelaide,) July 1 to July 14, 2011
4. Upadhyay, Dewashish - Research Collaboration (University of Muenster, Germany,) May-July, 2012
5. Mohanty, William Kumar - To attend fourth "Total Education and Energy Seminar" (Paris, France,) November 11 to November 16, 2012
6. Basu, Arindam - Participating in EUROCK 2012 (Stockholm,) 28-30 May 2012 (conference duration)

Invited Lectures by Faculty Members

1. Rock deformation, fabric analysis, and applications (during Green Earth Day -2012) *by* Mamtani, Manish A (OASTC, IIT Kharagpur)
2. Microcrack anisotropy quantification and its application in exploration of mineral resources *by* Mamtani, Manish A (Kumaun University, Nainital)
3. Anisotropy of Magnetic Susceptibility (AMS) - Principles, Methods, Scope and Limitations *by* Mamtani, Manish A (Sambalpur University (Orissa))
4. Application of Anisotropy of Magnetic Susceptibility (AMS) in Structural Geology and Tectonics - *by* Mamtani, Manish A (Sambalpur University Orissa)
5. VLF electromagnetic method- A near surface geophysical approach *by* Sharma, Shashi Prakash (GandhiNagar, Gujrat)
6. Geophysical Prospecting as Adjunct Faculty *by* Mohanty, William Kumar (IIT Bhubaneswar)
7. Thermal history of the Proterozoic granulites from northwestern, central, eastern and northeastern I *by* Bhowmik, Santanu Kumar (International Granulite Conference, 2013, Hyderabad)
8. Preliminary Results of the Metamorphic Studies from the Naglaland Ophiolite Complex: Implication for *by* Bhowmik, Santanu Kumar (International Conference on Mantle Gneiss Dome, Manali)
9. Metamorphic Evolution of the Lesser and Greater Himalayan Sequence Rocks Exposed in the Dirang-Se la *by* Bhowmik, Santanu Kumar (International Conference on Mantle Gneiss Dome, Manali)
10. Seismic Vulnerability of the City of Kolkata *by* Nath, Sankar Kumar (Stadel Hotel, Salt Lake City, Kolkata (WBDMA))
11. Seismic Vulnerability of West Bengal with an emphasis on the City of Kolkata *by* Nath, Sankar Kumar (Administrative Training Institute, Government of West Bengal at Salt Lake City, Kolkata)
12. Seismic Hazard, Vulnerability & Risk Assessment of Darjeeling-Sikkim Himalaya *by* Nath, Sankar Kumar (INDO-TAIWAN Workshop on "Earthquake Early Warning System" at Prithvi Bhawan, MOES, New Delhi)

Papers Published in Journals

1. 3D modeling and inversion of VLF and VLF-R electromagnetic data *By* P. Kaikkonen, S. P. Sharma and S. Mittal *Geophysics* 77 (4), WB219–WB23 (2012)

2. Alteration of plagioclase to nepheline in the Khariar alkaline complex, SE India: constraints on metasomatic replacement reaction mechanisms By Upadhyay D. *Lithos* 155, 19-29 (2012)
3. Angular distribution of neutron flux around the Tritium target of 14 MeV neutron generator By Ranjit Mandal, Genu Radhu Pansare, D. Sengupta and V.N. Bhoraskar *Journal of Physical Society of Japan* 81(10), 40061-40065 (2012)
4. Archaean granulite facies metamorphism at the Singhbhum craton-Eastern Ghats Mobile Belt interface: Implication for the Ur Supercontinent Assembly. By Mahapatra, S.N., Pant, N.C., Bhowmik, S.K., Tripathi, A.K., Nanda, J.K. *Geological Journal* 47, 312-333 (2012)
5. Assessment of Seismic Hazard Parameters for Guwahati Region in Northeast India By Maiti, S. K., Adhikari, M. D., and Nath, S. K. *Disaster Advances* 6(3), 62-70 (2013)
6. Chemistry of the cupriferous ore fluid at Malanjkhanda copper deposit, Central India: constraints from ion chromatography of fluid inclusion leachates By Panigrahi MK *Journal of Applied Geochemistry* 14, 383-392 (2012)
7. Comparative petrogenesis and tectonics of paleoproterozoic Malanjkhanda and Dongargarh granitoids, Central India By Pandit D and Panigrahi MK *Journal of Asian Earth Science* 50, 14-26 (2012)
8. Contrasting geochronological evolution of the Rajpura Dariba and Rampura Agucha metamorphosed Zn-Pb deposit, Aravalli-Delhi Belt, India By Hazarika, P., Upadhyay, D., Mishra, B. *Journal of Asian Earth Sciences* in press (2013)
9. Crustal heterogeneity and seismotectonics of the national capital region, Delhi, India. By Sandeep Gupta, William K. Mohanty, Rajesh Prakash and Atindra Kumar Shukla *Pure and Applied Geophysics* 170, 607-616 (2013)
10. Delineation of Groundwater Potential Zones using Satellite Remote Sensing and Geographic Information System Techniques: A Case study from Ganjam district, Orissa, India By Biswas Arkoprovo, Jana Adarsa and Sharma Shashi Prakash *Research Journal of Recent Sciences* 1, 59-66 (2012)
11. Earthquake Scenario in West Bengal with emphasis on Seismic Hazard, Vulnerability & Risk Microzonation of Kolkata City, West Bengal, India By Nath, S. K., Adhikari, M. D., Maiti, S. K., Devaraj, N., Srivastava, N. and Mohapatra, L. D. *Natural Hazards and Earth System Sciences* Under review (2013)
12. Estimation of uniaxial compressive strength of rock materials by index tests using regression analysis and fuzzy inference system By Mishra, D. A., Basu, A. *Engineering Geology* (Accepted) (2013)
13. Focusing frequency and significance of multi-frequency very low-frequency electromagnetic measurement in delineating near-surface conducting structures By S.P. Sharma and V.C. Baranwal *Near Surface Geophysics* 9, 435-447 (2011)
14. Fractal analysis of magnetite grains – implications for interpreting deformation mechanism By Mamtani, M.A. *Journal of the Geological Society of India* 80, 308-313. (2012)
15. Frequency-dependent body wave attenuation characteristics in the Kumaun Himalaya By Chandrani Singh, Arun Singh, Srinivasa Bharathi V. K. And R. K. Chadha, *Tectonophysics* 37-42 (2012)
16. Frequency-dependent body wave attenuation characteristics in the Kumaun Himalaya By Chandrani Singh, Arun Singh, Srinivasa Bharathi V. K. And R. K. Chadha, *Tectonophysics* 524-525 (2012)
17. Global nonlinear optimization for the estimation of static shift and interpretation of 1-D magnetotelluric sounding data By Shashi Prakash Sharma and Arkoprovo Biswas *Annals of Geophysics* 54,249-264 (2011)
18. Growth of the Greater Indian Landmass and its Assembly in Rodinia: Geochronological evidence from the Central Indian Tectonic Zone. By (22) Bhowmik, S.K., Wilde, S.A., Bhandari, A., Pal, T., Pant, N. C. *Gondwana Research* 22, 54-72 (2012)
19. Influence of Epicentral Distance on Local Seismic Response in Kolkata city, India By William K., Mohanty, Akhilesh K. Verma, Franco Vaccari, Giuliano F. Panza *Journal of Earth System Science* ODI 10.1007/s12040-0 (2013)
20. Integrated geological and geophysical studies for delineation of chromite deposits: A case study from Tangarparha, Orissa, India By William K. Mohanty, Animesh Mandal, S. P. Sharma, Saibal Gupta, and Surajit Misra *Geophysics* 76,B173–B185 (2011)
21. Kinematic analysis using AMS data from a deformed granitoid (DOI: 10.1016/j.jsg.2012.03.002) By Mamtani, M.A., Pal, T. and Greiling, R.O. *Journal of Structural Geology* 50, 119-132 (2013)

22. Lapse time and frequency-dependent attenuation characteristics of Kumaun Himalaya *By* Lapse time and frequency-dependent attenuation characteristics of Kumaun Himalaya *Journal of Asian Earth Sciences* 54-55, 64-71 (2012)
23. Lg attenuation characteristics across Indian Shield *By* Chandrani Singh, Arun Singh, Sagarika Mukhopadhyaya, M. Shekar and R. K. Chadha *Bulletin of Seismological Society of America* 101, 2561-2567 (2011)
24. Lg attenuation characteristics across Indian Shield *By* Chandrani Singh, Arun Singh, Sagarika Mukhopadhyaya, M. Shekar and R. K. Chadha *Bulletin of Seismological Society of America* 101, 2561-2567 (2011)
25. Metal behavior in sediment associated with acid mine drainage stream: role of pH *By* Equeenuddin SkM, Tripathy S, Sahoo PK and Panigrahi MK *Journal of Geochemical Exploration* 124, 230-237 (2013)
26. Migration of arsenic in multi-aquifer system of southern Bengal Basin: analysis via numerical modeling *By* P.K. Sidar, P. Sahu, S.P. Ray, A. Sarkar, S. Chakarabarty *Environmental earth Sciences* (2013)
27. Mineralogy of Fe-precipitates and their role on metal retention from an acid mine drainage site in India. *By* Sahoo PK, Tripathy, S., Panigrahi MK and Equeenuddin Sk M *Mine Water and the Environment* 31, 344-352 (2012)
28. Multicomponent diffusion in garnets I: General theoretical considerations and experimental data for Fe-Mg systems. *By* (24) Borinski, S.A., Hoppe, U., Chakraborty, S., Ganguly, J., Bhowmik, S.K. *Contributions to Mineralogy & Petrology*. 164, 571-586. (2012)
29. Natural Hazards in relation to Landslides *By* Singh, A., De, Rase, D.M., De, U.S. *The International Journal of Meteorology* 36, 358, 51-55 (2011)
30. Near surface shear velocities in diverse geological segments of India *By* Singh, A., Kumar, M. R., Srinagesh, D *Bulletin of Seismological Society of America* Accepted (2013)
31. Proterozoic tectonics: An Indian perspective *By* (23) Bhowmik, S.K., Chattopadhyay, A., Gupta, S., Dasgupta, S. *Proceedings of the Indian National Science Academy*. 78, 385-391. (2012)
32. Quantification of microcrack anisotropy in quartzite - a comparison between experimentally undeformed and deformed samples. *By* Mamtani, M.A., Vishnu, C.S., Basu, A. *Journal of the Geological Society of India* 80, 153-166 (2012)
33. Reappraisal of elastic thickness in the south-west Indian Ocean and its possible implications *By* Deshraj Tivedi, Tanmay K. Maji, D. Sengupta and Rajesh R. Nair *Annals of Geophysics* 55, 265-272 (2012)
34. Reconstruction of physicochemical environment of hydrothermal mineralization at Malanjkhand copper deposit, Central India: constraints from sulfur isotope ratios in pyrite, molybdenite and chalcopyrite. *By* Panigrahi MK, Pandiot D, Naik RK and Ishihara S *Resource Geology* 63, 110-116 (2013)
35. Seismic anisotropy beneath the eastern Dharwar Craton *By* Roy, S. K., Srinagesh, D., Saikia, D., Singh, A., and Kumar, M. *Lithosphere* Accepted (2012)
36. Seismic attenuation characteristics along the Hi-Climb profiles in Tibet from Lg Q inversion *By* Chandrani Singh, M. Shekar, Arun Singh and R. K. Chadha *Bulletin of Seismological Society of America* 102 (2), 783-789 (2012)
37. Seismic attenuation characteristics along the Hi-Climb profiles in Tibet from Lg Q inversion *By* Chandrani Singh, M. Shekar, Arun Singh and R. K. Chadha *Bulletin of Seismological Society of America* 102 (2), 783-789 (2012)
38. Seismic Hazard and Risk Microzonation of Darjeeling-Sikkim Himalaya *By* Nath, S. K., Adhikari, M. D., Maiti, S. K., Devaraj, N. *Natural Hazards* Under review (2013)
39. Seismic signatures of an altered crust and a normal transition zone structure beneath the Godavari Rift *By* Arun Singh, M. Ravi Kumar, Narendra Kumar, Dipankar Saikia, P. Solomon Raju, D. Srinagesh, N. Purnachandra Rao, Dipankar Sarkar *Precambrian Research* Revision needed (2012)
40. Seismicity and Maximum Earthquake Prognosis of Greater Kashmir *By* Sanna, H., and Nath, S. K. *Journal of Seismology* Under review (2013)
41. Seismogenesis of 18th September 2013 Sikkim Earthquake of Mw 6.9 *By* Adhikari M. D., Nath, S. K., Maiti, S. K. *Disaster Advances* In press (2013)
42. Spatial variation of coda wave attenuation in Southern Indian Shield and its implications *By* Chandrani Singh, S. K. Basha, M. Shekar and R. K. Chadha *Geologica Acta* 10 (2012)
43. Stochastic Finite-Fault Modeling of Strong Earthquakes in Narmada South Fault, Indian Shield *By* P Sengupta *Journal of Earth System & Science* 121, 3, 837-846 (2012)

44. Taphonomy of an Upper Triassic vertebrate bonebed: A new rhynchosaur (Reptilia Archosauromorpha) accumulation from India. By Mukherjee D. and Ray S. *Paleogeography, Paleoclimatology, Paleocology*, 333-334, p. 75–91 (2012)
45. Tectonic implications of the September 2011 Sikkim earthquake and its aftershocks By Kumar, M. R., Hazarika, P., Prasad, G. S., Singh, A., Saha, S. *Current Science* (2012)
46. Tectono-magmatic evolution of the Meosoproterozoic Singhora basin, central India: Evidence for compressional tectonics from structural data, AMS study and geochemistry of basic rocks. By Saha, S., Das, K., Chakraborty, P.P., Das, P., Karmakar, S. and Mamtani, M.A. *Precambrian Research* 227, 276-294 (2013)
47. Tectonothermal evolution of the Banded Gneissic Complex in Central Rajasthan, NW India: Present status and correlation. By Bhowmik, S.K. and Dasgupta, S. *Journal of Asian Earth Sciences* 49, 339-348 (2012)
48. The ISLANDS Network in the Andaman-Nicobar Subduction Zone By Srijayanthi, G., Kumar, M. R., Sirisha, T., Sushini, K., Srihari Prasad, G., Raju, P. S., Singh, A., and Rao, P. N., *Seismological Research Letter* (2012)
49. The relation between Seismicity and water level changes in the Koyna – Warna region, India By J. Pavan Kumar , D.V. Ramana, R.K. Chadha, Chandrani Singh and M.Shekar *Natural Hazards and Earth System Sciences* 12 (2012)
50. The vorticity axis flip and its control on mineralization. Journal of the Geological Society of India, 81, 27-30. By Mamtani, M.A. *Journal of the Geological Society of India* 81, 27-30. (2013)
51. Topographic gradient based site characterization in India complemented by strong ground motion spectral attributes By Nath, S. K., Thingbaijam, K.K.S., Adhikari, M. D., Devraj, N., Nayak, A., Ghosh, S. K., and Mahajan, A. K. *Soil Dynamics and Earthquake Engineering* In press (2013)
52. Upper Gondwana succession of the Rewa basin, India: understanding the interrelationship of lithologic and stratigraphic variables By Mukherjee, D., Ray, S., Pal, S., Chandra, S. and Bandyopadhyay, S. *Journal of the Geological society of India*, vol. 79, p. 563-575. (2012)
53. Utilization of hyperion data over Dongargarh, India, for mapping altered/weathered and clay minerals along with field spectral measurements. By Bhattacharya S, Majumadar TJ, Rajawat, AS, Panigrahi MK and Das PR *International Journal of Remote Sensing* 33, 5438-5450 (2012)
54. VFSARES—a very fast simulated annealing FORTRAN program for interpretation of 1-D DC resistivity sounding data from various electrode arrays By S.P. Sharma *Computers and Geosciences* 42, 177-188 (2012)
55. Zircon U-Pb/Lu-Hf and Monazite Chemical Dating of the Tirodi Biotite Gneiss: Implication for Latest Paleoproterozoic to Early Mesoproterozoic Orogenesis in the Central Indian Tectonic Zone By Bhowmik, S.K., Wilde, S.A., Bhandari, A. *Geological Journal* 46, 574-596 (2011)

Papers Presented in Conferences

1. Application of Very Low Frequency Electromagnetic and Self Potential survey to identify the source for subsurface mine seepage at Bangur Chromite mine, By Arkoprovo Biswas and S.P. Sharma, *IGU, 2012, Gandhinagar, Gujrat*, (2012)
2. Cross-section of the reaction $^{34}\text{Se}(n,2n) ^{34}\text{Se}$ through activation analysis by 14 MeV neutrons experimentally and using the compound nucleus theoretically, By Ranjita Mandal, V.N. Bhoraskar and D. Sengupta, *National Workshop on Radiation*, Ranchi, (2013)
3. Delineation of source for subsurface mine leakage at Bangur Chromite mine, Odisha using Very Low Frequency Electromagnetic and Self Potential survey, By Arkoprovo Biswas and S. P. Sharma, *Advances in Near Surface Geophysics*, NGRI, Hyderabad, (2013)
4. Delineation of source for subsurface mine leakage at Bangur Chromite mine, Odisha using Very Low Frequency Electromagnetic and Self Potential survey, By S.P. Sharma and Arkoprovo Biswas, *Advances in Near Surface Geophysics*, NGRI, Hyderabad, (2013)
5. Determination of kinematic vorticity number using Anisotropy of Magnetic Susceptibility (AMS) Data, By Mamtani, M.A., *2nd Rock Deformation & Structures (RDS-II) conference*, Lucknow University (Lucknow), (2012)
6. Estimation of Permeability from Well Log Data using Neuro-Fuzzy Techniques for Reservoir Characterization,, By Verma, A.K., Chaki S., Routray, A. and Mohanty, W.K., *49th Annual*

Convention of IGU on Towards the energy security - Exploration, Exploitation and new strategies, Gandhinagar, India, (2012)

7. Fabric analysis of the massive metabasalts in the Gadag region – preliminary results from anisotropy of magnetic susceptibility (AMS) studies, *By Mondal, T.K. and Mamtani, M.A., 2nd Rock Deformation & Structures (RDS-II) conference*, Lucknow University (Lucknow), (2012)
8. Geological and geophysical variations across the Talchir Gondwana basin - evidence for episodic reactivation of the North Orissa Boundary Fault, India, *By Animesh Mandal, Surajit Misra, William K Mohanty, Saibal Gupta,, American Geophysical Union (AGU) Fall Meeting 2012*, San Francisco, (2012)
9. Global optimization of self-potential data for the resolution of closely spaced multiple structures, *By Anand Singh, Arkoprovo Biswas and S.P. Sharma, IGU, 2012*, Gandhinagar, Gujrat, (2012)
10. Integrated exploration strategy for uranium mineralization from Beldih mine, Purulia, *By Animesh Mandal, Arkoprovo Biswas, Saurabh Mittal, S. P. Sharma, W. K. Mohanty and D. Sengupta, IGU, 2012*, Gandhinagar, Gujrat, (2012)
11. Integrated gravity-magnetic study for subsurface investigation and correlation with hydro-uranium anomalous zones of Manbazar-Kutni area of South Purulia Shear Zone, West Bengal, India, *By Animesh Mandal, William K. Mohanty, and S.P. Sharma, Annual International conference of Geological and Earth Sciences (GEOS 2012)*, Singapore, (2012)
12. Integrated geophysical approach for the demarcation of uranium mineralised zones between Beldih and Barabazar region in south Purulia shear zone, *By S. Mittal, P. Marya, D. Sengupta and S.P. Sharma, International Science congress Association*, Mathura, Uttar Pradesh, (2012)
13. Integrated non-invasive subsurface image for mineral prospecting, *By S. Mittal, S.P. Sharma and D. Sengupta, Near Surface Geophysics Workshop*, NGRI, Hyderabad, (2013)
14. Locating neutron beam position using neutron activation analysis, *By Ranjita Mandal, V.N. Bhoraskar S.J. Deepa and D. Sengupta, D.A.E. Symposium on Nuclear Physics*, New Delhi, (2012)
15. Mechanical Characterization of Schistose Rocks, *By Basu, A., EUROCK 2012*, Stockholm, Sweden, (2012)
16. Probabilistic Seismic Hazard Analysis for Nuclear Power Plant: A Case Study from Western India, *By Mohanty, W.K. and Verma, A.K, Annual International Conference on Geological and Earth Sciences (GEOS 2012)*, Singapore, (2012)
17. Recognition of fluid pressure fluctuation from quartz vein orientations – a study based on 3-D Mohr circle construction, *By Mondal, T.K. and Mamtani, M.A., Tectonic Studies Group Annual Meeting 2013*, University of Leeds (UK), (2013)
18. Seismic Hazard, Vulnerability & Risk Assessment of Darjeeling-Sikkim Himalaya, *By Nath, S. K., Indo-Taiwan Workshop*, New Delhi, (2013)
19. The movement direction in the Kerajang Shear Zone – textural and AMS studies., *By Misra, S., Gupta, S. and Mamtani, M.A., 2nd Rock Deformation & Structures (RDS-II) conference*, Lucknow University (Lucknow), (2012)
20. Thermal history of the Proterozoic granulites from northwestern, central, eastern and northeastern India: implication for the growth of the Greater Indian landmass, *By Bhowmik, S.K., Granulites & Granulites 2013.*, Hyderabad, (2013)
21. Uncertainty in the interpretation of Self potential anomaly over a 2D inclined sheet type structure using very fast simulated annealing global optimization technique, *By S.P. Sharma and Arkoprovo Biswas, IGU, 2012*, Gandhinagar, Gujrat, (2012)
22. VLF-EM and Radiometric studies around Beldih mine in South Purulia shear zone, India, *By S. Mittal, A. Biswas, S.P. Sharma and D. Sengupta, IGU 49th Convention (Indian Geophysical Union)*, Gandhinagar, Gujarat, (2012)

Department of Humanities & Social Sciences

Head

Prof. Kailash Bihari Lal Srivastava

Professors

Basu, Partha	<i>Ph.D.(Calcutta Univ)</i> , Quantitative Economics with special ref. to Efficiency and Growth
Chakraborti, Chhanda	<i>Ph.D.(Univ of Utah)</i> , Bioethics, Business ethics, Philosophy of Mind, Logic and Philosophy of logic
Chatterjee, Suhita Chopra	<i>Ph.D.(Bombay)</i> , Sociology of Health /Medical Sociology / Sociology of Science
Chatterjee, Bani	<i>Ph.D.(BHU, Varanasi)</i> , Development Planning, Manpower Management, International Finance
Giri, Vijai Nath	<i>Ph.D.(IIT Kharagpur)</i> , Conflict Resolution and Negotiation, Organizational Communication, Intercultural Communication, Interpersonal Communication
Patnaik, Priyadarshi	<i>Ph.D.(Utkal Univ)</i> , Indian aesthetics, Visual Culture and Communication, Cultural Translation theory and practice, Media and Multimedia Studies, Emotions and nonverbal communication
Roy, Anjali	<i>Ph.D.(Bombay)</i> , Postmodern and Post-colonial theory and literature, Culture Studies, Media Studies, Performance Studies, Diaspora Studies, Oral Histories, Partition and Punjab Studies, Folklore
Srivastava, Kailash Bihari Lal	<i>Ph.D.(IIT Kanpur)</i> , Human Resource Management and Development, Organizational Behaviour, Knowledge management and innovation
Suar, Damodar	<i>Ph.D.(IIT Kharagpur)</i> , Social and organizational psychology, Cognitive psychology
Tewari, Hare Ram	<i>Ph.D.(IIT Kharagpur)</i> ,

Associate Professors

Chakraborty, Jayshree	<i>Ph.D.(IIT Kanpur)</i> , Semantics and Pragmatics, Discourse Analysis, Sociolinguistics, Indian English, Communication
Goswami, Kishor	<i>Ph.D.(IIT Kharagpur)</i> , Development Economics (Globalization - Gender and Trade - Poverty - Food Security), Agricultural Economics, Economics of Biofuels
Komalesha, H. S.	<i>Ph.D.(IIT Kharagpur)</i> , Translation Studies, Indian Literatures in English, Poetry, Postcolonial Literatures, Cultural Studies
Mahakud, Jitendra	<i>Ph.D.(IIT, Bombay)</i> , Financial Markets, Financial Economics, Corporate Finance, Fixed Income Securities, Equity Research, Financial Econometrics
Mishra, Pulak	<i>Ph.D (Vidyasagar University)</i> , Industrial Economics, Public Economics and Policy, Economics of Rural Development
Nayak, Narayan Chandra	<i>Ph.D.(Utkal Univ)</i> , Labour Economics Social Sector Development Agricultural Economics International Finance

Assistant Professors

Behera, Bhagirath	<i>Ph.D.(Univ. of Bonn, Germany)</i> , Human Transformation and Well-Being, Environmental and Natural Resource Economics, Development Economics, New Institutional Economics, Economics of Religion, Green Economics
Das, Saswat Samay	<i>Ph.D.(Utkal Univ.)</i> , Postmodern/postcolonial studies Critical theory Continental Philosophy
Pradhan, Rabindra Kumar	<i>Ph.D.(Utkal Univ.)</i> , Organisational Behaviour, Positive Psychology, Social Psychology, Industrial & Organisational Psychology, Human Resource Development and Management
Singh, Seema	<i>Ph.D.(BHU)</i> , Indian Women Writing in English, Managerial Communication Styles & Employee Outcomes, Communication Skills, Feminist Narratology

Faculty Retirement

Hare Ram Tewari	Professor
Pratha Basu	Professor

Faculty Re-employment

Hare Ram Tewari	Professor
Partha Basu	Professor

Brief Description of on-going activities

Research and Development on:
1. Quantitative economics, 2. Financial economics, 3. Economics of growth, 4. Industrial economics, 5. Development economics, 6. Environmental and resource economics, 7. Developing world bioethics, 8. Gender and trade, 9. Financial institutions and markets, 10. Sociology of health and medicine, 11. Human resource development, 12. Brain and behavior, 13. Interpersonal, intercultural and organizational communication, 14. Visual aesthetics, 15. Business ethics, corporate social responsibility, 16. Economics of biofuels, 17. Bioethics and Public Health Ethics.

Training and development programmes on: 1. Aesthetics 2. Interpersonal communication 3. Recent trends in human resource development 4. Strategic management 5. Emotional intelligence 6. Logic and applications of logic 7. Research methodology and data analysis 8. Financial modelling and risk management 9. Leadership and teambuilding 10. Language, cognition and communication 11. Understanding culture and practising cross-cultural communication 12. Creative writing, 13. Critical thinking, reading and writing skills

Course development on 1. Economics 2. Human Resource Management 3. Philosophy 4. Psychology

Thrust Areas

1. Development studies
2. Human resource management and ethics
3. Cultural and communication studies

Lectures by Visiting Experts

1. Invited lecture *by* Mr. C.K. Poddar (Executive Director, NINL, Odisha)
2. Invited lecture *by* Mr. Srikanth Venkatachari (Senior Delivery Manager and Innovation coordinator, Cognizant Technology)
3. Invited lecture *by* Mr. Mark Boutros (Director, Krab Gavin Anderson)

4. Invited lecture *by* Ms. Barsha Chakraborty (Senior Human Resource Manager, G-Cube Solution)
5. Invited lecture *by* Mr. Alope Tagore (Regional HR Head-East, Deloitte Touche Tohmastu India Pvt. Lt. Kolkata)
6. Invited lecture *by* Ms. Linda Johansson (Social Sustainability Coordinator and CSR Program Developer, H & M)
7. Invited lecture *by* Mr. Sujitesh Das (Head, HR, Microland, Bangalore)
8. Invited lecture *by* Mr. Padmanabhan S. (Director HR, Dr. Reddy's Laboratories, Hyderabad)
9. Invited lecture *by* Prof. S.S. Ganesh (Asso. Professor, Xavier Institute of Management, Bhubaneswar)
10. Invited lecture *by* Mr. R. Shantaram (Director, Kelsa Solutions, Chennai)
11. Invited lecture *by* Prof. Pinaki Chakraborty (National Institute of Public Finance and Policy, New Delhi)
12. Invited lecture *by* Mr. Karin Holmquist (Director Sustainability Division, Atlas Copco.)
13. Invited lecture *by* Prof. Achin Chakraborty (IDS Kolkata)

Doctoral and MS Degrees Awarded

1. Mr. Amarendra Kumar Dash : Advertising Strategy and Cultural Blend: Glocal Identities in Indian TV Commercials(Ph. D.)
2. Ms. Suryatapa Kar : Antecedents, mediators, moderators, and consequences of burnout among Indian Nurses(Ph. D.)
3. Mr. A.V.L.N. Rao : Learning Organizations: A Study in the Indian Context(Ph. D.)
4. Ms. Maninder Kapoor : Quest for Selfhood in Select Contemporary Indian English Women's Fiction: A Study through Feminist Narratology(Ph. D.)
5. Mr. Mukti Pada Bag : Evaluation of Growth and Quality Parameters of Two Species of Tilapia (*Oreochromis spp.*) using Artificial Feeds Prepared from Alternative Protein Sources(Ph. D.)
6. Ms. Surjya Sikha Das : Impact of Behavioural Competencies on Sales Persons' Performance, Effectiveness, Satisfaction, and Success(Ph. D.)
7. Ms. Soni Agrawal : Factors Influencing Entry and Performance of Information Technology Enabled Service Firms in India(Ph. D.)
8. Mr. Shantanu Mazumder : Emotional Intelligence and Moral Intelligence Influencing Leadership Effectiveness(Ph. D.)
9. Mr. Manish Thaplyal : Role Stress of Locomotive Pilots: Antecedents, Mediators, Consequences, and Intervention(Ph. D.)
10. Ms. Alin Borah Bortamuli : Determinants of Income, Technology Adoption. Occupational Choice, and Entrepreneurial Development in the Handloom Industry in Assam(Ph. D.)
11. Ms. Rojalini Sahoo : Antecedents and Consequences of Informal Young Care giving in Families(Ph. D.)
12. Ms. Nupur Sinha : Dynamics of Innovation Management: Antecedents and Consequences(Ph. D.)
13. Mr. Sandip Sarkar : Interrogating Sahitya Akademi's Objective in the Global Climate of Dissemi-Nation(Ph. D.)

Member - Professional Bodies

1. Nayak, Narayan Chandra, *Life Member* - Indian Society of Labour Economics
2. Nayak, Narayan Chandra, *Life Member* - Regional Science Association, India
3. Nayak, Narayan Chandra, *Life Member* - Indian Economic Association
4. Nayak, Narayan Chandra, *Life Member* - The Indian Econometric Society
5. Nayak, Narayan Chandra, *Member* - Poverty and Economic Policy Research Network (PEP-Network)
6. Singh, Seema, *Life Member* - All India English Teachers' Conference (AIETC)
7. Singh, Seema, *Regular* - Association for Learning Technologies (ALT), Oxford, UK
8. Singh, Seema, *Life Member* - Vidyasagar University English Teachers' Consortium (VUETC), Midnapore
9. Singh, Seema, *Member* - Association for Business Communication (ABC), NY, USA
10. Singh, Seema, *Member* - Multi - Ethnic Literatures of the World, MELOW – India
11. Singh, Seema, *Member* - University Grants Commission (UGC), New Delhi

12. Singh, Seema, *Member* - International Association for the Teachers of English as a Foreign Language (IATEFL), University of Kent, UK
13. Singh, Seema, *Life Member* - Indo - American Center for International Studies (IACIS), Hyderabad, formerly the American Studies Research Center (ASRC)
14. Singh, Seema, *Member* - English Language Teachers Association of India (ELTAI), Chennai
15. Singh, Seema, *Life Member* - National Library, Kolkata
16. Singh, Seema, *Member* - Indian Society for Technical Education (ISTE), New Delhi
17. Singh, Seema, *Member* - International Association of Business Communicators (IABC), San Francisco, California, USA
18. Singh, Seema, *Life Member* - Indian Association for English Studies (IAES)
19. Singh, Seema, *Member* - Indian Association for Commonwealth Literature and Language Studies (IACLALS), New Delhi
20. Singh, Seema, *Member* - Multi - Ethnic Literatures of the US, MELUS – India
21. Goswami, Kishor, *Regular* - International Society on Multiple Criteria Decision Making (MCDM), USA
22. Goswami, Kishor, *Life Member* - Agricultural Economics Research Association, New Delhi, India
23. Goswami, Kishor, *Life Member* - Indian Red Cross Society, India
24. Goswami, Kishor, *Life Member* - Circle for Child and Youth Research Cooperation in India – CCYRCI, Lucknow, India
25. Komalesha, H. S., *Member* - American Literary Translators Association
26. Komalesha, H. S., *Life Member* - Indian Association of Commonwealth Literature and Language Studies
27. Komalesha, H. S., *Member* - ASLE-India
28. Chakraborty, Jayshree, *Life Member* - Dravidian Linguistics Association
29. Chakraborty, Jayshree, *Life Member* - Linguistic Society of India
30. Pradhan, Rabindra Kumar, *Life Membership* - Indian Academy of Applied Psychology
31. Pradhan, Rabindra Kumar, *Annual* - International Association of Applied Psychology
32. Pradhan, Rabindra Kumar, *Life Membership* - INDIAN Society for Training and Development
33. Pradhan, Rabindra Kumar, *Life Member* - National HRD Network
34. Pradhan, Rabindra Kumar, *Annual* - National Academy of Psychology, India
35. Pradhan, Rabindra Kumar, *Life Member* - International Association of Holistic Psychology
36. Pradhan, Rabindra Kumar, *Life Membership* - Indian Science Congress Association
37. Pradhan, Rabindra Kumar, *Annual* - International Association of Cross-Cultural Psychology
38. Pradhan, Rabindra Kumar, *National Council Member* - Indian Society for Training and Development
39. Basu, Partha, *Life Member* - Indian Academy of Social Sciences
40. Chatterjee, Bani, *Life Member* - Regional Science Association
41. Chatterjee, Bani, *Life Member* - International Society of Adult Education
42. Chatterjee, Bani, *Life Member* - Indian Academy of Social Sciences
43. Giri, Vijai Nath, *Member* - National Communication Association, USA
44. Giri, Vijai Nath, *Member* - International Communication Association, USA
45. Giri, Vijai Nath, *Member* - Central States Communication Association, USA
46. Giri, Vijai Nath, *Member* - Southern States Communication Association, USA
47. Giri, Vijai Nath, *Member* - National Academy of Psychology (NAOP) India
48. Roy, Anjali, *Senior Member* - Indian Association for Commonwealth Literature and Language
49. Roy, Anjali, *President* - Association for the Study of Australasia in Asia
50. Suar, Damodar, *Member* - Association for Psychological Sciences
51. Suar, Damodar, *Life Member* - National Academy of Psychology
52. Suar, Damodar, *Life Member* - Indian Society of Training and Development
53. Suar, Damodar, *Life Member* - The Indian Science Congress Association
54. Suar, Damodar, *Member* - Asian Association of Social Psychology
55. Srivastava, Kailash Bihari Lal, *Member* - Indian Academy of Management
56. Srivastava, Kailash Bihari Lal, *Regular* - National Academy of Psychology
57. Srivastava, Kailash Bihari Lal, *Member of the Executive Committee* - Academy of International Business, India Chapter
58. Patnaik, Priyadarshi, *Regular* - Word and Music Association
59. Chakraborti, Chhanda, *Member 2010-till date* - International Association of Bioethics
60. Chakraborti, Chhanda, *Senior member 2000-till date* - Indian Philosophical Congress

61. Chakraborti, Chhanda, *Regular member 2009-till date* - International Network of Women Philosophers, UNESCO
62. Chakraborti, Chhanda, *Nominated Program Advisor 2010-2011* - International Program Committee, 14th Congress of Logic, Methodology and Philosophy of Science (LMPS)
63. Chakraborti, Chhanda, *Member* - Forum of Medical Ethics Society
64. Chakraborti, Chhanda, *Member* - American Philosophical Association (APA)

Member - Editorial Board

1. Chakraborti, Chhanda (2009) *Member 2009-till date* - Indian Journal of Medical Ethics
2. Giri, Vijai Nath (2009) *Member Editorial Board* - Encyclopedia of Communication Theory
3. Giri, Vijai Nath (0) *Editorial Board of Journal, 2006-08* - Communication Theory
4. Goswami, Kishor (2011) *Editorial Board Member* - Aisa-Pacific Economic Association Newsletter
5. Goswami, Kishor (2011) *Associate Editor* - SAGE Open (Social Science Journals)
6. Goswami, Kishor (2013) *Advisory Board Member* - The International Journal of Economics and Business Modeling
7. Goswami, Kishor (2009) *Reviewer* - Journal of Rural and Community Development, Canada
8. Goswami, Kishor (2011) *Associate Editor* - Journal of Business Excellence
9. Goswami, Kishor (2009) *Reviewer* - International Journal of Ecology and Development
10. Komalesha, H. S. (2012) *Guest Editor* - Muse India
11. Pradhan, Rabindra Kumar (2012) *Co-Chair, Technical Committee* - 42 National Convention of ISTD
12. Pradhan, Rabindra Kumar (0) *Reviewer* - International Journal of Entrepreneurial Behaviour & Research (IJEER)
13. Pradhan, Rabindra Kumar (0) *Reviewer* - Indore Management Journal
14. Roy, Anjali (2012) *Member* - Journal of Global Diaspora Studies
15. Singh, Seema (2012) *Board of Editors* - Titiksha
16. Singh, Seema (2013) *Member, Board of Reviewers, Management Communication Quarterly, SAGE pub.* - Management Communication Quarterly
17. Srivastava, Kailash Bihari Lal (0) *Reviewer* - ICFAI Journal of Knowledge Management
18. Srivastava, Kailash Bihari Lal (0) *Reviewer* - Psychological Studies
19. Srivastava, Kailash Bihari Lal (0) *Reviewer* - ICFAI Journal of Mergers and Acquisitions
20. Srivastava, Kailash Bihari Lal (0) *Member Editorial board* - Journal of Technology & Management
21. Srivastava, Kailash Bihari Lal (2010) *Member, Editorial Advisory Board* - Journal of Contemporary research in Management
22. Suar, Damodar (2002) *Associate Editor* - Psychological Studies

Awards & Honours

1. Pradhan, Rabindra Kumar (2012) *ARTS Fellowship, 2012 awarded by International Union of Psychological Sciences*
2. Giri, Vijai Nath (1988) *German Academic Exchange Service (DAAD) Long-term Fellowship*
3. Singh, Seema (2001) *Human Rights Promotion Award at World Human Rights Congress*
4. Pradhan, Rabindra Kumar (2012) *ISTD Best Trainer Award-2012 for Excellence in Training & Human Resource Development*

Sponsored Research Projects

1. COMMUNITY DEVELOPMENT THROUGH CORPORATE SOCIAL RESPONSIBILITY (CSR): A BENCHMARK STUDY FOR INDUSTRIAL UNITS IN PASCHIM MEDINIPUR (ACC Limited, Rs.4.56 Lakhs)
2. Economic Value Addition of Jatropha Based Products in Northeast India (National Oilseeds and Vegetable Oils Development (NOVOD) Board, Ministry of Agriculture, Govt. of In, Rs.17.54 Lakhs)
3. Expansion of Trade and Development of Women Entrepreneurs in Handloom Industry in Assam (Indian Council of Social Science Research, Rs.5.52 Lakhs)

4. Fast fixed-point algorithms for identifying alertness and emotions- FIA (Samsung, Rs.0.00 Lakhs)
5. Functional Explanations in Language : an Inquiry in the Context of Indian Languages (IIT, Kharagpur (ISIRD), Rs.1.60 Lakhs)
6. Ganga River Basin Management Plan: Socio-Economic and Cultural Aspects (Ministry of Forests and Environment, Government of India, New Delhi, Rs.19.45 Lakhs)
7. Impact Assessment of Mahatma Gandhi NREGS in Orissa: A Study of Mayurbhanj and Ganjam District (Indian Council of Social Science Research, New Delhi, Rs.5.65 Lakhs)
8. Impact of Emotional Labour on Psychological Health & Job outcomes: A Study on Indian Service Industry (Indian Council of Social Science Research, New Delhi, India, Rs.4.32 Lakhs)
9. Performing on the Margins of India (SSHRC, Rs.18.00 Lakhs)
10. Renovation, Extension and Modernization of Nehru Museum of Science and Technology (Ministry of Culture, Rs.27443768.00 Lakhs)
11. SOCIAL COST BENEFIT ANALYSIS OF THE PROPOSED COAL MINE AT CHHENDIPADA TEHSIL OF ANGUL DISTRICT, ODISHA (-Radhikapur(West) Coal Mining Private Ltd, Rs.4.49 Lakhs)
12. Social impact Analysis (ACC Limited, Rs.3.50 Lakhs)
13. Sustainability of Biodiesel Industry in North East India (South Asian Network for Development and Environmental Economics, Rs.9.15 Lakhs)
14. Translation of Metaphysical Writings of the Pancasakha Sanths of Medieval Odisha (Indian Council of Philosophical Research, Rs.2.00 Lakhs)

Consultancy Projects

1. Community Development through Corporate Social Responsibility (CSR): A Benchmark Study for Industrial Units in Paschim Medinipur (ACC Ltd, Rs.4.56 Lakhs)
2. Preparation of Fire Safety Manual for NDMA, New Delhi (National Disaster Management Authority, New Delhi, Rs.-0.00 Lakhs)
3. Social Costs Benefits Analysis of the Proposed Coal Mine at Chhendipada Tehsil of Angul District, Odisha (Radhikapur (West) Coal Mining Ltd., Rs.4.49 Lakhs)
4. Social Impact Assessment for the Proposed Project Location in West Midnapore (ACC Limited, Rs.3.58 Lakhs)

Visits Abroad by Faculty Members

1. Roy, Anjali - Academic Visitor (University of Technology at Sydney, Sydney Australia,) 5-8 September 2012
2. Pradhan, Rabindra Kumar - Paper presentation and Participation in the 30th International Congress of Psychology (Cape Town, South Africa,) 22-27 July 2012
3. Goswami, Kishor - To present project progress report (Colombo, Sri Lanka,) One week
4. Srivastava, Kailash Bihari Lal - To attend International Conference of Psychology (Cape Town, South Africa,) 22-26 July 2012
5. Mishra, Pulak - Paper presentation in the 6th MEIDE (Micro Evidence on Innovation and Development) Conference (Cape Town, South Africa,) November 21-23, 2012
6. Pradhan, Rabindra Kumar - Advanced Research Training Seminar (University of Stellenbosch, Stellenbosch, South Africa,) 17-19 July 2012
7. Chatterjee, Bani - To interact with Director, faculty and students for future collaboration (Thomas Bata University, Zlin, Czech Republic,) Oct 22nd to Nov 10th, 2012
8. Nayak, Narayan Chandra - To chair a session at the Cambridge Business and Economics Conference and present a paper (Cambridge, UK,) 25-30 June, 2012
9. Pradhan, Rabindra Kumar - Attended the 21st International Congress of International Association of Cross-Cultural Psychology (University of Stellenbosch, Stellenbosch South Africa,) 17-21 July 2012
10. Roy, Anjali - Deliver a lecture (University of Western Australia Perth Australia,) 9-10 September 2012
11. Suar, Damodar - Present papers in IUPSs (Cape Town, South Africa,) July 2012
12. Behera, Bhagirath - Attend a conference (London,) 26-29 March 2012

13. Chakraborty, Jayshree - To participate and present a paper in the Annual Conference of Linguistic Society of Nepal (Kathmandu, Nepal,) November 26 - 28, 2012
14. Singh, Seema - Session Chair & Paper Presenter (Colombo,) 26th -27th July 2012
15. Singh, Seema - Session Chair & Paper Presenter (Bangkok,) 19th-21st Nov. 2012

Invited Lectures by Faculty Members

1. Corporate Response to Economic Reforms in India: Emerging Patterns and Trends *by* Mishra, Pulak (Asian School of Business Management, Bhubaneswar)
2. Relevance of Managerial and Business Economics for the Students of Business Management *by* Mishra, Pulak (Sri Sri University, Cuttack)
3. Estimation of Limited Dependent Variable Models *by* Mishra, Pulak (Vidyasagar University, Midnapur)
4. Impact of FDI Inflows on Innovation and Growth: Experience of Indian Manufacturing Sector *by* Mishra, Pulak (Kharagpur College)
5. Emotional Intelligence and Organizational Excellence: A Global Business Perspective *by* Pradhan, Rabindra Kumar (PG Dept of Master of Business Administration, Sambalpur University, Odisha, India)
6. Attitude Matters at Work *by* Pradhan, Rabindra Kumar (PXE, DRDO, Ministry of Defence, Govt of India, Chandipur, Odisha)
7. Executive excellence through EQ *by* Pradhan, Rabindra Kumar (United School of Business Management, Bhubaneswar, Odisha)
8. Interpersonal Communication *by* Pradhan, Rabindra Kumar (PXE, DRDO, Ministry of Defence, Govt of India, Chandipur, Odisha)
9. Emotional Intelligence *by* Pradhan, Rabindra Kumar (PXE, DRDO, Ministry of Defence, Govt of India, Chandipur, Odisha)
10. What are the Posts You Tether Indianness To *by* Komalesha, H. S. (Bharatiya Vidya Bhavan's Arts College - Ahmedabad)
11. Towards a More Meaningful and Goal-based Study of English in our Colleges *by* Komalesha, H. S. (D K College, Jaleswar)
12. Travels of the Dastaan from Qissa Khwani Bazaar to Bombay *by* Roy, Anjali (IISc Bangalore)
13. Swami Vivekananda on Empowerment and Women of India *by* Chakraborti, Chhanda (Netaji Subhash Institute of Asian Studies, Kolkata)
14. Swami Vivekananda: Some Reflections *by* Chakraborti, Chhanda (Department of History, Calcutta University)
15. What are Humanities and Social Sciences Doing in IIT Kharagpur? *by* Roy, Anjali (PEC Chandigarh)
16. The Magic of Bollywood: At Home and Abroad *by* Roy, Anjali (UWA, Perth, Australia)
17. Bollywood's Soft Power *by* Roy, Anjali (Christ University Bangalore)
18. Effective communication *by* Patnaik, Priyadarshi (IIT Patna)
19. Virtual Communication and Language Teaching *by* Chakraborty, Jayshree (Padnava College of Engineering Rourkella)
20. Genres-based Writing *by* Chakraborty, Jayshree (Calcutta University)
21. Adaptive Innovation Paradigm: Global Issues And Challenges *by* Chatterjee, Bani (Thomas Bata University, Zlin, Czech Republic)
22. Business In India *by* Chatterjee, Bani (Thomas Bata University, Zlin, Czech Republic)
23. SHG to successful entrepreneur: Strategic analysis in the light of challenges and opportunities *by* Suar, Damodar (Post harvest technology centre, IIIT Kharagpur)

Books Published

1. Dr. Rabindra Kumar Pradhan & Dr. Nutankumar S. Thingujam: Emotional Intelligence: Optimizing Human Performance at Work *published by* LAP LAMBERT Academic Publishing, Germany (2012)
2. Dr. Uday Kumar Haldar, Dr. Rabindra Kumar Pradhan, Mr. Arun Ray Choudhury & Ms. Juthika Sarkar: Value Creation through Human Development: The Emerging Dimension *published by* Indian Society for Training and Development, New Delhi (2012)
3. H S Komalesha: Rashtrakavi Kuvempu *published by* Sahitya Akademi, New Delhi (2013)

4. Maninder Kapoor and Seema Singh: Quest for Selfhood in Select Contemporary Indian English Womens Fiction *published by* SAGE Publications India Pvt Ltd (2013)
5. Roy, Anjali Gera: Magic of Bollywood : At Home and Abroad *published by* Delhi: Sage (2012)
6. Roy, Anjali Gera(with Chua Beng Huat): Travels of Bollywood Cinema: From Bombay to LA *published by* Delhi: OUP (2012)
7. Seema Singh: Success in Oral Communication: Strategies for GD - PI and Presentations *published by* ISTE – Macmillan, New Delhi (2013)
8. Seema Singh: English for Thesis Writing: A Student's Handbook *published by* Scitech, Kolkata (2013)

Short-Term Courses, Training Programmes and Workshops organised

1. Essentials of Writing (August 2 - 8, 2012)
2. The Futural Critical Constellations: The Cultural politics of the Neo- empire (5 Days)

Papers Published in Journals

1. (After) That Long Silence: A Feminist Narratological Study of Shashi Deshpande *By* Maninder Kapoor and Seema Singh *Journal of Post Colonial Cultures & Societies (Pub. by the Dpt. of English and German Colonia de Sa* Vol. 3, No. 2, 2012 (2012)
2. A Comparative Assessment of Unconditional Multifactor Asset-pricing Models: Evidence from Indian Stock Market *By* Saumya Ranjan Dash and Jitendra Mahakud *Journal of Management Research* Vol. 13, PP. 35-54 (2013)
3. Association of personality, work values and socio cultural factors with intrapreneurial orientation *By* Sinha, Nupur, & Srivastava, KBL *Journal of Entrepreneurship* 97-113. (2013)
4. Bhangra's Many Avatars: From the Radio Era to the Age of the Music Video *By* Roy, Anjali Gera *Special Issue of Studies in The Humanities on Globalism from Below* Vol 40 No 1 & 2 (2013)
5. Black Beats with a Punjabi Twist *By* Roy, Anjali Gera *Popular Music* Vol 32, No 2, 243–26 (2013)
6. Decision-making in positive and negative prospects: Influence of certainty and affectivity *By* Mohanty, S. N., & Suar, D. *International Journal of Advances in Psychology* 2(1), 19-28 (2013)
7. Decision-making: Path to Effectiveness *By* Sinha, Nupur, & Srivastava, KBL *Human resource Management Research* 46-52 (2012)
8. Determinants of expansion of area under jatropha plantation in North East India: A tobit analysis *By* Hari Kanta Choudhury and Kishor Goswami *Forest Policy and Economics* DOI:10.1016/j.forpol (2013)
9. Determinants of Occupational Choice of Workers in Handloom Industry in Assam *By* Alin Borah Bortamuly, Kishor Goswami, and Bhabesh Hazarika *International Journal of Social Economics* 40 (12) (2013)
10. Economic Freedom and Employment in India *By* Falguni Pattanaik, Narayan Chandra Nayak *South Asian Journal of Macroeconomics and Public Finance*, 2(1) (Forthcoming) (2013)
11. Economics of Solid Waste Management in India: An Overview *By* Behera, B & Hota, P. *Sri Sri Journal of Management and Innovation* 1(1), 12-25 (2012)
12. Effects of anxiety, disaster education, and resources on disaster preparedness behavior *By* Mishra, S., & Suar, D. *Journal of Applied Social Psychology* 42 (5), 1069-1087 (2012)
13. Emotional intelligence for effective HRD *By* Pradhan, R. K. *Kolkata Kindle* 2(2), 15-17. (2012)
14. Emotional labour, Psychological health and job outcomes. *By* Pradhan, R. K. & Pramanik, A. *Time's Journey*, 1(1), 23-34 (2012)
15. Estimating the Magnitude of Working Poor in India: An Analysis of Growth-Employment-Poverty Linkages *By* Falguni Pattanaik, Narayan Chandra Nayak *Journal of Social and Economic Policy* 9(2), pp. 123-141 (2012)
16. Factors Influencing Performance of ITES Firms In India *By* Sony Agrawal, Kishor Goswami, Bani Chatterjee *Information Resources Management Journal* 25[4] (2012)

17. Factors Influencing Wage Structure of the Handloom Workers in Assam: An Assessment from Gender Perspective By Alin Borah Bortamuly and Kishor Goswami *Journal of Rural Development* 31 (2) 139-150 (2012)
18. Forecasting GDP Growth Rates Of India: An Empirical Study By Bipasa Maity and Bani Chatterjee *International Journal Of Economics And Management Sciences* 1(9)52-58 (2012)
19. Health consequences and buffers of job burnout among Indian software developers By Singh, P., & Suar, D. *Psychological Studies* 58(1), 20-32 (2013)
20. HR has to excel in applied domains By Pradhan, R. K. *Business Manager* 15(5), 24. (2012)
21. Impact of Macroeconomic Condition on Financial Leverage: Evidence from Indian Firms By Sulagna Mukherjee and Jitendra Mahakud *Journal of Management Research* Vol.12, pp.128-140 (2012)
22. Impact of Managerial Communication Styles on Employees Attitudes and Behaviours By Shilpee A. Dasgupta, Damodar Suar, Seema Singh *Employee Relations: The International Journal (ISSN: 0142-5455)* Volume: 35 Issue: 2 (2013)
23. Impact of managerial communication styles on employees' attitudes and behaviours By Dasgupta, S.A., Suar, D., & Singh, S. *Employee Relations* 35(2), 173-199 (2013)
24. Influence of Positive Affect on Physical Health and Psychological Wellbeing: Examining the mediating Role of Psychological Resilience. By Nath, P. & Pradhan, R. K. *Journal of Health Management* 14(2), 161-174. (2012)
25. Investor Sentiment, Risk Factors and Stock Return: Evidence from Indian Non-Financial Companies By Saumya Ranjan Dash and Jitendra Mahakud *Journal of Indian Business Research* Vol.4, pp. 194-218 (2012)
26. Linking transformational leadership, karma-yoga, and contextual performance: A theoretical framework. By Pradhan, R. K., Pradhan, S., & Mazumder, S. (2012). *Social Science International: an interdisciplinary* 28(2), 221-231. (2012)
27. Management of Similipal Biosphere Reserve Forest: Issues and Challenges By Dash, M & Behera, B. *Advances in Forestry Letter* 1: 7-15 (2012)
28. Mixed-sided individuals with neuroticism sustain more unintentional injuries in India By Mandal, M. K., Sabharwal, A., Misra, I., Suman, S., & Suar, D. *International Journal of Psychology* 47(4), 296-304 (2012)
29. Natural Resource Abundance in the Indian States: Curse or Boon? By Bhagirath Behera and Pulak Mishra *Review of Development and Change* 17(1), pp. 53-73 (2012)
30. Ordinary People on the Move: Subaltern Cosmopolitanisms in Amitav Ghosh's Writings By Roy, Anjali Gera *Asiatic: ILUM Journal of English Language and Literature*. Vol 6, No1, 32-46 (2012)
31. Patterns of hand preference and unintentional injuries among Indian attempted hand switchers and hand non-switchers By Suar, D., Mandal, M. K., Misra, I., & Suman, S. *Laterality: Asymmetries of Body, Brain and Cognition* DOI:10.1080,1-19 (2012)
32. Relationship between Stock Prices, Exchange Rate and the Demand for Money in India By Jyoti Kumari and Jitendra Mahakud *Journal of Economics, Management, and Financial Markets* Vol. 7, PP. 31-52 (2012)
33. Rethinking Entrepreneurship: Developing a Psycho-social framework. By Pradhan, R. K. & Nath, P. *Journal of Indian Academy of Applied Psychology* 38(3), 9-18. (2012)
34. Revisiting training evaluation By Pradhan, S., & Pradhan, R. K. *International Journal of Research in Commerce, IT and Management* 2(4), 1- 4. (2012)
35. Salience and corporate responsibility towards natural environment and financial performance of Indian manufacturing firms By Mishra, S., & Suar, D. *Journal of Global Responsibility* 4(1), 44-61 (2013)
36. Soldiers, Artisans, Cultivators and Revolutionaries: The Movement of Sikhs in the Indian Ocean By Roy, Anjali Gera *PORTAL: Journal of Multidisciplinary International Studies* Vol 9, No 1, online (2012)
37. Structure, Conduct and Performance of Indian Banking Sector By Deepti Sahoo and Pulak Mishra *Review of Economic Perspectives* 12(4), pp. 235-264 (2013)
38. The Dehumanizing Mission of Imperial Reason and Humanizing Blackness By Roy, Anjali Gera *Studies in Humanities and Social Sciences. Journal of the Inter-University Centre for Humanities* Vol 16, No1/2, 109-22 (2010)
39. The Remembered Railway Town of Anglo-Indian Memory By Roy, Anjali Gera *South Asian Diaspora* Vol. 4. No. 2. online (2012)

40. Transformational leadership, organizational effectiveness, and programme outcomes in non-governmental organizations By Shiva, M.S.A.M., & Suar, D. *Voluntas: International Journal of Voluntary and Non-profit Sector* 23(3), 684-710 (2012)
41. Trends and Forecasting of Employment Intensity of Growth in India By Falguni Pattanaik, Narayan Chandra Nayak *Journal of Asia Pacific Economy* DOI:10.1080/13547860 (2012)
42. Why the Fire on the Mountain: A Feminist Narratological Approach By Maninder Kapoor and Seema Singh *JSL (Journal of the School of Languages, Literature & Culture Studies), Autumn 2011* Vol 16, 74-86 (2013)
43. Workplace spirituality and job outcomes: A review of extant literature and agenda for future research. By Pradhan, S., Pradhan, R. K., & Mazumder, S. *Siddhant: A Journal of Decision Making*, 12(1),1-10. (2012)

Papers Presented in Conferences

1. A Feminist Narratological Study of Arundhati Roy's The God of Small Things, By Maninder Kapoor and Seema Singh, *International Conference on Asian Studies (ICAS 2012), Negombo, Colombo, Sri Lanka, Colombo, Sri Lanka, (2012)*
2. Assessment and antecedents of young caregiving in families, By Suar, D., & Sahoo R., *XXX international Congress of Psychology, Cape Town, South Africa, (2012)*
3. Bereavement, traumatic stress, and behavioural reactions of tsunami survivors, By Suar, D., Das, D., & Hota, L., *XXX international Congress of Psychology, Cape Town, South Africa, (2012)*
4. Can changing climate be reversed and/or halted without radically transforming the human psyche?, By Behera, B, *Transforamtion in a Changing Climate, University of Oslo in Norway, (2013)*
5. Chaired a Scientific session on "Youth and Sports, By Rabindra Kumar Pradhan, *National Conference on Positive Behaviour: Perspective and Applications (NCPBPA), Pondichery University, (2012)*
6. Commons, poverty and social exclusion, By Suar, D., *International Conference on Govenore of Commons and Livelihood Security, XISS, Ranchi, (2012)*
7. Consuming Bollywood, By Roy, Anjali Gera, *Workshop on Give and Take: The Newly Rich and Social Conscience in China and India(Invited paper), University of Technology at Sydney, (2012)*
8. Dynamics of Positivity and Positive Wellbeing, By Papri Nath & Rabindra Kumar Pradhan, *30th International Congress of Psychology, Cape Town, South Africa, (2012)*
9. Emotional Intelligence and Leadership Effectiveness: Some Evidence from India., By Rabindra Kumar Pradhan & Shantanu Mazumder, *30th International Congress of Psychology, Cape Town, South Africa, (2012)*
10. Employment Intensity of Secondary Sector in India: Trends, Patterns and Determinants, By Falguni Pattanaik, Narayan Chandra Nayak, *54th Annual Conference of the Indian Society of Labour Economics, BHU, Varanasi, (2012)*
11. Examining the Influence of Positive Emotions on Cognitive Flexibility, By Papri Nath & Rabindra Kumar Pradhan, *National Conference on Positive Behaviour: Perspective and Applications (NCPBPA), Pondicherry University, (2012)*
12. Going to the Movies in Pardes, By Roy, Anjali Gera, *International Conference on South Indian Cinemas.Cpracis & EFLU Hyderabad., Kochi, (2012)*
13. Impact of Organizational justice, trust and organizational citizenship behaviour, By Srivastava, KBL, *International Congress of psychology, Cape town, South Africa,, (2012)*
14. Influence of learning styles and academic achievement on performance and preference in different learning modes: An adaptive hypermedia approach, By Arnab Hazra, P. Patnak, D. Suar, *Intelligent Human Computer Interaction (IHCI), 2012 4th International Conference on, IIT Kharagpur, (2012)*
15. Influence of learning styles and academic achievement on performance and preference in different learning modes: An adaptive hypermedia approach, By Hazra, A. K., Patnaik, P., & Suar, D., *International Conference on Intelligent Human Computer Interaction, IIT Kharagpur, (2012)*
16. Investor Sentiment and Stock Price: Evidence from India, By Saumya Ranjan Dash and Jitendra Mahakud, *XI Capital Markets Conference, Mumbai, (2012)*

17. Is the average person better (worse) than similar others in a socially desirable(undesirable) trait?, *By* Suar, D., Mishra, S., & Mishra, S., *XXII Annual Convention of the National Academy of Psychology (NAOP) India*, Christ University Bangalore, India, (2012)
18. Karma-Yoga (Spirit at work) and job attitudes: Applying Indian wisdom to today's business problems, *By* Sajeet Pradhan & Rabindra Kumar Pradhan, *IIMK HR Summit*, IIM Kozhikode, Kerala, (2013)
19. Lest We Forget: Revisiting the Komagata Maru, *By* Roy, Anjali Gera, *Exploratory Workshop on Urbanization and Migration in Transnational India: Work and Family Life from a Welfare Perspective. Organized by ISEC Bangalore, the Swedish South Asian*, Bangalore, (2013)
20. Lifelong Learning through Meditation: A Spiritual Perspective, *By* Seema Singh, *Lifelong Learning International Conference 2012, Bangkok, Thailand*, Bangkok, Thailand, (2012)
21. Linking Economic Freedom to Economic Growth in India: Empirical Evidences, *By* Falguni Pattanaik, Narayan Chandra Nayak, *Cambridge Business and Economics Conference*, Cambridge University, UK, (2012)
22. Oh Kudian ji: Dancing to 'Vulgar' Punjabi Music in the Global Village(invited paper), *By* Roy, Anjali Gera, *National Seminar on Popular Culture, Film and Media: Indian Texts and Contexts*, University of Chandigarh, (2013)
23. Patachitra as a Sustainable Art(Invited Paper), *By* Roy, Anjali Gera, *Values and Practices to Foster Sustainable Communities. February Dialogues.Meeting Rivers Programme of Pipal Tree (Bangalore, India) and Dialogues en Humanite (Lyon, France)*, Fireflies Bangalore, (2013)
24. Pitching Poetry Against Fundamentalism: A Subaltern Reading of Arun Kolatkar, *By* H S Komalesha with Hari M G, *Revisiting the Contours of English Studies*, EFLU, Hyderabad, (2012)
25. Positive Affect and Psychological Well Being: Examining the moderating role of personality factors, *By* Rabindra Kumar Pradhan & Papri Nath, *National Conference on Positive Behaviour: Perspective and Applications (NCPBPA), 21-22Sept 2012*, Pondicherry University, (2012)
26. Representation of Sikhs in Bollywood Cinema(Invited paper presented in absentia), *By* Roy, Anjali Gera, *Sikhi(sm), Literature and Film) Conference*, Hofstra University, (2012)
27. Self-development through renewal, *By* Suar, D., *National Conference on positive behaviour:Perspectives and applications*, Applied Psychology, Pondicherry Universi, (2012)
28. Small States Vs Big States: A Theoretical and Empirical Report on Indian States, *By* A Bhatia, N C Nayak, P Jha, *16th Annual Conference of Indian Political Economy Association*, IIT Roorkee, (2012)
29. Social Motivations for Mixing Codes at the Script Level, *By* Jayshree Chakraborty, *Annual Conference of Linguistic Society of Nepal*, Kathmandu, (2012)
30. The Talismanic Stories: A Comparative Study of Chandrakanta and Haroun and the Sea of Stories, *By* Roy, Madhumita & Anjali Gera Roy, *The Indian World(s) of Indian English Literature*, JNU Delhi, (2013)
31. Training and Development: Issues and Challenges, *By* Srivastava, KBL, *ISTD Eastern regional Conference 2012*, Jamshedpur, (2012)
32. Translating Spatio-Temporal Visuals into Music: Exploring how Intermediality influences Interpretation and Transformation, *By* P. Patnaik, R. Sinha, *Music, Semiotics, Intermediality: XIIth International Congress on Musical Signification*, Catholic University of Louvain, Belgium, (2013)
33. Understanding Intrapreneurial Orientation and Innovation Championing in Indian Organizations, *By* Srivastava, KBL & Nupur Sinha, *National Academy of psychology Conference*, Bangalore, (2012)
34. Untamed Voices from the Unknown Margins: Partition Narratives from a Remote Region of West Bengal♦♦?, *By* Sharmishtha De Dutta & Anjali Gera Roy, *IASFM 14 on Contested Spaces & Cartographic Challenges*, Kolkata, (2013)
35. Workplace spirituality and deviant workplace behaviour: Lessons from age old wisdom., *By* Sajeet Pradhan & Rabindra Kumar Pradhan, *Fourth International Conference on Integrating Spirituality and Organizational Leadership*, XIMB, Bhubaneswar, Odisha, (2012)

Department of Industrial Engineering & Management

Head

Prof. Biswajit Mahanty upto 31.12.2012
Prof. Manoj Kumar Tiwari from 01.01.2013

Professors

Acharya, Damodar *Ph.D.(IIT Kharagpur),*
Banerjee, Rabindra Nath *PGDM (Edinburgh UK),*
Mahanty, Biswajit *Ph.D.(IIT Kharagpur), System Dynamics, Operations Research, Information Systems, Project Management*
Mohapatra, Pratap Kumar *Ph.D.(IIT Kharagpur), System Dynamics and Systems Thinking, E-Business and E-Governance, Production and Operations Management, Quality Engineering and Control, Quantitative Methods*
Jagadev
Ray, Pradip Kumar *Ph.D.(IIT Kharagpur), Ergonomics/Human Factors Engineering, Quality Design/Quality Management, Operations and Environmental Management, Optimization of Engineering/Service Systems*
Sahu, Sadananda *Ph.D.(IIT Kharagpur), 1.Industrial Engineering 2.Supply Chain Management 3.Productivity management*
Srinivasan, S *Ph.D.(IIT Kharagpur), Financial Engineering*
Tiwari, Manoj Kumar *, Manufacturing Planning and Scheduling, Logistics and Supply Chain Analysis, Computational Intelligence in Manufacturing and Logistics, Optimisation and Simulation*

Associate Professor

Maiti, Jhareswar *Ph.D.(IIT Kharagpur), Safety engineering and management, Engineering ergonomics and worksystem design, Quality engineering and management, Data Analytics*

Assistant Professors

Jenamani, Mamata *Ph.D.(IIT Kharagpur), Information System, E-Business*
Jha, Jitendra Kumar *Ph.D.(IIT Kanpur), Supply Chain Management, Inventory Control, Facility Location*
Kumar, Akhilesh *Ph.D.(Wayne State Univ., USA), Reverse Logistics, Supply Chain Management, Autonomous Diagnostics & Prognostics, Condition-Based Maintenance, Computational Intelligence Data Mining Complex Systems Evolutionary Computing*
Thakkar, Jitesh J *Ph.D.(IIT Delhi), Supply Chain Management, Lean Manufacturing, Project Management, Service Operations Management, Quality Control and Management*

Faculty Appointments

Jitendra Kumar Jha Assistant Professor
Jitesh J Thakkar Assistant Professor
Dr. Shri Krishna Kumar Assistant Professor

Brief Description of on-going activities

Since its inception the department has been known across the nation for its excellent research potential and capability in the field of industrial engineering and related areas. As a matter of fact, pioneering research in the following areas of industrial engineering and management are being carried out: Operations Management: Production Planning and Inventory Control, Logistics and

Supply Chain Management, E-Business, Quality Engineering and Control, Facility Layout and Design, Total Quality Management and Six Sigma. Simulation and Soft Computing: Genetic Algorithms and its variants, Heuristics, System Dynamics, Discrete Event Simulation. Work System Design: Ergonomics/Human Factors Engineering, Occupational Safety and Health Management, and Probabilistic Risk Assessment.

Thrust Areas

1. Manufacturing and Supply Chain Management
2. Industrial Analytics
3. Production, Planning and Control
4. Human Factor and Safety Engineering
5. Optimization and Simulation
6. Quality Engineering

Lectures by Visiting Experts

1. Digital Manufacturing, life cycle modelling *by* Prof. Darek Ceglarek (Warwick Manufacturing Group,UK)
2. Strategic Management *by* Dr. PVN Nambiar (TATA Steel)
3. Agribusiness and Supply chain integration *by* Prof. Surya Pande (Institute for Business Research : University of Waikato, New Zealand)

Doctoral and MS Degrees Awarded

1. Gopal Kumar : Conceptualizing, Analyzing, and Measuring Collaboration: A Supply Chain Perspective(Ph.D.)
2. Lalit Mohan Jha : Adoption of Enterprise Resource Planning System in Indian Army(Ph.D.)
3. Srikanth Prabhu : Retinal Biometric Pattern Analysis System(Ph.D.)
4. Purushottam Lal Meena : Sourcing Decisions under the Risks of Supply Disruption and Supplier Satisfaction(Ph.D.)
5. Ajay Pathak : Basel-II risks model development and implementation issues for a Public Sector Bank of India(Ph.D.)
6. O Bala Krishna : Evaluation and Design of EOT Crane Operators Job: A Macroergonomic Approach(Ph.D.)
7. Balagopal G Menon : Modeling the Effects of Energy Efficiency Improvements in Personal Transport Sector in India(Ph.D.)

Member - Professional Bodies

1. Maiti, Jhareswar, *Regular life member* - Operational Research Society of India
2. Maiti, Jhareswar, *Senior life member* - Indian Society for Technical Education
3. Maiti, Jhareswar, *Senior life member* - Mining, Geological and Metallurgical Institute of India
4. Maiti, Jhareswar, *Senior life member* - Society for Safety and Fire Engineering
5. Sarmah, Sarada Prasad, *Regular* - AIMS International; The Association of Indian Management Scholar, Houston, USA
6. Sarmah, Sarada Prasad, *Life member* - ISTE
7. Jenamani, Mamata, *Member* - Association for information systems research
8. Jenamani, Mamata, *Regular* - IEEE
9. Tiwari, Manoj Kumar, *member* - Member of INFORMS, US
10. Tiwari, Manoj Kumar, *Member* - Institute of Industrial Engineers, USA
11. Tiwari, Manoj Kumar, *Member* - Fellow of National Academy of Engineering, India
12. Tiwari, Manoj Kumar, *Member* - Member of IEEE, US
13. Thakkar, Jitesh J, *Member* - Indian Institute of Industrial Engineering
14. Thakkar, Jitesh J, *Member* - The Institution of Engineers (India)
15. Jha, Jitendra Kumar, *Member (MIIE 9520)* - Indian Institution of Industrial Engineering Navi Mumbai
16. Jha, Jitendra Kumar, *Life Member* - Indian Society for Technical Education

17. Srinivasan, S, - Member of American Financial association
18. Ray, Pradip Kumar, *Fellow* - World Academy of Productivity Sciences(WAPS)
19. Ray, Pradip Kumar, *Member* - Indian Institute of Materials Management (IIMM), Calcutta, India
20. Ray, Pradip Kumar, *Regular* - INFORMS, USA
21. Mahanty, Biswajit, *Life member* - System Dynamics Society of India

Member - Editorial Board

1. Maiti, Jhareswar (0) *Reviewer* - Computer and Industrial Engineering
2. Maiti, Jhareswar (0) *Reviewer* - Journal of Production Research
3. Maiti, Jhareswar (0) *Reviewer* - Accident Analysis and Prevention
4. Maiti, Jhareswar (0) *Reviewer* - Safety Science
5. Ray, Pradip Kumar (2012) *Member* - South Asian Journal of Global Business Research
6. Tiwari, Manoj Kumar (2012) *Associate Editor* - Neurocomputing
7. Tiwari, Manoj Kumar (2008) *Editorial Board Member* - Robotics and Computer Integrated Manufacturing
8. Tiwari, Manoj Kumar (2013) *Associate Editor* - International Journal of Production Research
9. Tiwari, Manoj Kumar (2008) *Associate Editor* - Journal of Decision Support System
10. Tiwari, Manoj Kumar (2012) *Guest Editor* - International Journal of Production Research
11. Tiwari, Manoj Kumar (2011) *Associate Editor* - IEEE Transactions on Systems, Man and Cybernetics: Systems
12. Tiwari, Manoj Kumar (2010) *Editorial Board Member* - European Journal of Operational Research
13. Tiwari, Manoj Kumar (2008) *Editorial Board Member* - Journal of Transportation Security
14. Tiwari, Manoj Kumar (2012) *Guest Editor* - International Journal of Production Economics
15. Tiwari, Manoj Kumar (2011) *Associate Editor* - Journal of Computers and Industrial Engineering
16. Tiwari, Manoj Kumar (2010) *Editorial Board Member* - IEEE Transactions on Systems, Man and Cybernetics: Systems
17. Tiwari, Manoj Kumar (2008) *Editorial Board Member* - International Journal of Advanced Manufacturing Technology
18. Tiwari, Manoj Kumar (2009) *Associate Editor* - International Journal of System Science
19. Tiwari, Manoj Kumar (2007) *Editorial Board Member* - International Journal of Computer Integrated Manufacturing
20. Tiwari, Manoj Kumar (2007) *Associate Editor* - Journal of Intelligent Manufacturing
21. Tiwari, Manoj Kumar (2010) *Editorial Board Member* - International Journal of Production Research

Awards & Honours

1. Jha, Jitendra Kumar (2012) *Best paper award in XVI Annual International Conference of the Society of Operations Management, Delhi, December 21-23*
2. Jha, Jitendra Kumar (2011) *Biography selected and included in Marquis Whos Who in the World (28th Edition) USA*
3. Ray, Pradip Kumar (2013) *Distinguished Scholar 2013 by International Association of Research Scholars (IARS), Australia.*
4. Sarmah, Sarada Prasad (2012) *Doctoral student has won 2012 Emerald/European Foundation Management Development (EFMD) Outstanding Doctoral Research Awards*
5. Tiwari, Manoj Kumar (2013) *Fellow of National Academy of Engineering, India*
6. Kumar, Akhilesh (2010) *Finalist for Best Student Paper Award, INFORMS Annual Conference, Austin, TX*
7. Tiwari, Manoj Kumar (2009) *Listed among top 20 most productive authors in the broad area of Production and Operations Management in the last 50 years (Published in IJPE, 2009)*
8. Kumar, Akhilesh (2011) *Listed in The Marquis WhosWho in America*
9. Tiwari, Manoj Kumar (2012) *Rated 2nd among many researchers working in Logistics and Supply Chain Management in India(Analysis of the logistics Research in India-White paper published in TU Dortmund University, Dortmund Germany*

Fellowships

1. Ray, Pradip Kumar (2012) *Visiting Fellow under DSA-I (2011-16) programme on Environmental Management of University Grants Commission, New Delhi at University of Calcutta.*
2. Ray, Pradip Kumar (2012) *Invited Fellow at the Department of Industrial Management, National Taiwan University of Science and Technology (NTUST), Taipei, Taiwan*

Sponsored Research Projects

1. A Comparative Assessment of Performance of Select Institutes of Higher Education (Indian Council of Social Science Research (ICSSR), Rs.9.00 Lakhs)
2. A Strategic Capacity Management Framework for Remanufacturing in the Indian Automotive Industry (SRIC, IIT KGP, Rs.4.98 Lakhs)
3. Bid Evaluation, Contract Finalization and Overview of Implementation of SAP-IS Utilities (Central Electricity Supply Utility of Orissa, Bhubaneswar, Rs.0.00 Lakhs)
4. Climate Change Issues and Environmental Performance of Small and Medium Sized Enterprises in India and the UK (UKIERI, Rs.35.00 Lakhs)
5. Data driven sustainable and resilient safety management system for Tata Steel Jamshedpur (Tata Steel, Jamshedpur, Rs.25.68 Lakhs)
6. Designing a Responsive and Efficient Supply Chain for Perishable Items (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
7. Developing comprehensive supply chain performance indices and benchmarks for Indian industry (SRIC, IIT Kharagpur, Rs.4.00 Lakhs)
8. ERP System for the Institute (IER) (IIT Kharagpur, Rs.51.00 Lakhs)
9. Organizational Asset Maturity Model (Tata Consultancy Services, Mumbai, Rs.0.00 Lakhs)
10. Strategic Options Study for Rural Roads under R. D. Department (Government of Orissa, Rs.0.00 Lakhs)
11. Technical Audit of Center for Jute Machinery Development (National Jute Board, Kolkata, Rs.0.00 Lakhs)
12. Virtual Lab for Simulation and Gaming (MHRD, Rs.52.00 Lakhs)
13. Vision 2030 of State Pollution control Board, Orissa (State Pollution Control Board, Bhubaneswar, Orissa (2011), Rs.0.00 Lakhs)

Consultancy Projects

1. 8. To Study, design, develop, install, test, commission, implement the Web based Reverse Auction Software in NLC Ltd for Neyveli Lignite Corporation (Neyveli Lignite Corporation Limited, Rs.27.00 Lakhs)
2. Assessment of Future Human Capital Requirements in Agriculture (NAARM, Hyderabad, Rs.3.00 Lakhs)
3. Assessment of residual reliability of armoured fighting vehicles through CBM (AFVC) (Military College of Electronics and Mechanical Engineering Hyderabad, India, Rs.13.50 Lakhs)
4. Computerization of Corporate Contracts Management System for NLC (Neyveli Lignite Corporation, Rs.260.00 Lakhs)
5. Decision Support Model for Optimizing Bulk Material Handling Operations (Dhamra Port Corporation Ltd. Orissa, Rs.11.00 Lakhs)
6. Design and Supervision of Central SLIVER Plant, Chowdar, Orissa (Khadi and Village Industries Commission, Mumbai, Rs.0.00 Lakhs)
7. Hazard Identification and Risk Assessment of Industrial Activities in the Integrated Test Range, Chandipur (DRDO, Rs.9.00 Lakhs)
8. Implementation of Reverse Auction Software in NLC (Neyveli Lignite Corporation Limited, Rs.29.34 Lakhs)
9. Logistics Solver for Route Optimization and Truck Load Capacity Planning for Proctor & Gamble India Limited (Proctor & Gamble India Limited, Rs.3.00 Lakhs)

10. Modification of E-Proc. Software to comply with Interoperability Guidelines for Digital Signature Certificate for Neyveli Lignite Corporation Limited (Neyveli Lignite Corporation Limited, Rs.13.00 Lakhs)
11. Reservoir Characterization using Artificial Intelligent Techniques (Soft Computing) (ONGC, Rs.45.00 Lakhs)
12. Studying and analyzing carbon trading regime for Global Collaborative Supply Chain (ACTR) (The University of Sheffield, UK, Rs.1.18 Lakhs)

Visits Abroad by Faculty Members

1. Ray, Pradip Kumar - Workshop/Interaction Meeting as CI of UKIERI-sponsored Project (Aston Business School, Aston University, Birmingham, UK,) November 5-9, 2012
2. Tiwari, Manoj Kumar - Delivered lecture and research discussion in emerging area (School of Business and Economics, University of Exeter, Exeter, UK,)
3. Tiwari, Manoj Kumar - Attended the conference and collaborative research (Warwick Manufacturing Group, University of Warwick,)
4. Ray, Pradip Kumar - To Teach TQM module for Post-Graduate Studies Programme (PNG UNRE, Rabaul, Papua New Guinea,) June 18-22, 2012
5. Ray, Pradip Kumar - To Teach TQM module for Post-Graduate Studies Programme (PNG UNRE, Rabaul, Papua New Guinea,) March 18-22, 2013
6. Ray, Pradip Kumar - Visiting Fellow at the Department of Industrial Management (National Taiwan University of Science and Technology (NTUST), Taipei, Taiwan,) May 15-18, 2012
7. Mahanty, Biswajit - To present a paper in the International Conference KOMPLASTECH-2013 (Zakopane, Poland,) January 12-17, 2013

Invited Lectures by Faculty Members

1. Delivered a key note to address Self Healing in Supply Chain Management *by* Tiwari, Manoj Kumar (IIT Delhi)
2. Key note speaker in International Conference on Swarm Evolutionary and Memetic Computing Conferen *by* Tiwari, Manoj Kumar (SOA University, Bhubaneswar, Odisha)
3. Key note speaker in International Conference on Best Practices in Supply Chain Management (BPSCM) *by* Tiwari, Manoj Kumar (SOA University, Bhubaneswar, Odisha)
4. Delivered 2 hours talk on Intelligent Automation : Customized Manufacturing Requirements *by* Tiwari, Manoj Kumar (CMIA Business Conference on Industrial Automation, Aurangabad)
5. Project Scheduling *by* Sarmah, Sarada Prasad (Mc Nalley Bharat Ltd. Kolkata)
6. Logistics and Supply Chain Management in Infrastructure Business *by* Thakkar, Jitesh J (Adani Institute of Infrastructure Management, Ahmedabad)
7. Process Safety Management: Where are we and what should we do? *by* Maiti, Jhareswar (Tata steel Jamshedpur)
8. Kaizen in Professional Life *by* Ray, Pradip Kumar (Production Engg Department, Jadavpur University, Calcutta)
9. Design for Safety' and 'Ergonomics *by* Ray, Pradip Kumar (Mechanical Engineering Department, Jadavpur University, Calcutta)
10. Leadership Excellence – Role of Human Asset *by* Ray, Pradip Kumar (Central University of Rajasthan, Bandar Sindri, Rajasthan)
11. Statistics: Concepts and Methods' *by* Ray, Pradip Kumar (Metallurgical and Material Engineering Department, Jadavpur University, Calcutta)
12. DOE: Concepts and Methods *by* Ray, Pradip Kumar (Metallurgical and Material Engineering Department, Jadavpur University, Calcutta)
13. Robust Design and Taguchi Method *by* Ray, Pradip Kumar (Metallurgical and Material Engineering Department, Jadavpur University, Calcutta)
14. Analytics in Manufacturing/Production Systems: Opportunities and Challenges *by* Ray, Pradip Kumar (Production Engineering Department, Jadavppur University, Calcutta)
15. National Safety Day Lecture on 'Safety Culture: Major Issues and Challenges *by* Ray, Pradip Kumar (PXE, DRDO, Chandipur, Balasore, Orissa)
16. Intelligent Manufacturing *by* Mahanty, Biswajit (ITR Chandipur)

Books Published

1. Lyes Benyoucef, Jean-Claude Hennet and Manoj Kumar Tiwari: Multi-criteria and Game theory Application in Manufacturing and Logistics *published by* Springer (2013)
2. M.K. Tiwari B. Mahanty S. P. Sarmah M. Jenamani: Modeling of Responsive Supply Chain *published by* CRC Press (2012)

Short-Term Courses, Training Programmes and Workshops organised

1. A Course on Lean Manufacturing for managers of different companies ()
2. Conducted a Course on PLM/PDM for DRDO Professionals ()
3. Decision modeling in Facility Planning (4-8 July 2011)
4. Facility Layout and Decision Modeling (04.07.2011 to 08.07.2011)
5. Industrial safety engineering (December 22-24, 2012)
6. One-Day Duration Seminar on "SME Performance – Quality and Environmental Sustainability" (September 26, 2012)
7. One-Day Workshop on 'Asset Management for Railway Systems: Opportunities and Challenges' (February 1, 2013)
8. Project Management (24-26 February 2012)
9. Project Management (11-14 May 2013)
10. Reconfigurable Manufacturing System for Faculty members of different Technical Institutes (One week)
11. Short-Term Course on 'Industrial Safety Engineering' for Industry Participants (December 21-23, 2012)
12. Total Quality Management (16-18 September 2011)
13. Workshop on Total Quality Management for Industry Professionals (May 3-4, 2012)

Papers Published in Journals

1. A coordinated two-phase approach for operational decisions with vehicle routing in a single-vendor multi-buyer system *By* Jha, J K and Shanker, K *International Journal of Production Research* 51(5), 1426–1450 (2013)
2. A data clustering for stratified data partitioning in artificial neural network *By* Ajit Sahoo, Ming J Zuo and M. K. Tiwari *Expert System with Application* (2012)
3. A Review on Dimensional Tolerance Synthesis: Paradigm Shift from Product to Process *By* Karmakar, S., and Maiti, J. *Assembly Automation* 32(4), 373-388 (2012)
4. A review on supply chain performance measures and metrics: 2000-2011 *By* Gopal, P.R.C and Thakkar, J. *International Journal of Productivity and Performance Management* 61 (5), 518-547 (2012)
5. Adaptive production control system for a flexible manufacturing cell using support vector machine-based approach, accepted for publication *By* Vijay Kumar, Rohit Ananda, J. J. Thakar, Lyes Benyoucef, Fausto P. Garsia and M. K. Tiwari *International Journal of Advance manufacturing Technology*, (2012)
6. Algorithm Portfolios for Logistics Optimization Considering Stochastic Demands and Mobility allowance *By* N Shukla, A.K choudhary, P. Prakash, K J fernades, M. K Tiwari *IJPE(Special issue)* (2012)
7. An approach to build process-oriented basis for causation based multivariate SPC and process capability analysis *By* Chitta Ranjan, and Maiti, J. *Quality and Reliability Engineering International* AIP (2013)
8. An Incorporated Inventory Transport System with Two Types of Customers for Multiple Perishable Goods *By* Kapil Gumasta, F. T. S Chan and M. K. Tiwari *International Journal of Production Economics* 139(2), 678-686 (2012)
9. An Integrated Revenue Sharing and Quantity Discounts Contract for Coordinating a Supply Chain dealing with Short Life-Cycle Products. *By* Partha Sarathy,G., Sarmah S P, Jenamani, M *Applied Mathematical Modelling* Fothcoming (2013)

10. Constraint based simulated annealing(CBSA) approach to solve disassembly scheduling problem By P. K. S. Prakash, D. Ceglerek and M. K. Tiwari *International Journal of Advance manufacturing Technology*, 60(9-12) 1125-1137 (2012)
11. Designing a multi echelon flexible logistic network using co-evolutionary immune-particle swarm optimization with penetrated hyper mutation(COIPSO-PHM) By N. C. Hiremath, Sadananda Sahu and M. K. Tiwari *Applied Mechanics and Materials* 110-116, 3713-3719 (2012)
12. Development of supplier satisfaction index model By Meena,P.L, Sarmah S P *Industrial Management and Data System* Vol. 112(8), pp.1236 (2012)
13. Do interorganizational relationships and knowledge management practices enhance collaborative commerce adoption? (Knowledge Management and Supporting Tools for Collaborative Networks By Chong, Alain Yee Loong Chan, Felix T S Goh, Mark Tiwari, M K *International Journal of Production Research*. (2012)
14. E-Procurement service provider selection – an analytic network process (ANP) based group decision making approach By Ramkumar, M., and Jenamani, M. *Service Science* 4(3), 269-294 (2012)
15. Effects of Fuel Efficiency Improvements in Personal Transportation: Case of Four-Wheelers in India By Menon B.G. and B. Mahanty *International Journal of Energy Sector Management* 6(3), pp 397-416 (2012)
16. Key Characteristics-based sensor distribution in multi-station assembly process By Nagesh Shukla, Dariusz Ceglerek and M. K. Tiwari *Journal of Intelligent Manufacturing* (2013)
17. Knowledge management and supporting tools for collaborative networks By Alok, K, Jenny Harding, Luis, M., Lenny, S. C. And M. K. Tiwari *International Journal of Production Research(Special Issue)* (2013)
18. Logistic planning and inventory optimization using swarm intelligence: A third prospective By S. K. Kumar, R. R. M. Roy Muddada , M. K. Pandey, B. Mahanty and M. K. Tiwari *International Journal of Advance Manufacturing Technology* 65(9-12), 1535-1551 (2012)
19. Logistics Planning and Inventory Optimization using Swarm Intelligence: A Third Party Perspective By Kumar S.K., RRM Roy Muddada, M.K. Pandey, B. Mahanty, and M.K. Tiwari *International Journal of Advanced Manufacturing Technology* 65, pp. 1535–1551 (2013)
20. Meta-heuristics for manufacturing scheduling and logistics problems, By Ching-Jong, Mitsuo Gen, Manoj Kumar Tiwari, Pei-Chann Chang *IJPE(Special issue)* (2012)
21. Modeling Uncertainty in Risk Assessment: An Integrated Approach with Fuzzy Set Theory and Monte Carlo Simulation By Arunraj N S, Saptarshi Mandal and J Maiti. *Accident Analysis and Prevention* 55, 242-255 (2013)
22. Modelling Robustness in Serial Multistage Manufacturing Processes By Subhas Chandra Mondal, J Maiti and P K Ray *International Journal of Production Research* (Accepted) (2013)
23. Multiple sourcing under supplier failure risk and quantity discount: A genetic algorithm approach By Meena P.L, Sarmah, S.P *Transportation Research Part E* Vol.50, pp.84-97 (2012)
24. Optimal process plan selection in networked based manufacturing using game-theoretic approach By M. Vijay, Sujay Deo, N. Cheikhrouhou, and M. K. Tiwari *International Journal of Production Research(IJPR)* 50(8), 5239-5258 (2012)
25. Process Plan and Scheduling Integration for Near Optimal Process Plans in Networked Based Manufacturing Using Controlled Elitist NSGA-II and Territory Defining Algorithms By Manupati, V.K., Thakkar, J.J., Mohapatra, Priyabrata , Kumar, Ajay, and Tiwari, M.K. *SEMCCO 2012 LNCS 7677*, 754-760 (2012)
26. Realizing Process planning and scheduling Integration through adaptive setup planning By P. Mohapatra, Lyes Benyoucef and M.K. Tiwari *International Journal of Production Research* 51(8), 2301–2323 (2013)
27. Relationships of Demographic Factors, Job Risk Perception and Work Injury in a Steel Plant in India By S A Basha and J Maiti *Safety Science* 51, 374-381 (2013)
28. SCM based performance measurement system: A preliminary conceptualization By Thakkar, J. *Decision* 39 (3), 5-43 (2012)
29. Selective maintenance for binary systems under imperfect repair By Mayank Pandey, Ming J Zuo, Ramin Moghaddas and M. K. Tiwari *Reliability Engineering and System Safety* 113, 42-51 (2012)

30. Single-vendor multi-buyer integrated production-inventory model with controllable lead time and service level constraints By Jha, J K and Shanker, K *Applied Mathematical Modelling* 37(4), 1753-1767 (2013)
31. Supply Chain Coordination in an RFID Enabled Supply Chain By Partha Sarathy,G., Sarmah S P, Jenamani, M *Int. Journal of Supply operations Management* Vol. 15(1),95-122 (2013)
32. Supply Chain Design Integrated with Risk Pooling, accepted for publication By S. K. Kumar and M. K. Tiwari *Computer and Industrial Engineering* 64(2), 580-588 (2013)
33. Supply chain issues in SMEs: select insights from cases of Indian origin By Thakkar, J., Kanda, A. and Deshmukh, S.G. *Production Planning & Control: The Management of Operations* 24 (1), 47-71 (2013)
34. Supply chain performance measurement for third party logistics By Dhanya, J. Sarmah S P *Bench marking: An international Journal* Accepted (2013)
35. System Dynamics Approach for Modeling Cost of Quality By Mahanty B., V.N.A. Naikan, and T. Nath *International Journal of Performability Engineering* 8(6), pp. 625-634 (2012)

Papers Presented in Conferences

1. A decision support system to combat underground mine fire using Bayesian networks, By Vishal Kumar, S Gupta and J Maiti, *National Symposium on Present Technology and Safety Scenario in Mining & Allied Industries.*, IIT, BHU, (2013)
2. A Genetic Algorithm for Optimizing Production in a Cold Rolled Steel Slitting Line, By Mahanty B. and P. Rakshit, *KOMPLASTECH 2013*, Zakopane, Poland, (2013)
3. A Quadratic Programming Problem for a Dual Market Facility Network Design, By Geet Lahoti, P. Mohapatra, R. P. Mohanty and M. K. Tiwari, *BPSCM-2012*, SOA University, Bhubaneswar, Odhisa, (2012)
4. Process plan and scheduling integration for near optimal process plans in networked based manufacturing using controlled elitist NSGA-II and territory defining algorithms, By V K Manupati, J J Thakkar, Priyabrata Mohapatra, Akhilesh Kumar and M K Tiwari, *SEMCCO*, SOA University, Bhubaneswar, Odhisa, (2012)
5. Risk assessment of e-procurement systems adoption - a fuzzy based approach, By Ramkumar, M., and Jenamani, M., *proceedings in IIE Asian conference*, Singapore, (2012)
6. Sourcing decision under supply disruption and capacity constrained suppliers: a newsvendor approach, By Ray, P. & Jenamani, M., *International conference of Society of Operations Management*, IIT Delhi, (2012)
7. Sustainable supplier selection through e-procurement - A hybrid MCDM model based on DANP, By Ramkumar, M., and Jenamani, M., *Twenty second Annual IPSERA Conference*, Nantes, France., (2013)
8. Vendor-buyer model for distribution free demand under imperfect production process and service level constraint, By Gutgutia A and Jha J K, *XVI Annual International Conference of the Society of Operations Management*, IIT Delhi, Delhi, (2012)

Department of Mathematics

Head

Prof. Parmeshwary Dayal Srivastava

Professors

Bhattacharyya, Somnath	<i>Ph.D.(IISc Bangalore)</i> , Computational Fluid Dynamics, Micro-/nanofluidics Modeling
Biswal, Mahendra Prasad	<i>Ph.D.(IIT Kharagpur)</i> , 1. Multi Choice Programming, 2. Stochastic Programming, 3. Fuzzy Programming, 4. Game Theory and applications, 5. Uncertain Programming
Goswami, Adrijit	<i>Ph.D.(Jadavpur Univ)</i> , Operations Research and Theoretical Computer Science
Gupta, Dharmendra Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Numerical Analysis and Computer Science, Constraint Satisfaction Problems
Gupta, Umesh Chandra	<i>Ph.D.(IIT Delhi)</i> , Statistics, Stochastic Modelling, Queueing Theory
Jain, Vinay Kumar	<i>Ph.D.(IIT Delhi)</i> , Zeros of polynomials and analytic functions & Extremal problems of polynomials
Kumar, Somesh	<i>Ph.D.(IIT Kanpur)</i> , Reliability Estimation, Statistical Decision Theory, Entropy Estimation, Estimation Theory, Quantum Information and Computation, Statistical Data Analysis, Experimental Designs, Estimation under Constraints
Pandey, Rajnikant	<i>Ph.D.</i> , Differential Equations (Ordinary), Theoretical Numerical Analysis, Singular Boundary Value Problems
Raja Sekhar, G P	<i>Ph.D.(Hyderabad Univ)</i> , Boundary integral methods for viscous flows, Mass transfer in porous biological pellets
Roy, Akhil Ranjan	<i>Ph.D.(IIT Kharagpur)</i> , General Th.of Reativity, Theoretical Cosmology, Algebra and Application of Soft Set theory, Dynamics of Nonlinear Systems
Sarkar, Anjan	<i>Ph.D.(IIT Kharagpur)</i> , Probabilistic Robotics, Remote Sensing Image Analysis, Statistics
Srivastava, Parmeshwary Dayal	<i>Ph.D.(IIT Kanpur)</i> , Functional Analysis & Cryptography

Associate Professors

Kumar, Pawan	<i>Ph.D.(IIT Kanpur)</i> , Graph Theory
Murthy, P V S N	<i>Ph.D.</i> , Bio-fluid Mechanics, Convective Heat and Mass Transfer in nano fluid
Panda, Geetanjali	<i>Ph.D.</i> , Optimization with uncertainty, Convex Optimization, Numerical Optimization

Assistant Professors

Allu, Vasudeva Rao	<i>Ph.D.(IIT Madras)</i> , Univalent Function Theory, Harmonic Mappings (in the Plane), Complex Analysis
Biswas, Debapriya	<i>Ph.D.(Leeds Univ)</i> , Functional Analysis, Lie Groups Lie Algebras and their Representation theory, Complex Analysis, Harmonic Analysis
Dutta, Ratna	<i>Ph.D.(ISI, Kolkata)</i> , Disruption Tolerant Networks (DTNs), Key Pre-Distribution in WSN, Oblivious Transfer & Private Information Retrieval, Elliptic Curves and Pairing based Cryptography, Private Set Intersection Protocols, Vehicular Ad Hoc Network, Lattice-Based Cryptography
Ganguly, Asish	<i>Ph.D.(Calcutta Univ.)</i> , Mathematical & Theoretical Physics, Quantum

	Mechanics, Dynamical System, Fluid, Non-linear Evolution Equation in Real & Complex Domain
Gayen, Rupanwita	<i>Ph.D.(Univ of Calcutta)</i> , Linear water waves, Integral equations
Ghoshal, Koeli	<i>Ph.D.(Jadavpur Univ.)</i> , Mathematical Modelling of velocity and concentration in an open channel turbulent flow, Grain-size distribution in suspension over erodible sediment bed, Effect of secondary current on velocity and concentration, Application of Beta Gamma and Psi function in sediment transport problem, Verification of the developed models by existing experimental data
Kumar, Jitendra	<i>Ph.D.(Univ. of Magdeburg, Germany)</i> , Numerical mathematics, Numerical solutions of integro-partial differential equations
Mukhopadhyay, Sourav	<i>Ph.D.(ISI, Kolkata)</i> , Digital rights management, Cryptanalysis on symmetric cipher, Key management in wireless adhoc network, Traitor-Tracing in broadcast encryption, Key Pre-Distribution (KPS) in sensor network
Nelakanti, Gnaneshwar	<i>Ph.D.(IIT Bombay)</i> , Inverse and ill-posed problems, Spectral approximation of integral operators, Approximate solutions of operator equations

Faculty Appointments

Prof. B. Bhowmik	Assistant Professor
Prof. Nitin Gupta	Assistant Professor
Prof. T. Raja Sekhar	Assistant Professor

Faculty Retirement

Prof. Anjan Sarkar	Professor
Prof. A.R. Roy	Professor

Faculty Re-employment

Prof. A.R. Roy	Professor
Prof. Anjan Sarkar	Professor

New Academic Programmes

The Department has not introduced any new program. However, the Department is in the process of reviewing its already existing programs though a change of course content of different topics as per the present day requirements

Brief Description of on-going activities

Besides extensive research in the thrust areas viz. Functional Analysis and Fluid Mechanics, significant contribution has also been made by the members of the faculty in the area of Clifford Analysis, Fuzzy Mathematics, Soft Algebra, Bio-Mechanics, Dynamics of Nonlinear systems, Inventory Management, Graph Theory, Integral Equations, Cryptography, Queueing Theory, Statistical Decision Theory, Statistical Data Analysis, Compiler Design, Combinatorics, Fractional Calculus, Optimization Theoretical Computer Science; Information and coding Theory and Cryptology. Faculty members of this department have published number of research papers in reputed international journals on those topics. Number of sponsored research projects are under taken by the faculty members.

Thrust Areas

1. Fluid Mechanics and Functional Analysis

New Acquisitions

1. Dell Blade Servers - 2 Units
2. Lenovo Desktop computers - 10 Units
3. Dell Desktop computers - 50 units
4. Online UPS 10 KVA - 2 Units
5. Online UPS 20 KVA - 1 Unit

Lectures by Visiting Experts

1. Quasi Conformal mapping and Variational Formulas in Function Theory *by* Prof. Hiroshi Yanagihara (Professor of Mathematics, Department of Applied Sciences, Yamaguchi University, Japan)
2. (a) On homogenization, diffusion and reaction in porous media. (b) On Modelling of Material Behaviour of Steel under Cooling *by* Prof. Michael Böhm (Department of Mathematics and Computer Sciences at the University of Bremen, Germany)
3. Numerical Evaluation of Singular Integrals using Daubechies Wavelets *by* Prof. B. N. Mandal (NASI Senior Scientist Physics & Applied Mathematics Unit, Indian Statistical Institute Kolkata)
4. An unbiased approach to linear regression analysis *by* Prof. P. Vellaisamy (Department of Mathematics, IIT Bombay)
5. Selecting the better of two gamma populations having unequal shape parameters *by* Prof. Neeraj Misra (Department of Mathematics and Statistics, IIT Kanpur)
6. A Trip through Fluidic Interfaces in Compressible Fluid Flow: Shock Waves, Contact Waves and Phase Transitions *by* Prof. Christian Rohde (Professor & Chair, Department of Mathematics, Institute for Applied Analysis and Numerical Simulation, University of Stuttgart, Germany)
7. (a) An Introduction of Functional Analysis -II-III. (b) A new sequence space $\Lambda_{p(f)}$ Derived from an L_p function. *by* Prof. Hiroshi Sato (Emeritus Professor of Mathematics, Kyushu University, Japan)
8. Linearity of the sequence space $\Lambda_{p(f)}$ *by* Prof. Honda Aoi (Professor of Mathematics, Department of System Design & Informatics, Kyushu Institute of Technology, Japan)
9. Stochastic Models and Matrix-analytic methods *by* Prof. Srinivas R. Chakravarthy (Professor, Department of Industrial and Manufacturing Engineering, Kettering University, USA)

Doctoral and MS Degrees Awarded

1. Om Prakash : Some Deterministic and Probabilistic Models in Production Planning and Inventory Control(Ph.D.)
2. Sushomita Mohanta : Some Aspects of Scalar & Vector Valued Sequence Spaces of Fuzzy Numbers using Modulus Function(Ph.D.)
3. Ravi Shankar Kumar : Mathematical Modelling of Inventory Control Problems in Fuzzy Random Environment(Ph.D.)
4. Partha Pratim Gopmandal : Numerical Study on Electrophoresis of Rigid/Porous Micro-particles and Isotachophoretic Separation of Analytes(Ph.D.)
5. Laxman Saha : Theoretic and Algorithmic Results on Radio k-Coloring of Graphs(Ph.D.)

Member - Professional Bodies

1. Murthy, P V S N, *Member* - American Nano Society
2. Ganguly, Asish, *Category S Member* - American Mathematical Society USA
3. Srivastava, Parmeshwary Dayal, *Member* - National Academy of Science ,India

4. Gupta, Dharmendra Kumar, *Member* - National Academy of Sciences
5. Kumar, Somesh, *Elected Life Member* - National Academy of Sciences
6. Chakraborty, Debjani, *Member* - Indian National Academy of Science, Allahabad
7. Allu, Vasudeva Rao, - *Member* of American Mathematical Society (Since January 2011)

Member - Editorial Board

1. Biswal, Mahendra Prasad (2008) *Member of Editorial Board* - Mathematical Reviews
2. Goswami, Adrijit (2010) *Member, Editorial Board* - International Journal of Fuzzy Systems and Rough Systems
3. Goswami, Adrijit (2010) *Member, Editorial Board* - International Journal of Mathematics in Operational Research (IJMOR)
4. Kumar, Somesh (2011) *Editor* - International Journal of Mathematics and Computation
5. Kumar, Somesh (2005) *Editor* - International Journal of Applied Mathematics and Statistics
6. Murthy, P V S N (0) *Member, Editorial Board* - "The Scientific World Journal ♦♦?", <http://www.tswj.com/26827478/>
7. Murthy, P V S N (2009) *Member, Editorial Advisory Board*, - The Open Transport Phenomena Journal, <http://www.bentham.org/open/totpj/>
8. Panigrahi, Pratima (2005) *A member of the Editorial Board* - The Aligarh Bulletin of Mathematics

Awards & Honours

1. Raja Sekhar, G P (2009) *Alexander von Humboldt Fellowship for Experienced Researchers*
2. Bhattacharyya, Somnath (1997) *BOYSCAST Fellowship, DST*
3. Biswas, Debapriya (2002) *Clarendon Fund Bursary Award, University of Oxford, UK*
4. Bhattacharyya, Somnath (2010) *DFG, Germany Fellowship*
5. Allu, Vasudeva Rao (2007) *Distinguished CIMO (Center of International Mobility) Fellowship from Ministry of Education, Finland*
6. Bhattacharyya, Somnath (2000) *EPSRC, UK Fellowship*
7. Bhattacharyya, Somnath (2006) *HWK, Germany Fellowship*
8. Raja Sekhar, G P (2002) *INSA (Indian National Science Academy) Young Scientist Award*
9. Chakraborty, Debjani (1997) *ISCA Young Scientist Award in Mathematics*
10. Raja Sekhar, G P (1998) *Japan Society for the Promotion of Science (JSPS) Fellowship*
11. Bhattacharyya, Somnath (2004) *Max Planck Fellowship*
12. Bhattacharyya, Somnath (2007) *Max Planck Institute Fellowship*
13. Ganguly, Asish (1993) *National Scholar (BSc)*
14. Allu, Vasudeva Rao (2010) *NBHM Post-Doctoral Fellowship*
15. Allu, Vasudeva Rao (2007) *Received Best Paper Award at 22nd Annual conference of Ramanujan Mathematical Society*
16. Raja Sekhar, G P (2004) *Royal Society-INSA Visiting Scientist*
17. Ganguly, Asish (2004) *Visiting Fellow CINVESTAV Mexico*
18. Biswas, Debapriya (2011) *Visiting Research Fellow, University of Leeds, UK*

Fellowships

1. Ghoshal, Koeli (2000) *DST*
2. Kumar, Jitendra (2012) *Alexander von Humboldt Fellowship*

Sponsored Research Projects

1. A Study on Quantum System with Position-dependent mass in the context of Hermitian/Non-Hermitian Interaction (ISIRD, SRIC, IIT KGP, Rs.3.10 Lakhs)
2. Classification of the actions of semi-simple Lie groups on homogeneous spaces. (SRIC, IIT Kharagur (ISIRD) (duration 3 years), Rs.1.65 Lakhs)
3. Coefficient bounds, distortion condition for subclasses of univalent functions and Nitsche type conjectures for harmonic univalent functions (ISIRD, SRIC, IIT Kharagpur, Rs.3.70 Lakhs)

4. Construction of Boolean Functions to Design Cryptographically Secure Stream Cipher (ISIRD, SRIC, IIT-KGP, Rs.5.00 Lakhs)
5. Continuous and periodic review inventory model in Fuzzy and/or Stochastic Environment (Department of Science & Technology, Rs.13.00 Lakhs)
6. Designing ABE Schemes for Fine-Grained Access Control in DTNs (ISIRD, SRIC, IIT-KGP, Rs.5.00 Lakhs)
7. Electro-osmotic Flow and Mixing in a charged Micro and Nano-Channels: A Computational and Analytical Study (DST, Rs.0.00 Lakhs)
8. Elliptic curves and pairing based cryptography for wireless communication. (Department of Science & Technology(DST), Government of India., Rs.10.92 Lakhs)
9. FIST (DST, Rs.2000000.00 Lakhs)
10. Localization and Navigation Using Semantics(thematic), Second year (European Aeronautics Defence Space Company, Rs.46.82 Lakhs)
11. Modeling Electrokinetic Flows in Microfluidics (CSIR, Rs.0.00 Lakhs)
12. MODELLING OF AGGREGATION KERNELS OF POPULATION BALANCE EQUATION FOR FLUIDIZED BED GRANULATION ON THE BASIS OF MONTE CARLO SIMULATIONS (ISIRD, SRIC, IIT KHARAGPUR, Rs.4.40 Lakhs)
13. On a class of doubly singular boundary value problems arising in Physiology (DST, New Delhi, Rs.8.24 Lakhs)
14. WAVE INTERACTION WITH BARRIERS AND FLOATING ELASTIC PLATES (DST, Rs.11.00 Lakhs)

Visits Abroad by Faculty Members

1. Sarkar, Anjan - Project work (EADS), Delivering lectures (Munich Germany,) 26-30 June 2013
2. Murthy, P V S N - Research Collaboration (Department of Mathematics, Statistics and Computer Science, University of KwaZulu-Natal, Pietermaritzburg, South Africa,) 15th May – 14th June, 2012. (1 Month)
3. Panda, Geetanjali - Paper presentation (Imperial college London,) July 2012
4. Murthy, P V S N - Continued Research Collaboration (Department of Mathematics, Statistics and Computer Science, University of KwaZulu-Natal, Pietermaritzburg, South Africa,) 12th December – 17th December 2012. (1 week)
5. Panigrahi, Pratima - To present a paper in an international conference. (London, UK,) 2-7 July 2012
6. Ghoshal, Koeli - To present seminar in International conference on Fluids Engineering(ICFE-2012) (Paris, France,) 7 days

Invited Lectures by Faculty Members

1. Existence of Solution of Nonlinear Interval Optimization problem *by* Panda, Geetanjali (Bhubaneswar)
2. Interval Newton method *by* Panda, Geetanjali (Berhampur University)
3. Zabreikos result and its applications fo functional analysis *by* Nahak, Chandal (OMS, Sambalpur University)
4. Algorithms on Radio coloring of Graphs *by* Panigrahi, Pratima (Raja N. L. Khan Womens College, Midnapore)
5. On unit distance strongly regular graphs *by* Panigrahi, Pratima (V V V College, Virudhunagar, near Madurai, TN.)
6. Introduction to Operations Research *by* Biswal, Mahendra Prasad (KIIT Bhubaneswar)
7. A third order itertaion for A+ *by* Gupta, Dharmendra Kumar (ISM Dhanbad)
8. Magnetic drug targeting in a micro vessel *by* Murthy, P V S N (Christ University, Bangalore)
9. Estimating parameters under restrictions *by* Kumar, Somesh (Indian Statistical Institute, Chennai)
10. Fascinating world of numbers *by* Kumar, Somesh (NIT Durgapur)
11. Rigorous estimates for Oseen-Brinkman transmission problem *by* Raja Sekhar, G P (University of Hyderabad, India.)
12. Towards Boundary elemet methods for porous media flows *by* Raja Sekhar, G P (IIT Hyderabad, India)

Papers Published in Journals

1. A derivative free multidimensional optimal search method using Lucas number By G.Panda, S.Ghosh *Applied Mathematics and Computation* Volume 219, Issue 12 (2013)
2. A graph edge coloring approach for school timetabling problems By Rakesh P. Badoni and D.K.Gupta *International journal of Mathematics in Operational Reserach* (2012)
3. A graph k-coloring algorithm By Laxman Saha and Pratima Panigrahi *Lecture Notes in Computer Science* Vol 7643, 125-129. (2012)
4. A Group-Based Deterministic Key Predistribution Scheme for Wireless Sensor Network By Sarbari Mitra, Sourav Mukhopadhyay and Ratna Dutta *International Journal of Wireless and Mobile Computing (IJWMC)* (to appear) (2012)
5. A method to obtain fuzzy Pareto set of fuzzy multi-criteria quadratic programming problems By Debdas Ghosh and Debjan Chakraborty *Annals of Fuzzy Mathematics and Informatics* (2013)
6. A new method to obtain fuzzy Pareto set of fuzzy multi-criteria optimization problems By Debdas Ghosh and Debjan Chakraborty *International Journal of Intelligent and Fuzzy Systems* (2013)
7. A new similarity measure of intuitionistic fuzzy sets and its application to estimate the priority weights from intuitionistic preference relations By Debashree Guha and Debjani Chakraborty *Notes on Intuitionistic Fuzzy Sets* Vol. 18, No. 1 (2012)
8. A Simple and Complete Computational Analysis of MAP/R/1 Queue Using Roots By M. L. Chaudhry, Gagandeep Singh, U. C. Gupta *Methodology and Computing in Applied Probability* 1-20 (2012)
9. A two-warehouse inventory model with increasing demand and time varying deterioration By B. Kumar Sett, Biswajit Sarkar, A. Goswami *Scientia Iranica* 19 (6), 1969-1977 (2012)
10. An Alternative Method to Study Wave Scattering by Semi-infinite Inertial Surfaces By R. Gayen and Ranita Roy *Journal of Marine Science and Applications* 12, 31-37 (2013)
11. An analytical model for velocity distribution and dip-phenomenon in uniform open channel flows By Snehasis Kundu and Koeli Ghoshal *International Journal of Fluid Mechanics Research* 39(5), 381-395 (2012)
12. An effective and Secure Key- Management scheme for hierarchial access in E-Medicine system By Vanga Odelu, Ashok Kumar Das, Adrijit Goswami *Journal of Medical Systems* 37 (2), 1 - 18 (2013)
13. An EOQ model for imperfect items with shortages under declining demand and deterioration By Arindum Mukhopadhyay, A. Goswami *Bull. of Calcutta Mathematical Society* 20, (1), 11-28 (2012)
14. Analysis of finite-buffer bulk-arrival bulk-service queue with variable service capacity and batch-size-dependent service: $M(X)/Gr(Y)/1/N$ By A. Banerjee, U.C. Gupta and K. Sikdar *Int. J. Mathematics in Operational Research* 5 (3), 358-386 (2013)
15. Anti-Collusive Self-Healing Key Distributions for Wireless Networks By Ratna Dutta *International Journal of Wireless and Mobile Computing (IJWMC)* (to appear) (2012)
16. Application of Beta, Gamma and Psi Functions in Sediment Transport By Snehasis Kundu and Koeli Ghoshal *Mathematical Sciences International Research Journal* 1(1), pp.152-168 (2012)
17. Approximation Solvability of a Class of A-monotone Variational Inclusion Problems in Semi-inner Product Spaces By N. K. Sahu, C. Nahak, R. N. Mohapatra and S. Nanda *Dynamics of Continuous, Discrete and Impulsive Systems* to appear (2013)
18. Computational analysis of bulk service queue with Markovian arrival Process: MAP/R(a,b)/1 queue By Gagandeep Singh, U. C. Gupta and M. L. Chaudhry *OPSEARCH* 1-22 (2013)
19. Computationally Efficient Secure Access Control for Vehicular Ad Hoc Networks By Y.Sreenivasa Rao and Ratna Dutta *ICISS 2012, LNCS* 496-501 (2012)
20. Computing waiting-time distribution of M/D_N/1 queue - An alternative approach By Gagandeep Singh, U. C. Gupta and M. L. Chaudhry *Journal of Probability and Statistical Science* 10 (1), 93-102 (2012)
21. Construction of ternary orthogonal arrays from sum-invariant balanced arrays By K. Sinha, Somesh Kumar & A. Ghosh *International Journal of Mathematics and Computation* V. 19, No. 2, pp. 27 (2013)
22. Convergence of a continuation method under Lipsctiz continuous derivative in Banach spaces By M. Prashant and D.K.Gupta *J. Appl Math Comput* Vol-39, pp. 253-270 (2012)

23. Convergence of a continuation method under the holder condition of the first derivative By M. Prashant and D.K.Gupta *Journal of Applied Mathematics and Computing* (2012)
24. Double layer polarization and non-linear electroosmosis in and around a charged permeable aggregate By P. P. Gopmandal and S. Bhattacharyya *World Academy of Science, Engineering & Technology* 69, 1088-1094 (2012)
25. Dynamic permeability of an assemblage of soft spherical particles By Jai Prakash, Raja Sekhar, G. P. *Mathematical Methods in the Applied Sciences* In Press. (0)
26. Effects of electroosmosis and counterion penetration on electrophoresis of a positively charged spherical permeable particle. By S. Bhattacharyya and P. P. Gopmandal *Soft Matter* 9, 1871-1884 (2013)
27. Efficient Attribute Based Access Control Mechanism for Vehicular Ad Hoc Network By Y.Sreenivasa Rao and Ratna Dutta *NSS 2013, LNCS* (to appear) (2013)
28. Efficient solution of interval optimization problem By A.Bhurjee, G.Panda *Mathematical Methods of Operations research* vol- 76 pp :273–28 (2012)
29. Estimating common mean of a bivariate normal population with order restricted variances By M. R. Tripathy and Somesh Kumar *Calcutta Statistical Association Bulletin* V. 63, No. 249-252, (2011)
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31. Estimation of the dynamic permeability of an assembly of permeable spherical porous particles using the cell model By Jai Prakash, Raja Sekhar, G. P. *Journal of Engineering Mathematics* DOI 10.1007/s10665-0 (0)
32. Estimation of the Shannons Entropy of Several Shifted Exponential Populations By S. Kayal and Somesh Kumar *Statistics and Probability Letters* V. 83, pp.1127-1135 (2013)
33. Flexible Deterministic Approach to Key Pre-Distribution in Grid Based WSN By Sarbari Mitra, Sourav Mukhopadhyay and Ratna Dutta *ADHOCNETS 2012, LNICST* (to appear) (2012)
34. Fuzzy EOQ models with ramp type demand rate, partial backlogging and time dependent deterioration rate By Ravi Shankar Kumar, S.K.De, A. Goswami *International Journal of Mathematics in Operational Research* 4 (5), 473-502 (2012)
35. Fuzzy inventory models for items with imperfect quality and shortage backordering under crisp and fuzzy decision variables By Gour Chandra Mahata, Adrijit Goswami *Computers & Industrial Engineering* 64, 190 - 199 (2013)
36. Fuzzy probabilistic linear programming problems involving log-normal random variables By S. Acharya, M.P. Biswal and S.Nanda *The Journal of Fuzzy Mathematics* Accepted (2013)
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38. Generalized Differentiable E invex functions and Their Applications in Optimization By S Jaiswal, G.Panda *Advances in Operations Research* Volume 2012 (2012), (2012)
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40. Generalized Symmetric Formulation of Tangential Stiffness for Nonassociative Plasticity By Debasis Deb, Kamal C. Das and G. P. Raja Sekhar *ASCE Transactions-Journal of Engineering Mechanics* 139, 105-113 (2013)
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45. Hydromagnetic nanofluid flow due to a stretching sheet with viscous dissipation and chemical reaction effects By P. K. Kameswarana, M. Narayanaa, P. Sibandaa, P.VSN Murthy , *International Journal of Heat and Mass Transfer*, Vol.55, 7587-7595, (2012)

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47. Investigations on unit distance property of Clebsch graph and its complement By Pratima Panigrahi and Uma kant Sahoo *Proceedings of the world congress on engineering 2012* 41-43 (2012)
48. Iterated fast multiscale Galerkin methods for Fredholm integral equations of second kind with weakly singular kernels By Long, Guangqing Nelakanti, Gnaneshwar *Applied Numerical Mathematics* 62, pp: 201–211 (2012)
49. Magnetic drug targeting in permeable micro vessel By Sachin Shaw, P V S N Murthy, P Sibanda *Microvascular research* V. 85, 77-85, (2013)
50. Minimizing a Function using Posynomial Approximation By G.Panda *J. Math. Comput. Sci.* 2 (2012), No. 4, 107 (2012)
51. Mixed Equilibrium Problems with Relaxed α -Monotone Mapping in Banach Spaces By N. K. Mahato and C. Nahak *Rend. Circ. Mat. Palermo* DOI 10.1007/s12215-0 (2013)
52. Multi-choice stochastic transportation problems involving extreme value distribution By D.R. Mohapatra, S.K. Roy and M.P. Biswal *Applied Mathematical Modelling* Vol-37, pp.2230-2240 (2013)
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55. Nonlinear electroosmosis-pressure driven flow in a wide microchannel with patchwise surface heterogeneity By S. Bhattacharyya & S. Bera *Trans ASME Journal of Fluids Engineering* (in press) (2013)
56. Numerical Range of Two Operators in Semi-Inner Product Spaces By N. K. Sahu, C. Nahak and S. Nanda *Abstr. Appl. Anal.* Article ID 648070 (2012)
57. Numerical study on separation of analytes through isotachophoresis By S. Bhattacharyya and P. P. Gopmandal: *Communications in Computer and Information Science* 305, 282-292. (2012)
58. On mixed electroosmotic-pressure driven flow and mass transport in microchannels By S. Bera & S. Bhattacharyya: *International Journal of Engineering Science* 62, 165-176 (2013)
59. On the radio number of toroidal grids, Australian Journal of Combinatorics By Laxman Saha and Pratima Panigrahi *Australian Journal of Combinatorics* Vol.55 , 273-28 (2013)
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61. Richardson extrapolation of iterated discrete Galerkin method for eigenvalue problem of a two dimensional compact integral operator By Panigrahi, Bijaya Laxmi Nelakanti, Gnaneshwar *Journal of Scientific Computing* 51, pp: 421–448 (2012)
62. Sample dispersion in isotachophoresis with Poiseuille counter flow. By S. Bhattacharyya, P. P. Gopmandal, T. Baier and S. Hardt: *Physics of Fluids* 25, 022001 (2013)
63. Semilocal convergence of a continuation method with Holder continuous second derivative in Banach spaces By D.K.Gupta and M. Prashant *Journal of Computational and Applied Mathematics* Vol-236, pp. 3174-31 (2012)
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65. Some Duality Results for Fuzzy Nonlinear Programming Problem By G.Panda,S.Jaiswal *Journal of Fuzzy Set Valued Analysis* Volume 2012, (2012)
66. Some remarks on Matrix exponential and Matrix logarithm (communicated). By Debapriya Biswas (0)
67. Soret effect on free convection from a melting vertical surface in a non-Darcy porous medium By R R Kairi and P V S N Murthy *Journal of Porous Media*, V.16 (2), (2013)
68. Soret effect on the natural convection from a vertical plate in a thermally stratified porous medium saturated with non-Newtonian liquid By M. Narayana, A. A. Khidir, P. Sibanda and P. V. S. N. Murthy *Journal of Heat Transfer* Vol. 135-03251-1 (2013)
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70. Thermocapillary drift on a spherical drop in a viscous fluid By Choudhuri, D., Raja Sekhar, G. P *Physics of Fluids* In Press. (0)
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73. Velocity distribution in open channels: Combination of log-law and parabolic law By Snehasis Kundu and Koeli Ghoshal *World Academy of Science, Engineering and Technology* 68, pp 1735-1742 (2012)

Papers Presented in Conferences

1. A backtrack free algorithm for course timetabling problems, By Rakesh Prasad Badoni and D.K.Gupta, *AIRES*, Andhra University, Viasakapatnam, (2012)
2. A mathematical model for predicting magnetic drug targeting in a permeable microvessel, By Sachin Shaw*, P. Sibanda and P.V.S.N Murthy, *South African Mathematical Society annual conference 2012*, Stellenbosch, (2012)
3. A novel key management mechanism for dynamic hierarchical access control based on linear polynomials, By Vanga Odelu, Ashok Kumar Das, Adrijit Goswami, *International conference on Security in Computer Networks and Distributed Systems (SNDS 2012)*, Trivandrum, India, (2012)
4. Classification into two normal populations with a common mean and unequal variances, By N. Jana and Somesh Kumar, *International Conference on Optimization Modeling and Applications*, University of Delhi, Delhi, (2012)
5. Estimating quantiles of normal populations under order restrictions, By M.R. Tripathy and Somesh Kumar, *International Conference on Frontiers of Statistics and its Applications*, Pondicherry University, Puducherry, (2012)
6. Improved estimators for parameters of a Pareto distribution with a restricted scale, By Y. M. Tripathi, Somesh Kumar and C. Petropoulos, *Statistics, Science, and Society: New Challenges and Opportunities: 2013 IISA Conference*, Chennai, (2013)
7. Investigations on unit distance property of Clebsch graph and its complement, By Pratima Panigrahi and Uma kant Sahoo, *International conference of Applied and Engineering Mathematics*, London, UK, (2012)
8. LHSC : An effective dynamic key management scheme for linear hierarchical access control, By Vanga Odelu, Ashok Kumar Das, Adrijit Goswami, *IEEE international conference on Communication Systems and Networks (COMSNETS 2013)*, Bangalore, India, (2013)
9. Minimizing a Function Using a Sequence of Interval Vectors, By G.Panda, Md Abu Tala, *IAENG-WCE-2012*, Imperial College, London, (2012)
10. Performance analysis of batch-service queues with batch-size dependent service-Recent developments, By U.C. Gupta, *International Conference on Mathematical Modelling and Soft Computing*, Coimbatore, (2012)
11. Some decision theoretic aspects on the estimation for the mean direction of a Langevin model, By Kanika and Somesh Kumar, *International Conference on Optimization Modeling and Applications*, University of Delhi, Delhi, (2012)
12. The Double diffusive free convection flow past an inclined plate in non-Darcy porous medium saturated with nanofluid, By Abhijit Sutradhar and P V S N Murthy, *57th Congress of ISTAM*, DIAT Pune, (2012)

Department of Mechanical Engineering

Head

Prof. Ranjan Bhattacharyya

Professors

Bhattacharyya, Ranjan	<i>Ph.D.(Kentucky)</i> , Nonlinear Elasticity, Vibration, Dynamical Systems
Bhattacharyya, Sati Nath	<i>Ph.D.(IIT Kharagpur)</i> , Fluid Mechanics
Bhattacharyya, Souvik	<i>Ph.D.(Texas A & M)</i> , Thermal science, Natural refrigerant based transcritical heating cooling systems, Thermodynamic optimization, Natural circulation loops (NCLs), Energy Engineering
Chakraborty, Suman	<i>Ph.D.</i> , Microfluidics and Nanofluidics, Interfacial Phenomena and Phase Change, Computational Fluid Dynamics (CFD)
Chatterjee, Anindya	<i>Ph.D.(Cornell University)</i> , Applied mechanics, Dynamics
Chattopadhyay, Ajay Kumar	<i>Ph.D.(Jadavpur Univ)</i> , Metal-Ceramic Joining, Machining, Grinding, Surface Coating
Das Gupta, Anirvan	<i>Ph.D.(Kanpur)</i> , Wave propagation, Dynamics of discrete and continuous systems, Mechanics of membranes, Vibration induced particle transport
Das, Prasanta Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Thermal Engineering, Gas-liquid two phase flow-instrumentation and hydrodynamics, CFD for multiphase flow, Nano fluids, Thermo hydraulics of nuclear reactors, Liquid-liquid two phase flow, Experimental thermo-fluid science
Dash, Sukanta Kumar	<i>Ph.D.(IIT Kharagpur)</i> , pressure drop in gas solid flow, free surface flow
Guha, Abhijit	<i>Ph.D.(Cambridge)</i> ,
Maiti, Biswajit	<i>Ph.D.(IIT Delhi)</i> ,
Maiti, Rathindranath	<i>Ph.D.(IIT Kharagpur)</i> , Mechanical and Fluid Power Transmission and Gear Engineering, Mechanical and Fluid Power Transmission and Gear Engineering
Mohanty, Amiya Ranjan	<i>Ph.D.(Kentucky)</i> , Machinery Condition Monitoring, Acoustics and Noise Control, Underwater Acoustics, More Research Details at www.iitnoise.com , Building Acoustics, Mechanical Systems and Signal Processing, Automotive Diagnostics
Mukherjee, Amalendu	<i>Ph.D.(IIT Kharagpur)</i> , System Dynamics and Controls
Nath, Ashish Kumar	<i>Ph.D.(Bombay University)</i> , Laser material interaction and processing, Underwater laser processing, Nontraditional manufacturing processes
Paul, Soumitra	<i>Ph.D.(IIT Kharagpur)</i> , Machining and Grinding, Cutting Tool Coating
Pratihari, Dilip Kumar	<i>Ph.D.(IIT Kanpur)</i> , Soft Computing, Robotics, Manufacturing Science
Ray, Manas Chandra	<i>Ph.D.(IIT Kharagpur)</i> , Fuzzy Fiber Reinforced Composites, Smart Structures, Composite Structures, Nanocomposites, Fluid-structure interaction, Active constrained layer damping
Roy Chowdhury, Samar Kumar	<i>Ph.D.(Birmingham)</i> , Tribology Bio-Tribology Nano-Tribology
Roy, Subhransu	<i>Ph.D.(Penn. State)</i> , Heat Transfer, Laser Processing of Materials, Optical diagnostics for flow and heat transfer
Satyamurty, V V	<i>Ph.D.(IIT Kanpur)</i> , Flow and Heat Transfer in Porous Media, Solar Energy Thermal Systems, Numerical Heat Transfer and Fluidmechanics
Som, Sankar Kumar	<i>Ph.D.(IIT Kharagpur)</i> ,

Associate Professors

Bandyopadhyay, Partha Pratim	<i>Ph.D.(IIT Kharagpur)</i> , Thermally Sprayed coatings, Laser processing of materials
Bhattacharyya, Kingshook	<i>Ph.D (IIT Kharagpur)</i> , Dynamics
Biswas, Kajal	<i>Ph.D.(IIT Kharagpur)</i> ,
Chakraborty, Goutam	<i>Ph.D (IIT Kanpur)</i> , Applied Mechanics
Das, Manab Kumar	<i>Ph.D.(IIT Kanpur)</i> , Fluid Mechanics and Heat Transfer
Gupta, Sanjay	<i>Ph.D.(Delft)</i> , Biomechanics, Finite Element Analysis, Machine Design
Kumar, Cheruvu Siva	<i>Ph.D.(IIT Kharagpur)</i> , Robotics, Control Systems, Computer and Telecommunication Networks
Moulic, Sandipan Ghosh	<i>Ph.D.(Arizona)</i> , Theoretical and computational fluid dynamics and heat transfer, Hydrodynamic and thermal instability, Spectral methods in fluid dynamics, Non-Newtonian fluid dynamics
Pal, Surjya Kanta	<i>Ph.D (IIT Kharagpur)</i> , Manufacturing Process Modelling and Simulation
Ramgopal, Maddali	<i>Ph.D.(IIT Madras)</i> , Refrigeration & air conditioning, Carbon dioxide based natural circulation loops, Solid sorption systems
Ray, Kumar	<i>Ph.D.(IIT Kharagpur)</i> ,
Roy Chowdhury, Asimava	<i>Ph.D.(IIT Kharagpur)</i> , cutter design and manufacture for CTC machine (tea leaf cutting), Rapid prototyping with curved layers - CLFDM (Curved layer fused deposition modeling), CNC machining of free form (curved) surfaces, Direct slicing (without tessellation) for Rapid prototyping
Saha, Partha	<i>Ph.D.(IIT Kharagpur)</i> , Laser processing of materials, Micro manufacturing, Nonconventional manufacturing, Rapid prototyping
Samantaray, Arun Kumar	<i>Ph.D (IIT Kharagpur)</i> , Systems and Control, Vehicle system dynamics, Rotor dynamics, Nonlinear Mechanics

Assistant Professors

Deb, Sankha	<i>Ph.D.(Univ. of Montreal, Canada)</i> , Computer Integrated Manufacturing, Computer-Aided Process Planning for Manufacturing and Assembly, Automation and Robotics, Intelligent Manufacturing Systems, Manufacturing Processes, Soft Computing techniques in Manufacturing, Flexible Manufacturing Systems
Gupta, Abhishek	<i>Ph.D.(RICE Univ.)</i> , Robotics, Mechatronics, Haptics
Kalelkar, Chirag Deepak	<i>Ph.D. (IISc., Bangalore)</i> , Rheology, Fluid Dynamics
Panda, Sushanta Kumar	<i>Ph.D.(IIT, Delhi)</i> , Sheet metal forming, Hydroforming, Bulk forming, Formability test design and development, Theory of plasticity for metal forming, Laser and resistance spot welding of sheet metal
Paul, Jinu	<i>Ph.D.(Nanyang Tech. Univ., Singapore)</i> , Polymer Nanocomposites, Joining of Materials
Racherla, Vikranth	<i>Ph.D.(Univ. of Pennsylvania)</i> , Failure mechanics, Composite mechanics, Metal plasticity, Numerical modeling of thermo-mechanical processes
Ramanujam, S	<i>Ph.D.(IIT Kharagpur)</i> , IC Engines
Saranghi, Mihir	<i>Ph.D.(IIT Kharagpur)</i> ,
Sidpara, Ajay Muljibhai	<i>Ph.D.(IIT Kanpur)</i> ,

Faculty Appointments

Jinu Paul	Assistant Professor
Chirag Deepak Kalelkar	Assistant Professor

Faculty Resignation

Anindya Chatterjee	Professor
Ajeet Kumar	Visiting Professor

Brief Description of on-going activities

Design and development of expert systems in robotics, manufacturing science, medical diagnosis and others using soft computing. Bio-micro-fluidics and microscale transport processes, Transport Phenomena in Phase Change Problems. Laser materials Processing. CFD/Lattice Boltzmann Method in Complex Flows. Rotor dynamics and dynamics of lubricated ball bearings. Numerical simulation on two phase flow pertaining to bottom injected gas stirred ladles. High Efficiency Deep Grinding: Modelling & Experimentation. High Pressure Cooling in Machining of Super Alloys. TiN hard coating by unbalanced magnetron using Physical Vapour Deposition Technique. Multi Layer TiN-MoS₂ coating on cutting tools by unbalanced magnetron technique. Machinability study of Inconel 718. Development of control strategies for autonomous underwater vehicles. Model based fault detection and isolation. Softcomputing techniques used in conventional and nonconventional machining. Simulation of liquid sloshing in a tank using numerical grid generation techniques. Prediction of fluid flow and heat transfer from wavy surfaces . Design and development of carbon di-oxide based heat pump systems. Vehicle system dynamics. Vibration Analysis Based Machine Fault Diagnostics

Thrust Areas

1. High Speed Machining, Grinding and Development of Cutting Tools / Grinding Wheel
2. Micro Manufacturing and Microscale Transport Processes
3. Bio-mechanics, Bio-micro-fluidics and microscale transport processes
4. System Dynamics, modelling and control
5. Vibration condition monitoring

New Acquisitions

1. Dell precision T7600 workstation
2. Precision spectral pyrometer
3. Twin hopper powder feeder
4. Micro vicker indenter for Leco LM 700 micro-hardness tester
5. Vacuum tube furnace
6. Torsion testing machine
7. B&K 2250-L-D30 Hand held analyzer 2250 light with 1/3 octave frequency analyser software
8. Cosmos make surface grinding machine
9. Micromatic make precision external cylindrical grinding machine
10. Die sinking electro-discharge machine
11. Chamber furnace with temperature controller and control panel
12. Contact angle meter
13. All geared universal milling machine
14. CNC flame cutting machine nesting software
15. Single axis stepper motor ball screw driven close loop controlled table with encoder
16. Indus make portable gas analyser
17. Electra CNC wire cut electro-discharge machine
18. 4-ch input module LAN-XI 51.2kHz
19. Cosmos high precision NC surface grinding machine
20. All geared lathe machine
21. Otis passenger elevator
22. Server mounted rack

23. SIMPACK Perpetual academic license multibody dynamics simulation tool
24. Sulzer metco power supply unit 10MR-04
25. Sulzer metco complete 9mc plasma control unit
26. Complete 9mcd plasma distribution unit
27. 2T friction stir welding unit
28. Trnsys software package
29. Gear hobbing machine
30. One time up-gradation of existing MSC ADAMS university 50 user license
31. Computer-controlled open-circuit subsonic wind tunnel with accessories
32. Rotary type torque sensor (Model 1702-20)
33. Product code VL-EDU.01-1-FY LMS virtual lab educational bundle LMS virtual lab software
34. Mapple software and mapple sim
35. Magic RP SG module EOSTYLEE2
36. Motion simulation system
37. Computerized engine test set up for four cylinder four stroke MPF1 petrol engine
38. Nx8.5 academic CAD/CAM/CAE bundle perpetual license with one year ME&S
39. In-vehicle human vibration analyzer
40. CATIA V6 academic pack
41. Object 3D printer desktop series object30 scholar
42. Water Jet System
43. Multi channel - signal conditioner for rotating dynamo-meter

International Collaborations

Student exchange program with University of South California (USA). Student exchange program with University of Erlangen (Germany). Indo-South African Research Collaboration between IIT Kharagpur and Univ. Pretoria (SA). Research collaboration with Universite des Sciences et Technologies de Lille (France). UK-India Education and Research Initiative (UKIERI) Project in collaboration with Univ. Southampton (UK). Research collaboration with Växjö University, Sweden. Indo-US Project/ DST-NSF Project with UIUC and UCI (USA). DST-JSPS Project with University of Tokyo and Tokai University (Japan)

Lectures by Visiting Experts

1. Influence of thermal buoyancy on vortex shedding behind bluff obstacles *by* Dr. Dipankar Chatterjee (Simulation & Modeling Laboratory CSIR-CMERI, Durgapur)
2. Soft Wetting at MicroNanoscales *by* Dr. Siddhartha Das (Micro and Nanoscale Transport Laboratory, Department of Mechanical Engineering, University of Alberta)
3. Micro and Nano-scale Transport Processes with Applications in Science and Engineering *by* Prof. Sushanta Mitra (University of Alberta, Canada)
4. Nano-Devices for Enhanced Thermal Energy Storage, Cooling and Sensing *by* Prof. Debjyoti Banerjee (Texas A&M University)
5. Micro-Extension Rheometer with Feedback Control for Microscale Samples *by* Dr. Chirag Kalelkar (I.I.T. Mandi)
6. Development of a Large Scale Biorefinery for Production of Fuels and Chemicals *by* Dr. Amit Kumar (University of Alberta in Edmonton, Alberta, Canada)
7. Molecular mechanism of membrane targeting by GRP1 PH domain *by* Dr. Anand Srivastava (Department of Chemistry, Institute for Biophysical Dynamics and Computation Institute, University of Chicago)
8. Finite crystal elasticity of nanorods and nanotubes *by* Dr. Ajeet Kumar (Department of Mechanical Engineering, IIT Kharagpur)
9. Keynote Address (Research Scholars day) *by* Dr. Sumanta Neogi (Jadavpur University)
10. Patient-specific modelling of flow, heat transfer and endothelial dysfunction of a carotid artery *by* Prof. P. Nithiarasu (College of Engineering, Swansea University, U.K.)
11. High-Fidelity, Time-Efficient Modeling of Flexible Multibody Dynamics *by* Dr. Arun Banerjee (Former Principal Research Scientist, Lockheed Martin Advanced Technology Center, Palo Alto, CA., USA)
12. Eulerian and Lagrangian investigations of simple turbulent flows *by* Dr. Sathyanarayana Ayyalsomayajula (School of Mechanical Sciences, I.I.T. Bhubaneswar)

Doctoral and MS Degrees Awarded

1. Rega Rajendra : Modeling and Simulations of Robotic Systems Using Soft Computing(Ph.D.)
2. Somak Datta : Forward and Reverse Modeling of Plasma Spray Coating Process: Experimental Observation, Statistical Analyses and Soft Computing-based Approaches(Ph.D.)
3. Amrita Priyadarshini : Finite Element Modeling of Chip Formation During Orthogonal Machining(Ph.D.)
4. Ajay Kumar Yadav : Numerical and Experimental Studies on Subcritical/Supercritical Carbon Dioxide Based Natural Circulation(Ph.D.)

Member - Professional Bodies

1. Ray, Manas Chandra, *Life Member* - ISTAM
2. Ramgopal, Maddali, *Member (MIE)* - Institute of Engineers (IE) India
3. Saha, Partha, *Life Member* - Indian Laser Association
4. Chakraborty, Suman, *Member* - APS
5. Chakraborty, Suman, *Member* - ASME
6. Chakraborty, Suman, *Life Member* - ISHMT
7. Pratihar, Dilip Kumar, *Member* - Association for Machines and Mechanisms
8. Pratihar, Dilip Kumar, *Member* - IEEE
9. Pal, Surjya Kanta, *Life member* - Indian Institute of Metals
10. Gupta, Sanjay, *Member* - European Society of Biomechanics
11. Sarangi, Mihir, *Regular* - Society for Experimental Mechanics, Inc., USA
12. Nath, Ashish Kumar, *Life member* - Indian Laser Association
13. Deb, Sankha, *Member* - American Society of Mechanical Engineers(ASME)
14. Das, Prasanta Kumar, *Life member* - Indian Society of heat and mass transfer
15. Kumar, Cheruvu Siva, *Member* - American Society of Mechanical Engineers
16. Kumar, Cheruvu Siva, *Member* - Institution of Electrical and Electronic Engineers
17. Kumar, Cheruvu Siva, *Member* - Association of Unmanned Vehicle Systems International (AUVSI)
18. Mohanty, Amiya Ranjan, - Member, National Committee on Noise Pollution Control, CPCB, Government of India
19. Mohanty, Amiya Ranjan, - Member, Bureau of Indian Standards on National Building Code, Government of India

Member - Editorial Board

1. Bhattacharyya, Souvik (2010) *Editor* - Journal of Nano Energy and Power Research
2. Pratihar, Dilip Kumar (2012) *Member of Editorial Board* - Advances in Robotics Research, an International Journal
3. Pratihar, Dilip Kumar (2012) *Member of Editorial Board* - International Journal of Advanced Robotic Systems
4. Pratihar, Dilip Kumar (2013) *Member of Editorial Board* - International Journal of Information Engineering
5. Pratihar, Dilip Kumar (2013) *Member of the Editorial Board* - International Journal of Mechanic Systems Engineering
6. Pratihar, Dilip Kumar (2012) *Member of Editorial Board* - International Journal of Applied Intelligence
7. Pratihar, Dilip Kumar (2013) *Member of Editorial Board* - Statistics, Optimization and Information Computing
8. Pratihar, Dilip Kumar (2012) *Member of Editorial Board* - International Journal of ISRN Robotics

Awards & Honours

1. Deb, Sankha (2012) *Second best paper award at International Conference of Agile Manufacturing (ICAM 2012) held in IIT BHU, Varanasi, India*

Sponsored Research Projects

1. 2D Laser Doppler Velocinetry and Phase Dopler Particle Analyser (MHRD - FIST, Rs.120.00 Lakhs)
2. Active structural-acoustic control of smart structure using 1-3 piezoelectric composite (DST, Rs.16.00 Lakhs)
3. Advanced Control and failure prognosis and diagnosis of industrial processes using data Fusion (DIT Govt. of India, Rs.0.00 Lakhs)
4. Advanced research in Mechanical Engineering System (DST FIST program) (DST, Rs.694.00 Lakhs)
5. Aerodynamic design of traction rolling stock with speed potentials of 250 KM/H upgradeable to 350 KM/H (Indian Railways, Rs.734.24 Lakhs)
6. Algae mediated bio-sequestration and storage of carbon dioxide from coal based flue gas and assessment of Algal biomass for animal feed application (WB - DST, Rs.28.00 Lakhs)
7. Biomechanical Assessment of Current and Novel Total Knee Replacement (UKIERI British Council, Rs.10.41 Lakhs)
8. Carbon dioxide based natural circulation loops (CSIR, Rs.13.50 Lakhs)
9. Creep and warping analysis of hot running loco wheels towards development of design guidelines against gauge widening (Indian Railways, Rs.49.79 Lakhs)
10. Deep drawing of laser welded advanced high strength steels (Department of Science and Technology, Rs.19.02 Lakhs)
11. Design and development of automobile for SAE Formula 1 international competition for students (SRIC, Rs.10.00 Lakhs)
12. Development and Characterization of Nano-fluid for Micro-thermal Heat Transfer Applications in Advanced Satellite (DCN) (, Rs.0.00 Lakhs)
13. DEVELOPMENT AND PERFORMANCE EVALUATION OF THERMALLY SPRAYED BALL MILLED DIAMOND-METAL COMPOSITE POWDER FOR BEARING SURFACE APPLICATION (DST, Rs.43.00 Lakhs)
14. Development and processing of polymer based nanocomposite materials (SRIC, IIT Kharagpur, Rs.0.00 Lakhs)
15. Development of a Schlieren imaging system to study natural convection of heated vertical plate (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
16. Development of Cage for Mariculture through Numerical and Physical Modeling (Ministry of Earth Science, Govenment of India., Rs.45.00 Lakhs)
17. Development of Remote Laboratory for Computer Integrated Manufacturing System (MHRD, Rs.91.50 Lakhs)
18. Development of Robust Signal Processing Techniques for Detection of Underwater Impact and Burst Noise (UIB) (Ministry of Earth Sciences, Rs.60.00 Lakhs)
19. Development of Sound Proofing Composite Materials usng Jute Products (SPC) (JMDC, Kolkata, Rs.32.26 Lakhs)
20. Development of the underwater water assisted laser cutting process and associated systems including a laser water micro-jet cutting system (BRNS-DAE, GOI, Rs.29.88 Lakhs)
21. Droplet based screening of Amyloid β -peptide aggregation (DBT, Rs.0.00 Lakhs)
22. Dynamics of Shrouded and Part-span Shrouded Blade Assembly with Floating Mass Damper (GTRE, DRDO, Bangalore, Rs.35.50 Lakhs)
23. Establishment of an advanced research facility for EB welding and process development related to programs of interest to DAE (BRNS, DAE, Mumbai, Rs.42.53 Lakhs)
24. Finite element analysis of weld location on formability of tailor welded blanks (SRIC, IIT Kharagpur, Rs.4.90 Lakhs)
25. GM-CRL on ECS (GM USA, Rs.0.00 Lakhs)
26. High Power laser workstation - 2 kW CW Fibre Laser with five axis CNC table (DST-FIST (SERC), Rs.200.00 Lakhs)
27. HVOF sprayed ultrahard nanocomposites (DST SERB, Rs.43.00 Lakhs)
28. Investigation of Interfacial Bonding in Thermally Sprayed Coatings using Glow Discharge Optical Emission Spectroscopy (GDOES) Depth Profiling (Swiss National Science Foundation, Rs.4.00 Lakhs)
29. Materials for Underwater Vehicles (Ministry of Earth Sciences, Rs.48.00 Lakhs)
30. Modular Engineering of Vascular Tissue: A Bottom-up Approach (DBT, Rs.0.00 Lakhs)
31. MVL (MHRD, Rs.200.00 Lakhs)

32. Nanoscale Processes for Clean Coal and Bioinspired Water and GHG Efficient Energy Technologies (DST / GITA, Rs.8.00 Lakhs)
33. National Mission Project on Education through ICT, Developing suitable pedagogical methods (Thermodynamics) (MHRD, Rs.0.00 Lakhs)
34. Numerical simulation of turbulent plane offset jet flow and conjugate heat transfer (Department of Science and Technology, Rs.9.60 Lakhs)
35. On the dynamics of artificial joints (SRIC, IIT Kharagpur, Rs.4.90 Lakhs)
36. Optimal design of human muscle like electro active polymer actuators (DST, Rs.8.14 Lakhs)
37. Optimal design of tough wear resistant nanostructured coatings (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
38. Participation in AUVSI - student coordination (NIOT Chennai, Rs.11.00 Lakhs)
39. Pedagogy (Mechanics of materials) (MHRD, Rs.0.00 Lakhs)
40. Pre-clinical analysis of failure mechanisms and design optimization of acetabular prosthesis (DBT, New Delhi, Rs.23.38 Lakhs)
41. Real Time Virtual Labs (Ministry of Human Resources Development, Rs.743.00 Lakhs)
42. Realtime Virtual Lab on Automotive Systems (RTV-2) (MHRD, Rs.65.00 Lakhs)
43. Setting up a research and development centre for Damodar Valley Corporation at Kolkata (DVC, Kolkata, Rs.10600.00 Lakhs)
44. STANDARDIZATION OF PROCESS PARAMETERS IN WITHERING, MACERATION, ROLLING, FERMENTATION AND DRYING OF TEA (Tea Board, GOI, Rs.366.96 Lakhs)
45. Steel Technology Centre (Minsitry of Steel & DST, Rs.2025.00 Lakhs)
46. Studies on process optimisation and visualisation of laser cladding process (Board for Research in Nuclear Sciences (BRNS), DAE, GOI., Rs.18.86 Lakhs)
47. Study of flow and thermal characteristics in the near field of two parallel plane jets. (COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH, Rs.9.56 Lakhs)
48. Suspension and Bogie Technology for High Speed Train (RDSO, Rs.86.00 Lakhs)
49. Suspension and Bogies Technology for High Speed Trains (Center for Railway Research and RDSO, Rs.71.75 Lakhs)
50. Theoretical and Experimental Analysis of Evaporation in the Grooves of a Micro Heat Pipe (ISRO, Rs.0.00 Lakhs)
51. Thermomechanically processed high strength bainitic steel rails for Indian Railways (RD & SO, Ministry of Railways, Rs.199.65 Lakhs)
52. Transient Boiling and Counter Current Flow Phenomena during Direct in Bundle Emergency Coolant Injection (BARC, Rs.45.00 Lakhs)
53. Turbulent Flow Computation of Two-Dimensional Incompressible Viscous Flow through a Cascade (ARDB Aerodynamics Panel, Rs.12.61 Lakhs)
54. Underwater Acoustic Sensors for AUVs (Ministry of Earth Sciences, Rs.48.00 Lakhs)
55. Virtual Laboratory on Mechanical Systems and Signal Processing (VLS/16) (MHRD, Rs.54.00 Lakhs)
56. Virtual Laboratory on multiphase flow (MHRD, Rs.0.00 Lakhs)
57. Virtual Labs (Mechanisms) (MHRD, Rs.17.00 Lakhs)
58. Virtual Labs - Main Phase (Simulation) (MHRD - NMEICT, Rs.823.00 Lakhs)
59. Virtual Labs - Pilot Phase (MHRD - NMEICT, Rs.200.00 Lakhs)
60. VLS-4 (MHRD, Rs.58.00 Lakhs)
61. Wireless Internet (Vodafone Centre of Excellence in Telecommunications / Telecom Centre of Excellence, Rs.48.00 Lakhs)

Consultancy Projects

1. Application of finite element and other analytical methods for failure analyses of roller bearings (ABC Bearings Limited, Bharuch, Gujarat, Rs.6.00 Lakhs)
2. Characterization of Surface Roughness for Pressure-Driven and/or Electro-osmotic Liquid Flow in Microchannel (DELPHI, Rs.0.00 Lakhs)
3. Demonstration of and advice on finite element analyses of elastic-plastic structures (Usha Martin Limited, Kolkata, Rs.2.00 Lakhs)
4. Design of cooling system for Plant Growth Chamber (Scigenics Biotech Private Limited, Rs.1.25 Lakhs)
5. Design of silencers for blowers (DDSB) (M/s. Everest Blowers Pvt. Ltd. Haryana, Rs.4.50 Lakhs)

6. Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning (Pedagogy) (MHRD, Rs.0.00 Lakhs)
7. Development of a fundamental model for characterizing solidification transport in the mushy region (General Motors, Rs.0.00 Lakhs)
8. Development of a Multiphase Flowmeter (General Electric, India, Rs.3.00 Lakhs)
9. Development of Numerical Models for Emulsion and Nanofluid Heat Transfer (TATA Steel, Rs.0.00 Lakhs)
10. Development of System for monitoring of slow speed running equipment (SAIL, RDCIS, Ranchi - Completed, Rs.8.50 Lakhs)
11. Experimental sample preparation by Wire Cut EDM (Various institutes, Rs.0.75 Lakhs)
12. Finite Element Analysis of Stress Distribution in Electrode and Nipple Joint (HEG Bhopal, Rs.4.40 Lakhs)
13. Laser Processing of Materials (LAPM) (Various Departments / Centres of IIT Kharagpur and Outside Institutions, Rs.0.00 Lakhs)
14. Modelling and Simulation of Hydro-pneumatic Shock Isolation System, through Bond Graph on SOMBOLS Shakti (DRDO, R&D(E) Engineers, Through High Tech Cosultance, STEP iit Kharagpur, Rs.15.00 Lakhs)
15. Pulling force estimation on a ribbed bar (Tata Steel, Rs.5.50 Lakhs)
16. Refrigerator Noise Control Implementation (RNCI) (Whirlpool of India Ltd., Pune, Rs.17.00 Lakhs)
17. RTD Analysis of Mexican Tundish (IFGL REfractory, Rs.1.50 Lakhs)
18. RTD and Temp study of JSPL Jajpur tundish, (IFGL Refractory, Rs.1.50 Lakhs)
19. Simulation studies of P15A with modified hanger top (Mazagon Dock Ltd, Rs.28.09 Lakhs)
20. Support and training on trommel design (Tega Industries Limited, Kolkata, Rs.2.50 Lakhs)
21. Training on rolling mill simulation (Tata Steel, Rs.1.00 Lakhs)
22. Vetting of analysis and design of a vibration isolation system (VAVS) (Airef Engineers (P) Ltd., Delhi, Rs.2.00 Lakhs)
23. Wear analysis in laying head pipe (TISCO Jamshedpur, Rs.2.50 Lakhs)

Patents (filed / granted)

1. A force transducer for microscale samples
2. A method of maintaining the zone temperature in a variable air volume air conditioning system and a system thereof
3. A Novel 6DOF Platform for Micromanipulation with Piezoelectric Actuators and Compliant Mechanisms
4. A PROCESS OF CONFIGURATING MICROSIZED CHANNELS HAVING IMPROVED INCLINATION AND FOR ENHANCEMENT OF BOILING HEAT TRANSFER OVER PLANE SURFACE
5. An electromagnetic device for fault detection in rotating machines
6. An Energy and QoS Aware Method for Vertical Handover among Heterogeneous Wireless Networks
7. Cost effective mechanical testing equipment for characterizing creep behavior of materials under combined tension-torsion loadings

Visits Abroad by Faculty Members

1. Chakraborty, Suman - Collaborative Research (Technische Universität Darmstadt,) May, 2012
2. Samantaray, Arun Kumar - Indo-Korean Joint Project (Daegu, South Korea,) 17-25 June, 2012
3. Chakraborty, Suman - Collaborative Research (University of Southampton, UK,) Nov, 2012
4. Bandyopadhyay, Partha Pratim - SNF -International Visiting Fellowship (University of Bern,) 15th May - 12th July 2012
5. Gupta, Sanjay - 18th Congress of the European Society of Biomechanics (Lisbon, Portugal,) July 4 - 8, 2012
6. Gupta, Sanjay - Collaborative research project (University of Southampton,) June 15 - July 15, 2012.

Invited Lectures by Faculty Members

1. Automation for Integrated Manufacturing *by* Deb, Sankha (Department of Mechanical Engineering, Budge Budge Institute of Technology, Kolkata)
2. Introduction to computational fluid dynamics (CFD) *by* Moulic, Sandipan Ghosh (B.I.E.T. Suri)
3. Vibration assisted micro-manipulation *by* Das Gupta, Anirvan (IIT Delhi)
4. Vibration assisted transport and manipulation *by* Das Gupta, Anirvan (CMERI Durgapur)
5. Mechanics of biped walking and jumping *by* Das Gupta, Anirvan (Thapar University)
6. Vehicle Dynamics Modelling and Simulation *by* Samantaray, Arun Kumar (KIIT University, Bhubaneswar)
7. Bond Graph Modelling of Mechatronic Systems *by* Samantaray, Arun Kumar (Keimyung University Sin-Dang-Dong, Daegu, South Korea)
8. Introduction to Bond Graph Modelling *by* Samantaray, Arun Kumar (Catholic University of Daegu Hayang, Gyeongsan, South Korea)
9. Nanoflows: A Molecular Perspective *by* Chakraborty, Suman (1st International Workshop on Nanomaterials (IWoN): Engineering Photon and Phonon Transport, Jadavpur, Kolkata)
10. Stress adaptation of a cell in a confined fluidic environment *by* Chakraborty, Suman (1st Indo-UK Workshop on Biomicrofluidics and Microscale Bioengineering, Southampton, UK)
11. Microfluidics for Lab on a Chip Devices: Some Fundamentals and Applications *by* Chakraborty, Suman (TU Darmstadt Germany)
12. Microfluidics for Lab on a Chip Devices: Some Fundamentals and Applications *by* Chakraborty, Suman (RWTH Aachen, Germany)
13. Future of Mechanical Engineering: Mechanical Engineering at 2050 *by* Chakraborty, Suman (Occasion of the inauguration of ASME Chapter of ISM Dhanbad)
14. Effect of a Microconfined Fluidic Environment: Droplets/Cells, and Beyond... *by* Chakraborty, Suman (Indo-US Workshop on Fabrication, IIT Kanpur)
15. Effect of a Microconfined Fluidic Environment: Droplets/Cells, and Beyond... *by* Chakraborty, Suman (Fourth Workshop on Nanocomputing and Biochips)
16. Effect of a Microconfined Fluidic Environment: Droplets/Cells, and Beyond... *by* Chakraborty, Suman (First International Symposium on Physics and Technology of Sensors, CMET Pune)
17. Effect of a Microconfined Fluidic Environment: Droplets/Cells, and Beyond... *by* Chakraborty, Suman (39th National Conference on Fluid Mechanics and Fluid Power, Surat)
18. Biomicrofluidics: A Journey with DNAs, Cells, and Painless Microneedles *by* Chakraborty, Suman (National Workshop on CFD and its application in Bio-Fluid Dynamics (NWCBSFD'12), Kolaghat)
19. Biomicrofluidics: A Journey with DNAs, Cells, and Painless Microneedles *by* Chakraborty, Suman (2nd Indo-UK Workshop on Biomicrofluidics and Microscale Bioengineering, Jadavpur, Kolkata)
20. Microfluidics on a Compact Disk *by* Chakraborty, Suman (4th Bangalore Nano, Bangalore)
21. Microfluidics on a Compact Disk *by* Chakraborty, Suman (Sixth ISSS International Conference on Smart Materials, Structures and Systems, Bangalore)
22. Prof. S K Sorkhel Memorial Lecture in Production Engg. Dept. Jadavpur University, Kolkata *by* Nath, Ashish Kumar (Jadavpur University)

Books Published

1. R. Merzouki, A.K. Samantaray, P.M. Pathak, B. Ould Bouamama: Intelligent Mechatronic Systems: Modeling, Control and Diagnosis *published by* Springer (2012)
2. Rega Rajendra, D.K. Pratihar: Modeling and Simulations of Robotic Systems Using Soft Computing *published by* Lap Lambert Academic Publishing, Germany (2012)
3. S.K. Bose, D. Chattoraj, D.K. Pratihar: Analytical Engineering Mechanics *published by* Narosa Publishing House, New Delhi (2012)
4. S.S. Roy, D.K. Pratihar: Modeling and Analysis of Six-legged Robots *published by* Lap Lambert Academic Publishing, Germany (2012)

Papers Published in Journals

1. A Joint Parametric Prediction Model for Wireless Internet Traffic using Hidden Markov Model By Sumit Maheshwari, Sudipta Mahapatra, C.S Kumar, Vasu K *Springer WINET* Vol 1, Pages 1-15 (2012)
2. A Machine Vision based approach for Computer-Aided Inspection of Mechanical Parts By Palkush Rai Chawla and Sankha Deb *International Journal of Precision Technology* Under review (2013)
3. Active Constrained Layer Damping of Geometrically Nonlinear Vibration of Rotating Composite Beams Using 1-3 Piezoelectric Composite By D. Biswas and M. C. Ray *International Journal of Mechanics and Materials in Design* 9, 83-104 (2013)
4. Active Constrained Layer Damping of Geometrically Nonlinear Vibrations of Smart Laminated Composite Sandwich Plates Using 1-3 Piezoelectric Composites By R. Suresh Kumar and M. C. Ray *International Journal of Mechanics and Materials in Design* (2012)
5. Active Constrained Layer Damping of Geometrically Nonlinear Vibrations of Smart Laminated Composite Sandwich Plates Using 1-3 Piezoelectric Composites By R. Suresh Kumar and M. C. Ray *International Journal of Mechanics and Materials in Design* (2012)
6. Active damping of Laminated Cylindrical Shells Conveying Fluid Using 1-3 Piezoelectric Composites By M. C. Ray and J. N. Reddy *Composite Structures* (2012)
7. Active Structural-Acoustic Control of Laminated Composite Truncated Conical Shells Using Smart Damping Treatment By P. H. Shah and M. C. Ray *ASME Journal of Vibrations and Acoustics* (2012)
8. Adaptive neuro-fuzzy expert systems for predicting specific energy consumption and energy stability margin in crab walking of six-legged robots By S.S. Roy, D.K. Pratihar *Journal of Intelligent and Fuzzy Systems* 10.3233/IFS-2012-056 (2012)
9. Air core in pressure swirl atomizing nozzles (Invited Review Paper) By S. K. Som *Atomization and Sprays* 22(4), 283-303 (2012)
10. Alteration of chaotic advection in blood flow around partial blockage zone: role of hematocrit concentration By S. Maiti, K. Choudhury, D. DasGupta, S. Chakraborty *Journal of Applied Physics* 113, 034701 (2013)
11. An Energy and QoS Aware FUZZY-TOP Vertical Handover Decision Mechanism for Heterogeneous Wireless Networks By Vasu K, Sumit Maheshwari, Sudipta Mahapatra, C.S. Kumar *IET Networks* (2013)
12. An Intelligent Methodology for Optimizing Machining Operation Sequence by Ant System Algorithm By Sneha Singh and Sankha Deb *International Journal of Industrial and Systems Engineering* In Press (2012)
13. Analysis and synthesis of laser forming process using neural networks and neuro-fuzzy inference system By Kuntal Maji, D. K. Pratihar, A. K. Nath *Soft Computing* 1-17 (2012)
14. Analysis and synthesis of laser forming process using neural networks and neuro-fuzzy inference system By K. Maji, D.K. Pratihar, A.K. Nath *Soft Computing* 10.1007/s00500-012-0 (2012)
15. Analysis on fabrication of micro-tools by micro-electrochemical machining process By Alok Kumar Das, Partha Saha *International Journal of Nanomanufacturing* Vol 9, No. 1,, Page (2013)
16. Automatic classification of vertical counter-current two-phase flow by capturing hydrodynamic characteristics through objective descriptions By S. Ghosh, D.K. Pratihar, B. Maiti, P.K. Das *International Journal of Multiphase Flow* 52, pp. 102-120 (2013)
17. Bone Adaptation around a cemented short-stem ceramic femoral resurfacing component By Kaushik Mukherjee, Bidyut Pal, Sanjay Gupta *Journal of Biomechanics* 45 (Sup1), pp S99 (2012)
18. Bone remodelling around uncemented metallic and ceramic acetabular components By Rajesh Ghosh, Kaushik Mukherjee, Sanjay Gupta *Journal of Engineering in Medicine, Proc IMechE Part H* In Press (2013)
19. Capillary Filling Dynamics of Water in Nanopores By C. Bakli, S. Chakraborty *Applied Physics Letters* 101, 153112 (2012)
20. Combined effects of permittivity variations and finite ionic sizes on streaming potentials in nanochannels By A. Bandopadhyay, S. Chakraborty *Langmuir* 28, 17552–17563 (2012)
21. Combined Effects of Surface Roughness and Wetting Characteristics on the Moving Contact Line in Microchannel Flows By D. Chakraborty, N. N. Dingari, S. Chakraborty *Langmuir* 28, 16701–16710 (2012)

22. Combined influences of electrostatic component of disjoining pressure and interfacial slip on thin film evaporation in nanopores By Sukumar Pati, S K Som, Suman Chakraborty *International Journal of Heat and Mass Transfer*, (accepted for publication) (2013)
23. Comparison of two low-Reynolds number turbulence models for fluid flow study of wall bounded jets By S.K. Rathore and M.K. Das *International Journal of Heat and Mass Transfer* 61, 365–380 (2013)
24. Consistent accounting of steric effects for prediction of a streaming potential in narrow confinements By J. Chakraborty, R. Dey, S. Chakraborty *Physical Review E* 86, 061504 (2012)
25. Consistent description of electrohydrodynamics in narrow fluidic confinements in presence of hydrophobic interactions By J. Chakraborty, Sukumar Pati, S. K. Som, Suman Chakraborty *Physical Review E* 85, 046305 (2012)
26. Contribution of Interfacial Electrostriction in Surface Tension By S. Das, S. Chakraborty, S. K. Mitra *Journal of Colloid and Interface Science* (accepted for publication) (0)
27. Correlation between full width at half maximum (FWHM) of XRD peak with residual stress on ground surfaces By M Vashista and S Paul *Philosophical Magazine* 93(33), pp.4194-4204 (2012)
28. Design and validation of the reconfiguration strategy for a redundantly actuated intelligent autonomous vehicle By T.K. Bera, R. Merzouki, B. Ould bouamama, A.K. Samantaray *Proc. IMechE Part I: J. Systems and Control Engineering* 226 (8), 1060-1076 (2012)
29. Development and parametric study of a water-jet assisted underwater laser cutting process By Suvradiip Mullick, Yuvraj K. Madhukar, Subhransu Roy, Shailesh Kumar, Dinesh K. Shukla, Ashish K. Nath *International Journal of Machine Tools & Manufacture* 68, 48–55 (2013)
30. Double Diffusive Convection in a Porous Cavity Near its Density Maximum By Muthtamilselvan, M., and Das, M. K., *Journal of Porous Media* 15 (8): 765–774 (2012)
31. Dynamic modeling, stability and energy consumption analysis of a realistic six-legged walking robot By S.S. Roy, D.K. Pratihar *Robotics and Computer-Integrated Manufacturing* 29, pp. 400-416 (2013)
32. Effect of carbon nanotube waviness on the elastic properties of the fuzzy fiber reinforced composites By S. I. Kundalwal and M. C. Ray *ASME Journal of Applied Mechanics* (2012)
33. Effect of laser operating mode in paint removal with a fiber laser By Yuvraj K. Madhukar, Suvradiip Mullick, Dinesh K. Shukla, Shailesh Kumar, Ashish K. Nath *Applied Surface Science* 892- 901 (2013)
34. Effect of Presence of Salt on the Dynamics of Water in Uncharged Nanochannels By C. Bakli, S. Chakraborty *Journal of Chemical Physics* 138, 054504 (2013)
35. Electro-osmotic flows through topographically complicated porous media: Role of electropermeability tensor By A. Bandopadhyay, D. DasGupta, S. K. Mitra, S. Chakraborty *Physical Review E* 87, 033006 (2013)
36. Electrokinetics with 'paper-and-pencil' devices By P. Mandal, R. Dey, S. Chakraborty *Lab on a Chip* 12, 4026-4028 (2012)
37. Electrowetting of Evaporating Extended Meniscus By S. Bhaumik, S. Chakraborty, S. DasGupta *Soft Matter* 8, 11302-11309 (2012)
38. Evolutionary neural networks for strategic bidding in electricity markets By A. Hota, P. Bajpai, D.K. Pratihar *International Journal of Energy Sector Management* 6, pp. 321-342 (2012)
39. Experimental investigations and statistical analysis of pulsed laser bending of AISI304 stainless steels By Kuntal Maji, D. K. Pratihar, A. K. Nath *Optics & Laser Technology* 49, 18-27 (2013)
40. Experimental validation of finite element models of intact and implanted composite hemipelvises using digital image correlation By Rajesh Ghosh, Sanjay Gupta, Alexander Dickinson, Martin Browne *Trans. ASME, Journal of Biomechanical Engineering* 134(8), 081003(1-9) (2012)
41. Experimental validation of numerically predicted strain and micromotion in intact and implanted composite hemipelvises By Rajesh Ghosh, Sanjay Gupta, Alexander Dickinson, Martin Browne *Journal of Engineering in Medicine, Proc IMechE Part H* 227, pp 162-174 (2013)
42. Fault Detection in a Centrifugal Pump using Vibration and Motor Current Signature Analysis By A. R. Mohanty, P. K. Pradhan, N. P. Mahalik and S. G. Dastidar *International Journal of Automation and Control* 6(3/4). pp. 261-276 (2012)

43. Finite Element Modeling of Chip Formation in Orthogonal Machining By A. Priyadarshini, S.K. Pal, A.K. Samantaray *Statistical and Computational Techniques in Manufacturing, J. Paulo Davim (Ed.), Chapter 3* 101-144 (2012)
44. Finite inflation analysis of a hyperelastic toroidal membrane of initially circular cross-section By Tamadapu G. and DasGupta A. *Int. J. of Nonlinear Mechanics* 49, pp. 31-39 (2013)
45. Flow regimes predictions using conductivity probe signals and neural networks for counter-current gas-liquid two-phase flow By S. Ghosh, D.K. Pratihar, B. Maiti, P.K. Das *Chemical Engineering Science* 84, pp. 417-436 (2012)
46. Flow Shear Induced Changes in Membrane Fluidity: Dependence on Cell-Substrate Adhesion Strength By T. Das, T. K. Maiti, S. Chakraborty *Current Analytical Chemistry* 9, 9-15 (2013)
47. Force control in parallel manipulator through virtual foundations By T.K. Bera, R. Merzouki, B. Ould bouamama, A.K. Samantaray *Proc. IMechE Part I: J. Systems and Control Engineering* 226 (8), 1088-1106 (2012)
48. Fuzzy clustering of mechanisms By A. Ghosh, D.K. Pratihar, M.V.V. Amarnath, G. Dittrich, J. Muller *Sadhana* 37(5), pp. 539-556 (2012)
49. Geodesic flows in rotating black hole backgrounds By DasGupta A., Nandan H., Kar S. *Phys. Rev. D* 85, 104037 (2012)
50. Giant Augmentations in Electro-Hydro-Dynamic Energy Conversion Efficiencies of Nanofluidic Devices using Viscoelastic Fluids By A. Bandopadhyay, S. Chakraborty *Applied Physics Letters* 101, 043905 (2012)
51. Hierarchical adaptive neuro-fuzzy inference systems trained by evolutionary algorithms to model plasma spray coating process By S. Datta, D.K. Pratihar, P.P. Bandyopadhyay *Journal of Intelligent and Fuzzy Systems* 24, pp. 355-362 (2013)
52. High resolution residual stress measurement on amorphous and crystalline plasma-sprayed single-splats By M. Sebastiani, G. Bolelli, L. Lusvarghi, P.P. Bandyopadhyay, E. Bemporad *Surface and Coating Technology* (206) 4872-4880 (2012)
53. Hydrodynamic and thermal transport characteristics of swirling flows through microchannels with interfacial slip By P Kaushik, Sukumar Pati, S. K. Som, Suman Chakraborty *International Journal of Heat and Mass Transfer* 55, 4359-4365 (2012)
54. Hydrodynamic Swirl Decay in Microchannels with Interfacial Slip By P Kaushik, Sukumar Pati, S. K. Som, Suman Chakraborty *Nanoscale and Microscale Thermophysical Engineering* 16, 133-143 (2012)
55. Improvement of Machinability in End Milling of Nimonic C-263 by Application of High Pressure Coolant By Bikramjit Podder and S Paul *International Journal of Machining and Machinability of Materials* 11(4), pp.418-433 (2012)
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62. Mean flow and turbulent characteristics of an Oblique Offset Jet By S. Pramanik and M.K. Das *Computers & Fluids* 77, 36-55 (2013)
63. Mechanical properties of conventional and nanostructured plasma sprayed alumina coatings By - Bandyopadhyay P P, Chicot D, Venkateshwarlu B, Racherla V, Decoopman X, and Lesage J *Mechanics of Materials* 53, 61-71 (2012)
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73. Numerical Analysis of free surface in water model for Design of Submerged Entry Nozzle By Rajat Das and S K Dash *International Journal of Advanced Computer Research* Vol. 3, pp. 182-187 (2013)
74. Numerical modelling of ground surface topography: effect of traverse and helical superabrasive grinding with touch dressing By Shubham Kumar and S Paul *Production Engineering* 6(2), pp.199-204 (2012)
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91. Study of surface integrity of ground bearing steel using Barkhausen Noise technique By M Vashista, A Gaddam and S Paul *International Journal of Advanced Manufacturing Technology* 63, pp.771-783 (2012)
92. Technique for optimal placement of transducers for fault detection in rotating machines By S. Fatima, S. G. Dastidar, A. R. Mohanty and V. N. A. Naikan *Proceedings of the IMechE, Part O: Journal of Risk and Reliability* 227(2),119-131 (2013)
93. Thermally activated control of microfluidic friction By R. Dey, S. DasGupta, S. Chakraborty *Applied Physics Letters* 101, 134101 (2012)
94. Thermodynamic performance of microscale swirling flows with interfacial slip By S. Pati, S. K. Som, S. Chakraborty *International Journal of Heat and Mass Transfer* 57, 397–401 (2013)
95. Thermoelastic properties of fuzzy fiber reinforced composites By S. I. Kundalwal and M. C. Ray *ASME Journal of Applied Mechanics* (2013)
96. Thin Film Evaporation in Microchannels with Slope- and Curvature-Dependent Disjoining Pressure By L. Biswal, S. K. Som, S. Chakraborty *International Journal of Heat and Mass Transfer* 57, 402–410 (2013)
97. Variational formulation on Joule heating in combined electroosmotic and pressure driven microflows By A. Sadeghi, M. H. Saidi, Z. Waezi, S. Chakraborty *International Journal of Heat and Mass Transfer* 61, 254–265 (2013)
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2. A Knowledge Based Approach for Automatic Process Plan Generation for Machining, By S. K. Singh and Sankha Deb, *International Conference of Agile Manufacturing (ICAM 2012)*, IIT BHU, Varanasi, India, (2012)
3. Augmenting Capillary Suction by Electrowetting for Cooling applications, By S. Bhaumik, S. DasGupta, S. Chakraborty, *16th International Heat Pipe Conference (16th IHPC)*, Lyon, France, (2012)
4. Bond Graph Modeling of an Over-actuated Intelligent Autonomous Vehicle with Decoupled Steering Wheel, By T.K. Bera, A.K. Samantaray, R. Merzouki, B. Ouldbouamama, *2012 IEEE International Conference on Robotics and Biomimetics (ROBIO)*, Guangzhou, China, (2012)
5. Bone Adaptation around a cemented short-stem ceramic femoral resurfacing component, By Kaushik Mukherjee, Bidyut Pal, Sanjay Gupta, *18th Congress of the European Society of Biomechanics*, Lisbon, Portugal, (2012)
6. Combined Interplay of Steric Effects and Asymmetric Zeta Potential on Electrokinetic Transport off Nonnewtonian Fluids Through Narrow Confinements: Studies On Streaming Potential, By R. Dey, J. Chakraborty, S. Chakraborty, *rd European Conference on Microfluidics - Microfluidics 2012*, Heidelberg, (2012)

7. Combined Poiseuille and Couette Flow in Nanochannels Studied Using Molecular Dynamics Simulations, *By C. Bakli, S. Chakraborty, 3rd European Conference on Microfluidics - Microfluidics 2012, Heidelberg, (2012)*
8. Enhancing Stability of Fault-Tolerant Gaits of a Quadruped Robot Using Moving Appendage, *By J.-M. Yang, S.W. Kwak, P.M. Pathak, A.K. Samantaray, Latest Trends in Circuits, Automatic Control and Signal Processing, Barcelona, Spain, (2012)*
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10. Geodesic flows around rotating black holes, *By DasGupta A., Nandan H., Kar S., 27th Meeting of the IAGRG, Srinagar (Garhwal), (2013)*
11. Influence of positive mood states on information processing during decision making: a combined neuro-fuzzy approach, *By S.N. Mohanty, D.K. Pratihari, D. Suar, National Conference on Paradigm for Sustainable Business: People, Planet and Profit, IIT Roorke, India, (2013)*
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13. Laser Microgrooving of Ti6Al4V and Its Effect on Viability of Human Osteoblast-like MG63 Cells, *By Mukherjee S., Dhara S., Saha P., 4th International & 25th All India Manufacturing Technology, Design and Research (25th AIMTDR) Conference, Jadavpur University, Kolkata, India, (2012)*
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15. Modeling of pulsed laser bending of sheet metal using neuro-fuzzy system, *By K. Maji, D.K. Pratihari, A.K. Nath, AIMTDR Conference, Jadavpur University, Kolkata, (2012)*
16. Modification of initial blank shape to minimize earing in deep drawing process, *By P. Das, S.K. Panda, D.K. Pratihari, ICMPC-2013 Conference, Hyderabad, India, (2013)*
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18. Prediction of Formability of Fibre Laser Welded DP Steel by Finite Element Analysis, *By Bandyopadhyay K., Panda S. K., Saha P., 4th International & 25th All India Manufacturing Technology, Design and Research (25th AIMTDR) Conference, Jadavpur University, Kolkata, India, (2012)*
19. Verification of the digital image correlation technique for bone surface strain measurements, *By Rajesh Ghosh, Sanjay Gupta, Alexander Dickinson, Martin Browne, 18th Congress of the European Society of Biomechanics, Lisbon, Portugal, (2012)*
20. Wettability Study of Aluminium on Various Cutting Tool Substrate, *By S K Sarangi and A K Chattopadhyay, 4th International and 25th AIMTDR Conference Vol1 p341-344, Jadavpur University, (2012)*

Department of Metallurgical & Materials Engineering

Head

Prof. Siddhartha Das

Professors

Chakraborti, Nirupam	<i>Ph.D.(Univ. of Washington, USA)</i> , Computational Materials Science Genetic Algorithms Extractive Metallurgy
Chakraborty, Madhusudan Das, Karabi	<i>Ph.D.(IIT Kharagpur)</i> , <i>Ph.D.(Wisconsin, USA)</i> , Metal Matrix Composites, Nanocomposites, Wear of Materials, Physical Metallurgy, Powder Metallurgy, Electron Microscopy
Das, Siddhartha	<i>Ph.D.(Illinois, USA)</i> , Nano Materials, Composite Materials, Physical Metallurgy, Electron Microscopy, Surface Engineering, Failure Analysis
Dutta Majumdar, Jyotsna	<i>Ph.D.(IIT Kharagpur)</i> , Surface Engineering, Corrosion and Environmental Degradation, Laser Materials Processing, Biomaterials, Advanced Processing of Materials, shape memory alloy, Advanced Welding of Materials
Godkhindi, Mahadev Malhar	<i>Ph.D.(IIT Bombay)</i> , powder metallurgy Ceramics
Manna, Indranil	<i>Ph.D.(IIT Kharagpur)</i> ,
Mitra, Rahul	<i>Ph.D.(Northwestern Univ., USA)</i> , Mechanical Behaviour of Materials, Scanning and transmission electron microscopy, Materials for high temperature applications, Composite Materials, Nanocrystalline materials, Thin Film Processing and Characterization, Oxidation behavior of materials
Pabi, Shyamal Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Nanostructured materials Phase transformations Composites Modelling and simulation
Ray, Kalyan Kumar	<i>Ph.D.(IIT Bombay)</i> , Mechanical Metallurgy, Physical Metallurgy, Fracture Mechanics, Nondestructive Evaluation, Structural Integrity, Failure Analysis, Advanced Structural Materials, Stereology, Modelling and Simulation, Metal Matrix and Ceramic Matrix Composites
Roy, Gour Gopal	<i>Ph.D.(IIT Kanpur)</i> , Alternative Routes of Iron & Steel making, Modelling of Heat & Mass Transfer in Materials Processing, Electron Beam Welding
Roy, Sanat Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Mineral Processing, Extractive Metallurgy, Environmental Degradation of Materials, Laser Processing of Materials, Electronic and magnetic nanomaterials
Singh, Shiv Brat	<i>Ph.D.(Cambridge Univ,UK)</i> , Physical metallurgy of steel

Associate Professors

Acharya, Narendra Nath	<i>Ph.D.(IIT Kharagpur)</i> , Artificial Intelligence, Powder Metallurgical Applications, Multi-Media, Educational Technology, Photography
Ghosh, Sudipto	<i>Ph.D (IIT Kanpur)</i> , 1. Mathematical Modeling of Material pprocesses, 2.Solidification Processing Metal Matrix Composites, 3.Fabrication of Lithium Ion Batteries, 4.Deformation Behavior of Materials
Sant, Sudhindra B	<i>Ph.D.(Queen's Univ., Canada)</i> , Thin Film Electronic Materials and Nanostructures, Spintronic Thin Films, Defects in Thin Film Semiconductors, Wide band-Gap Semiconductors, MEMS devices, Photovoltaic Thin Films, Biomaterials and Biomimetics, Nanomaterials and Nanocrystalline Plasticity

Assistant Professors

Aich, Shampa	<i>Ph.D.(Univ.of Nabaska, USA)</i> , Rapid Solidification, Magnetic Materials, Shape Memory Alloys, Surface Modifications, Biomaterials
Bhaduri, Amit	<i>M.Tech.(IIT Kanpur)</i> , STRUCTURE-PROPERTY RELATIONSHIP
Biswas, Koushik	<i>Ph.D. (Univ.of Stuttgart, Germany)</i> , Energy materials (Hydrogen storage Solid Oxide Fuel Cell Lithium Ion Battery, Abinitio and MD Modeling, Electroceramics, Structural Ceramics, Ceramic Reinforced Metal Matrix Composites, Sintering (Microwave SPS Conventional)
Chakrabarti, D	<i>Ph.D.(Univ. of Birmingham, UK)</i> , Microstructure property correlation in metals, Development of microstructure and texture in thermo-mechanical processing, Fracture toughness and fracture transition behaviour in metals, Development and effect of mixed grain structures in metals, Segregation during solidification and its effect on properties, Modelling based on dislocation theory, Defect initiation and its control in metals
Das, Jayanta	<i>Ph.D.(TU Dresden, Germany)</i> , Solidification and Non-equilibrium Processing, Metastable and Nanostructured Alloys, High Temperature Oxidation, Structure-Property Relationship, Phase Transformation
Kar, Sujoy Kumar	<i>Ph.D.(The Ohio State Univ.)</i> , Physical and Mechanical Metallurgy, Processing-Microstructure-Microtexture-Property Relationship, Materials and property modeling, Materials systems: Ti alloys and Ni based superalloys and steels for power plant applications
Kundu, Tarun Kumar	<i>Ph.D(Lulea univ of Tech,Sweden)</i> , Atomistic Simulations of Materials, Extractive Metallurgy, Computational Fluid Dynamics, Mineral processing
Laha, Tapas	<i>Ph. D.(Florida Int.Univ., Miami)</i> , Nanocomposites - Processing & Characterization, Interfacial Phenomena, Surface Engineering & Coating

Chair Professor

Ghosh, R.N.	Ph.D. (IIT Kharagpur)	Physical Metallurgy
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Chair Professor

Sen, P.K.	Ph.D. (Jadavpur University)	Process Metallurgy
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Brief Description of on-going activities

The Research and Development Program of the Department encompasses various areas like Corrosion Science and Technology, Extractive Metallurgy, Mechanical Metallurgy, Melting, Casting and Solidification Processing, Modeling, Simulation and Multimedia in Metallurgical Engineering, Physical Metallurgy, Powder Metallurgy, Surface Engineering etc. In the field of Extractive Metallurgy significant contributions for metal value extraction, particularly Cu, Ni and Co from sea nodules has been made. Direct reduction of iron ore using mine generated ore and coal fines is another major research area. Other areas of interests include the mathematical modeling of fluid flow and heat transfer during welding. In the domain of Mechanical Metallurgy, a pioneering achievement has been the design and development of fatigue testing using rotating bending machine to study short, long and non-propagating crack behaviour in several steels. Investigations related to structure-property relationship of various ceramic and metal-matrix composites, high temperature materials and advanced alloys are thrust areas of activity. Development of newer grades of dual phase and micro alloyed steels through fracture based studies, correlation between fracture and wear characteristics of materials, development of thin sheet steel components are some important fronts in this direction. In addition, research is progressing in the area of mechanical behaviour of small volume materials. The major areas in the field of Melting, Casting and Solidification Processing include: development of cast micro-alloyed steels, studies on the hot tearing of long freezing range Al alloys, austempered ductile

iron through non-conventional route, grain refinement of Al alloys and the development of cast metal matrix composites. Success has been achieved in improving the mechanical properties of some hypoeutectic and eutectic Al-Si alloys by combined grain refinement and modification treatment using indigenously developed Al-B and B rich Al-Ti-B master alloys and Sr, respectively. In addition to mathematical modeling works in the areas of surface engineering, phase transformation, solidification processing, fracture & fatigue, some more new areas have surfaced and these are: application of genetic algorithm for the optimization of metallurgical systems, mathematical simulation of high temperature metallurgical systems by application of computational fluid dynamics, heat and mass transfer, molecular dynamic simulation of nanostructured materials etc. Several Al-Cu-TM and Al-TM-Si (TM = transition metal) Al-Ni-Ti ternary alloys, and Al-alloys containing rare earth metals have been synthesized and characterized to explore the possibility of developing bulk amorphous Al-alloy by mechanical alloying and identifying the criteria of selection of such amorphous alloy compositions. The present activities of the Powder Metallurgy group include synthesis of particulate reinforced mullite and their property evaluation, production of Al₂O₃ reinforced Ni₃Al through reaction sintering route, reaction sintering of silicon carbide, recovery of copper from printed circuit etchant sludge and production of silicon carbide from fly ash silica. Research has been initiated in the area of semi-solid processing for casting and forming operations of Al-alloy matrix composites. In addition, significant progress has been achieved in the synthesis of Fe-TiC, Fe-ZrC and Fe-TiB₂ composites from cheaper raw materials by aluminothermic reduction method. Among several activities related to surface engineering, laser assisted surface modification, ion implantation and plasma spray deposition are the primary areas of active research interest. The research activities in the area of Environmental Degradation embraces fundamental studies relating to film/scale growth processes on different metal-oxygen and metal-halogen systems with emphasis on kinetics and growth mechanisms, defect structures of compounds, transport properties of different species, adhesion and protective properties of the scales etc. Studies on high temperature oxidation behaviour of multi-phase refractory metal-silicides like Molybdenum and Niobium Silicides are in progress. In the area of aqueous corrosion, the current activities are concentrated on the studies relating to corrosion behaviour of amorphous and nanocrystalline Zr-based binary alloys, corrosion and stress corrosion performance of aluminum based composites and Al-Ni alloys and stress corrosion cracking of nickel alloys in hydrogen fluoride environment. Development of Lithium Ion Battery (LIB) Technology for applications in Electric Vehicles in India has taken the role of a prominent research area in the Department.

Thrust Areas

1. CLASSICAL METALLURGY AND MATERIALS SCIENCE i. Extractive metallurgy; ii. Solidification and nonequilibrium processing; iii. Metastable alloys and Phase transformation; iv. Deformation and fracture behavior; v. Joining of metals; vi. Corrosion behavior and high temperature oxidation; vii. Powder Metallurgy
2. COMPUTATIONAL MATERIAL SCIENCE i. Modeling and simulation in process metallurgy; ii. Modeling of phase transformation kinetics; iii. Molecular dynamics; iv. Design & scale-up of metallurgical processes; v. Modeling and simulation of iron making processes
3. IRON AND STEEL i. Raw material processing and mineral beneficiation; ii. Advanced auto-grade steel; iii. Improvement in mechanical properties like creep, fatigue, fracture and non-destructive testing
4. ADVANCED MATERIALS i. Composites & functionally graded materials; ii. Nanomaterials and nanocomposites; iii. Surface engineering & Interfacial phenomena; iv. Thin film coatings; v. Biomaterials; vi. Lithium ion battery; vii. Solid oxide fuel cells (SOFCs)

New Acquisitions

1. Thermal Conductivity Analyser
2. Slurry Erosion Test Set Up
3. Impact Wear Testing Set Up
4. Ultra Pure Water Purification System
5. Fretting Wear Test Set-up

Lectures by Visiting Experts

1. Exploring coherent transport in complex oxides *by* Dr. Jaykanth Ravichandran (Research Associate, Columbia University, New York, USA)
2. Assessment and application of equilibrium slag – metal phosphorus partition for basic oxygen steelmaking *by* Prof Ahindra Ghosh (Retired Professor, Department of Materials and Metallurgical Engineering, Indian Institute of Technology Kanpur)
3. Modeling and Simulation Related to the Manufacturing of Aircraft Engine Components *by* Dr. Shesh Srivatsa (Consultant, GE, Aviation, USA)
4. Polymer-Derived Porous Ceramics for Energy and Environmental Applications *by* Dr. Ravi Mohan Prasad (Technische Universität Darmstadt, Fachbereich Material-und Geowissenschaften, Petersenstrasse 32, 64287 Darmstadt, Germany)
5. Inclusions and their control in steel *by* Prof Ahindra Ghosh (Retired Professor, Department of Materials and Metallurgical Engineering, Indian Institute of Technology Kanpur)

Doctoral and MS Degrees Awarded

1. S. Patra : Development of ultrafine grained HSLA steel with mixed grain structure(MS)
2. A. Chatterjee : Thermal fatigue behaviour of Cu-Cr-Zr alloys(MS)
3. S. Sahoo : Mathematical modeling of twin-roll strip casting of Al-3.3Cu and its experimental validation(PhD)
4. A. Karmakar : Rapid transformation annealing treatment for development mixed microstructures in low-carbon steels(MS)
5. K. Dutta : Accumulation of ratcheting strain in polycrystalline metallic materials(PhD)
6. Ashutosh : Development of ceria reinforced lead free tin based nanocomposites by pulse co-electrodeposition technique(PhD)
7. J. Das : Microstructure, mechanical properties and oxidation behaviour of some tungsten alloys(PhD)
8. N. Yedla : Deformation behavior of ribbons of Copper-Zirconium based metallic glass with nanocrystalline precipitates-Classical molecular dynamics and experimental studies(PhD)
9. S. Acharya : Mechanical behaviour of spot welds on interstitial free steel sheets(MS)
10. S. Chakraborty : Effect of annealing on texture evolution and oxide formation in nanocrystalline nickel-iron alloys(PhD)

Member - Professional Bodies

1. Dutta Majumdar, Jyotsna, *Life Member* - National Academy of Science, Allahabad
2. Mitra, Rahul, *Member* - The Minerals, Metals and Materials Society
3. Mitra, Rahul, *Member* - Programme Advisory Committee on Minerals, Metals and Materials, Department of Science and Technology
4. Mitra, Rahul, *Member* - American Society of Materials
5. Mitra, Rahul, *Member* - American Institute of Steel Technology
6. Mitra, Rahul, *Life Member* - Indian Institute of Metals
7. Mitra, Rahul, *Life Member* - Indian Ceramic Society
8. Mitra, Rahul, *Life Member* - Materials Research Society of India
9. Kundu, Tarun Kumar, *regular* - Indian Institute of Metal
10. Kundu, Tarun Kumar, *Member* - The Minerals, Metals & Materials Society
11. Biswas, Koushik, *Life Member* - Materials Research Society of India (MRSI)
12. Biswas, Koushik, *Life Member* - The Indian Ceramic Society
13. Biswas, Koushik, *Life Member* - The India Science Congress Association
14. Biswas, Koushik, *Member* - The Mineral Metal and Material Society, USA
15. Biswas, Koushik, *Life Member* - The Indian Institute of Metals
16. Aich, Shampa, *Life Member* - Indian Institute of Metals
17. Aich, Shampa, *Regular* - Institute of Biological Engineers (IBE)
18. Aich, Shampa, *Regular* - Materials Research Society (MRS), USA
19. Aich, Shampa, *Regular* - The Minerals, Metals & Materials Society (TMS), USA
20. Sant, Sudhindra B, *Member* - Materials Research Society
21. Chakrabarti, D, *Life Member* - Indian Institute of Metals
22. Chakrabarti, D, *Member* - Institute of Minerals, Materials and Mining (IOM3)

23. Laha, Tapas, *Professional Membership* - The Materials Research Society (MRS)
24. Laha, Tapas, *Professional Membership* - The Minerals Metals & Materials Society (TMS)
25. Laha, Tapas, *Life Membership* - The Indian Institute of Metals (IIM)
26. Laha, Tapas, *Life Membership* - The Indian Science Congress Association (ISCA)
27. Kar, Sujoy Kumar, *Member* - Indian Institute of Metals
28. Kar, Sujoy Kumar, *Member* - ASM International
29. Kar, Sujoy Kumar, *Committee member of two different technical groups of* - The Minerals, Metals & Materials Society (TMS)
30. Kar, Sujoy Kumar, *Member* - Alpha Sigma Mu (the International Professional Honour Society for Materials Science & Engineering)
31. Das, Jayanta, *Member* - NACE International
32. Das, Jayanta, *Member* - Deutsche Gesellschaft für Materialkunde e.V. (German Society for Materials Research)
33. Das, Jayanta, *Life Member* - The Indian Institute of Metals
34. Roy, Sanat Kumar, *Life Member* - Materials Research Society of India
35. Roy, Sanat Kumar, *Life Member* - The Indian Institute of Mineral Engineers
36. Roy, Sanat Kumar, *Regular Member* - The Mining, Geological and Metallurgical Institute of India
37. Roy, Sanat Kumar, *Regular Member* - Corrosion Society of India
38. Pabi, Shyamal Kumar, *Lifemember* - Indian Institute of Metals
39. Pabi, Shyamal Kumar, *Life member* - Materials Research Society of India
40. Pabi, Shyamal Kumar, *Member and former Sectional President of Metal Science Section* - Indian Science Congress Association
41. Chakraborty, Madhusudan, *Life Member* - Materials Research Society of India
42. Chakraborty, Madhusudan, *Member* - Institute of Indian Foundrymen
43. Chakraborty, Madhusudan, *Life Member* - Indian Institute of Metals
44. Ray, Kalyan Kumar, *Fellow* - Indian Institute of Metals
45. Ray, Kalyan Kumar, *Life member* - Indian group of International Stereological Society
46. Ray, Kalyan Kumar, *Life Member* - Material Research Society of India
47. Ray, Kalyan Kumar, *Life Member* - Powder Metallurgical Association of India
48. Roy, Gour Gopal, *Life Member* - Indian Institute of Metals
49. Das, Siddhartha, *Life Member* - Tau Beta Pi, a national engineering honour society, USA
50. Das, Siddhartha, *Life Member* - Sigma Xi, a national scientific research society, USA
51. Das, Siddhartha, *Life Member* - Indian Institute of Metals
52. Das, Siddhartha, *Life Member* - Materials Research Society of India
53. Das, Siddhartha, *Life Member* - Powder Metallurgy Association of India
54. Das, Karabi, *Life member* - Indian Institute of Metals
55. Das, Karabi, *Life member* - Materials research society, India
56. Ghosh, R N, *Life Member* - Indian Society for Non Destructive Testing (ISNT)
57. Ghosh, R N, *Life Member* - Indian Institute of Welding
58. Ghosh, R N, *Life Member* - Indian institute of Metals
59. Sen, Prodip Kumar, *Life Member* - Indian Institute of Metals

Member - Editorial Board

1. Chakraborti, Nirupam (0) *Member Editorial Board* - Materials & Manufacturing Processes
2. Chakraborti, Nirupam (0) *Member Editorial Board* - International Journal of Machining and Machinability of Materials
3. Chakraborti, Nirupam (0) *Member Editorial Board* - Journal of Advanced Research in Evolutionary Algorithms
4. Chakraborty, Madhusudan (2000) *Member* - Indian Foundry Journal
5. Dutta Majumdar, Jyotsna (2010) *Chief Editor* - Advances in Metallic Materials Processing a special issue under Advanced Processing of Materials
6. Dutta Majumdar, Jyotsna (2012) *Member* - Scientific Reports
7. Dutta Majumdar, Jyotsna (2010) *Member, Editorial Board* - Lasers in Engineering
8. Dutta Majumdar, Jyotsna (2009) *Editorial Board Member* - International Journal of Emerging Technologies and Applications in Engineering
9. Ghosh, Sudipto (2012) *Associate Editor* - Journal of Surfaces and Interfaces in Materials
10. Mitra, Rahul (2010) *Member* - Transactions of the Indian Institute of Metals
11. Pabi, Shyamal Kumar (2012) *Member* - Advances in Materials Research (AMR)

12. Pabi, Shyamal Kumar (2012) *Member* - Conference Papers in Materials Science
13. Ray, Kalyan Kumar (2007) *Advisory Member* - Transactions of the Indian Institute of Metals
14. Roy, Gour Gopal (2010) *Member of Editorial board* - Science and Technology of Welding & Joining
15. Sen, Prodip Kumar (2012) *Member, Editorial Board* - Steel Tech

Awards & Honours

1. Dutta Majumdar, Jyotsna (2012) *2012 - Metallurgist of the Year*
2. Chakraborti, Nirupam (2005) *Adjunct Professorship, POSTECH, Korea*
3. Dutta Majumdar, Jyotsna (2013) *MRSI Medal*

Fellowships

1. Dutta Majumdar, Jyotsna (2012) *DAAD-reinvitation fellowship*

Sponsored Research Projects

1. Atomistic Simulation of Gas Hydrates and Stabilizer/Inhibitor Design (MINISTRY OF EARTH SCIENCES, Rs.31.92 Lakhs)
2. Carbon Abatement In Ironmaking Blast Furnace (Ministry of Steel, Rs.0.00 Lakhs)
3. Correlation between Processing, Microstructure, Microtexture & Property in a beta Titanium alloy Ti-5553 (IIT Kharagpur (ISIRD Project), Rs.5.00 Lakhs)
4. Development of Aluminium Cenosphere Syntactic Foam Through Spray Forming Technique for Aerospace Application (Aeronautics Research and Development Board (ARDB), N. Delhi, Rs.0.00 Lakhs)
5. Development of Compositionally and Microstructurally Graded Thermal Barrier Coating by Plasma Spraying (Department of Science and Technology, N. Delhi, Rs.39.55 Lakhs)
6. Development of ductile cast iron for spent fuel sub-assembly cask for PFBR (IGCAR, Kalpakkam, Rs.32.68 Lakhs)
7. Development of Expert System for Indian Blast furnace (Ministry of Steel, Rs.84.46 Lakhs)
8. Development of Functionally Graded Metallic Components by Laser Materials Processing for Bio-implant Application (Department of Science and Technology, India, Rs.9.70 Lakhs)
9. Development of high energy density lithium ion prismatic batteries for laptops, solar and electric vehicles (Future Hi-tech Batteries Ltd., Punjab, Rs.3.98 Lakhs)
10. Development of high strength ferrite-bainite steels (SAIL, Rs.6.72 Lakhs)
11. Development of High Strength to Weight Ratio Materials for the Body of Under Water Vehicle (National Institute of Ocean Technology, Rs.76.02 Lakhs)
12. Development of Molybdenum and Niobium silicide based alloys and composites for elevated temperature applications (Defence Research and Development Organization, Rs.32.41 Lakhs)
13. Development of pilot scale pelletisation technology (Ministry of Steel, Rs.89.42 Lakhs)
14. Effect of ferrite grain structure on the mechanical properties of low-carbon steel (CSIR, New Delhi, Rs.20.00 Lakhs)
15. Essar Steel Research Wing (Essar Steel Limited, Rs.25.00 Lakhs)
16. Establishment of an advanced research facility for EB welding and process development related to programs of interest to DAE (EBW) (BRNS, DAE, Mumbai, Rs.132.00 Lakhs)
17. Evaluation of Manganese Nodules (Ministry of Earth Sciences, Rs.0.00 Lakhs)
18. Feasibility of Sequestration of Carbon Di-Oxide from Industrial Systems (SCI) (NIOT, Chennai, Rs.12.36 Lakhs)
19. Feasibility of sequestration of carbon di-oxide from industrial systems-Phase I (National Institute of Ocean Technology, Chennai, Rs.12.36 Lakhs)
20. High Strength TRIP-aided Steel for Automobiles (Tata Steel, Rs.11.68 Lakhs)
21. Innovative heat treatment of cast microalloyed steels for improving the properties. (Funded by: CSIR, New Delhi. (HTS), Rs.15.00 Lakhs)
22. Life estimation and microstructural damage of irradiated and unirradiated Cu-Cr-Zr alloy (NFP-BRFST, Ahmedabad, Rs.30.38 Lakhs)

23. Machinery Development in Tea Processing Industry (Tea Board, Rs.360.00 Lakhs)
24. Mathematical Model Development for Induration Cycle of Different Ore Sources (Ministry of Steel, GoI, Rs.89.42 Lakhs)
25. MD-Stochastic Model-based Design, Synthesis and Thermo-Physical Characterization of Nanofluids for Advanced Heat Transfer Applications (Naval Research Board, DRDO, Rs.48.40 Lakhs)
26. Microstructural Characterization and its Optimization for Improved Weld Strength, Fatigue Behavior and Corrosion Resistance of Electron Beam Welded Ma (Board of Research on Nuclear Science, Rs.22.00 Lakhs)
27. Microstructure-Texture-Toughness relations in High Strength Automotive Steel. (Funded by: DST, New Delhi. (HAS), Rs.28.00 Lakhs)
28. MICROWAVE ASSISTED SYNTHESIS OF NANOCRYSTALLINE ELECTRO-CERAMICS FOR FERRO-ELECTRIC RELAXORS AND SOFCS (CSIR, New Delhi, Rs.21.98 Lakhs)
29. Nanocrystalline Plasticity (DST, Rs.15.00 Lakhs)
30. NANOFLUID BASED COOLANT AND COMBUSTION FUEL SYSTEM (Kalpana Chowla Space Technology Centre, Rs.17.00 Lakhs)
31. Optimization of design & operating parameters like wire speed, bath super heat, steel grades on calcium recovery and its efficacy (Rastriya Ispat Nigam Limited, Rs.6.45 Lakhs)
32. Optimization of Processing Parameters to Produce High Aspect Ratio Synthetic Wollastonite (Indian Rare Earths Ltd., Kerala, Rs.38.32 Lakhs)
33. Physico-Chemical Analysis of Metal Based Ayurvedic Bhasma Drugs by Sophisticated Modern Instrumental Methods (DST, Rs.20.35 Lakhs)
34. Picometer displacements in piezoelectric thin film membranes for resonators (DST, Indo-Portuguese Joint Research project, Rs.3.70 Lakhs)
35. Process induced microstructural variation towards improved ductile-brittle transition temperature (DBTT) of 9Cr-1Mo steel (BRNS, Department of Atomic Energy (DAE), Rs.21.00 Lakhs)
36. Processing and characterization of bulk nanostructured brass (Department of Science and Technology, SERC, Rs.22.87 Lakhs)
37. Processing, characterization and deformation behavior of Ti-Fe-(Sn) ultrafine eutectic composites (ISIRD, SRIC, I.I.T. Kharagpur, Rs.5.00 Lakhs)
38. Silicon Carbide sensors as high temperature power electronic devices. (ISRO-KCSC, Rs.5.00 Lakhs)
39. Solvent Extarction using Ionic Liquids for High Value Metal (IIT, Rs.4.70 Lakhs)
40. Steel Technology Centre (Ministry of Steel and Department of Science and Technology, Rs.2025.86 Lakhs)
41. Structural Characterization of Materials Lab (MHRD, New Delhi, Rs.495.00 Lakhs)
42. Structure-property relations in ceramic composites for high temperature applications in nose cone tiles in hypersonic vehicles (Defence Research and Development Organization, Rs.72.96 Lakhs)
43. Studies on process optimisation and visualisation of laser cladding process (BRNS-DAE, Rs.18.00 Lakhs)
44. Study of correlation between Processing , Microstructure , Microtexture and Property in a high strength, beta Titanium alloy Ti-5Al-5Mo-5V-3Cr (DRDO, Rs.40.00 Lakhs)
45. Synthesis and properties of electrodeposited Nickel/Ceria nano composites (IREL, Rs.27.81 Lakhs)
46. Ti/TiB₂ Bi-layered and Multi-layered Coating on Steel Substrate by Pulsed Laser Deposition (PLD) Technique to Improve Tribological Properties (CSIR, Rs.19.25 Lakhs)
47. Versatile nano Zirconia production at Indian Rare Earths Limited, OSCOM (IRELTDC, Indian Rare-earths, Limited, Kerala, Rs.52.36 Lakhs)

Consultancy Projects

1. 1. Corrosion resistance test of Reinforcement of Existing Major Bridge on Kanchnalla and River Bhargavi (CREB) (M/s Bhubaneswar Expressway Pvt. Ltd., N. Delhi – 110001, Rs.0.00 Lakhs)
2. 14. Structure property correlation in near eutectoid steels, (Tata Steel,, Rs.05.01 Lakhs)
3. Artificial Neural Network Modeling of Materials (GE India Technology Center Pvt. Ltd., Rs.2.50 Lakhs)
4. Charpy impact testing of TMT rebar (Tata Steel, Jamshedpur, Rs.10.00 Lakhs)

5. Consultancy project on extractive metallurgy of polymetallic nodules (Ministry of Earth Science, New Delhi, Rs.40.53 Lakhs)
6. Creep modelling of high temperature alloys for super critical applications (CHAC) (BHEL R&D, Hyderabad, Rs.6.00 Lakhs)
7. Development of high strength automotive steel by quenching and partitioning (Q&P) treatment (Tata Steel, Jamshedpur, Rs.8.00 Lakhs)
8. Development in process design to achieve improved structural integrity of gun barrel (Metal & Steel Factory, Ishapore, Rs.24.27 Lakhs)
9. Development of air cooled microalloyed steel with improved toughness for forging applications (Ashok Leyland, Rs.12.00 Lakhs)
10. Examination of cold rolled stainless steel samples (Salem Steel Plant, Rs.0.67 Lakhs)
11. Genetic Algorithms in Blast Furnace (Åbo Akademi University, Finland, Rs.0.00 Lakhs)
12. Improvement of Adhesion between Bead Wire and Rubber Material inside Radial Tires (Tata Steel, Rs.39.00 Lakhs)
13. Optimizing the properties of galvanized steel (TATA Steel, Rs.0.00 Lakhs)
14. Process Optimization of Polymetallic Nodules (Consulting for Extractive Metallurgy) (Ministry of Earth Sciences, Rs.0.00 Lakhs)
15. Quality improvement of silver medallion obtained from Kolkata mint (India Govt. Mint, Kolkata, Rs.4.74 Lakhs)
16. SEM and TEM Examination of Cold Rolled Stainless steels (Salem Steel Plant, Tamil Nadu, Rs.1.00 Lakhs)
17. Strength and fracture behaviour of spot-welds in automotive steel sheets (Tata Steel, Rs.17.83 Lakhs)
18. Stress relaxation behavior of steel reinforcing strands (SRBS) (Tata Steel Limited, Rs.11.00 Lakhs)
19. Study of structure-property relations of wire ropes for achieving improved service performance (Usha Martin Ltd., Rs.19.05 Lakhs)
20. Testing of Tungsten Carbide Tips (Customs, Rs.0.67 Lakhs)

Patents (filed / granted)

1. Oxide dispersion strengthened powder metallurgy ferritic alloy and process for producing the same.
2. Synthesis of Bulk nanocomposites by non contact cavitation method

Visits Abroad by Faculty Members

1. Kar, Sujoy Kumar - Research Collaboration (University of North Texas, Denton, USA,) May 2012
2. Kar, Sujoy Kumar - Research Collaboration (The Ohio State University, Columbus, Ohio, USA,) June 2012
3. Sen, Prodip Kumar - Attending Conference for paper presentation (KOMPLASTECH 2013) (Zakopane, Poland,) Jan 13- Jan 16th, 2013
4. Roy, Gour Gopal - To attend International Conference and present a paper (Zakopane, Poland,) 13th January to 16th January, 2013
5. Dutta Majumdar, Jyotsna - As a visiting Scientist (Karlsruhe Institute of Technology, Karlsruhe,) 2 months
6. Chakrabarti, D - Paper presentation in 4th International Conference on Thermomechanical Processing of Steels (Sheffield UK,) 10-12 September, 2012

Invited Lectures by Faculty Members

1. Recovery & Efficacy of Cored Wire Injection in Steel Melt towards Clean Steel Production *by* Roy, Gour Gopal (Jadavpur University)
2. Some Studies on the Reduction Kinetics of Iron Ore-Carbon Composite Pellets in Rotary Hearth Furnace *by* Roy, Gour Gopal (Jadavpur University)
3. Cored Wire Injection in Steel melt *by* Roy, Gour Gopal (NML Jamshedpur)

4. The role of twins, nanocrystallinity and silver-oxygen complex species for biological efficacy of no *by Sant, Sudhindra B* (Department of Metallurgical Engineering, BHU, Varanasi)
5. Transmission Electron Microscopy of II-VI compound semiconductors *by Sant, Sudhindra B* (Department of Metallurgical Engineering, BHU, Varanasi)
6. Structure-Property Relations of Interfaces in Metal and Ceramic Matrix Composites *by Mitra, Rahul* (IIT-BHU)
7. Mechanical Properties of Ceramic Materials *by Mitra, Rahul* (IISc, Bangalore)
8. Mechanical Properties of Ceramic Matrix Composites *by Mitra, Rahul* (IISc Bangalore)
9. Effect of microstructure, non-metallic inclusions and texture on toughness of ferritic steel *by Chakrabarti, D* (Scientific Services Department, Tata Steel)
10. Comparison of data driven and analytical blast furnace models(KOMPLASTECH 2013) *by Sen, Prodip Kumar* (Poland, Zakopane, January 13th-16th)
11. Sustainable Development for Aluminium & Magnesium(EINFI-2012) *by Sen, Prodip Kumar* (Kolkata, India, December 7th-8th)
12. Parameters influencing the Performance of Niobium Superconducting Cavities- Few Open Issues *by Dutta Majumdar, Jyotsna* (Inter University Accelerator Centre, N. Delhi)
13. Thermal Barrier Coating *by Dutta Majumdar, Jyotsna* (High Temperature Coating Division, DLR, Germany)
14. Microstructural Designing and Process Optimization in Laser Surface Engineering *by Dutta Majumdar, Jyotsna* (Institute of Lasertechnique, Aachen, Germany)
15. Multi-scale Microstructural Control in Laser Surface Engineering *by Dutta Majumdar, Jyotsna* (Ruhr University, Bochum, Germany)
16. Copper based Shape Memory Alloy *by Dutta Majumdar, Jyotsna* (University of Munster, Germany)
17. Characterization of materials using FESEM, HRTEM, AFM and XRD *by Biswas, Koushik* (Materials Science Centre, IIT Kharagpur)
18. Renewable Sources of Energy in India: Initiatives, Challenges and Future Perspectives *by Biswas, Koushik* (Kanpur, Orissa)
19. A few aspects on the processing and deformation of advanced eutectic alloys *by Das, Jayanta* (Fifth International Conference on Solidification Science and Processing (ICSSP5), The Crown, Bhubaneswar, organized by IIT Bhubaneswar)

Papers Published in Journals

1. A few aspects on the processing and deformation behavior of advanced eutectic alloys *By J. Das, Tapabrata Maity Transactions IIM 65, 571-576 (2012)*
2. A New Model for Keyhole Mode Laser Welding using FLUENT *By S. Mohanty, C. K. Laldas, and G. G. Roy Transaction of the Indian Institute of Metals 65(5), 459-466 (2012)*
3. A Parameter for selection of Nano-dispersoids in Nanofluids for Thermal Applications *By M. M. Ghosh, S. Ghosh and S. K. Pabi Mater. Sci. Forum 736, pp 223-228 (2013)*
4. Al-Fe-Si Intermetallics in Sc-added Cast Al-4.5Zn-2Mg Alloy *By S. S. Sadhukhan, S. Biswas, M. Ghosh, K. Biswas International Journal of Metallurgical Engineering 1, 44-47 (2012)*
5. Approach for minimizing operating blast furnace carbon rate using carbon direct reduction diagram *By S. Paul, S. K. Roy, P. K. Sen Metallurgical and Materials Transactions B 44(B), 20-27 (2013)*
6. Austenite Grain Structures in Ti- and Nb-Containing High-Strength Low-Alloy Steel During Slab Reheating *By S. Roy, D. Chakrabarti, G. K. Dey Metallurgical and Materials Transactions A Vol. 44, pp. 717-728 (2013)*
7. Book Review on Polymers in Industry from A-Z, A Concise Encyclopedia, Leno Mascia *By J. Das Materials and Manufacturing Processes, Marcel Dekker, 28, 1 (2013)*
8. Cleavage initiation in steel: Competition between large grains and large particles *By A. Ghosh, A. Ray, D. Chakrabarti, C. L. Davis Materials Science and Engg. A Vol. 561, pp. 126-135 (2013)*
9. CO₂ Minimization in blast furnace and development of a CCS scheme *By S. Paul, S. K. Roy, P. K. Sen LAP LAMBERT ISBN-978-3-659-32265 (2013)*
10. CO₂ Minimization in Blast Furnace and Development of a CCS Scheme- A Novel Approach to CO₂ Capture and Sequestration *By Soumavo Paul, S. K. Roy and P. K. Sen ISBN: 978-3-659-3226 (2013)*

11. Cold-rolling and inter-critical annealing of low-carbon steel: Effect of initial microstructure and heating-rate By A. Karmakar, M. Ghosh, D. Chakrabarti *Materials Science and Engg. A* Vol. 564, pp.389-399 (2013)
12. Densification and characterization of W-Cr-Nb alloys prepared by sintering of mechanically alloyed nanocrystalline powders By S. Telu, R. Mitra and S.K. Pabi *Powder Metallurgy* 56(1) 83-88 (2013)
13. Development of Bimodal Ferrite-Grain Structures in Low-Carbon Steel Using Rapid Intercritical Annealing By A. Karmakar, A. Karani, S. Patra, D. Chakrabarti *Metallurgical and Materials Transactions A* Vol. 44, pp.2041-205 (2013)
14. DFT Analysis of Lithium De-intercalation in Li₂FeVO₄ By 33. Shamik Chakrabarti, Awalendra K. Thakur, K. Biswas *Ionics* DOI 10.1007/s11581-0 (2013)
15. Dodecahedron Methane Hydrate Cage Structure – An Ab initio Study By Snehanshu Pal and T. K. Kundu *Journal of Petroleum Engineering and Technology* V 2, Iss 1, p 22-35 (2012)
16. Effect of Age-Hardening on Dry Sliding wear behavior of mushy state rolled In-situ Al-4.5Cu-5TiB₂ composites By K. Pavitra and R. Mitra *Materials Science and Engineering A* 557, 84-91 (2012)
17. Effect of hot rolling temperature and thermal cycling on creep and damage behavior of powder metallurgy processed Al-SiC particulate composite By Jishnu J. Bhattacharyya and R. Mitra *Materials Science and Engineering A* 557, 92-105 (2012)
18. Effect of laser post-treatment on Al₂O₃-TiB₂-TiN composite coating with free hBN, By Chatterjee S., Dutta Majumdar J., Shariff S. M., Padmanabham G., Roy Choudhury A. *Int J Adv Manuf Technol* 61, 559-567 (2012)
19. Effect of Oxygen Partial Pressure on the Cyclic Oxidation Behavior of Mo₇₆Si₁₄B₁₀ By BARNAR ROY, KHUSHBOO, JAYANTA DAS, RAHUL MITRA, and SANAT KUMAR ROY *METALLURGICAL AND MATERIALS TRANSACTIONS A* DOI: 10.1007/s11661- (2013)
20. Effect of SiC content, additives and process parameters on densification and structure-property relations of pressureless sintered ZrB₂-SiC composites By Manab Mallik, Sabyasachi Roy, K.K. Ray and R. Mitra *Ceramics International* 39(3), 2915-2932 (2013)
21. Effect of tungsten metal particle sizes on the solubility of molten alloy melt: experimental observation of Gibbs-Thomson effect in nanocomposites By M. H. Lee, J. Das, D. J. Sordet, J. Eckert, A. J. Hurd *Applied Physics Letters* 101, 124103 (2012)
22. Evaluation of mechanical properties of partially amorphous and nanocrystalline Al₅₀Ti₄₀Si₁₀ composites prepared by mechanical alloying and hot isostatic pressing By D. Roy, R. Mitra, O.A. Ojo, S.S. Singh, D. Kolesnikov, W. Lojowski, R.O. Scattergood, C.C. Koch, I. Manna *Materials Science and Engineering A* 555, 21-27 (2012)
23. Evaluation of microstructure and mechanical properties of nano-Y₂O₃ dispersed ferritic alloy synthesized by mechanical alloying and consolidated by high pressure sintering By 2. Karak, S. K., Dutta Majumdar, J., Witczak, Z., Lojowski, W., Ciupinski, L., Kurzydowski, K. J., and Manna, I. *Metallurgical Transaction A* In press (2013)
24. Evolution of texture and nature of grain growth on annealing nanocrystalline Ni and Ni-18.5%Fe in air By S. Chakraborty, M. Settem and S. B. Sant *MaterialsXpress* accepted (2013)
25. Flow behaviour of a heat treated tungsten heavy alloy By Jiten Das, R Sarkar, G Appa Rao, R. Sankaranarayana, T. K. Nandy and S. K. Pabi *Mater. Sci. Engg. A* 553, pp119– 127 (2012)
26. Green-synthesis and characterization of Silver Nanoparticles by aqueous Leaf extracts of *Cardiospermum helicacabum* L By D.Vishnudas, B. Mitra, S. B. Sant and A. Annamalai *Drug Invention Today* 4(2), 340-344 (2012)
27. High Temperature Oxidation Behavior of W-Cr-Nb Alloys in the Temperature Range of 800-1200 °C By Suresh Telu, Rahul Mitra, Shyamal Kumar Pabi *International Journal of Refractory Metals and Hard Materials* 38, pp. 47-49 (2013)
28. In-situ synthesis, microstructure and properties of TiC & (Ti,W)C-reinforced Fe-Mn-Al austenitic steel matrix composites By A.K. Srivastava and Karabi Das *Journal of Materials Engineering and Performance* vol. 21, pp.2438-2445 (2012)
29. Influence of current density on microstructure of pulse electrodeposited tin coatings By 1. Ashutosh Sharma, Sumit Bhattacharya, Ranjan Sen, B.S.B. Reddy, H.-J. Fecht, Karabi Das, and Siddhartha Das *Materials Characterization* 68, 22-32 (2012)
30. Influence of sodium saccharin on the microstructure of pulse electrodeposited Ni-CeO₂ nanocomposite coating By Ranjan Sen, Siddhartha Das and Karabi Das *J. of Nanoscience and Nanotechnology* 12(10), 7944-49 (2012)

31. Introduction to Nanomaterials and Devices – Book review By S. B. Sant *Materials and Manufacturing Processes* in print (2013)
32. Laser-Surface Alloying of Nimonic 80 with Silicon and Aluminum and its Oxidation Behavior By Dutta Majumdar J and Manna I *Metallurgical Transaction A* 43, 3786-3796. (2012)
33. Mathematical Modeling of Iron Ore Sintering Process using Genetic Algorithm: Effect of Moisture Evaporation and Condensation on the Temperature Profile By Sekhar Suman, Brijesh K. Giri, Gour G. Roy *Computer Methods in Materials Science* 13(1), 141-146 (2013)
34. Mechanical activation of Al-Oxyhydroxide minerals - physicochemical changes, reactivity and relevance to Bayer process. By T. C. Alex, Rakesh Kumar, S. P. Mehrotra and S. K. Roy *Light Metals - TMS, Edited by C. E. Suar* pp -15-19 (2012)
35. Mechanism of accelerated spheroidization of steel during cyclic heat treatment around the upper critical temperature By 34. Joydeep Maity, Atanu Saha, Dipak Kumar Mondal, Koushik Biswas *Philosophical Magazine Letters* 93, 231-237 (2013)
36. Methane encapsulation in 51264 clathrate cage - a theoretical study By Snehanshu Pal and T. K. Kundu *Journal of Petroleum Engineering and Technology* V 2, Is 3, p 1-8 (2012)
37. Microstructural Characterization and Properties Evaluation of Ni-Based Hardfaced Coating on AISI 304 Stainless Steel 4 by High Velocity Oxyfuel Coating Technique By Sharma Prashant and Dutta Majumdar J. (*Metallurgical Transaction A* 44A, 372-380. (2012)
38. Microstructural Development and Room-Temperature Thermal Stability of Mechanically Alloyed Al87Y10Ni3 Nanostructure By Suhrit Mula, Sudipto Ghosh, and Shyamal Kumar Pabi *Adv. Sci. Lett.* 16, pp. 362-367 (2012)
39. Microstructure and cyclic oxidation behavior of W-Cr alloys prepared by sintering of mechanically alloyed nanocrystalline powders By S. Telu, A. Patra, M. Sankarnarayana, R. Mitra, S.K. Pabi *International Journal of Refractory and Hard Materials* 36, 191-203 (2013)
40. Microstructure and mechanical properties of nano-Y2O3 dispersed ferritic steel synthesized by mechanical alloying and consolidated by pulse plasma sintering By Karak, S. K., Dutta Majumdar, J., Lojkowski, W., Michalski, A., Ciupinski, L., Kurzydowski, K. J., and Manna, I. *Philosophical Magazine* 92, 516-534 (2012)
41. Microstructure–fracture toughness correlation in an aircraft structural component alloy Ti–5Al–5V–5Mo–3Cr By Atasi Ghosh, S. Sivaprasad, Amit Bhattacharjee, Sujoy Kumar Kar *Materials Science and Engineering: A* Volume 568, Pages 61 (2013)
42. Miedema model based methodology to predict amorphous-forming-composition range in binary and ternary systems By N Das, J Mittra, B S Murty, S K Pabi, U D Kulkarni, G K Dey *Journal of Alloys and Compounds* 550, pp. 483-495 (2013)
43. Minimization of Exergy losses in Corex process By A.Kadrolkar,S.K.Roy,P.K.Sen *LAP LAMBERT* ISBN-978-3-8454-3894 (2012)
44. Multi-objective optimization in wire-electro-discharge machining of TiC reinforced composite through Neuro-Genetic technique By Probir Saha, Debashis Tarafdar, Surjya K. Pal, Partha Saha, Ashok K. Srivastava and Karabi Das *Applied Soft Computing* 13, 2065-2074 (2013)
45. Nanocomposites of Aluminum Alloys by Rapid Solidification Processing By S S Nayak, D H Kim, S K Pabi, B S Murty *Transactions of the Indian Institute of Metals* 65, pp 647-651 (2012)
46. Natural Bond Orbital Analysis, Bond order and Frequency Calculation based study of hydrogen bond formation in different glycols and water complex By Snehanshu Pal and T. K. Kundu *Journal of Modern Chemistry and Chemical Technology* Vol 4, No. 1, p1-20 (2013)
47. On Synthesis of a Highly Effective and Stable Silver Nanofluid Inspired by Its Multiscale Modeling By M. M. Ghosh, S. Ghosh, and S. K. Pabi *Nanoscience and Nanotechnology Letters* 4, pp. 843-848 (2012)
48. On the Phononic and Electronic Contribution to the Enhanced Thermal Conductivity of Water-based Silver Nanofluids By Karthik, V, S. Sahoo, S. K. Pabi and S. Ghosh *International Journal of Thermal Sciences* 64, pp. 53-61 (2013)
49. Origin of plasticity in ultrafine lamellar Ti-Fe-(Sn) composites By Tapabrata Maity, J. Das *AIP Advances (American Institute of Physics)* 2, 032175 (2012)
50. Pentagonal dodecahedron methane hydrate cage and methanol system - an Ab initio study By Snehanshu Pal, T. K. Kundu *Journal of Chemical Sciences* V. 125, N. 2, p 379 (2013)
51. PHASE STABILITY IN THE MO-TI-ZR-C SYSTEM VIA THERMODYNAMIC MODELING AND DIFFUSION MULTIPLE VALIDATION By SUJOY KUMAR KAR, VORAMON S. DHEERADHADA, and DON M. LIPKIN *Metallurgical and Materials Transactions A* DOI : 10.1007/s11661 (2013)

52. Processing of silica foam using steam heating and its characterization By Jitendra Verma, R. Mitra and M. Vijayakumar *Journal of the European Ceramic Society* 33, 943-951 (2013)
53. Quantitative Microstructural Characterization of a near beta Ti alloy, Ti-5553 under Different Processing Conditions By Sujoy Kumar Kar, Atasi Ghosh, Nishant Fulzele, Amit Bhattacharjee *Materials Characterization* DOI: 10.1016/j.match (2013)
54. Refinement of Ferrite Grain Size near the Ultrafine Range by Multipass, Thermomechanical Compression By S. Patra, S. Neogy, V. Kumar, D. Chakrabarti, A. Haldar *Metallurgical and Materials Transactions A* Vol. 43, 4296-4310 (2013)
55. Refinement of Ferrite Grain Size Near to the Ultra-Fine Range by Single-Pass and Multi-Pass Thermo-Mechanical Compression By D. Chakrabarti, S. Patra, A. Haldar, Vinod Kumar *Int. J. of Metallurgical Engineering* Vol. 2, pp. 52-55 (2013)
56. Review of Phase Transformations in Multicomponent Melts, edited by Dieter M. Herlach By Sujoy Kumar Kar *Materials and Manufacturing Processes* Volume: 28, pp: 225 (2013)
57. Schottky nanocontact on single crystalline ZnO nanorod using conductive atomic force microscopy By S. K. Panda, S. B. Sant, C. Jacob and Hyunjung Shin *J Nanoparticle Research* 15, 1361-72 (2013)
58. Soft Matter Gradient Surfaces – Methods and Applications – Book review, By S. B. Sant *Materials and Manufacturing Processes* 28, 341–342 (2013)
59. Stability analysis and Frontier Orbital Study of Different Glycol and Water Complex By Snehanshu Pal and T. K. Kundu *ISRN Physical Chemistry* ID 753139, p 1-16 (2013)
60. Structure–property–correlation in laser surface alloyed AISI 304 stainless steel with WC + Ni + NiCr By Anandan S., Pityana S. and Dutta Majumdar J *Materials Science and Engineering A* 536, 159-169 (2012)
61. Study of Reduction Behavior of Prefabricated Iron Ore–Graphite/Coal Composite Pellets in Rotary Hearth Furnace, Ironmaking and Steelmaking By 2. Mukesh Kumar Sharma, Vikas Solanki, G. G. Roy and P. K. Sen *Ironmaking & Steelmaking* (DOI number 10.1179/1743281212Y.0000000086) published online (2012)
62. Study of reduction behaviour of prefabricated iron ore graphite/coal composite pellets By M.K.Sharma,V.Solanki,G.G.Roy,P.K.Sen *Iron making and steel making* DOI 10.1179/17432812 (2012)
63. Surface Characterization and Mechanical Properties Evaluation of Boride-Dispersed Nickel-Based Coatings Deposited on Copper Through Thermal Spray Routes By Sharma Prashant and Dutta Majumdar J *Journal of Thermal Spraying Technology* 21(5) 800-809. (2012)
64. Surface Characterization and Wear Behavior of Laser Surface Melted AISI 316L Stainless Steel By Kumar A., Pityana S. and Dutta Majumdar J. *Lasers in Engineering* 24, 147-166 (2012)
65. Synthesis and electrical characterization of Ba(Cd_{1/3}Nb_{2/3})O₃ ferroelectric compound By M. Pastor, K. Biswas *Materials Chemistry and Physics* 139, 634-639 (2013)
66. Synthesis and properties of pulse electrodeposited Ni-CeO₂ nanocomposite By Ranjan Sen, Siddhartha Das and Karabi Das *Metallurgical Transactions A*, 43A, 3809-3823 (2012)
67. Theoretical Prediction of Maximum Number of Methane Molecule Accommodation in Unit Cages of S-I Clathrate Structure By Snehanshu Pal and T. K. Kundu *Journal of Petroleum Engineering and Technology* Vol 2, Iss 2, P40-46 (2012)
68. Theoretical study of hydrogen bond formation in chitosan and pentagonal dodecahedron methane hydrate cage structure By Snehanshu Pal and T. K. Kundu *Chemical Science Transaction* 2 (2), P 447-454 (2013)
69. Theoretical study of hydrogen bond formation in trimethylene glycol-water complex By Snehanshu Pal and T. K. Kundu *ISRN Physical chemistry* ID 570394, p 1-12 (2012)
70. Transient stage oxidation behavior of Mo₇₆Si₁₄B₁₀ alloy at 1150 °C By Barna Roy, J. Das and R. Mitra *Corrosion Science* 68, 231-237 (2013)
71. Workability and mechanical properties of ultrasonically cast Al-Al₂O₃ nanocomposites By Suhrit Mula, S. K. Pabi, Crl C Koch, P. Padhi, S. Ghosh *Mater. Sci. Engg. A* 558, pp. 485-491 (2012)

Papers Presented in Conferences

1. Advanced Processing of Non-ferrous Materials (NMD Award Lecture), By Dutta Majumdar J, *National Metallurgists Day and Annual Technical Meeting of the Indian Institute of Metals*, Jamshedpur, India, (2012)

2. Application of Top Gas Recycle Concept in Blast Furnace using Indian Raw Materials., By R. K. Sahu, P. K. Sen and S. K. Roy., *Presented at the 66th ATM of IIM, Jamshedpur.*, (2012)
3. Caustic Leaching of Mechanically Activated Boehmite -Kinetic Analysis., By T.C. Alex, Rakesh Kumar, S.P. Mehrotra and S.K. Roy., *Presented at the 66th ATM of IIM, Jamshedpur.*, (2012)
4. Comparison between conventional annealing and rapid-transformation annealing of low-carbon steel, By A. Karmakar, D. Chakrabarti, *International Conference on Thermomechanical Processing of Steels (TMP-2012)*, Sheffield, UK, (2012)
5. Comparison of data driven and analytical blast furnace models for minimizing input carbon rate, By K. Rajesh, N. Chakraborti, P K Sen, *KOMPLASTECH 2013*, Zakopane, Poland, (2013)
6. Corrosion Prevention by Laser Surface Engineering (invited lecture), By Dutta Majumdar J, *International Corrosion Conference and Expo, organized by NACE, International*, Goa, India, (2012)
7. Cyclic oxidation behaviour of Mo-Si-B ultrafine composites, By B. Roy, J. Das, R. Mitra, *CORCON 2012 Conference & Expo on Corrosion*, Hotel Intercontinental -The Lalit, Goa, (2012)
8. Development of a new liquid phase sintered W-alloy – W-Cr-Nb – having very high sintered density and excellent oxidation resistance, By Suresh Telu, S.K. Pabi and R. Mitra, *66th Annual Technical Meeting of the Indian Institute of Metals*, Jamshedpur, (2012)
9. Development of ultra-fine and bimodal ferrite grain structures by rapid inter-critical annealing, By A. Karmakar, D. Chakrabarti, *3rd Int. Conf. on Thermomechanical simulation and processing of steel*, RDCIS, SAIL, Ranchi, (2012)
10. Development of ultra-fine grain structure in HSLA steels by single-pass and multi-pass deformation, By D. Chakrabarti, S. Patra, V. Kumar, A. Haldar, *International Conference on Thermomechanical Processing of Steels (TMP-2012)*, Sheffield, UK, (2012)
11. Effect of argon to nitrogen gas ratio on structure and properties of Ni-TiN nano-composite thin films processed by RF/DC magnetron co-sputtering system, By Mukesh Kumar, S. Mishra, R. Mitra, *66th Annual Technical Meeting of the Indian Institute of Metals*, Jamshedpur, (2012)
12. Effect of Heat Treatment On Microstructure And Properties Of Laser Cladded H13 Tool Steel Layer On H13 Tool Steel, By 3. Gururaj T, Dutta Majumdar J, Manish Tak, G. Padmanabham, Manna. I, *3rd Asian Symposium on Materials and Processing*, Indian Institute of Technology, Madras, (2012)
13. Effect of microalloy precipitates on austenite grain structure in reheated HSLA steel, By S. Roy, D. Chakrabarti, *NMD-ATM 2012*, XLRI Jamshedpur, (2012)
14. Effect of Operating Parameters on Weld Geometry and HAZ during Electron Beam Welding of AISI 304 Steel., By Jyotirmaya Kar, G. G. Roy and S. K. Roy., *Presented at the 66th ATM of IIM, Jamshedpur.*, (2012)
15. Green Synthesis of a core-shell ZnO Nanostructure with a Graphene like Surface Layer at Low Temperature., By Sumit Kumar, S. Ram, R. Mitra, and S. K. Roy, *Presented at the 100th Indian Science Congress at Calcutta University*, Kolkata, (2013)
16. Improving wear and erosion resistance by thermal spray deposition, By Dutta Majumdar J, *National Conference on Advances in Naval Materials (ADNAM-2013)*, NIOT, Chennai, (2013)
17. Indentation size effect and mechanism of deformation in Ti-Fe-(Sn) eutectic alloys, By T. Maity, J. Das, *The 50th National Metallurgist Day (NMD) and the 66th Annual Technical Meeting (ATM) of Indian Institute of Metals*, Jamshedpur, India,, (2012)
18. Laser Surface Engineering of Ti-6Al-4V for Bio-implant Application (MRSI Medal Lecture), By Dutta Majumdar J, *Materials Research Society of India*, IGCAR, Kalpakkam, (2013)
19. MD-stochastic model-based design, synthesis and thermo-physical characterization of nanofluids for advanced heat transfer applications, By S. K. Pabi, M. M. Ghosh, V. Karthik, and S. Ghosh, *ADNAM-2013 (National Conference on Advances in Naval Materials)*, NIOT Chennai, (2013)
20. Mechanical Activation of Gibbsite: Physicochemical Changes and Reactivity., By T. C. Alex, Rakesh Kumar, S. P. Mehrotra and S. K. Roy., *Presented at the 26th International Mineral Processing Congress (IMPC 2012)*, New Delhi., (2012)

21. Mechanical Behavior of ZrB₂ and HfB₂ Based Ultra-high Temperature Ceramic Composites, By M. Mallik, K.K. Ray, R. Mitra, *International Conference on Strength of Materials (ICSMA-16)*, IISc, Bangalore, (2012)
22. Nano-Boride Dispersed Coating on AISI 304 Stainless Steel by HVOF Spraying and Laser Melting, By Dutta Majumdar J and Sharma P, *26th International Conference on Surface Modification Technology*, Eculy, Lyon, France, (2012)
23. Near Net Shaping of Component by Direct Laser Cladding, By Dutta Majumdar J, *3rd Asian Symposium on Materials and Processing*, Indian Institute of Technology, Madras, (2012)
24. Oxidation behavior of Mo-Si-B based alloy at 1150 oC, By B. Roy, J. Das, R. Mitra, *The 50th National Metallurgist Day (NMD) and the 66th Annual Technical Meeting (ATM) of Indian Institute of Metals*, Jamshedpur, India, (2012)
25. Oxide dispersion strengthened powder metallurgy ferritic alloy, By K. Jayasankar, A. Pandey, B. K. Mishra and S. Das, *International Conference and Exhibition on Powder Metallurgy (PM-2013)*, Pune, India, (2013)
26. Preparation and structural investigations of ODS ferritic steel, By K. Jayasankar, B. K. Mishra and S. Das, *6th German-Japanese International Symposium on Nanostructures*, Kusatsu/Kyoto, Japan, (2013)
27. Refinement of ferrite grain size by single-pass and multi-pass deformation, By S. Patra, D. Chakrabarti, V. Kumar, A. Haldar, *3rd Int. Conf. on Thermomechanical simulation and processing of steel*, RDCIS, SAIL, Ranchi, (2012)
28. Structural and electrical characterization of La_{0.8}Sr_{0.2}Ga_{0.8}Mg_{0.2}O_{2.8} electrolyte for solid oxide fuel cell, By Ramesh Chandra Biswal and Koushik Biswas, *6th India-Singapore Joint Physics Symposium (ISJPS 2013) on Physics of Advanced Materials*, IIT Kharagpur, (2013)
29. Structure-Property Relations of Interfaces in Metal and Ceramic Matrix Composites, By R. Mitra, *Conference-cum Workshop on Electron Microscopy*, IIT-BHU, Varanasi, (2012)
30. Surface Engineering for Enhanced Efficiency of Photovoltaic Solar Cell (Invited Lecture), By Dutta Majumdar J, *3rd EICOON SCHOOL on Science and Technology of Renewable and Clean Energy Sources*, Kolkata, (2012)
31. Synthesis and characterization of Sr and Mg doped LaGaO₃ electrolyte by Pechini method for intermediate temperature SOFC application, By Ramesh Chandra Biswal and Koushik Biswas, *3rd EICOON School on Science and Technology of Renewable and Clean Energy Sources*, Kolkata, West Bengal, (2012)
32. Synthesis and characterization of Sr²⁺ and Mg²⁺ doped LaGaO₃ by co-precipitation method followed by hydrothermal treatment, By Ramesh Chandra Biswal and Koushik Biswas, *NMD-ATM 2012*, Jamshedpur, (2012)
33. Synthesis and Optical properties of a core-shell ZnO nanostructure with a graphene like surface layer at low temperature., By Sumit Kumar, S. Ram, S. K. Roy and R. Mitra, *Presented at the 6th India - Singapore Joint Physics Symposium (ISJPS)*, IIT Kharagpur., (2013)
34. Synthesis and Optical properties of a core-shell ZnOnanostructure with a graphene like surface layer at low temperature, By Sumit Kumar, S. Ram, S. K. Roy, and R. Mitra, *6th India - Singapore Joint Physics Symposium (ISJPS)- 2013*, Dept. of Physics, IIT Kharagpur, (2013)
35. Synthesis and thermal analysis of core core-shell ZnO nanostructure with a graphene like surface layer., By Sumit Kumar, S. Ram, S. K. Roy and R. Mitra, *Presented at the International Conference on Recent Advances in Composite Materials (ICRACM-2013)*, Goa, (2013)
36. Theoretical study of methanol as inhibitor and cyclopentane as stabilizer of dodecahedron methane hydrate cage, By Snehanshu Pal, T. K. Kundu, *International Conference on Materials Science and Technology (ICMST)*, St.Thomas College, Pala, Kottayam, Keral, (2012)
37. Thermal treatment-Microstructure-Fracture Toughness correlation in Ti-5553 (Ti-5Al-5Mo-5V-3Cr) alloy for aircraft structural applications, By Atasi Ghosh, S.Shivaprasad, Sujoy Kar, Amit Bhattacharjee and Dipankar Banerjee, *TMS Fall Meeting 2012*, Orlando, Florida, USA, (2012)

Department of Mining Engineering

Head

Prof. Karanam Uma Maheshwar Rao

Professors

Bhattacharya, Jayanta	<i>Ph.D.(IIT Kharagpur)</i> , Environmental Engineering and Management Social Impacts Mine Planning and Reliability Engineering
Bhattacharjee, Ashis	<i>Ph.D.(Penn-State)</i> , Occupational Health and Safety and Operations Research applications in mining
Das, Samir Kumar	<i>Ph.D.(ISM Dhanbad)</i> , Strata Control and Rock Mechanics, Mines Safety Engineering, Mine Environment
Deb, Debasis	<i>Ph.D.(Alabama Univ, USA)</i> , Rock Mechanics, Numerical modelling, Mine Design, Ground Control
Mukhopadhyay, Subir Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Mine Planning and Design, Underground Metalliferous Mining, Surface Mining (Open pit/ Opencast/ Quarry/ On & Offshore Placer), Mine Safety Mining Laws and Mine Management, Mine and Mineral Economics Valuation Trade & Stockpiling, Small-scale Mining and Sustainable Development in Mining
Pal, Samir Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Geomechanics - Roof fall prediction in underground coal mines, Mine Void Filling – Blind backfilling of abandoned mines using sand and other waste material, Wear of Elastomers in Mining – Abrasion of elastomers against different rock types.
Pathak, Khanindra	<i>Ph.D.(London Univ)</i> , Environmental Management in Surface Mining, Safety and Productivity of Mining Machinery, Application of Remote Sensing and GIS, Vetiver System Implementation for CSR- EMP Integration, Oil Spill Management
Rao, Karanam Uma Maheshwar	<i>Ph.D.(IIT Kharagpur)</i> , Rock Mechanics, Mine Development, Underground Metal Mining, Back filling of mine voids
Sastry, Bhamidipati Suryan	<i>Ph.D.(Utah)</i> ,

Associate Professors

Chakravarty, Debashish	<i>Ph.D (IIT Kharagpur)</i> , Mine Mapping and Locational Surveillance using Digital Photogrammetry, GeoResource Exploitation using Geoinformatics and GPS & GIS, Mineral Resource Mapping using Geodesy and InSAR Technologies, Geotechnical Stability Analysis of Slopes using Numerical Modelling, Hyperspectral Imaging for Mineral Identification
Majumder, Arun Kumar	<i>Ph.D.(Univ. of Queensland)</i> , Mineral Processing, Coal Washing, Solid- Fluid Interactions, Fine Particle Processing
Samanta, Biswajit	<i>Ph.D.(IIT Kharagpur)</i> , Mine planning, Geostatistics, Mine environment and ventilation

Assistant Professors

Dey, Kaushik	<i>Ph.D.(ISM, Dhanbad)</i> , Rock excavation blasting mechanised rock cutting surface mining
Patra, Aditya Kumar	<i>Ph.D.(Imperial College, London)</i> , Air pollution measurement and modelling, Greenhouse gas emissions from mines, Human vibration in mines and allied industries, Industrial safety assessment and audit
Prusty, Basanta Kumar	<i>Ph.D.(Southern Illinois)</i> , Coalbed methane and shale gas, Geological Carbon Sequestration, Clean Coal Technology (UCG and CTL)

technology)
Verma, Abhiram Kumar *Ph.D.(IIT Kharagpur)*, Rock Mechanics and Ground Control, Slope Design, Numerical Modeling

Faculty Appointments

Abhiram Kumar Verma Assistant Professor
Kaushik Dey Assistant Professor
Arun Kumar Majumder Associate Professor

Brief Description of on-going activities

Environment and Safety- Application of LCA, GIS and remote sensing for soil and water analysis as a part of mine closure planning; Experimental and computational fluid dynamics studies for shock loss determination in mine air flow; Biological and passive treatment of mine waste water; Investigation of soil and water contamination vis-à-vis land use changes near mining fields. Study of human behaviour related accidents in mines; Epidemiological investigations to identify possible risk factor of occupational injuries in mines; The statistical methods for assessing risk factors included logistical regression, loglinear modeling and structural equation modeling.

Rock Mechanics / Ground Control- Finite element analysis for longwall strata control problems, and design of shield supports; Rock Joints and their influence on the stability of underground openings; Rock Mass characterization, Land reclamation and soil mechanics; Assessment of Fly ash composites as a substitute fill material for underground mine voids; Risk analysis for the safety management of coalmines; On the mechanics of rock fragmentation by drilling and cutting- studies on the linear cutting machine (LCM).

Mine Planning / Modeling- Application of various grade estimation techniques namely kriging, cokriging, stichastic simulation and neural networks for estimation of mining blocks for quality control in mines; Investigation of different statistical quality control techniques including univariate and multivariate control charts for controlling the grade of mineral at various locations; Grade control aspects in limestone and bauxite operations. Fault Tree Analyses and algorithm development for a Coal Handling Plant.

Collaborative Research- Collaborative research is ongoing with the French National Institute of Health and Medical Research (INSERM) for conducting research on injury epidemiology. In this study, the public health prevention methods were applied to occupational injuries in mines. The Department has signed a MoU with the Geotechnical Division of the Korean Institute of Geosciences and Mineral Resources (KIGAM) for undertaking a joint collaborative research on the rock mass characterization based on the image processing techniques.

Advanced Surveying & Geoinformatics: Integration of GPS & I.SAR ground deformation data over mining areas. Use of lasers for assessment of stability of dumps. Vision based semi-automatic mine navigation system.

Thrust Areas

1. Rock Mechanics and Ground Control
2. Surface and sub-surface Environment
3. Mine Safety and Systems Engineering
4. Advanced Surveying and Geo-informatics
5. Safety Engineering
6. Clean Coal Technology

New Acquisitions

1. Los Angles Abrasive tester
2. Flicker tester LED based
3. Bomb Calorimeter Model 6100 EF
4. Autoclave
5. Pneumatic trainer Ron make cat No. 4030
6. Dust Track DRX
7. Centrifugal Pump (closed circuit)
8. Electro Hydraulic trainer
9. Temperatyre controlled gas desorption on canister with portable gas measurement system
10. Refrigerated Centrifuse High Speed (Make – REM 1 without rotor head) model C-24BL
11. Experimental set-up for the 2nd part of Slurry flow
12. 4800 Start synth Microwave synthesis Lab Station
13. Pilot Plant for Air Pollution control Equipment (Bagfilter)

International Collaborations

French National Institute for Health and Medical Resaerch. Korea Institute of Geosciencs and Mineral Resources. Southern Illinois University Carbondale, USA. Romania.The University of Toulouse, France.

Lectures by Visiting Experts

1. *by* Mr A Chaudhary (ONGC Kolkata)
2. Factors of Vocational success *by* Dr M B Sharan (Ex – Faculty Humanity and Social Science IIT Kharagpur)
3. Keynote lecture delivered on Research Scholars day *by* Dr. B K Pal (NIT Rourkela)
4. Keynote lecture delivered on Research Scholars day *by* Prof S Sinha (BESU Kolkata)
5. Prospecting and Production of Petroleum and Job Prospects in Oil Industry *by* Shri Biman Borgohain (ONGC Kolkata)
6. Surface mine environment *by* Dr Jim Flatt (The University of Adelaide, Australia)
7. Full demonstration of Mines Rescue and recovery, first-aid etc. *by* Shri J N Ghosh (Mines Rescue Station, Sitarampur)

Doctoral and MS Degrees Awarded

1. Radhakanta Koner : Numerical Stability Studies for External Overburden Dumps in Wardha Valley Coalfields(PhD)
2. Dibyendu Ghosh : Application and Simulation of InSAR in Geoinformation for Ground Profile Change(MS)
3. Kiran Yirrakula : Hydrodynamic Modeling of Subarnarekha River for Assessing Flood Affected Areas(PhD)
4. A K Jha : Evaluation of the Effects of Surface Blasting on Adjacement Underground Workings(PhD)

Member - Professional Bodies

1. Pathak, Khanindra, *Life Member* - Indian Society for Technical Education
2. Pathak, Khanindra, *Life Member* - Insitution of Engineers (India)
3. Pathak, Khanindra, *Member* - PNG Chamber of Mines and Petroleum
4. Pathak, Khanindra, *Life Member* - Mining, Geology, Metallurgy Institute of India,
5. Pathak, Khanindra, *Life Member* - Acoustic Society of India
6. Deb, Debasis, *Life Member* - Indian Society of Theoretical and Applied Mechanics (ISTAM)
7. Deb, Debasis, *Life-time* - International Soceity of Rock Mechanics (ISRM)
8. Deb, Debasis, *Life-time* - Mining, Geology and Metallurgical Society of India (MGMI)
9. Chakravarty, Debashish, *Associate* - Associate Member of IEI

10. Chakravarty, Debashish, *Life Member* - Life Member of MGMI
11. Samanta, Biswajit, *Regular* - SME (Society of Mining Engineering, USA)
12. Samanta, Biswajit, *Regular* - MGMI
13. Samanta, Biswajit, *Regular* - Institute of Engineer
14. Prusty, Basanta Kumar, *Life Member* - Mining Geological and Metallurgical Institute of India
15. Prusty, Basanta Kumar, *Member* - Institution of Engineers
16. Prusty, Basanta Kumar, *Life Member* - Society of Geoscientist and Allied Technologists, India
17. Prusty, Basanta Kumar, *Life Member* - Indian Science Congress Association
18. Prusty, Basanta Kumar, *Life Member* - Mining Engineers Association of India
19. Patra, Aditya Kumar, *Life member* - Society of Geoscientists and Allied Technologists (SGAT)
20. Patra, Aditya Kumar, *Life member* - IME Journal Readers' Forum
21. Patra, Aditya Kumar, *Member* - Institution of Engineers (India) (IE)
22. Patra, Aditya Kumar, *Life member* - Institution of Public Health Engineers (IPHE)
23. Patra, Aditya Kumar, *Life member* - Mining, Geological and Metallurgical Institute of India (MGMI)
24. Patra, Aditya Kumar, *Life member* - Indian Science Congress Association (ISCA)
25. Verma, Abhiram Kumar, *Life Member* - Institute of Engineers (India)
26. Verma, Abhiram Kumar, *Life Member* - International Society of Rock Mechanics
27. Dey, Kaushik, *Life Member* - Indian Society of Rock Mechanics and Tunelling Technology
28. Dey, Kaushik, *Life member* - Indian Science Congress Association
29. Dey, Kaushik, *Life Member* - Mining Geological and Metallurgical Society of India
30. Dey, Kaushik, *Life Member* - Mining Engineers Association of India
31. Dey, Kaushik, *Associate Member* - Institute of Engineers (India)
32. Majumder, Arun Kumar, *Life Member* - Institution of Engineers (India)
33. Majumder, Arun Kumar, *Life Member* - Indian Institute of Mineral Engineers
34. Majumder, Arun Kumar, *Life Member* - Indian Institute of Metals
35. Majumder, Arun Kumar, *Life Member* - Institute of Standard Engineers
36. Pal, Samir Kumar, *Fellow* - The Institution of Engineers (India)
37. Pal, Samir Kumar, *Life Member* - The Mining, Geological and Metallurgical Institute of India
38. Mukhopadhyay, Subir Kumar, *Chartered Engineer (Regular)* - The Institution of Engineers (India) Estd. 1923
39. Mukhopadhyay, Subir Kumar, *Senior Life Member* - The Mining, Geological & Metallurgical Institute of India, Estd. 1906
40. Mukhopadhyay, Subir Kumar, *Senior Life Member* - Indian Society of Technical Education
41. Mukhopadhyay, Subir Kumar, *Senior Life Member* - Mining Engineers Association of India
42. Bhattacharya, Jayanta, *Member* - Mining Geological and Metallurgical Institute of India
43. Bhattacharya, Jayanta, *Member* - Indian Society of Technical Education
44. Bhattacharya, Jayanta, *Member* - Institution of Engineers India
45. Bhattacharya, Jayanta, *Fellow* - Indian National Acedemy of Engineering
46. Rao, Karanam Uma Maheshwar, *Fellow Institution of Engineers FIE-112784* - Institution of Enginners - FIE
47. Bhattacharjee, Ashis, *Life Member* - Mining, Geological and Metallurgical Institute of India
48. Bhattacharjee, Ashis, *Life Member* - The Institution of Engineers India

Member - Editorial Board

1. Bhattacharya, Jayanta (2010) *Member* - Journal of Mines Metals and Fuels
2. Bhattacharya, Jayanta (2012) *Member of the Editorial Board* - Instituion of Enginners India Transactions on Material Science, Metallurgy and Mining
3. Majumder, Arun Kumar (2011) *Member of the Editorial Board* - World Environment
4. Mukhopadhyay, Subir Kumar (2009) *Member Editiorial Board From 1999 - 2005, 2007 - till date* - Journal of The Mining Geological & Metallurgical Institute of India (Estd. 1906)
5. Mukhopadhyay, Subir Kumar (2009) *Reviewer* - Journal of the Institution of Engineers India (1923) (Mining Engineering Division)
6. Pathak, Khanindra (2007) *Council Member* - The Indian Mining and Engineering Journal
7. Rao, Karanam Uma Maheshwar (0) *Member. Editorial Board* - International Journal of Earth Sciences And Engineering
8. Samanta, Biswajit (2010) *Member* - International Journal of Wireless Engineering and Technologg
9. Samanta, Biswajit (2008) *Associate Editor* - Transactions of SME

10. Samanta, Biswajit (2008) *Associate Editor - Mining Engineering*

Awards & Honours

1. Chakravarty, Debashish (2010) *Award of Merit from IEI for one of the Technical Papers*
2. Majumder, Arun Kumar (2005) *'Institute's Gold Medal for 2004-2005 (by Mining, Geological and Metallurgical Institute of India) for the paper on "Kelsey jig: A New Technique for Fine Coal Beneficiation*
3. Pal, Samir Kumar (1994) *Certificate of Merit*
4. Bhattacharya, Jayanta (2000) *Certificate of Merit for the year by the Institute of Engineers*
5. Bhattacharya, Jayanta (1997) *Coal India Gold Medal for their research paper published in the Journal of Institution of Engineers (I)*
6. Pathak, Khanindra (1993) *Commonwealth Fellowship*
7. Mukhopadhyay, Subir Kumar (2003) *Dr. J. Coggin Brown Memorial Gold Medal*
8. Mukhopadhyay, Subir Kumar (2001) *Dr. M. L. Rungta Award by MGMI.*
9. Mukhopadhyay, Subir Kumar (2011) *Eminent Mining Engineer - Honour MEAI (Jaipur) - delivered lecture as Guest of Honour.*
10. Bhattacharjee, Ashis (2012) *Eminent Mining Engineering Award by the Institution of Engineers (India)*
11. Chakravarty, Debashish (2001) *German Government Fellowship for postdoctoral research*
12. Rao, Karanam Uma Maheshwar (2011) *Hindustan Zinc Ltd Gold Medal*
13. Das, Samir Kumar (2002) *Hindustan Zinc Ltd Medal by IE*
14. Bhattacharya, Jayanta (2011) *Honorary Advisor, Corporate and Social Performance, Tata Steel*
15. Mukhopadhyay, Subir Kumar (2009) *Honour (Engraved Pleque) of Eminent Mining Engineer from The Institution of Engineers (India) Estd. 1923, to deliver memorial lecture*
16. Verma, Abhiram Kumar (2012) *IEI Young Engineers Award*
17. Majumder, Arun Kumar (2004) *IIME best paper award on beneficiation for the paper titled "Development of a new coal washability index published in Minerals Engineering Journal (an international journal), Vol. 17 (2004), pp. 93-96*
18. Chakravarty, Debashish (2010) *Institute Bronze Medal from MGMI*
19. Pal, Samir Kumar (1993) *Institute Gold Medal*
20. Das, Samir Kumar (1998) *Institute of Engineers (India) Certificate of Merit*
21. Mukhopadhyay, Subir Kumar (2009) *Institutes Silver Medal (2008-2009)(MGMI) for the research paper: Design of a Combined Stopping Method below an Open Pit Mine Using Numerical Modelling*
22. Deb, Debasis (2009) *Institutes Silver Medal (MGMI)*
23. Dey, Kaushik (2010) *ISRMTT Best Paper Award*
24. Mukhopadhyay, Subir Kumar (1998) *John Dunn Medal from the Mining, Geological and Metallurgical Institute of India*
25. Mukhopadhyay, Subir Kumar (2000) *John Dunn Medal from the Mining, Geological and Metallurgical Institute of India*
26. Majumder, Arun Kumar (2005) *Khare Award (IIME Best Presented Paper Award on Beneficiation) for the paper titled A Comparative Study on Magnetite Medium Behaviour Inside a Heavy Medium Cyclone and a Vorsyl Separator presented in*
27. Mukhopadhyay, Subir Kumar (2009) *Lala Ramkishore Singhal Award (Gold Medal) (2008 -09) A lifetime award for outstanding contribution in the field of conservation of minerals in India*
28. Pal, Samir Kumar (2012) *MGMI Institutes Silver Medal*
29. Das, Samir Kumar (1997) *Mining, Geological & Metallurgical Institute of India Bronze Medal*
30. Das, Samir Kumar (1996) *Mining, Geological & Metallurgical Institute of India Silver Medal*
31. Majumder, Arun Kumar (2007) *National Design Award in Mining Engineering 2007 for outstanding contribution in the field of mining (mineral) engineering design by the National Design and Research Forum of The Institution of Engine*
32. Majumder, Arun Kumar (2003) *R. P. Bhatnagar Award (by Mining, Geological and Metallurgical Institute of India) for the year 2002 - 2003 for outstanding contributions in the field of Mineral Beneficiation.*
33. Dey, Kaushik (2012) *Rajendraprasad Memorial Award (IE(I))*
34. Pathak, Khanindra (2009) *Sir John Dunn Medal*
35. Pathak, Khanindra (2007) *Smt Bala Tandan Award of MGMI*

36. Deb, Debasis (2009) *Smt. Bala Tandon Award (2008-09) for outstanding contribution to upgrading the quality of life in mining environment*
37. Pal, Samir Kumar (2003) *Sukumar Rakshit Award*
38. Das, Samir Kumar (2001) *Sukumar Rakshit Award by MGMI*
39. Majumder, Arun Kumar (2008) *The Coal India (J G Kumaramangalam Memorial) Award - 2007 from The Institution of Engineers (India) for the paper on New possibilities in fine coal beneficiation technique.*
40. Das, Samir Kumar (2009) *The Institution of Engineers (India) awarded me the Dr Rajendra Prasad award for the year 2009 for the paper titled Consolidation Characteristics of Stowed Pond Ash and Pond Ash Lime Mixture, JI of th*
41. Majumder, Arun Kumar (2007) *◆Institute Silver Medal for 2005-2006 (by Mining, Geological and Metallurgical Institute of India) for the paper on "Definition of Near Density Materials in Coal Preparation*

Sponsored Research Projects

1. An Investigation on Adsorption Characteristics of Indian Coals and to Ascertain Recoverability of CBM from Deep-Seated Coal and Lignite Resources" (Coal India Limited, Kolkata, Rs.90.07 Lakhs)
2. Assessment Of Cracked Zone In The Post - Blast Walls Of Surface & Underground Excavations (ISIRD, SRIC, IIT Kharagpur,, Rs.5.00 Lakhs)
3. CO2 Sequestration in Abandoned Coal Mine - A Fesibility Study" (DST, Rs.27.60 Lakhs)
4. CO2 Sequestration in Abandoned Coal Mines - A Feasibility Study (DST, Rs.23.40 Lakhs)
5. CO2 Sequestration in Abandoned Coal Mines – A Feasibility Study (DST, Rs.27.60 Lakhs)
6. Design and development of application tool for differential InSAR technique to determine ground surface movement (KCSTC, ISRO, Rs.30.00 Lakhs)
7. Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning (Department of Higher Education, MHRD, Rs.0.00 Lakhs)
8. Development and application of a new partition curve for cyclones (Tega Industries Limited, Rs.21.00 Lakhs)
9. DEVELOPMENT OF A MATHEMATICAL MODEL FOR PREDICTING THE FISH-HOOK EFFECT IN HYDROCYCLONE CLASSIFIERS (ISIRD, SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
10. Development of Indigenous Tools for carrying out Random Sampling & Testing of Explosive and Accessories used in mines of Coal India Limited (CMPDI (Coal India Limited), Rs.0.00 Lakhs)
11. Development of roof fall prediction system for underground mines using wireless network (Coal India Ltd, Rs.216.98 Lakhs)
12. Development of RS-GIS based database for Uranium Mining and Milling in the West Khasi Hills district, Meghalaya (BRNS, Rs.32.00 Lakhs)
13. Development of rubber compound and repair techniques for trailing cables of underground mining machines (Coal India Ltd, Rs.187.84 Lakhs)
14. Development of rubber compound and repair techniques for trailing cables of underground mining machines (Coal India Limited, Rs.187.84 Lakhs)
15. Development of soft computing model to forecast the capacity of powered support for Indian geo-mining condition (SRIC-DST, Rs.9.00 Lakhs)
16. Dispersion of particulate matter from deep opencast mines (ISIRD, SRIC, Indian Institute of Technology Kharagpur, Rs.5.00 Lakhs)
17. Diversion of forest land for mining and other allied activities (Steel Authority of India Limited, Rs.27.30 Lakhs)
18. Diversion of forest land for mining and other allied activities (Steel Authority of India Limited, Rs.27.30 Lakhs)
19. Effect of Mining on Water Regime (SAIL, Rs.27.80 Lakhs)
20. Effects of Mine Tailing and Jarofix leaching on Water Contamination (Hindustan Zinc Limited, Rs.19.00 Lakhs)
21. Green House Gas Emission: Assessment of Coal Bed Methane Potential (European Union, Rs.118.00 Lakhs)
22. Green house gas recovery from coal mines and unmineable coal beds and conservation to energy (European Commission - Imperial College London, Rs.116.38 Lakhs)

23. Green house gas recovery from coal mines and unmineable coal beds and conservation to energy (EU Contribution, Rs.116.38 Lakhs)
24. Greenhouse Gas Recovery from coal mines and unmineable coalbeds and conservation to energy. (European Union, Rs.116.00 Lakhs)
25. Investigation on Augmentation of Life of Dump-Truck Tyres through the Improvement of Tyre Retreading Compound-Phase II (Coal India Limited, Rs.64.37 Lakhs)
26. Investigations of Bolt Behaviour in Development and Depillaring Panels under Blast Induced Dynamic Loading (CIL R&D Board, Rs.229.00 Lakhs)
27. Modeling Extent of Overbreak and Cracked Zone due to Blasting in Tunnels of Hydro-Electric Projects (CSIR, Rs.20.84 Lakhs)
28. National Mission on Education through Information and Communication Technology - NMEICT (MHRD, Rs.-0.00 Lakhs)
29. Numerical and Analytical Study of Crack Propagation Through Rock (ISIRD-SRIC, Rs.5.00 Lakhs)
30. Pedagogy Project for Mine Ventilation (MHRD, Rs.0.00 Lakhs)
31. Re-application of Model Studies on Gravity Blind Backfilling Method and Evaluation of a Pre-jamming Indication Parameter in the Field (Ministry of Coal, New Delhi, Rs.402.66 Lakhs)
32. Studies on shrinkage swelling characteristics of some Indian coals to ascertain recoverability of CBM from deep seated coal and shale resources (CMPDI,Central Mine Planning & Design Institute Limited, Rs.126.90 Lakhs)
33. Studies On Shrinkage Swelling Characteristics Of Some Indian Coals To Ascertain Recoverability Of Cbm From Deep Seated Coal And Shale Resources (CIL R&D, Rs.126.90 Lakhs)
34. Study of the Behavior of Oil Spill on Ocean Surface through Laboratory experiments, modeling and Satellite Image (Ministry of Earth Science, Gol, Rs.78.00 Lakhs)
35. Technial Study of Old and Active OB Dumps of WCL for Dimensional Optimization (CIL R&D Board, Rs.359.29 Lakhs)
36. The environmental impact of coal mines closure and ecological rehabilitation of mining area of India and Romania (Department of Science and Technology, Rs.5.20 Lakhs)
37. Underground coal gasification and its process optimisation for sub-bituminous coals of India by a laboratory study (SRIC, IIT, Rs.5.00 Lakhs)
38. Use of hyperspectral remote sensing for mineral identification and mapping (STC, ISRO, Rs.14.90 Lakhs)
39. Virtual Laboratory for mine automation and vitural reality (MHRD, Rs.56.00 Lakhs)

Consultancy Projects

1. Applied Rock and Soil Mechanics Works for Mine Design System in UCIL mines (RSMW) (Uranium Corporation of India Ltd. (UCIL) Gol, Rs.9.88 Lakhs)
2. Aresting flow of fines from fines heaps at Gua ore mines (SAIL, Rs.0.80 Lakhs)
3. 'Sealed-off Area Monitoring by Video Photography at Kunustoria Colliery' (Eastern Coalfields Limited, Kunustoria Colliery, Burdwan, Rs.1.86 Lakhs)
4. Blast design for a drive with a single boomer for 38 mm blasthole and post blast monitoring for safe blast design in haulage road (MOIL, Rs.4.00 Lakhs)
5. Blast design for a drive with a single boomer for 38mm dia blasthole and post blast monitoring for safe blast design in haulage road at Balaghat mine, (Manganese Ore India Ltd., Nagpur, Rs.4.03 Lakhs)
6. Blast Vibration Studies for the Mining Operations (Bheema Cements, Rs.2.10 Lakhs)
7. Blast Vibration Study at Kaliapani Chromite Mine of Balasore Alloys Limited (SKCM) (Balasore Alloys Limited, Jajpur, Orissa, Rs.0.40 Lakhs)
8. Coal as Raw Materials for Thermal Power Generation (The Orissa Power Generation Corporation Limited,, Rs.0.79 Lakhs)
9. Consultancy by IIT-KGP for compliance of FC & EC Conditions of KIOM-MIOM, (SAIL, Rs.22.00 Lakhs)
10. Consultancy by IIT-KGP for compliance of FC & EC Conditions of Manaoharpur Iron Ore Mines, Chiria, (SAIL, Rs.11.50 Lakhs)
11. Design and Stability Analysis of Crown/ Sill Pillars below A Filled Stope (Hutti Gold Mines Ltd. A Govt. of Karnataka Undertaking, Rs.10.97 Lakhs)
12. Design of air-cooling system at SCCL mine, Kothagudem (SCCL, Rs.3.75 Lakhs)

13. Design, development and demonstration of a new hydrocyclone to analyze the feasibility of generating different quality of overflows simultaneously (Tega Industries Limited, Rs.5056200.00 Lakhs)
14. Determination of IPT and CPT of Jhillimili mine (SEC L, Rs.0.40 Lakhs)
15. Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning through ICT (Pedagogy Project; National Mission Project on Education through ICT, Rs.0.60 Lakhs)
16. Environmental impact assessment for fly-ash mixed dumping in JOCCM#1 (JSPL, Rs.5.10 Lakhs)
17. Evaluation of sealed off areas at Moonidih Mine, India (Southern Illinois University Carbondale, U.S.A., Rs.9.85 Lakhs)
18. Feasibility studies of underground mining in weathered rock in Kaliapani Chromite Mines of Balasore Alloys Ltd (Balasore Chromite Mines, Rs.4.95 Lakhs)
19. Feasibility Study of Sublevel in Iode-4, F/W-A (Uranium Corporation of India Limited (UCIL), Rs.3.90 Lakhs)
20. Geo-Environmental Study for Fly-Ash Mixed Dumping in JPOCCM (JPL, Rs.5.20 Lakhs)
21. Geotechnical Instrumentation Monitoring and Data Analysis for Sub Level Open Stope at Bangur Chromite Mines (Underground) (GIMD) (The Orissa Mining Corporation, A Govt. of Orissa Undertaking, Rs.3.02 Lakhs)
22. Geotechnical Instrumentation, Monitoring and Data Analysis for open blast hole stoping at Khetri Copper Mine(Underground) (Hindustan Copper Limited, Khetri Copper Complex, P.O-Khetri Nagar - 333504, Dist. - Jhuniunu(Raj., Rs.7.10 Lakhs)
23. Geotechnical instrumentation, monitoring and data analysis for open blast hole stoping at Khetri Copper Mine (underground) (Hindustan Copper Ltd, Rs.7.12 Lakhs)
24. Geotechnical study at Kaliapani Chromite Mines of Balasore Alloys Limited. (Phase – I, Phase – II and Phase – III) (Balasore Alloys Limited, Rs.21.00 Lakhs)
25. Geotechnical Study at Kaliapani Chromite Mines (Phase - I, II, and III) (Balasore Alloys Limited, Rs.21.21 Lakhs)
26. Geotechnical Study for Subsidence of Sukinda Mines of Balasore Alloys LTd (Balasore Alloys Limited, Rs.4.90 Lakhs)
27. Geotechnical Study of Enhancement of Waste Dump Height at our Sukinda Mines (Chromite) (INDIA METALS & FERRO ALLOYS LTD IMFA Group, IMFA Building, Jajpur, Orissa, India., Rs.4.00 Lakhs)
28. Geotechnical Study of Enhancement of Waste Dump Height of Sukinda Mines (Indian Metals & Ferro Alloys Limited (IMFA), Rs.4.93 Lakhs)
29. Heightening the tailings dam embankment at Sukinda Chromite Mines (Tata Steel, Rs.2.50 Lakhs)
30. Impact Assessment of Stopping of the L1 W2 Stope on the Settling Tanks of the Mine Water Treatment Plant (STMW) (Uranium Corporation of India Ltd. (UCIL), Rs.11.48 Lakhs)
31. Intent for Slope Stability Study of Overburden Dump at TRB Iron Ore Mines, Tensa, Jharkhand (TRBI) (Jindal Steel and Power Ltd., Sundargarh, Orissa, Rs.3.65 Lakhs)
32. Monitoring of Strata Movement of Pit Slope (Balasore Alloys Ltd, Rs.1.80 Lakhs)
33. Numerical Modelling of Tailings Pond Dam for TATA SCM (SCM, TATA, Rs.2.60 Lakhs)
34. Performance Measurement of Surface Miner and Cost Benefit Analysis (NALCO, Rs.3.90 Lakhs)
35. Pit Slope Stability of Limestone Mines of Ambuja Cement Ltd (Ambuja Cement Ltd, Rs.2.95 Lakhs)
36. Rock Mechanics Study at Narwapahar UCIL Mines (Phase I-II) (Uranium Corporation of India Limited (UCIL) Gol, Rs.6.00 Lakhs)
37. Rock Stability Analysis of Decline and Design of Vertical Shaft Lining at Mohuldih Uranium Mine (Uranium Corporation of India Limited (UCIL) (Gol), Rs.3.40 Lakhs)
38. Slope Stability Assessment, Safe Overall Pit Slope Study and its control measures at Majhgawan Diamond Mine, Panna (National Mineral Development Corporation, Rs.5.68 Lakhs)
39. Slope Stability studies for Rawan Captive Limestone mine in Raipur (Ambuja Cements Ltd., Rs.4.50 Lakhs)
40. Slope Stability Studies for Rawan Captive Limestone Mine in Raipur District of Chhattisgarh (Ambuja Cement Corporation, Rs.4.95 Lakhs)
41. Slope Stability Studies for Rawan Captive Limestone Mine in Raipur District of Chhattisgarh (Ambuja Cements Ltd., Rs.4.95 Lakhs)

42. Slope Stability, safe over all pit slope study and its control measures at Majhgawan Diamond Mine (NMDC, Rs.5.68 Lakhs)
43. Slope stabilization by Vetiver System Technology (Tata Steel, Rs.24.00 Lakhs)
44. Stability and strength test for Q-0, Dungri limestone Quarry (ACC Ltd, Rs.1.65 Lakhs)
45. Stability of Dump Slopes at Sukinda chromite mines, Sukinda. (TISCO -Tata Iron & Steel Co. Limited, Rs.12.00 Lakhs)
46. Stability Study of RCC Stack of Unit No. 5 (Hindalco Industries Limited, Rs.12.99 Lakhs)
47. Stope Design and its Stability Analysis at Narwapahar Mine, UCIL (Uranium Corporation of India Ltd., Govt.of India Enterprise, Rs.2.85 Lakhs)
48. Stopes and Pillars Design at Narwapahar Mine (140mRL to 230 mRL), UCIL (Uranium Corporation of India Ltd., Govt. of India Enterprise, Rs.3.15 Lakhs)
49. Study of Dump Stability at Sukinda Chromite Mines, Tata Steel (Tata Steel, Rs.12.22 Lakhs)
50. Study of Pit Slope Stability in Kaliapani Chromite Mines of (Balasore Alloys Limited, Rs.3.00 Lakhs)
51. Study of Pit Slope Stability of Ari Dongri Iron Ore Mines (GPIL, Rs.4.66 Lakhs)
52. Study of Pit Slope Stability of Aridongri Iron Ore Mines (Godavari Power and Ispat Limited, Rs.4.66 Lakhs)
53. Study of ventilation system at Boula Chromite mine (FACOR, Rs.0.80 Lakhs)
54. Study on intensity of noise and vibration due to non-blasting mechanical mining operations. (VTBM) (M/s. Birla Corporation Ltd., Rs.9.83 Lakhs)
55. Study Project for determining suitability of Surface Miners at NALCO Mines , Damanjodi , Orissa (NALCO, Rs.8.60 Lakhs)
56. Subsidence Study at ICCGroup of Mines (HCL, Rs.17.00 Lakhs)
57. Subsidence study of Surda, Kendadih and Rakha mining areas (Hindustan Copper Limited, Rs.17.68 Lakhs)
58. Survey of Defense Land, Barrack pore Cantonment (Cantonment Board, Rs.11.00 Lakhs)
59. Survey of Defense Land, Jalapahar Cantonment (Cantonment Board, Rs.6.00 Lakhs)
60. Survey of Defense Land, LebongCantonment (Cantonment Board, Rs.5.00 Lakhs)
61. Techno Fesibility study for an Incline shaft and Primary Drivages for Underground Mining in lode No. 6 at Kaliapani Chromite Mines (Balasore Alloys Limited, Rs.7.00 Lakhs)
62. Techno-feasibility study for an incline, shaft and primary drivages for underground mining in lode no.6 at ISPAT Chromite mines (Balasore Alloys Ltd, Rs.7.06 Lakhs)
63. Testing of Core Sample and Soil Sample (Balasore Alloys Limited, Rs.2.00 Lakhs)
64. Testing of Core Samples and Soil Samples (Balasore Alloys Limited, Rs.2.12 Lakhs)
65. Time and Motion study of Dumper and Shovels in Kaliapani Chromite Mine of Balasore Alloys Ltd. (Balasore Alloys Limited, Rs.1.00 Lakhs)
66. Time and Motion Study of Dumpers and Shovels in Kaliapani Chromite Mines (Balasore Alloys Ltd., Rs.1.06 Lakhs)
67. Uniaxial and tensile strength test of core and block sample of Jungle and Maheswar Lode, Kathpal Mines (Ferro Alloys Corporation Ltd Laxmi Bhawan Kuans, Bhadrak – 756 100, Orissa, India, Rs.0.60 Lakhs)

Visits Abroad by Faculty Members

1. Majumder, Arun Kumar - To attend and present a paper in an International conference (Marrakech, Morocco,) May 9-13, 2011
2. Bhattacharya, Jayanta - To teach a course on Reclamation Engineering and Sustainability (Western Australia School of Mines, Curtin Univ. Australia,) A Week in April 2012
3. Bhattacharjee, Ashis - Invited for Academic Purpose (Pennsylvania State University, University Park, Pennsylvania,) 3 Days (June 26-28, 2012)
4. Bhattacharjee, Ashis - Invited lecture (National Institute of Occupational Safety and Health, Pittsburgh, USA,) 2 hours
5. Majumder, Arun Kumar - Scientific Collaboration (Toulouse, France,) December 1-17, 2011
6. Prusty, Basanta Kumar - Delivering lecture, Lab visit, collaborative research (INGV Roma, Italy,) 3-10 July 2011
7. Majumder, Arun Kumar - Visiting Professor of the University of Paul Sabatier (Toulouse, France,) December 1-23

Invited Lectures by Faculty Members

1. Fundamentals of Coal Preparation & Modeling on Gravity Concentration Unit Operations *by* Majumder, Arun Kumar (IICM, Ranchi)
2. Delivered Four Lectures in a short course organised by ISM, Dhanbad *by* Majumder, Arun Kumar (M N Dastur, Kolkata)
3. Delivered Four Lectures on Fundamentals of Mineral Processing *by* Majumder, Arun Kumar (Toulouse, France)
4. Delivered Four Lectures on Solid-Fluid Interactions *by* Majumder, Arun Kumar (Toulouse, France)
5. Innovative Approach in Modeling Gravity Concentration Unit Operations *by* Majumder, Arun Kumar (Tata Steel, Jamshedpur)
6. Delivered Six Lectures on Fine Particle Processing *by* Majumder, Arun Kumar (National Metallurgical Laboratory, Jamshedpur)
7. SAFE BLASTING TECHNIQUES FOR SURFACE AND UNDERGROUND EXCAVATION *by* Dey, Kaushik (IIT Kharagpur)
8. Controlled blasting .techniques in surface mining operations *by* Dey, Kaushik (Rourkela)
9. TECHNIQUES OF FRAGMENTATION CONTROL IN SURFACE MINES AND ITS IMPACT ON PRODUCTIVITY *by* Dey, Kaushik (IIT Kharagpur)
10. SELECTION, PLANNING AND OPERATION OF SURFACE MINER *by* Dey, Kaushik (IIT Kharagpur)
11. Problems in Drilling and blasting *by* Dey, Kaushik (IIT Kharagpur)
12. Risk Assessment of Coal Mines in India: Past, Present and Future Trends *by* Bhattacharjee, Ashis (National Institute of Occupational Safety and Health, Pittsburgh, USA)
13. Modes of rockmass failure in mines- based on case histories *by* Rao, Karanam Uma Maheshwar (NITK Surathkal)
14. Rock Mass response to the change in stresses and Modes of failure. *by* Rao, Karanam Uma Maheshwar (Department of Mining IIT BHU)
15. Principles of Mine Development *by* Rao, Karanam Uma Maheshwar (Department of Mining Engineering, South Dakota School of Mines, USA)

Books Published

1. J Bhattacharya (Ed): Design and Selection of Bulk Material Handling Equipment and Systems *published by* Wide Educational Products and Services (2012)
2. Jayanta Bhattacharya: Principles of Mine Planning Vol.II Enterprise Building *published by* Wide Educational Products and Services (2012)

Short-Term Courses, Training Programmes and Workshops organised

1. Accident Prevention and safety Management in Mines (November 6-9, 2012)
2. Environmental control in mining and allied industries (12 - 14 October 2011)
3. Environmental Control in Mining and Allied Industries (12-14 Oct 2011)
4. Project Land Acquisition Rehabilitation Resettlement of Displace People (11-14 July,2012)
5. Project Land Acquisition,CSR and Sustainable Development (20-23 Feb,2013)

Papers Published in Journals

1. A Methodology for Assessment of Carrying Capacity of a River in Mining Area, , , *By* Shivam Shahi, Animesh Ranjan and K. Pathak *Global Journal of Applied Environmental Sciences* V 1, No. 1 pp. 31-46 (2011)
2. An enhanced numerical procedure for modelling fully grouted bolts intersected by rock joint *By* Deb, D., and K.C. Das *Geosystem Engineering* In press (2013)
3. An investigation on operational characteristics of surface miners *By* Prof Samir K Pal, Kudlappa Desai, Subhash C Niyogi and Dr. Anup K Tripathi *Transactions of Mining, Geological and Metallurgical Institute of India* Vol. 108, pp. 70-76 (2012)

4. Analysis of excavation shapes on fully grouted rock bolt using EFEM By Deb, D., and K.C. Das, and S. Kavala *Journal of Rock Mechanics and Tunnelling Technology* 18(1), pp. 15-30 (2012)
5. Analysis of Roof Vibration Patterns for Identifying Fractured Rock Strata in a Coal Mine By Bhattacharya S., D. Deb and S.K. Pal *Journal of Mines, Metals & Fuels* 60(3-4)47-53 (2012)
6. Analysis of roof vibration patterns for identifying fractured rock strata in a coal mine By Sudipta Bhattacharjee, Debasish Deb and Samir Kumar Pal *Journal of Mines, Metals & Fuels* Vol.60,No.3&4,p47-53 (2012)
7. Analysis of swirling flow in hydrocyclones operating under dense regime By Aurélien Davailles, Eric Climent, Florent Bourgeois and Arun Kumar Majumder *Minerals Engineering* 31 (2012)
8. Case Study of Establishing a Safe Blasting Criterion for the Pit Slopes of an Open-Pit Coal Mine By Choi, B. H., Chang-Ha Ryu, D. Deb, Yong-Bok Jung, and Juhwan Jeong *Int. J. of Rock Mech. and Min. Sci* In press (2012)
9. Comparative Evaluation of CARTOSAT-1 and SRTM Imageries for Digital Elevation Modeling By Yarrakula K., D. Deb, B. Samanta *Journal of Geospatial Information Sciences* in press (2012)
10. Cost -effective Importance measure-A new approach for resource prioritization in a production plant By S.Guta,J.Bhattacharya, J Barabady,Uday kumar *Reliability and Quality Engineering and Management* Vol.30,No.4 (2013)
11. Design and Stability of Open stopes in Hard Jointed rockmass- an integrated Techno-economic approach By Dr. S. K. Mukhopadhyay, Dr.D. Deb, and Dr.K. U. M. Rao *Institution of Engineers* 19 (2011)
12. Discussion on the article "Characterization method for population of mineral particles for flow processes and the assessment of its application potential" and authored by Ireneusz Pyka and Krzysztof Wierchowski published in International Journal of *By A. K. Majumder International Journal of Mineral Processing* 14-15 (2012)
13. Failure Process of Brittle Rock using Smoothed Particle Hydrodynamics, *Journal of Engineering Mechanics* By D. Deb, R. Pramanik *Journal of Engineering Mechanics* In press (2013)
14. Generalized symmetric formulation of tangential stiffness for nonassociative plasticity By Deb, D., and K.C. Das *Journal of Engineering Mechanics* In press (2012)
15. Is the fish-hook effect in hydrocyclones a real phenomenon? By F. Bourgeois and A.K. Majumder *Powder Technology* In Press (0)
16. Land-Use Land Cover Changes in East Singbhum Mineralized Zone: A Case Study By Pal K., Deb D., H. Vardhan, M. Aruna, and B. Samanta *Disaster Advances* 4 (4), pp. 5-10 (2011)
17. Microwave-assisted synthesis and characterization of CaS nanoparticles By Roy A, Bhattacharya J *International Journal of Nanoscience* doi: 10.1142/S021958 (2012)
18. Numerical analysis of an interaction between hydraulic powered support and surrounding rock strata By Verma AK and Deb D *Int J Geomechanics* 13 (2), 181-192 (2013)
19. Operation of Surface Miner: Retrospect of a Decade Journey in India By Dey K. and Bhattacharya J. *Procedia Engineering* vol.46, pp.97-104 (2012)
20. Performance of Piezo-electric sensor for the monitoring of roof fall hazard in underground coal mine By Sudipta Bhattacharjee, Debasis Deb and Samir Kumar Pal *International Journal of Multidisciplinary Research and Advances in Engineering* Vol.4,No.III (2012)
21. Planning and Design with Surface Miners – Some Issues By Dey K. and Sen P. *Journal of Mines, Metals and Fuels* Vol. 60 No. 11 & 12 (2012)
22. Postmining soil development on spreader reclaimed land for agricultural purpose in Rheinisch lignite area, Germany By Anup K. Tripathi, Janyanta Bhattacharya and Samir K. Pal *Journal of Mines, Metals & Fuels* Vol.60,No.5,p103-108 (2012)
23. Reclamation and management of disturbed surface mining areas for agricultural purpose with emphasis on concurrent reclamation By Anup K. Tripathi, Jayanta Bhattacharya and Samir K. Pal *Journal of Mines, Metals & Fuels* Vol.60,No.3&4,p54-59 (2012)
24. Removal of Cu(II), Zn(II) and Pb(II) from water using microwave-assisted synthesized maghemite nanotubes By Roy A, Bhattacharya J *Chemical Engineering Journal* 211-212 & 493-500 (2012)
25. Rock Failure Analysis using Smoothed Particle Hydrodynamics By R. Pramanik and D. Deb *Geosystem Engineering* In press (2013)

26. Stability Design Fundamentals of Open Stopes and Small Opening in Hard Rock Mines and their Scope for R&D Work ♦♦? By Dr. S. K. Mukhopadhyay, Dr.D. Deb, and Dr.K. U. M. Rao *MGMI Transcation* (2013)
27. Sweetmeat waste fractions as suitable organic carbon source for biological sulfate reduction By Bidus Kanti Das, Samiran S Gauri, Jayanta Bhattacharya *International Biodeterioration and Biodegradation Accepted* (2013)
28. Uncertainty-based Mine Production Scheduling for Ore Grade Control using Conditional Simulation and Genetic Algorithms By Samanta B., Vaibhav R.K. Bhattacharjee A., Chakravarty D. *Mining Engineering* Vol.65, No. 5, 66-76 (2013)
29. Understanding of the biochemical events in a chemo-bioreactor during continuous acid mine drainage treatment By Bidus Kanti Das • Santi M. Mandal • Jayanta Bhattacharya *Environmental Earth Sciences* 66 & 607 (2012)
30. Vibration and Acoustic Emission Studies of Rock Samples under Uniaxial Compression and Tension By Naga Ramesh Vanapalli, Subir K Ghosh, Dr. Samir K Pal & Dr Anup K Tripathi *Transactions of Mining, Geological and Metallurgical Institute of India* Vol. 108, pp. 60-69 (2012)

Papers Presented in Conferences

1. An enhanced numerical procedure for modeling fully grouted bolts intersected by rock joint, By Das, K.C., D. Deb, and A.K.Jha, *7th Asian Rock Mechanics Symposium (ARMS7)*, Seoul, South Korea, (2012)
2. Analysis of Brittle Fracture in Rock using Smoothed Particle Hydrodynamics, By D. Deb and R. Pramanik, *Third Indian Rock Conference by Indian Society of Rock Mechanics and Tunnelling Technology (ISRMTT)*, IIT Roorkee, (2011)
3. Analytical model for fully grouted rock bolts considering movements of rock joints, By Das, K.C., D. Deb, and G.P. Raja Sekhar, *3rd Indian Rock Conference by ISRMTT, INDOROCK-2011*, , (2011)
4. Beneficiation of Indian Rock Phosphates, By A K Majumder, K Dey and J Bhattacharya, *1st International Symposium on Innovation and Technology in Phosphate Industry*, Marrakech, Morocco, (2011)
5. Comparison of Two Near-field Blast Vibration Estimation Models – A Theoretical Study, By Arora S., Murmu P. and Dey K., *10th International Symposium on Rock Fragmentation by Blasting FRAGBLAST*, New Delhi, (2012)
6. Development of a Fluid-Mechanical model for Flowing Film Concentrators, By A K Majumder, *XXVI International Mineral Processing Congress - IMPC 2012*, Hotel Ashoka, New Delhi, (2012)
7. Excavation shape opening effect on fully grouted rock bolt through EFEM procedure, By Deb, D., K.C. Das, and S. Kavala, *3rd Indian Rock Conference by ISRMTT, INDOROCK-2011*, IIT Roorkee, (2011)
8. Monitoring Ground Vibrations for Predicting Overbreak Threshold Levels in Underground Drivages, By Dey K. and Murthy V.M.S.R., *10th International Symposium on Rock Fragmentation by Blasting FRAGBLAST*, New Delhi, (2012)
9. Prediction of Failure in Geomaterial using Smoothed Particle Hydrodynamics, By R. Pramanik and D. Deb, *56th Congress of the Indian Society of Theoretical and Applied Mechanics ISTAM 2011 (An International Meet)*, SVIT, Surat, (2011)
10. Real-Time Roof Health Status Monitoring System in Depillaring Section of a Bord and Pillar Coal Mine Using Multi-hop Wireless Sensor Network (MWSN), By Bhattacharjee S., D. Deb and S. K. Pal, *7th Asian Rock Mechanics Symposium (ARMS7)*, Seoul, South Korea, (2012)
11. Relationships of some Individual and Occupational Factors to Accidents of Dumper Operators in Coal Mines: A case Study, By Bhattacharjee Ashis and Sandeep, *XXIV Annual International Occupational Ergonomics and Safety Conference*, Fort Lauderdale, Florida, USA, (2012)
12. Rock Failure Analysis using Smoothed Particle Hydrodynamics, By R. Pramanik and D. Deb, *7th Asian Rock Mechanics Symposium (ARMS7)*, Seoul, South Korea, (2012)
13. SPH approach to rock failure with embedded discontinuity, By R. Pramanik, D. Deb, *RocDyn-1*, Laussane, (2013)

14. SPH Procedures for Failure Analysis of Circular Rock Disk under Distributed Arc Loading, By D. Deb and R. Pramanik, *10th International Symposium on Rock Fragmentation by Blasting (FRAGBLAST 10)*, New Delhi, (2012)
15. Stability Analysis of a Mine Waste Dump – A case study, By Verma AK, Deb D, Mukhopadhyay SK, *Proceeding of the ISRM Int. Sym. 7th Asian Rock Mechanics Symposium (ARMS)*, Seoul, Korea, (2012)
16. Stability Analysis of a Mine Waste Dump Over an Existing Height using Limit Equilibrium Method, By Verma AK, Deb D, Mukhopadhyay SK, *Proceeding of New Technology New Equipment – Management and Safety in Mines and Mineral Based Industries (ENTMS)*, Bhubaneswar, India, (2012)

Department of Ocean Engineering & Naval Architecture

Head

Prof. Om Prakash Sha

Professors

Mandal, Nisith Ranjan	<i>Dr.Inz.(Poland)</i> , Wave and Tidal Energy, Computational Weld Mechanics and Welding Technology
Misra, Suresh Chandra	<i>Ph.D.(Newcastle UK)</i> ,
Sahoo, Trilochan	<i>Ph.D.(IISc Bangalore)</i> , Coastal Hydrodynamics Hydroelasticity
Satsangi, Subir Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Ship Structures Structural Engineering Composite Materials Naval Architecture.
Sen, Debabrata	<i>Ph.D.(Canada)</i> , Free Surface Hydrodynamics, marine hydrodynamics, Dynamics of Marine Vehicles, Wave structure Interactions
Sha, Om Prakash	<i>Ph.D.(IIT Kharagpur)</i> , Marine Design and Production

Associate Professor

Bhaskaran, Prasad K	<i>Ph.D (Kurukshetra)</i> , Wind-Wave Modeling, Marine Acoustics, Coastal Processes, Coastal Sediment Dynamics, Physical & Dynamical Oceanography, Ocean Wave Climate Projections
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Assistant Professors

Bhar, Ashoke	<i>Ph.D.(IIT Kharagpur)</i> , Marine Structural Engineering
Vishwanath, Nagarajan	<i>Ph.D.(Osaka Univ. Japan)</i> , Ship motions, Rudder systems, Mathematical modelling
Warrior, Hari V	, ocean modeling and turbulence

Visiting Faculty

Datta, Nabanita	<i>Ph.D.(Univ. of Michigan, USA)</i> , Marine Dynamics, Vibrations, Hydroelasticity
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Faculty Appointments

Vishwanath Nagarajan	Assistant Professor
Dr. Nabanita Datta	Visiting Faculty
Dr. Sreekanta Das	Visiting Faculty

Brief Description of on-going activities

The Department is actively involved in various sponsored R&D projects of National importance on diversified areas of Ocean Engineering & Naval Architecture. The ongoing activities of the Department includes R&D as well Consultancy projects in diversified areas such as: CFD, Marine Structures, Wind-Wave Modeling, Coastal Processes, Coastal Sediment Dynamics, Hydroelasticity, Computational Weld Mechanics and Welding Technology, Experimental and Mathematical Modeling of Ship Motions, Coastal Hydrodynamics, Ship structures, Dynamics of Marine Vehicles, Wave-Structure Interactions, Marine Design and Production, Ocean Turbulence.

Thrust Areas

1. The thrust areas of the Department includes: CFD, Coastal Marine Hazards, Marine and Ocean Hydrodynamics, Numerical Hydrodynamics, Ocean Structures, Marine Structural Analysis, Ocean Wave & Circulation Modeling, Marine Design and Production, Welding

Technology, Coastal Processes, Storm Surge Prediction & Tsunamis, Suspended Sediment Dynamics, Marine Acoustics.

New Acquisitions

1. (i) NAPA Ship Design software, (ii) ADCIRC with SMS Interface, (iii) ORCAFLEX, (iv) WAMIT (v) MAXSURF (vi) SHIPFLOW (vii) Milling machine installed in Welding Laboratory

International Collaborations

A team from the University of South Pacific visited the Department to initiate collaboration in the field of Ocean Engineering.

A team from Ngee Ann Polytechnic and Centre for Innovation (Marine & Offshore Technology) had visited this Department on 9th July, 2012. The team expressed their interest to collaborate with this Department in the mutual areas of joint research and development work.

Lectures by Visiting Experts

1. Need for new ship design with respect to present shipping scenario (commercial & regulatory requirements) *by* Mr. Shantanu Paul (General Manager & Dean (Engineering Studies), The Shipping Corporation of India Ltd)
2. Challenges in Wave-Structure Interaction Problems *by* Prof. A. Chakrabarti (Professor, IISc Bangalore)
3. Ship Building in Japan and history of Uraga Shipyard *by* Mr. Yoshiaki Gonno (Sumitomo Heavy Industries and Marine Engineering, Yokohama, Japan)
4. Piping Systems on Bulk Carriers and Oil Tankers *by* Mr. K. K. Palit (Ex Director (Technical and Offshore Services), The Shipping Corporation of India Limited, Mumbai)
5. Maritime Education and Training: Need of higher maritime education in India and possible co-operation of institutes in India *by* Mr. Shantanu Paul (General Manager & Dean (Engineering Studies), The Shipping Corporation of India Ltd)
6. Challenges in Marine and Offshore Technology *by* Dr Lim Choo Min (Senior Director, Ngee Ann Polytechnic and Centre for Innovation (Marine & Offshore Technology), Singapore)
7. Global Ocean Observing System *by* Avijit Gangopadhyay (Professor)
8. Challenges in Marine and Offshore Technology *by* Mr. Subrata Chanda (Director (Marine & Offshore), Ngee Ann Polytechnic and Centre for Innovation (Marine & Offshore Technology), Singapore)

Doctoral and MS Degrees Awarded

1. Chinmaya Prasad Padhy : Development of a Ship Routing Algorithm and Its Application to the North Indian Ocean Region(Ph.D)
2. Anindya Bhar : Finite Element Analysis of Stiffened Laminated Composite and Functionally Graded Plates Using a Higher-Order Shear Deformation Theory(Ph.D)
3. Chitra Arora : Numerical Modeling of Bottom Boundary Layer Characteristics in the Hooghly Estuary(Ph.D)

Member - Professional Bodies

1. Sahoo, Trilochan, *Life Member* - Indian Society of Theoretical and Applied Mechanics(ISTAM)
2. Bhaskaran, Prasad K, *Life Member* - Indian Society of Theoretical & Applied Mechanics
3. Bhaskaran, Prasad K, *Life Member* - Ocean Society of India
4. Vishwanath, Nagarajan, *Member* - The Japan Society of Naval Architects and Ocean Engineers

5. Satsangi, Subir Kumar, *Member* - Indian Society of Technical Education
6. Satsangi, Subir Kumar, *Member* - Indian Society of Theoretical and Applied Mechanics
7. Satsangi, Subir Kumar, *Member* - Institution of Marine Technologists
8. Sha, Om Prakash, *Member* - Royal Institution of Naval Architects, UK
9. Sen, Debabrata, *Life Member* - Ocean Society of India
10. Datta, Nabanita, *Member* - Society of Naval Architects and Marine Engineers

Member - Editorial Board

1. Bhaskaran, Prasad K (2011) *Member* - Journal of Oceanography and Marine Sciences
2. Mandal, Nisith Ranjan (2010) *Editor in Chief* - Journal of Ocean and Ship Technology
3. Sen, Debabrata (2009) *Member, Editorial Board* - Journal of Ship Technology
4. Sen, Debabrata (2009) *Member, Editorial Board* - Journal of Engineering for the Maritime Environment
5. Sen, Debabrata (2009) *Member, Editorial Board* - International Journal of Vehicle Structures and Systems
6. Sha, Om Prakash (2010) *Reviewer* - Defence Science Journal
7. Sha, Om Prakash (2012) *Editorial Board Member* - International Journal of Naval Architecture and Ocean Engineering (JNAOE), Korea
8. Sha, Om Prakash (2013) *Reviewer* - Journal of Engineering for the Maritime Environment
9. Sha, Om Prakash (2012) *Reviewer* - Computer in Industry
10. Sha, Om Prakash (2012) *Reviewer* - Computer Aided Design

Awards & Honours

1. Satsangi, Subir Kumar (1995) *Best Paper Award INCHOE*
2. Misra, Suresh Chandra (2005) *H S Rao memorial award for Best paper, June 04 issue of Marine Engineers Review (India)*
3. Misra, Suresh Chandra (2002) *Institute of Engineers Medal*
4. Bhaskaran, Prasad K (2013) *James Rennell MoES Young Fellow*
5. Satsangi, Subir Kumar (2005) *Marine Award Min. of Shipping Govt of India*
6. Satsangi, Subir Kumar (2006) *Maritime Award 2005-2006*

Sponsored Research Projects

1. An investigation into the maneuvering performance of ships in navigation channels around Indian coast under different weather conditions (Naval Research Board, Rs.27.12 Lakhs)
2. Coastal Protection in the Mahakalpara area of Kendraparah District, ORISSA (Ministry of Earth Sciences, Govt. of India, New Delhi, Rs.42.32 Lakhs)
3. Development of a compositionally graded coating on marine propeller for improving cavitation corrosion resistance (Naval Research Board, Rs.35.56 Lakhs)
4. Development of a Hybrid Co-ordinate Ocean Model (HYCOM) for the Bay of Bengal (INCOIS, Hyderabad, Rs.43.00 Lakhs)
5. Development of an Integrated Ocean Wave Forecasting System and Study its impact on Coastal Structures (INCOIS, Hyderabad, Rs.47.00 Lakhs)
6. Development of Cage for Mariculture through Numerical and Physical Modeling (Ministry of Earth Sciences, New Delhi, Rs.0.00 Lakhs)
7. Development of Friction Stir Welding Process for Shipbuilding (NRB, New Delhi, Rs.16.90 Lakhs)
8. Development of high strength to weight ratio materials for the body of unmanned under water vehicle (MoES, Rs.76.02 Lakhs)
9. Experimental validation of theoretical models on sediment settling velocity and suspended sediment concentration using OCEANSAT data (NRB, New Delhi, Rs.9.56 Lakhs)
10. Implementation of an Integrated Nested Wave-Current-Surge Model with improved Air-Sea coupling parameterization for Kalpakkam region (IGCAR, Kalpakkam, Rs.32.33 Lakhs)
11. Monitoring Thermodynamical structure of Atmospheric Boundary Layer during pre-monsoon convective activity over Kharagpur (DST, New Delhi, Rs.110.00 Lakhs)

12. National Program in Marine Hydrodynamics (Naval Research Board, New Delhi, Rs.255.00 Lakhs)
13. National Programme in Marine Hydrodynamics (Naval research board, Rs.255.00 Lakhs)
14. nil (, Rs.0.00 Lakhs)
15. Ocean and Atmospheric Science Technology Cell (OASTC), IIT, Kharagpur (Ministry of Earth Sciences, Rs.6.66 Lakhs)
16. Research on ship maneuvering and propulsion performance using data from Voyage Data Recorder (VDR) and Automatic Identification System (AIS) (Ministry of Shipping, Government of India, Rs.27.48 Lakhs)
17. Research on ship maneuvering and propulsion performance using data from Voyage Data Recorder (VDR) and Automatic Identification System (AIS) (Ministry of Shipping, Rs.27.48 Lakhs)
18. Weld Induced Distortion Analysis of 3-D Large Ship Structures (DST, New Delhi, Rs.13.44 Lakhs)

Consultancy Projects

1. Calibration of water current meters (West Bengal government, Rs.0.20 Lakhs)
2. CFD Analysis of 97 metres OPV (Garden Reach Shipbuilders & engineers, Kolkata, Rs.7.30 Lakhs)
3. CFD Analysis of 1000 tonne Oil Barge (Garden Reach Shipbuilders & engineers, Kolkata, Rs.1.40 Lakhs)
4. Consultant for Project `Indigo (Tata Consultancy Services, Rs.55.00 Lakhs)
5. Design analysis and proof cheaking of 440 m long Heavy Motor Vehicle Suspension Bridge - Phase-I (PWD, Uttarakhand, Rs.96.00 Lakhs)
6. Design analysis and proof cheaking of 440 m long Heavy Motor Vehicle Suspension Bridge - Phase-II (Public Works Department, Govt. of Uttarakhand, Dehradun, Rs.108.00 Lakhs)
7. Design Analysis of Auxiliary Barge (Pipavav Shipyard, Gujarat, Rs.0.56 Lakhs)
8. Design Analysis of Cadet Training Ship (Pipavav Shipyard, Gujarat, Rs.0.56 Lakhs)
9. Design Analysis of Naval Offshore Patrol Vessel (Pipavav Shipyard, Gujarat, Rs.1.10 Lakhs)
10. Design of dock gate (Kolkata Port Trust, Rs.7.50 Lakhs)
11. Design of Leaf Type Lock Gate (KoPT, Rs.4.50 Lakhs)
12. Development of class rules (Axsys Technologies Ltd., Rs.1.50 Lakhs)
13. Development of software for computing added wave resistance (Indian Register of Shipping, Rs.7.50 Lakhs)
14. Dredging studies along the Persian gulf (KFUPM, Rs.2.50 Lakhs)
15. Dynamic model and trajectory simulation during entry phase of ALWT (NSTL,DRDO, Visakhapatnam, Rs.7.20 Lakhs)
16. Fabrication and resistance test of a 1500 DWT oil tanker ship model (MARINE HOUSE, DHAKA, BANGLADESH, Rs.1.93 Lakhs)
17. Hull structural analysis using FEM of one number 74m long Offshore Patrol Vessel (Garden Reach Shipbuilders and Engineers Ltd., Rs.8.00 Lakhs)
18. Hydrodynamic analysis of fishing vessels (CIFT, Cochin, Rs.5.95 Lakhs)
19. Hydrodynamic analysis of fishing vessels. (Central Institute of Fisheries Technology, Cochin, Rs.5.95 Lakhs)
20. Hydrodynamic Design & Design of Control Surfaces for AUV (Naval Science and Technological Laboratory, Visakhapatnam, Rs.13.50 Lakhs)
21. Hydrodynamic Design & Development of Trimarans and Delta Hull Forms (NSTL Vizag, Rs.21.15 Lakhs)
22. Hydrodynamic design and development of trimaran and delta hull forms (NSTL, Visakhapatnam, Rs.21.15 Lakhs)
23. Hydrodynamic design of high speed light weight torpedo (NSTL,DRDO, Visakhapatnam, Rs.22.25 Lakhs)
24. Impact of Storm Surge, Wind Waves and Seiches on the design of proposed Kalpasar Dam (Government of Gujarat, Rs.10.00 Lakhs)
25. Model Test for Self Propelled Sewage Barges Yard 446-451 (Bharati Shipyardc, Mumbai, Rs.6.60 Lakhs)
26. MODEL TESTING FOR Offshore Patrol Vessel (M/s Garden Reach Shipbuilders & Engineers Ltd., Kolkata - 700 024,, Rs.9.20 Lakhs)

27. Model tests for 200 tonne self propelled barge (M/s Bharati Shipyard Limited, Mumbai - 400 001,, Rs.6.94 Lakhs)
28. Modeling of half moon bay (AI Wasset, Rs.2.50 Lakhs)
29. Research on ship maneuvering using PMM captive tests and validation based on full scale maneuvering experiments (NSTL, Visakhapatnam, Rs.8.00 Lakhs)
30. Research on ship maneuvering using PMM captive tests and validation based on full scale maneuvering experiments (Naval Science & Technological Laboratory, Visakhapatnam, Rs.8.00 Lakhs)
31. Resistance and self propulsion test for MOPV (Garden Reach Shipbuilders & Engineers, Kolkata, Rs.9.20 Lakhs)
32. Resistance and self propulsion test for self propelled barges (M/s Bharati Shipyard Limited, Mumbai - 400 053, Rs.6.54 Lakhs)
33. Resistance test of ship model (NOPV) (M/s. Pipavav Shipyard Ltd., Gujarat, Rs.1.23 Lakhs)
34. Ship Model Testing for NOPV (Pipavav Shipyard, Gujarat, Rs.1.24 Lakhs)
35. study of ocean currents along AI Khobar port. (KFUPM, Rs.2.50 Lakhs)

Technology Transferred

1. M/s. OSNAR CHEMICAL PRIVATE LIMITED, Mumbai 400 015 - FRP Road Side Crash Barrier : Rs. 2.00 Lakh

Patents (filed / granted)

1. Design and Fabrication of FRP Road Side Crash Barrier
2. Design and Fabrication of Stiffened Plate Panel of AA5083 by Friction Stir Welding

Visits Abroad by Faculty Members

1. Mandal, Nisith Ranjan - To work out Institute level academic collaboration (Japanese Welding Research Institute, Osaka University,) Dec.15-17, 2011
2. Mandal, Nisith Ranjan - To discuss on collaborative research work on welding technology research programme (Dept. of Mechanical Engineering, Hiroshima University,) Dec.18-22, 2011
3. Mandal, Nisith Ranjan - To work out collaborative research programme (Dept. of System Integration, Yokohama National University,) Dec.26-27, 2011
4. Bhaskaran, Prasad K - KIZUNA-BOND Project Sponsored by JICE, Japan (Japan,) 04 - 12 February, 2013
5. Bhaskaran, Prasad K - To attend MARSIM 2012 (Singapore Polytechnic, Singapore,) 5 Days
6. Datta, Nabanita - 8th International Conference on Marine Technology, MARTEC 2012 at Kuala Terengganu, Malaysia. (Kuala Terengganu, Malaysia,) Oct 20-22, 2012

Invited Lectures by Faculty Members

1. Advanced welding techniques EGW, FSW *by* Mandal, Nisith Ranjan (Cochin Shipyard Ltd.)
2. Electroslag welding and single side submerged arc welding with reusable backing strip *by* Mandal, Nisith Ranjan (Cochin Shipyard Ltd.)
3. Effect of welding sequence on structural distortion *by* Mandal, Nisith Ranjan (Cochin Shipyard Ltd.)
4. Productivity improvement through Accuracy Control in shipbuilding *by* Mandal, Nisith Ranjan (Cochin Shipyard Ltd.)
5. Mathematical techniques for wave interaction with flexible structures Contemporary approaches *by* Sahoo, Trilochan (ICFMSA-2012, Calcutta Mathematical Society, Kolkata)
6. Contemporary approaches for wave interaction with flexible structures *by* Sahoo, Trilochan (NIT, Durgapur)
7. Introduction to water waves and coastal processes *by* Sahoo, Trilochan (IMU, Visakhapatnam Campus)

Books Published

1. T Sahoo: Mathematical techniques for wave interaction with flexible structures *published by* CRC Press (2012)

Short-Term Courses, Training Programmes and Workshops organised

1. Short term course on Practical Shipbuilding for Officers of Mazagon Dock Ltd (two weeks 4th Feb 15 Feb 2013)

Papers Published in Journals

1. Artificially Ventilated Conventional Hydrofoils - An Experimental Investigation *By* M Korulla and O P Sha *International Shipbuilding Progress* Vol. 59, pp.129-162 (2012)
2. Development of an automated Regional Coupled Atmosphere-Ocean modeling System for coastal Kalpakkam *By* Subba Reddy, Kaushik Sasmal, Hari Warrior *International Journal of Ocean and Climate systems* accepted (0)
3. Development of Four-Bladed Surface Piercing Propeller Series *By* S C Misra, O P Sha, R P Gokarn, Ch Suryanarayana, R V Suresh *Naval Engineers Journal* Vol.124, pp. 111-141 (2012)
4. Effect of compression on wave diffraction by a floating elastic plate *By* S. C. Mohapatra, R. Ghosal and T. Sahoo *J. Fluids and Structure* 36, 124-135 (2013)
5. Effect of tool shoulder and pin probe profiles on friction stirred aluminum welds – A comparative study, *By* Mohanty, H. K., Mahapatra, M. M., Kumar, P., Biswas, P. and Mandal, N. R. *J. Marine Science and Application* 11, pp200-207 (2012)
6. Expansion Formulae for Wave Structure Interaction Problems in Three Dimensions *By* R Mondal, S K Mohanty and T Sahoo *IMA J Appl Mathematics* 78,181-205 (2013)
7. Friction stir welding of aluminum alloy with varying tool geometry and process parameters *By* Biswas P., D A Kumar and N R Mandal *Proc. IMechE, J. Engineering Manufacture, Part B*, 226 (4), pp 641-648 (2012)
8. Higher mode dry and wet vibration of stiffened hull structures with axial loads with intermediate fixities *By* N.Datta, M. A.Siddiqui *Journal of Sound and Vibration* (2013)
9. Impact of South China Sea Cold Surges and Typhoon Peipah on Initiating Cyclone Sidr in the Bay of Bengal *By* Naresh K. Vissa, A N V Satyanarayana, B. Prasad Kumar *Pure and Applied Geophysics* DOI 10.1007/s00024-0 (2013)
10. Intensity of tropical cyclones during pre- and post-monsoon seasons in relation to accumulated tropical cyclone heat potential over Bay of Bengal *By* Naresh Krishna Vissa, A N V Satyanarayana, and Prasad K. Bhaskaran *Natural Hazards* DOI 10.1007/s11069-0 (2013)
11. Modeling the Effects of Tool Shoulder and Probe Profile Geometries on Friction Stirred Aluminum Welds Using Response Surface Methodology *By* 4. H. K. Mohanty, M. M. Mahapatra, Biswas P. and N. R. Mandal *J. Marine Sci. Appl* 11, pp493-503 (2012)
12. Modulation of local wind-waves at Kalpakkam from remote forcing effects of Southern Ocean swells *By* Sashikant Nayak, Prasad K. Bhaskaran, R. Venkatesan, Sikha Dasgupta *Ocean Engineering* 64, 23-35 (2013)
13. Near-shore wave induced setup along Kalpakkam coast during an extreme cyclone event in the Bay of Bengal *By* Sashikant Nayak, Prasad K. Bhaskaran and R. Venkatesan *Ocean Engineering* 55, 52-61 (2012)
14. Performance and validation of a coupled parallel ADCIRC–SWAN model for THANE cyclone in the Bay of Bengal *By* Prasad K. Bhaskaran, Sashikant Nayak , Subba Reddy Bonthu, P. L. N Murty and Debabrata Sen *Environmental Fluid Mechanics* DOI 10.1007/s10652-0 (2013)
15. Response of oceanic cyclogenesis metrics for NARGIS cyclone: a case study *By* Naresh Krishna Vissa, A.N.V. Satyanarayana and Prasad K. Bhaskaran *Atmospheric Science Letters* 14, 7-13 (2013)
16. Response spectrum of non-uniform mathematical hull girder springing to deep water random seas *By* N.Datta, J.D.Thekinen *Ocean Engineering Journal* (2013)

17. Study on the effect of tool profiles on temperature distribution and material flow characteristics in friction stir welding By H. K. Mohanty, M. M. Mahapatra, P. Kumar, Biswas P. and N R Mandal *Proc. IMechE Part B: J. Engineering Manufacture* pp1-9 (2012)
18. Tool Designs Effects for FSW of AA7039 By 1. Venkateswarlu, D., Mandal, N. R., Mahapatra, M. M. and Harsh, S. P. *Welding Journal* Vol.92, 41s-47s (2013)
19. Vibration of axially loaded multi-span Euler-Bernoulli beams with non-classical end conditions to transient loads By N.Datta, M. A.Siddiqui *Journal of Marine Science and Technology* (2013)
20. Wet vibration of axially loaded elastically supported plates to moving loads : aircraft landing on floating airports By N.Datta, J.D.Thekinen *Ocean Engineering Journal* (2013)

Papers Presented in Conferences

1. A Study on the Effectiveness of Active Fin Roll-Stabilizers Through Numerical Simulation, By Debabrata Sen and Jairam Saripilli, *Techsamudra : Int. conf. on Technology of the Sea*, Visakhapatnam, (2012)
2. CONTROL OF BALLAST WATER PROBLEMS IN SHIPS THROUGH DESIGN DEVELOPMENTS, By Avinash Godey, S.C.Misra, O.P.Sha, *Tech Samudra 2012*, Indian Maritime University, Visakhapatnam, (2012)
3. Dynamic response of axially loaded plates with intermediate fixities to transient hydrodynamic impact loads., By N.Datta, M. A.Siddiqui, *Proceedings of the 32nd International Conference on Ocean, Offshore and Polar Engineering.*, Nantes, France., (2013)
4. Dynamic response of axially loaded timoshenko beams with intermediate fixities to repeated transient hydrodynamic impact loads, By N.Datta, M. A.Siddiqui, *Second International Conference on Advances in Structural, Civil and Environmental Engineering*, Kuala Lumpur, Malaysia, (2013)
5. Expansion formula for velocity potential for wave interaction with floating and submerged structures, By S C Mohapatra, T Sahoo, *Intl Workshop on Water Waves and Floating Bodies*, (2013)
6. Higher-Order Dry And Wet Frequencies And Modeshapes Of Rectangular Kirchoff's Plate Vibration, By N.Datta, J.D.Thekinen, *Third Asian Conference on Mechanics of Functional Materials and Structures.*, IIT Delhi, (2012)
7. Identification of Submarine Hydrodynamic Coefficients from Sea Trials Using Extended Kalman Filter, By Amit Ray and Debabrata Sen, *10th Int. Conf. on Hydrodynamics*, St., Petersburg, Russia, (2012)
8. NUMERICAL INVESTIGATION OF STERN FLOW FOR IMPROVED HULL DESIGN, By R D B Prasad Naidu and O P Sha, *Tech Samudra 2012*, Indian Maritime University, Visakhapatnam, (2012)
9. Probabilistic Failure Analysis of Laminated Composite Plate by Response Surface Method, By Bishakha Chakraborty Ashoke Bhar, *ASRANet 2012*, Croydon, London, UK, (2012)
10. Response Spectrum Of Non-Uniform Mathematical Hull Girder Springing To Deep Water Random Seas With Forward Speeds, By N.Datta, J.D.Thekinen, *8th International Conference on Marine Technology, MARTEC 2012*, Kuala Terengganu, Malaysia, (2012)
11. Ship Collision Risk Assessment Using AIS Data, By Shwetabh Suman, Vishwanath Nagarajan, Om Prakash Sha, Sahbi Khanfir, Eiichi Kobayashi, Adi Maimun bin Abdul Malik,, *Tech Samudra 2012*, Indian Maritime University, Visakhapatna, (2012)
12. Ship Collision Risk Assessment Using AIS Data, By Shwetabh Suman, Vishwanath Nagarajan, Om Prakash Sha, Sahbi Khanfir, Eiichi Kobayashi, Adi Maimun bin Abdul Malik, *Tech Samudra 2012*, Indian Maritime University, Visakhapatnam, (2012)
13. Ship maneuvering: a review of past and present developments, By Anil Kumar Dash, Vishwanath Nagarajan, *ICSOT 2011: Developments in ship design & construction*, IIT Kharagpur, (2011)
14. Ship motion computations : prospect of RANSE based CFD solvers compared to potential flow solvers, By Debabrata Sen and Jai Ram Saripilli, *Int. Conf. on Applications of Fluid Engineering*, Greater Noida, India, (2012)
15. Time dependent flexural gravity wavemaker problem, By S K Mohanty, R Mandal, T Sahoo, *Intl Workshop on Water Waves and Floating Bodies*, France, (2013)
16. Uncertainty analysis for ship maneuvering in model scale and full scale measurements, By Anil Kumar Dash Vishwanath Nagarajan Om Prakash Sha, *Tech Samudra 2012*, Indian Maritime University, Visakhapatna, (2012)

17. Uncertainty analysis for ship maneuvering in model scale and full scale measurements, *By* Anil Kumar Dash Vishwanath Nagarajan Om Prakash Sha, *Tech Samudra 2012*, Indian Maritime University, Visakhapatnam, (2012)
18. Weld Distortion Measurement of Large 3-D Ship Structural Units using Photographic Method, *By* N R Mandal, Pankaj Biswas & Sharat Kumar, *The International Symposium on Visualization in Joining & Welding Science through Advanced Measurements and Simulation*, JWRI, Osaka University, (2012)
19. Wet vibration of axially loaded elastically supported plates to moving loads : aircraft landing on floating airports, *By* N.Datta, J.D.Thekinen, *Proceedings of the 32nd International Conference on Ocean, Offshore and Polar Engineering.*, Nantes, France., (2013)

Department of Physics & Meteorology

Head

Prof. Samit Kumar Ray

Professors

Bharadwaj, Somnath	<i>Ph.D.(IISc Bangalore)</i> , Astrophysics, Cosmology
Chandra, Naresh	<i>Ph.D.(Queens Univ, UK)</i> ,
Datta, Prasanta Kumar	<i>Ph.D.(Burdwan Univ)</i> , Ultrafast Lasers and Nonlinear Optics, Photonics
Kar, Sayan	<i>Ph.D.(IIT Kanpur)</i> , Gravitation and Geometry, High Energy Physics, Quantum mechanics
Kumar, Krishna	<i>Ph.D.(IIT Kanpur)</i> , Hydrodynamic flows, Pattern-forming instabilities
Mathur, Balbir Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Web Based Service, Microprocessor, ERP, Thin Films
Raina, Prabhu Krishna	<i>Ph.D.(IIT Kanpur)</i> ,
Ray, Samit Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Semiconductor nanostructures, Condensed Matter Physics, Thin Films, Photovoltaics
Roy, Anushree	<i>Ph.D.(IISc Bangalore)</i> , Raman spectroscopy
Sharma, Shivcharan Lal	<i>Ph.D.(IIT Kanpur)</i> , Effects of Ionizing Radiation on Thin Films, Radiation Physics and Instrumentation for Ionizing Radiation, Monte Carlo Simulations, Physics of Semiconductors and Devices, Fission Dynamics
Taraphder, Arghya	<i>Ph.D.(IISc Bangalore)</i> , Condensed matter physics

Associate Professors

Das, Amal Kumar	<i>Ph.D.(IOP Bhubaneswar)</i> , Experimental Condensed Matter Physics, Magnetism including spintronics, Magnetic semiconducting nanoparticles and thin films, Mechanical and magnetic stress measurement of thin films
Dhar, Achintya	<i>Ph.D.(Jadavpur Univ)</i> , Organic Semiconductors, Semiconductor Nanostructures, Heterostructure Devices
Nath, Tapan Kumar	<i>Ph.D.(IIT Kanpur)</i> , Magnetic thin films and heterojunctions, Spintronics, Nanostructured Magnetic Materials, Magnetic Alloys, Multiferroics, Low Temperature Condensed Matter Physics, Superconductivity
Roy Chaudhuri, Partha	<i>Ph.D.(IIT Delhi)</i> , Fiber & Integrated Optics and Optoelectronics, Experimental Bio-Photonics & Nano-Photonics
Shukla, Pragya	<i>Ph.D.(JNU Delhi)</i> , Statistical Studies of Complex Systems, Random Matrices and Quantum Chaos, Theoretical Physics

Assistant Professors

Chandra, Amreesh	<i>Ph.D.(I.T., B.H.U.)</i> , Multifunctional Ceramics, Energy Systems, Polymer Composites, Experimental Condensed Matter Physics, Microbial Fuel Cells, Supercapacitors
Das, Baidya Nath	<i>Ph.D.(IIT Kharagpur)</i> , condense matter physics
Khastgir, Sugata Pratik	<i>Ph.D.(IOP Bhubaneswar)</i> , Mathematical Physics/High Energy Physics
Majumder, Sonjoy	<i>Ph.D.(IIA Bangalore)</i> , Computational Many-body physics, Atomic & Molecular Physics, Theoretical modeling of bulk and nano-materials, Astronomy and Astrophysics
Panigrahi, Kamal Lochan	<i>Ph.D.(Institute of Physics, Bhubaneswar)</i> , String Theory, High Energy

	Physics, String Inspired Cosmology
Singh, Ajay Kumar	<i>Ph.D.(Calcutta Univ)</i> , Experimental Nuclear Physics, Double Beta decay studies, Compressed Baryonic Matter (CBM)
Srivastava, Sanjeev Kumar	<i>Ph.D.(JNU, New Delhi)</i> , Materials Engineering using Ion Beams, Nuclear Condensed Matter Physics, Quantum Criticality
Thakur, Awalendra Kumar	<i>Ph.D.(NEHU Shillong)</i> , Composite Nanostructures, Solid State Ionics, Dielectrics & Ferroelectrics, Renewable Energy Sources, E. M. I. Shielding

Visiting Faculty

Mishra, Shradha *Ph.D.*,

Scientific Officer

Chakraborty, Syamal *Ph.D.(IIT Kharagpur)*,

Brief Description of on-going activities

The Department is carrying out research and development utilizing in-house facilities and in collaboration with sister departments. Many of the facilities have been developed in the department and procured from sponsored projects. Faculty and scholars are carrying out active research in the following areas: Astrophysical Spectroscopy, Astrophysics, Atmospheric Sciences, Atomic and Molecular Physics, Biophysics, Condensed Matter Physics, Physics of Complex Systems, Cosmology, Electronic properties of solids, ERP, Bio-Photonics, Optical Imaging, Nuclear Physics, Ferroelectricity, Fiber & Integrated Optics, Optoelectronics, Gravitation and Geometry, High Energy Physics, Hydrodynamics, Laser Physics, Nonlinear Optics, Photonics, magnetic semiconducting nanoparticles and thin films, Magnetism, Spintronics, Materials engineering, Mathematical Physics, Mechanical and magnetic stress, Microprocessors based systems, Monte Carlo Simulation of Radiation Detectors, Semiconductor Devices, Nano- and Bulk-material science, Nanostructured Magnetic Materials, Magnetic thin films and Multilayers, Multiferroics, Nanotechnology, Nonlinear Dynamics, Nonlinear instabilities, Nuclear condensed matter physics, Nuclear Structure, Double Beta Decay and Neutrino Physics, Optoelectronics, Organic Electronics, Particle and Cluster Emission in Fission and Fusion-Fission, Physics of Semiconductor Crystals and Thin Films, Quantum Many-Body Theory, Radiation Measurement Techniques, Radiation Sensors and Dosimetry, Renewable Energy Sources, Semiconductors, Nanostructures, Solid State Ionics, Thermoelectricity, Web Based Services, Engineering and characterization of materials using ion beams, String Theory

Thrust Areas

1. Condensed Matter Physics
2. Non-linear Dynamics and complexity
3. Astronomy and Astrophysics
4. Nuclear and Particle Physics
5. Optics and Photonics

New Acquisitions

1. X-ray Photo-electron Spectroscopy
2. Optical Lithography

Lectures by Visiting Experts

1. A semi-analytical approach to high redshift Univers by Dr. Saumyadip Samui (University of KwaZulu-Natal, South Africa)
2. Interacting Fröhlich and Holstein bipolarons by Dr. Monodeep Chakraborty (POSTECH, Pohang, South Korea)

3. Nonlinear dynamics in nano-structured waveguides *by* Dr. Samudra Roy (Max Planck Institute for the Science of Light, Erlangen, Germany)
4. Universality of Black Hole Accretion *by* Dr. Ritaban Chatterjee (Yale University/University of Wyoming)
5. Beauty of disorder in photonics: In the context of fiber optics and random lasing *by* Dr. Somnath Ghosh (Fiber Optics Group, Indian Institute of Technology, Delhi)
6. Growth and characterization of III-Nitride semiconductors and their nano-structures *by* Dr. Abdul Kadir (Institute of Solid State Physics, Technical University, Berlin)
7. Prospects of silicon photonics and optical interconnect technology *by* Prof. Bijoy Krishna Das (Department of Electrical Engineering, IIT Madras, Chennai)
8. Dark Matter Particles and Phenomenology *by* Dr. Subhaditya Bhattacharya (Department of Physics, University of California, Riverside, USA)
9. New approach to biophysical studies of lipid membrane *by* Dr. Sajal Ghosh (University of California-San Diego, USA)
10. Quaternary (InAlGaAs) capped In(Ga)As/GaAs Quantum Dot Infrared Photodetectors and Thermal Imagers *by* Prof. Subhananda Chakrabarty (Dept. of Electrical Engineering, IIT Bombay)
11. Quantum Information and Communication *by* Prof. Sougato Bose (Department of Physics and Astronomy, University College, London, UK)
12. Collective dynamics of self-propelled particles with variable speed *by* Dr. Shradha Mishra (Department of Physics, Kansas State University, USA)
13. Structural, magnetic and antibacterial properties of SiO-CaO-P2O5-Fe2O3 based biocompatible nano-crystalline glass/glass-ceramics *by* Dr. G P Kothiyal (Bhabha Atomic Research Centre, Mumbai)
14. Life at the Edge: Quantum physics on manifolds with boundary *by* Prof. T. R. Govindarajan (Institute of Mathematical Sciences, Chennai)
15. Raman studies on Multiferroics *by* Prof. N. Chandrabhas (Chemistry and Physics of Materials Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore)
16. Weakening gravity at small distances and times *by* Prof. Anupam Mazumdar (Physics Department, Lancaster University, UK)
17. Micro-Extension Rheometer with feedback loop for microscale samples *by* Dr. Chirag Kalelkar (in transit from MIT to join IIT Mandi)
18. Topologically massive higher-spin gravity *by* Dr. Bindusar Sahoo (Nikhef theory group Amsterdam, Holland)
19. Theoretical aids in screening candidates for atomic clocks: Illustration for Yb II using coupled-cluster based linear response theory *by* Prof. Rajat K Chaudhuri (Indian Institute of Astrophysics, Bangalore)
20. Quantum Phase Transition of Light: Cavity Quantum Electro Dynamics *by* Dr. Sujit Sarkar (PoornaPrajna Institute of Scientific Research, Bangalore)
21. The Physics of Quasiperiodic Order *by* Prof. Arunava Chakrabarti (Department of Physics, University of Kalyani)

Doctoral and MS Degrees Awarded

1. Sanjit Das : Geometric flows without and with higher order and higher derivative terms(Ph.D.)
2. Purnima Singh : Structural Evolution in 125I, 123I and 122I with Increasing Angular Momentum.(Ph.D)
3. Anirban Sarkar : Development of Cantilever Beam Magnetometer for in situ characterizations and studies on heterostructure based magnetic diode(Ph.D)
4. Pratap Kumar Swain : Semiclassical Strings and D-branes in Diverse String Backgrounds(Ph.D)
5. Susanta Kr. Mohanta : Local Magnetic Behaviour of Isolated Impurities in Solids(Ph.D)
6. Abhik Ghosh : Foreground Analysis and Removal in Giant Metrewave Radio Telescope Observations Towards Detecting the Cosmological Red-shifted 21-cm Signal(Ph.D)
7. S.K. Ghorui : Double Beta Decay Study of Some Nuclei in the Mass Range $A=76$ to 150 within the Deformed Hartree-Fock Model(Ph.D)
8. Ritwik Saha : Electronic and Magnetic Properties of Iron-based Heusler Alloys: Role of Defects and Disorder(Ph.D)

9. Goutam K. Chandra : Spectroscopic Investigations on Interactions between Metal Particles and Bio-organic Molecules(Ph.D)
10. Sourav Kundu : Effect of Grain Size on Magnetic, Electronic- and Magneto-Transport Properties of Nd-based Nanostructured Manganites and Cobaltites(Ph.D)

Member - Professional Bodies

1. Datta, Prasanta Kumar, *Member* - SPIE (USA)
2. Datta, Prasanta Kumar, *Regular* - Optical Society of America
3. Datta, Prasanta Kumar, *Life* - Indian Laser Association
4. Datta, Prasanta Kumar, *Regular Associate* - International Centre for Theoretical Physics, Trieste, Italy
5. Nath, Tapan Kumar, *Life Time Member* - Magnetic Society of India
6. Nath, Tapan Kumar, *Life time member* - Material Research Society of India
7. Nath, Tapan Kumar, *Full Member* - American Nano Society
8. Roy Chaudhuri, Partha, *Life Member* - Indian Science Congress Association, ISCA
9. Roy Chaudhuri, Partha, *Life Member* - Optical Society of India, OSI
10. Roy Chaudhuri, Partha, *Regular* - Optical Society of America, OSA
11. Roy Chaudhuri, Partha, *Life Member* - Institute of Electronics & Telecommunication Engineers, IETE
12. Roy Chaudhuri, Partha, *Regular* - KIT Internation Exchange Club, Japan
13. Srivastava, Sanjeev Kumar, *Member* - Indian Science Congress Association
14. Srivastava, Sanjeev Kumar, *Member* - Indian Physical Society
15. Chandra, Amreesh, *Life Member* - Indian Science Congress Association
16. Chandra, Amreesh, *Life Member* - Indian Solid State Ionics Society
17. Mathur, Balbir Kumar, *Lile member* - MRSI
18. Mathur, Balbir Kumar, *Senior Member* - IEEE
19. Sharma, Shivcharan Lal, *Life Member* - Indian Physical Society
20. Sharma, Shivcharan Lal, *Member* - IEEE
21. Sharma, Shivcharan Lal, *Life Member* - Acoustical Society of India
22. Sharma, Shivcharan Lal, *Life Member* - Materials Research Society of India
23. Sharma, Shivcharan Lal, *Life Member* - Indian Society for Rdaiation Physics
24. Sharma, Shivcharan Lal, *Life Member* - Nuclear Track Society of India
25. Sharma, Shivcharan Lal, *Life Member* - Indian Physics Association
26. Ray, Samit Kumar, *Member* - MRS, USA
27. Ray, Samit Kumar, *Member* - IEEE, USA
28. Bharadwaj, Somnath, *Member* - International Astronomical Union
29. Kar, Sayan, *Secretary, IAGRG Council* - Indian Association for General Relativity and Gravitation

Member - Editorial Board

1. Kar, Sayan (2011) *Member, Editorial Board* - Indian Journal of Physics
2. Nath, Tapan Kumar (2012) *Editorial Board Member* - ScienceJet
3. Nath, Tapan Kumar (2012) *Editorial Board Member* - Journal of Spintronics and Magnetic Nanomaterials
4. Nath, Tapan Kumar (2012) *Editorial Board Member* - Dataset Papers in Nanotechnology
5. Panigrahi, Kamal Lochan (0) *Editorial Board Member: High Energy Physics* - The Scientific World Journal
6. Panigrahi, Kamal Lochan (0) *Editorial Board Member: High Energy Physics* - Dataset Papers in Physics
7. Ray, Samit Kumar (2011) *Editorial Board Member* - Journal of Nano Energy and Power Research.
8. Ray, Samit Kumar (2011) *Member of the Editorial Board* - Nanotrends

Awards & Honours

1. Chandra, Amreesh (2013) *Best Poster Award, 100th Science Congress (Materials Science Section), Kolkata*
2. Chandra, Amreesh (2012) *Best Poster Award, ICEP-2012, BHU, Varanasi*
3. Nath, Tapan Kumar (2012) *Recipient of MRSI Medal - 2012, Material Research Society of India*
4. Chandra, Amreesh (2012) *Recorder, Materials Science Section, Indian Science Congress Association*
5. Shukla, Pragma (2012) *Senior Associateship, ICTP, Trieste, Italy*

Sponsored Research Projects

1. A Detailed Study of the Effect of Gamma Radiation on Structural, Optical and Electrical Properties of Indium Oxide Doped Tellurium Dioxide Thin Films (DAE-BRNS-GOI (Submitted for funding), Rs.36.00 Lakhs)
2. Co-operative Phenomena and Nanosize effect in some Correlated Systems (DAE-BRNS, Rs.18.00 Lakhs)
3. Detection/measurement of low magnetic field through phase modulation of light in optical fiber/ photonic crystal fiber coated with ceramic magnetostri (BRNS, Government of India, Rs.15.65 Lakhs)
4. Development and Characterization of Nanostructured thin films for SiGe Quantum Well Infrared Photodetector (QWIP) and ferroelectric based gas/chemi (DRDO, Rs.201.80 Lakhs)
5. Development of Fluorescent Whole Cell Optical Fibre Biosensor for Heavy Metal Pollutants (DOB, Ministry of Science and Technology, Government of India, Rs.44.00 Lakhs)
6. Development of Real Time Gamma Radiation Dosimeters Employing Thin Films of Different Metal Oxides and Their Mixtures (BRNS-DAE-GOI (SRIC-Code: DRG), Rs.29.64 Lakhs)
7. Development of realtime gamma dosimeters employing thin films of different metal oxides and their mixtures. (BRNS, Rs.36.00 Lakhs)
8. Development of Soft Magnetic Materials from Nano Dispersion of Magnetic Particles for High Frequency Applications (ARMREB (DRDO), Rs.36.56 Lakhs)
9. Generation of tunable mid-infrared coherent radiation in the range of 12.7-17 μ m for strategic spectroscopic application (BRNS, Rs.22.57 Lakhs)
10. Investigation of Electrical-, Magneto-Transport, Extraordinary Hall resistivity, Specific Heat and Magnetic studies in nanostructured CMR Manganites (DST, India (Completed), Rs.128.00 Lakhs)
11. Investigation of electronic properties of heusler alloys for the development of environmentally friendly thermoelectric materials. (Department of Science and Technology, Rs.32.38 Lakhs)
12. MBE growth of strained Si/Ge layers and self-assembled Ge islands for heterostructure MOSFETs and flash memory devices (DST, New Delhi, Rs.161.66 Lakhs)
13. Multifunctional Ceramics and Polymer Composites (ISIRD, SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
14. Nanomaterials for smart energy systems (UKIERI, Rs.16.00 Lakhs)
15. Polymer composites for energy systems (Max Planck Society (Germany), Rs.8.50 Lakhs)
16. Pre-operative programme for Indian participation in the FAIR project at GSI, Darmstadt Germany- Accelerator and Detector-related R&D and protot (DST, Rs.15.00 Lakhs)
17. Proposal for Developing an Advanced Electromagnetic Modeling Platform for Complex, Arbitrary Microstructured Fiber and Designing Inline Active and No (DST, Government of India, Rs.10.80 Lakhs)
18. Realization of Packet-switched Node with optoelectronic and Photonic technologies for ultrabroadband communication systems and networks (Italian Ministry of Education, University and Research, Rs.300.00 Lakhs)
19. Second order cascaded nonlinear optical processes for all-optical photonic devices (DST, Govt. of India, Rs.7.62 Lakhs)
20. Semiclassical Strings in AdS/CFT (Department of Science and Technology, India, Rs.12.50 Lakhs)
21. Si/Ge Nanostructure sensitized hybrid solar cells (DST, Rs.47.45 Lakhs)
22. Structural Phase Transitions in Multiferroic Ceramics (BRNS, BARC, Mumbai, Rs.16.54 Lakhs)
23. Studies on Laser-Optical Fiber-Based Micro-Imaging Techniques in the Analysis of Tissue Structure and Detection of Abnormalities (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)

24. Studies on protein-metal interaction by Raman spectroscopy (Department of Science and Technology, Rs.21.05 Lakhs)
25. Study of hyperfine structure and isotope shift of Isotopes using relativistic highly correlated many-body theory (BRNS, DAE, Rs.17.00 Lakhs)
26. Theoretical studies on transition metal dichalcogenides (TID) (DST, Rs.15.00 Lakhs)
27. Theoretical Study of Hyperfine Interaction in Heavy Atoms and Molecules for Quantum Computation and Frequency Standard (IIT-Kharagpur(ISIRD), Rs.3.00 Lakhs)
28. To strengthen the post-graduate teaching and research facilities in the department (DST, New Delhi, Rs.365.00 Lakhs)
29. Tuning of structural and electrical properties of semiconductors by high energy ion-irradiation (CSIR, Rs.18.38 Lakhs)

Consultancy Projects

1. Development of Admission Modules (IISER Admission Committee, Rs.6.00 Lakhs)
2. Guest House management System (IIT Kharagpur, Rs.3.00 Lakhs)
3. Measurement of optical nonlinearity of organic and polymer samples (DMSRDE, DRDO Kanpur, Rs.0.53 Lakhs)
4. Students Academic Management (IISER Pune, Rs.6.00 Lakhs)
5. Thin Film Characterization (Various departments & agencies, Rs.0.00 Lakhs)

Patents (filed / granted)

1. Solar based mobile charger

Visits Abroad by Faculty Members

1. Nath, Tapan Kumar - To Deliver talk and to Chair a session for IUMRS-ICN 2012 (Busan, South Korea for IUMRS-ICN 2012 conference to deliver a talk and to Chair a session,) 30 min
2. Chandra, Amreesh - E-MRS Fall Meeting (Univeristy of Warsaw,) 1 week
3. Chandra, Amreesh - Collaborative Program (Max Planck Institute for Polymer Research, Germany,) 1 month
4. Chandra, Amreesh - IIT-DAAD Faculty exchange program (Technical University, Darmstadt,) 28 days
5. Ray, Samit Kumar - To participate in Indo-Finland Workshop on Plasmonics for Photovoltaics (Finland,) 5 days
6. Das, Amal Kumar - Research collaboration (JKU University Linz, Austria,) 26 May to 10 July, 2011
7. Panigrahi, Kamal Lochan - Research and Collaboration (International Centre for Theoretical Physics, ITALY,) 6 weeks
8. Ray, Samit Kumar - India-Taiwan Collaborative project (CGU, Taiwan,) 6 weeks
9. Ray, Samit Kumar - To deliver an invited talk at IEEE Nanoelectronics Conference 2013 (Singapore,) 5 days
10. Shukla, Pragya - Research Collaboration (Institute of Quantum Computing, Waterloo, Canada,) 1 month

Invited Lectures by Faculty Members

1. GO and graphene based composites for energy applications *by* Chandra, Amreesh (Banaras Hindu Univeristy)
2. Nano-oxides for energy applications *by* Chandra, Amreesh (IIT Kharagpur)
3. Eddington-inspired Born-Infeld gravity *by* Kar, Sayan (International Workshop on New Trends in Field Theories at BHU, Varanasi)
4. The Planck scale *by* Kar, Sayan (Scottish Church College, Kolkata)
5. The Planck scale *by* Kar, Sayan (Midnapore College, Midnapore)
6. Eddington-inspired Born-Infeld gravity: new solutions *by* Kar, Sayan (27th IAGRG Meeting, HNBBG University, Srinagar, Garhwal)

7. What is Science ? (in Bangla) *by* Kar, Sayan (JBNSTS Programme at Atulmoni High School, Kharagpur)
8. Search for octupole correlation in nuclei of mass 120 region *by* Singh, Ajay Kumar (Tata Institute of Fundamental research, Mumbai)
9. Physics of Periodic Structures and Photonic Crystal Fibers *by* Roy Chaudhuri, Partha (NIT, Warangal, Andra Pradesh)
10. Technology and Understanding Phase Modulated Fiber Optic Sensors *by* Roy Chaudhuri, Partha (NIT, Warangal, Andra Pradesh)
11. MicroRaman Spectroscopy: An Analytical Tool to Study Iron and Steel *by* Roy, Anushree (Tata Steel, Jamshedpur)
12. PHYSICS OF VISIBLE AND NIR SPECTROSCOPY *by* Roy, Anushree (AGFE, IIT Kharagpur)
13. Investigating electron correlations using swift heavy ions: A nuclear solid state physics study *by* Srivastava, Sanjeev Kumar (University of Hyderabad)
14. Swift heavy ion induced nano dimensional phase separation in liquid immiscible metal binary Mn-Bi *by* Srivastava, Sanjeev Kumar (Indian Science Congress, Kolkata)
15. Atomic scale investigation of solids using heavy ions. *by* Srivastava, Sanjeev Kumar (ISJPS 2013 IIT Kharagpur)
16. Magnetic moment and hyperfine field at impurities in solids: A first-principles approach *by* Srivastava, Sanjeev Kumar (HPC User Workshop, IUAC, New Delhi)
17. Nanstructured Magnetic Materials *by* Nath, Tapan Kumar (Nagpur University)
18. Magnetic Nanoparticles: Physics and applications *by* Nath, Tapan Kumar (NIT Hamirpur)
19. Temperature dependent Spin Injection Properties of the Ni Nanodots Embedded Metallic TiN Matrix *by* Nath, Tapan Kumar (Busan, South Korea (IUMRS-ICA 2012))
20. Magnetic Materials: Physics & Applications *by* Nath, Tapan Kumar (Vidyasagar University)
21. Weak Measurements: Typical weak and superweak Values *by* Shukla, Pragya (Institute of Quantum Computing, Waterloo, Canada)
22. Seeing the Universe with Redshifted 21-cm Radiation *by* Bharadwaj, Somnath (Department of Physics, IISc, Bangalore)
23. Cosmology *by* Bharadwaj, Somnath (Midnapore College)
24. Modern Science and Swami Vivekananda *by* Bharadwaj, Somnath (Vivekananda Centenary College, Rahara)
25. Metal Oxides - New Materials for Detection of Ionizing Radiation *by* Sharma, Shivcharan Lal (UGC DAE Consortium for Scientific Research, Kolkata Centre)
26. Semiclassical String in AdS₄ x CP³ *by* Panigrahi, Kamal Lochan (Scuola Normale Superiore, PISA)
27. Plenary Talk , National Laser Symposium - Silicon Based Optical Sources: Status & Trends *by* Ray, Samit Kumar (BARC, Mumbai)
28. Si/Ge Nanowires and Radial Heterostructures for Photonic Devices *by* Ray, Samit Kumar (Singapore)
29. Group-IV Nanostructures and Hybrid Photovoltaic Devices *by* Ray, Samit Kumar (VTT, Finland)
30. Nanostructured and Hybrid Devices for Green Energy *by* Ray, Samit Kumar (100th Science Congress, Kolkata)
31. Nanocrystal Based Floating Gate Memory Devices *by* Ray, Samit Kumar (IIT Bombay)
32. Semiconductor Nanowires for Electronic and Photonic Devices *by* Ray, Samit Kumar (IIT Indore)
33. Nanostructured and Hybrid Photovoltaic devices *by* Ray, Samit Kumar (Kolkata)
34. Quantum Devices using Semiconductor Nanostructures *by* Ray, Samit Kumar (Quantum-Nano Winter School, Agra)
35. Rayleigh-Benard convection in low-Prandtl-number fluids *by* Kumar, Krishna (National Institute of Technology, Durgapur)

Books Published

1. Roychoudhury, P: Chapter 13, Pages 205-22, in Guided Wave Optical Components and Devices *published by* Elsevier Publishers, Science and Technology Books, Burlington, USA (2004)

Papers Published in Journals

1. A Griffiths-like phase in antiferromagnetic $R_{0.5}Eu_{0.5}MnO_3$ ($R = Pr, Nd, Sm$), By A Karmakar, S Majumdar, S Kundu, T. K. Nath and S Giri, *J. Phys.: Condens. Matter* 25, 066006 (2012)
2. A New Design of Ultra-Flattened Near-zero Dispersion PCF Using Selectively Liquid Infiltration By Partha Sona Maji and Partha Roy Chaudhuri *Journal of Photonics and Optoelectronics (P&O)* 2 (2) pp. 25-32 (2013)
3. A Photoswitchable and Photoluminescent Organic Semiconductor Based On Cation– π and Carboxylate–Pyridinium Interactions: A Supramolecular Approach By S. Roy, S. P. Mondal, S. K. Ray and Kumar Biradha *Angew. Chem. Int. Ed.*, 51, 12012-12015 (2012)
4. A study of gamma radiation induced changes in electrical properties of Al/TeO₂/n-Si/Al MOS capacitor for dosimetric applications By G Chourasiya, T K Maity, S L Sharma, J Sarkar, J C Vyas *Radiation Protection and Environment* Vol 34/pp 249-252 (2012)
5. Ab initio calculations of transition amplitudes and hyperfine A and B constants of Ga III By Narendra Nath Dutta, Sourav Roy, Gopal Dixit and Sonjoy Majumder *Physical Review A* 87, 012501 (2013)
6. Bach flows of product manifolds By Sanjit Das and Sayan Kar *Int.J.Geom.Meth.Mod.Phys.* 09 (2012) 1250039 09, 1250039 (2012)
7. Cadmium Sulfide Nanostructures for Photovoltaic Devices By S. P. Mondal & S. K. Ray *Proceedings of the National Academy of Sciences-A* 82, 21-29 (2012)
8. CdS-Decorated ZnO Nanorod Heterostructures for Improved Hybrid Photovoltaic Devices By Tamita Rakshit, Suvra P. Mondal, Indranil Manna, and Samit K. Ray *ACS Appl. Mater. Interfaces* 4, 6085-6095 (2012)
9. CdSe quantum dots-poly(3-hexylthiophene) nanocomposite sensors for selective chloroform vapor detection at room temperature By S. P. Mondal, S. Bera, G. Narender, and S. K. Ray *Applied Physics Letters* 101, 173108 (2012)
10. Characteristics of Transverse-Stress Induced Phase Change through a Distinct Dual-Mode Fiber in Sagnac Loop By Saba Nashreen Khan, Kajol Mondal, Sudip Chatterjee and Partha Roy Chaudhuri *JOSA A* 30 (5) pp. 1-9 (2013)
11. Characterizing foreground for redshifted 21 cm radiation: 150 MHz Giant Metrewave Radio Telescope observations By Ghosh, Abhik Prasad, Jayanti Bharadwaj, Somnath Ali, Sk. Saiyad Chengalur, Jayaram N. *Monthly Notices of the Royal Astronomical Society* 426, 3295 (2012)
12. Classical dynamics with curl forces, and motion driven by time-dependent flux, By M V Berry and P. Shukla *Journal of Physics A: Maths & Theoretical* 45, 305201 (2012)
13. Constraining quasar and intergalactic medium properties through bubble detection in redshifted 21-cm maps By Majumdar, Suman Bharadwaj, Somnath Choudhury, T. Roy *Monthly Notices of the Royal Astronomical Society* 426, 3178 (2012)
14. Critical behavior and magnetic relaxation dynamics of Nd_{0.4}Sr_{0.6}MnO₃ nanoparticles By S. Kundu and T. K. Nath, *Philosophical Magazine*, DOI:10.1080/14786435.2013.776719 (2013)
15. Designing Ultra-High-Birefringent Photonic Crystal Fibers with Circular Air Holes in the Cladding By Kajal Mondal and Partha Roy Chaudhuri *Fiber and Integrated Optics* 32 (1) pp. 54-69 (2013)
16. Dielectric relaxation studies of low thermal expansion polymer composites By Amreesh Chandra and W.H. Meyer *Journal of Applied Polymer Science* DOI: 10.1002/app.384 (2012)
17. Effect of growth temperature and post-growth annealing on luminescence properties of molecular beam epitaxy grown single layer Ge quantum dots By S. Das, S. Manna, R. K. Singha, R. Aluguri, and S. K. Ray *J. Applied Physics* 113, 063101 (2012)
18. Effect of Mn doping on magnetic and transport properties of Nd_{0.5}Sr_{0.5}Co_{1-y}MnyO₃ ($y = 0, 0.1, 0.3, 0.9, 0.95$ and 1), By S. Kundu and T. K. Nath, *Journal of Magnetism and Magnetic Materials*, 325 1–6, (2013)
19. Effect of screening on spectroscopic properties of Li-like ions in plasma environment By Pradip Kumar Mondal, Narendra Nath Dutta, Gopal Dixit, and Sonjoy Majumder *Physical Review A* Accepted (2013)
20. Evidence of exchange bias effect and surface spin glass ordering in electron doped Sm_{0.09}Ca_{0.91}MnO₃ nanomanganites, By S. K. Giri, A. Poddar, and T. K. Nath, *Journal of Applied Physics*, 112, 113903 (2012)

21. Evidence of glassy ferromagnetic phase and kinetic arrest of electronic phase in $\text{Sm}_{0.35}\text{Pr}_{0.15}\text{Sr}_{0.5}\text{MnO}_3$ manganites, By S. K. Giri and T. K. Nath *Journal of Magnetism and Magnetic Materials* 324, 2277 (2012)
22. Experimental investigation of shell model excitations of ^{89}Zr up to high spin By S. Saha, R. Palit, J. Sethi, T. Trivedi, P.C. Srivastava, S. Kumar, B.S. Naidu, R. Donthi, S. Jadhav, D.C. Biswas, U. Garg, A. Goswami, H.C. Jain, P.K. Joshi, G. Mukherjee, Z. Naik, S. Nag, V. Nanal, R.G. Pillai, S. Saha, A.K. Singh *Physical Review C* 86, 034315 (2012)
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New Academic Programmes

M.Tech in Media and Sound Engineering

Brief Description of on-going activities

CET, IIT Kharagpur is offering an M.Tech Programme on "Media and Sound Engineering". Students with B.Tech./B.E. or equivalent qualification in CSE/ECE/EE/Instrumentation Engineering /IT are eligible to apply. CET also offers Ph.D and M.S. programmes in both, areas related to educational pedagogy and in Speech and Image processing. Research scholars are already working in these areas. Ten research scholars are already working in the area of Educational Technology and Speech Processing. M.Tech programme for teachers of AICTE affiliated institutions and industry are being offered through videoconferencing mode at 3 studios in CET.

Ongoing Sponsored Projects : 1) National Program on Technology Enhanced Learning - CET, IIT Kharagpur has already developed 186 courses (7,440 hours of video courses) as a part of NPTEL phase I & II which are available in the LAN for internal feedback. CET is planning to develop more courses by March 2013. 2) Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning. 90 courses have been completed in the pilot phase and 20 more are to be completed by March 2013. These courses consist detailed curriculum documents for each course with instructional objectives, assessment and references to learning resource materials. 3) Creation of Integrated Development Environment (IDE) for Generation of Pronunciation Lexicon for Indian Languages (PL-IL) in W3C Pronunciation Lexicon Standard (PLS) and Example lexicon in Hindi and Bangla Languages

Thrust Areas

1. The center has produced nearly 4,800 hours of video courses in various engineering subjects. These are in use in more than 250 engineering colleges, universities and R & D laboratories. These courses are primarily used for self-learning by faculty, staff and students. Significant demand for them exists in overseas markets also. CD & DVD versions of these courses are

available. CET is now also making the courses available on HDDs – to be used in the Video-on-Demand (VOD) mode by institutions within their internal LAN. This allows access to any course on the LAN to a large number of users at any point of time along with the ability to control all normal play functions at will. More than 3700 users access these courses on any single day within the LAN of IIT Kharagpur.

2. Instructional Design; Technology Enhanced Learning; Teaching-Learning Process; Distance Education; Speech and Image processing Speech Technology development for Indian Language and ICT application Cognitive Psychology & Human Resource Development E-learning

New Acquisitions

1. CET connected 15 locations though Video Conferencing both in IIT-Kharagpur and in extension centers in Kolkata and Bhubaneswar. The main purpose of the same is to run part time M Tech programs in Electronics & Communication Engineering and Electrical Engineering for AICTEE recognized college teachers. It is also used for conducting various meetings, overseas interviews etc. The project cost around 270.00 lacs for various equipments and studio upgradation. 20 or more manpower has been trained to operate the system to provide support for the same.
2. The video studios are being updated to HD (High definition) system and as a result new set of instruments like camera, switcher etc are being installed.
3. Establishment of Video Systems Laboratory at CET: A state-of-the-art video systems laboratory has been set up with purchase of audio / video equipment worth Rs. 80 lakhs. Centre also creating the largest active video lecture storage system of 400TB.

International Collaborations

Centre has collaborated with University of Tokyo Japan and also submitted collaborative project in the area of speech processing. Prof. B. Bhattacharya and Prof. S. K. Das Mandal Visited University of Tokyo, Japan during June, 2012.

Lectures by Visiting Experts

1. Prosody Modelling *by* Prof. Hiroya Fujisaki (Emeritus Prof. University of Tokyo)
2. Speech Signal Processing *by* Prof. Henning Reetz (Univ of Frankfurt, Germany)
3. Educational Technology *by* Prof. Raj Reddy (Carnegie Mellon University, USA)
4. Speech Prosody *by* Prof. Keikechi Hiroshi (Prof. Univ of Tokyo)

Doctoral and MS Degrees Awarded

1. Shiffon Chatterjee : Efficacy of Computer Game -based Learning: An Empirical Investigation(Ph.D)

Member - Professional Bodies

1. Mohanty, Atasi, *Life Member- No.1232* - Indian Academy of Applied Psychology
2. Mohanty, Atasi, *Life Member* - Indian Association of Health Research & Welfare
3. Mohanty, Atasi, *Regular Member up to 2016* - National Academy of Psychology
4. Das Mandal, Shyamal Kumar, *Member* - International Speech Communication Association
5. Bhattacharya, Bani, *Associate* - Board of experts in E-Learning Forum and Distance Education, Commonwealth of Learning
6. Bhattacharya, Bani, *Regular* - Expert committee on Distance education & e-Learning for the Asian Productivity Organization, (APO) Tokyo
7. Bhattacharya, Bani, *Regular* - Indo US Collaboration for Engineering Education (IUCEE)
8. Bhattacharya, Bani, *Member* - Technical Programme Committe, T4E, IEEE Chennai
9. Bhattacharya, Bani, *Regular* - International Forum of Educational Technology and Society
10. Bhattacharya, Bani, *member* - Technical Programme Committe, T4E, IEEE Hyderabad

Member - Editorial Board

1. Bhattacharya, Bani (2011) *Member, Editorial Advisory Board* - Higher Education Institutions and Learning Management Systems: Adoption and Standardization
2. Bhattacharya, Bani (2010) *Member, Technical Programme Committee* - International Conference on Technology for Education 2010 (IEEE)
3. Bhattacharya, Bani (0) *Member and Reviewer* - IEEE Techsym
4. Bhattacharya, Bani (2011) *Member and reviewer* - ICALT 2011
5. Bhattacharya, Bani (2013) *Committee Member* - The 7th European Conference on Games Based Learning (ECGBL13)

Sponsored Research Projects

1. A Multi-modal and ICT based Intervention Programme for removing Specific Learning Difficulties among Children (Indian Council of Social Science Research- MHRD India, Rs.0.00 Lakhs)
2. Creation of IDE for Generation of Pronunciation Lexicon for Indian Languages (PL-IL) in W3C Pronunciation Lexicon Standard (PLS) and Example lexicon i (Department of Information Technology, Rs.47.26 Lakhs)
3. Creation of Integrated Development Environment (IDE) for Generation of Pronunciation Lexicon for Indian Languages (PL-IL) in W3C Pronunciation Lexicon (DIT, Rs.47.00 Lakhs)
4. Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning (MHRD, Rs.100.00 Lakhs)
5. Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning ICE - main phase (MHRD, Rs.1600.00 Lakhs)
6. NPTEL (MHRD, Rs.1133.00 Lakhs)

Visits Abroad by Faculty Members

1. Das Mandal, Shyamal Kumar - Preesent Paper (Macau, China,) December 9-12, 2012
2. Das Mandal, Shyamal Kumar - Invitation for Talk (University of Tokyo, Japan,) 2-9, June2012
3. Bhattacharya, Bani - Collaboration Project (Tokyo University, Japan,) 5 days
4. Bhattacharya, Bani - Conference (Athens, Greece,) 5 days
5. Das Mandal, Shyamal Kumar - Present paper in Interspeech 2011 (Florance,Italy,) 4 days

Invited Lectures by Faculty Members

1. Business Communication- EMBA Course *by* Mohanty, Atasi (IIT Kgp- Extension Centre- Bhubaneswar)
2. Speech Prosody and its Modeling for Speech Technology *by* Das Mandal, Shyamal Kumar (FRSM-2013, Jadavpur University)
3. Pedagoical Principles *by* Bhattacharya, Bani (Assam Engineering College, Guwhati)
4. NMEICT Projects *by* Bhattacharya, Bani (Vidyasagar University)

Short-Term Courses, Training Programmes and Workshops organised

1. Educational Leadership (19-25 September, 2011)

Papers Published in Journals

1. Charisma as a factor in good teaching *By* Bhattacharya, B. Vasisth *Staff and Educational Development International* Volume 15, Number 3, (2012)
2. Collaborative Learning in Distance Education: A Case Study *By* Bhattacharya, B. *Online Journal of Education Research*, Volume 1, Issue 1, p (2012)

3. Emotional Intelligence Interpersonal Relation & Personal Effectiveness: A Comparison between School & College Teachers in North-east India By Ms. Atasi Mohanty & Ms. Meera Dahal *Journal of Management Development & Research* Vol-II No-1 Pg.19-28 (2012)
4. Equal Education By Mittal, R., Bhattacharya, B. *International Journal of Sociology of Education*, 2(1), 51 – 66 (2012)
5. Reading Achievement Behaviour Patterns and Cultural Difference in Indian Classrooms By Ms. Atasi Mohanty *Educationia Confab* Vol.1 No.-3 Pg.2-16 (2012)

Papers Presented in Conferences

1. A Bengali HMM Based Speech Synthesis System, By Mukherjee, S, Das Mandal, S. K., *Oriental COCOSDA, 2012*, Macau, China, (2012)
2. A Bengali Speech Synthesizer on Android OS, By S. Mukherjee, S. K. Das Mondal, *Proceedings of Speech and Multimodal Interaction in Assistive Environments*, Jeju, Republic of Korea, (2012)
3. A Comparative Study of Native (L1) and Nonnative (L2) English Speech Strategy for Discourse Prosodic Organization, By Shambhu Nath Saha and Shyamal Kumar Das Mandal, *IHCI 2012*, IIT Kharagpur, (2012)
4. Equal Education, By Mittal, R. and Bhattacharya, B, *BTTC-ICREEH*, Mumbai, (2013)
5. Impact of SOLO Taxonomy in Computer Aided Instruction to Qualitative Outcome of Learning for Secondary School Children., By Bhattacharya , T. Bhattacharya, B. Mitra, T, *T4E conference, IEEE,, IIIT Hyderabad*, (2012)
6. Occurrence and duration modeling of sentence medial pause for Bangla text reading at different speech rate, By Sudipta Acharya and Shyamal Kr.Das Mandal, *Oriental COCOSDA, 2012*, Macau, China, (2012)
7. Spirituality & Subjective Well-being, By Ms. Atasi Mohanty, *4th International Conference on Integrating Spirituality and Organizational Leadership*, XIMB- Bhubaneswar, (2013)
8. The Intonation of Bangla Sentences: Declarative, Wh-Questions and Yes/No by using Empirical Mode of Decomposition, By Sudipta Acharya and Shyamal Kumar Das Mandal, *Proc. of IHCI 2012 IEEE Conference, 2012*, IIT Kharagpur, (2012)

Centre for Oceans, Rivers, Atmosphere and Land Sciences

Head

Prof. Debabrata Sen

Associate Professor

Chakraborty, Arun *Ph.D (IIT Delhi)*, Ocean Dynamics and Ocean Circulation Modeling of the Bay of Bengal, Data Assimilation

Assistant Professors

Behera, Mukunda Dev *Ph.D.(IIRS, DehraDun)*, Land/ Vegetation Cover and River Basin Dynamics, Biodiversity and Geoinformatics Modeling, Forest Biomass and Carbon Sequestration, Ecosystem Ecology and Climate

Dash, Mihir Kumar *Ph.D. (Gujarat University)*, Satellite Oceanography, Mesoscale Ocean Modeling, Cryospheric Studies

Mandal, Manabottam *Ph.D.(IIT Delhi)*, Observations and modeling of land surface processes, Modeling of extreme weather events - tropical cyclones and thunderstorms, Regional climate modeling, Cloud microphysics, Mesoscale and land surface data assimilation

Satyanarayana, Achanta Naga Venkata *Ph.D (BHU)*, Observations and Modeling of PBL dynamics and Thunderstorms, Parameterization of Land Surface Processes, Air-Sea Interactions

Shaji, C *Ph.D. (IIT Delhi)*, Ocean Modeling and Analysis, Coastal Processes, Monsoon Oceanography

New Academic Programmes

Launching a Programme in the area of Marine Resource development and Management (in pipe line)

Brief Description of on-going activities

The CORAL center is actively participating in DST/MOES sponsored STORM (Severe Thunderstorms and Regional Modeling) which is in operation along East/North East part of India. Under this program a 50 m instrumented micro-meteorological tower was installed in IIT Kharagpur campus to monitor the atmospheric surface layer characteristics during the pre-monsoon thunderstorm activity. A state of art upper air sounding system was procured to study the atmospheric boundary layer dynamics during various epochs of thunderstorm activities at Kharagpur. These systems are actively used in STORM programme as well as CTCZ experimental programme. The centre is also involved in the development of Data Assimilative Coastal Circulation Model Over Bay of Bengal; development of a Hybrid Coordinate Ocean Model (HYCOM) for the Bay of Bengal, numerical simulation of Bay-of-Bengal Circulation Features using satellite data; air-sea interaction studies, sea ice monitoring using remote sensing and satellite data obtained from Megha-Tropiques and to study any climate signal in their variation. Attempts are also underway in biodiversity characterization at landscape level using Satellite Remote Sensing and GIS for various states of India as well as Land Use and Land Cover change Dynamics. Moreover, studies involving assessment and modelling of Forest Biomass and Carbon Dynamics using Remote Sensing and GIS is on going.

Thrust Areas

1. Observations and modeling of atmosphere and oceans
2. Climate variation studies towards Climate Change

Lectures by Visiting Experts

1. Why Indian Ocean is different from Other world Ocean - 10 January 2011 *by* Dr Prasanna Kumar (Deputy Director, National Institute of Oceanography, Goa)
2. Observing System Simulation Experiment for NASA Global Precipitation Mission using FSU Model - 7 January 2011 *by* Dr Akhilesh Mishra (Research Associate, Florida State University, USA)
3. Climate Change in East Asia - 9 February 2011 *by* Dr Sahana Paul (Post doctoral Research Associate, National Taiwan University, Taiwan)
4. Development and application of ground-based, mobile scanning lidars for 3-D measurements of aerosol, temp & moisture distributions in ABL - 28 July 2010 *by* Dr Sandip Pal (Post Doctoral Fellow, Institute of Physics and Meteorology, University of Hehenheim, Germany)

Member - Professional Bodies

1. Mandal, Manabottam, *Member* - Asia Oceania Geophysical Society
2. Mandal, Manabottam, *Life Member* - Indian Meteorological Society
3. Satyanarayana, Achanta Naga Venkata, *Member* - Internatinal Association of Urban Climate (IAUC), USA
4. Satyanarayana, Achanta Naga Venkata, *Life Member* - India Meteorological Society, New Delhi
5. Dash, Mihir Kumar, *Member* - American Geo-physical Union
6. Chakraborty, Arun, *Life Member* - Indian Geophysical Union
7. Chakraborty, Arun, *Life member* - Ocean Society of India
8. Chakraborty, Arun, *Life Member* - Indian Meteorological Society
9. Chakraborty, Arun, *Life Member* - The Indian Science Congress Association
10. Behera, Mukunda Dev, *Member* - International Association of Vegetation Science
11. Behera, Mukunda Dev, *Life Member* - National Institute of Ecology
12. Behera, Mukunda Dev, *Life Member* - Indian Association of Angiosperm taxonomy
13. Behera, Mukunda Dev, *Annual* - International Society for Tropical Ecology
14. Shaji, C, - *Life Member*: American Geophysical Union, USA
15. Shaji, C, - *Member*: Japan Oceanographic Society, Japan
16. Shaji, C, - *Life Member*: Indian Society of Theoretical and Applied Mathematics
17. Shaji, C, - *Life Member*: Ocean Society of India
18. Shaji, C, *Life Member* - Indian Geophysical Union

Member - Editorial Board

1. Behera, Mukunda Dev (2012) *Guest Editor (Special Issue on Climate Change)* - Biodiversity and Conservation
2. Behera, Mukunda Dev (2012) *Guest Editor (Special Section on Forest Remote Sensing, Biodiversity and Climate)* - Current Science
3. Chakraborty, Arun (2011) *Reviewer* - Journal of Shipping and Ocean Engineering
4. Chakraborty, Arun (2011) *Associate Editor* - Geoscience Research

Awards & Honours

1. Chakraborty, Arun (2013) *Adjunct Faculty, IIT Bhubaneswar*
2. Chakraborty, Arun (2010) *Second Best Paper Award in the International Workshop on Biodiversity and Climate Change Dec. 2010 held at IIT Kharagpur. Authors: Saswati Deb, Bishnu Kumar, Sourav Sil and Arun Chakraborty*

Sponsored Research Projects

1. Analysis and simulation of land surface energy balance at a tropical site using INSAT-3D observations (ISRO, Rs.15.30 Lakhs)

2. Assessment and Modelling of Forest Biomass and Carbon Dynamics using Remote Sensing and GIS in Katarniaghat WLS, U.P. (National Botanical Research Institute (NBRI), CSIR, Lucknow, Rs.60.00 Lakhs)
3. Developing Ganga Basin Environment Management Plan-Biodiversity and Ecology Theme (Ministry of Environment and Forests (MOEF), New Delhi, Rs.32.00 Lakhs)
4. Development of a Hybrid Coordinate Ocean Model (HYCOM) for the Bay of Bengal (Indian National Centre for Ocean Information Services (INCOIS), Hyderabad., Rs.0.00 Lakhs)
5. Development of Data Assimilative Coastal Circulation Model Over Bay of Bengal (Completed) (SAC, ISRO, Ahmedabad, Rs.22.80 Lakhs)
6. Development of Operational Ocean model for Bay of Bengal (INCOIS, Hyderabad, Rs.54.00 Lakhs)
7. Evaluation of atmospheric boundary layer parameters for validating atmospheric flow models at Kalpakkam (Board of Research in Nuclear Sciences - Department of Atomic Energy - Indira Gandhi Centre for Atomic Energy, Rs.3.52 Lakhs)
8. Feature based study of Indian Ocean Circulation Using Saral Altimetry Observations (Indian Space Research Organization, Rs.15.42 Lakhs)
9. High resolution mesoscale prediction of land-falling Bay of Bengal cyclones for coastal disaster preparedness (MoES, Govt. of India, Rs.16.20 Lakhs)
10. Land Use Land Cover Dynamics in Relation to Human Dimensions and climate change in Mahanadi, Ganga and Brahmaputra River Basin (Indian Institute of Remote Sensing, ISRO, Dehradun, Rs.41.00 Lakhs)
11. Monitoring of sea ice using oceanic scatterometer data for determination of climatic trend (Space Applications Centre (ISRO), Ahmedabad, Rs.22.80 Lakhs)
12. Observational & modeling of atmospheric boundary layer over different land surface conditions in the CTCZ domain during different epochs of Indian summer (MoES, Rs.31.20 Lakhs)
13. Regional assimilation of land surface parameters over Indian landmass for providing surface boundary condition to numerical models for simulation of MJO (MoES, Rs.64.92 Lakhs)
14. Sea ice monitoring in the Arctic and the Antarctic (National Centre for Antarctic and Ocean Research (MOES), Goa, Rs.45.00 Lakhs)
15. Simulation of Bay-of-Bengal Circulation Features using OCEANSAT-II Scatterometer Wind and OCM (Completed) (SAC, ISRO, Ahmedabad, Rs.17.40 Lakhs)
16. Smarter water resource management, Disaster Mitigation and Diabetic retinopathy (IBM, Rs.17.60 Lakhs)
17. South Asian Precipitation A: Seamless Assessment (SAPRIS) (MoES and UK, Rs.53.00 Lakhs)
18. Study of the behaviour of Oil Spill on Ocean surface through laboratory experiments, modeling and Satellite Images (MOES, Govt. of India, Rs.78.00 Lakhs)
19. Study of the Behaviour of Oil Spill on Ocean Surface Through Laboratory Experiments, Modelling and Satellite Images (Ministry of Earth Sciences, Rs.0.00 Lakhs)
20. Study of the surface and upper ocean Mesoscale features of North Indian Ocean from observation and Model (Ministry of Earth Sciences Through OASTC cell, IIT Kharagpur, Rs.31.36 Lakhs)

Visits Abroad by Faculty Members

1. Behera, Mukunda Dev - To attend International Conference (Birmingham,) September 2011
2. Behera, Mukunda Dev - Research Discussion (University of Oxford,) August 2011
3. Behera, Mukunda Dev - Research Discussion (University of Liebig, Hannover,) September 2011
4. Chakraborty, Arun - Scientific Research and Collaboration (University of Massachusetts, Dartmouth, USA,) (June - July, 2012, 39 days)
5. Behera, Mukunda Dev - Conference (Kathmandu Nepal,) 29-31 May 2012

Invited Lectures by Faculty Members

1. Modeling of SW Monsoon Induced Synoptic Features along India's West Coast by Shaji, C (University of Pune)
2. Global Warming by Chakraborty, Arun (Garbeta High School)

Papers Published in Journals

1. Characterizing Shorea robusta communities in the part of Indian Terai landscape By Chitale VS, Behera MD, Matin S, Roy PS, Sinha VK *Journal of Forestry Research* (Accepted) (0)
2. Criteria-based approach to suggest alternative road network in part of Ladakh province through object based modelling: A GIS & remote sensing method By Matin S, Behera MD and Mohapatra SN. *Journal of environmental research and development* 7(1) (2012)
3. Estimating Periodic Evapotranspiration using Remote Sensing in Relation to LULC in two Eastern Indian River Basins By Gupta DK, Behera MD, Panda SN and Roy PS *Environmental Monitoring and Assessment* (2013)
4. Estimation of Indian coastal areas inundated into the sea due to sea level rise during the 20th century By S. Nayak, M. Mandal, A. Adhikari and R. Bhatla *Current Science* 104, 5, 583-585 (2013)
5. Impact of Land Use and Land Cover changes on temperature trends over Western India By S. Nayak and M. Mandal *Current Science* 102, 8, 1166-1173 (2012)
6. Interannual Variability of Sea Surface Temperature in the Arabian Sea By C. Shaji, M. P. Sudev and M. V. Martin In "Climate Change and Island and Coastal Vulnerability", Springer Verlag, New York 53-76 (2013)
7. Modeling contribution of wildfires in predicting distribution of four endemic tree species in part of Himalayan biodiversity hotspot By Chitale VS and Behera MD. *Ecological Engineering* (2013)
8. Modeling the Effects of Nutrient Dynamics and Surface Circulation on the Productivity of Hooghly Estuary By Saswati Deb, A. Chakraborty *Journal of Shipping and Ocean Engineering* 2, 255-262 (2012)
9. Movement of seasonal eddies and its relation with cyclonic heat potential and cyclogenesis points in the Bay of Bengal By Bishnu Kumar and Arun Chakraborty *Natural Hazards* 1-19 (2011)
10. Numerical Simulation of Seasonal Variations in Circulations of the Bay of Bengal By Sourav Sil and Arun Chakraborty *Journal of Oceanography and Marine Science* 2(5), 127-135 (2011)
11. Seasonal variability of heat content and isothermal layer in the Bay of Bengal. By Bishnu Kumar and Arun Chakraborty *Journal of Oceanography and Marine Science*. 2(3), 63-77 (2011)
12. Simulation of East India Coastal Features and Validation with Satellite Altimetry and Drifter Climatology By Sourav Sil and Arun Chakraborty *International Journal of Oceans and Climate System* Vol. 2, (4), 279-289 (2011)
13. Stochastic modeling of internal wave induced acoustic signal fluctuation and performance evaluation of shallow UWANs By Amit Mandal, S. Misra and M. Dash *IEEE International Conference on Communications 2013* (accepted) (2013)
14. Terrestrial Carbon Studies and Earth Observation Data By MD Behera and Dash J *Current Science* 104 (4) 413 (2013)
15. The analysis of 20°C and 26°C isotherm variability over Bay of Bengal By Tarumay Ghoshal, Sourav Sil and Arun Chakraborty *J Ecosyst Ecogr* 2-4 (2012)
16. The mechanism of the 20°C isotherm depth oscillation for the Bay of Bengal By Sourav Sil, A. Chakraborty *Marine Geodesy* Doi: 10.1080/014904 (2012)
17. Unusual circulation pattern during Indian summer monsoon failure in July 2002 and June 2009 By Dhrubajyoti Samanta, Mihir Kumar Dash and Prem Chand Pandey *Natural Hazards* 65:295-302 (2013)
18. Variability in the ENSO-indexed southern hemispheric circulation and Antarctic sea ice extent By Mihir K Dash, P. C. Pandey, N. K. Vyas and J. Turner *International Journal of Climatology* 33: 778-783 (2013)
19. Wetland monitoring, serving as an index of land use change-a study in Samaspur wetlands, Uttar Pradesh, India By Behera MD, Chitale VS, Shaw A, Roy PS and Murthy, MSR *Journal of Indian Society of Remote Sensing* 40(2) (2012)

Papers Presented in Conferences

1. Assessment of the Predictive Capability of the Multiscale Features of the Bay of Bengal Using Regional Ocean Modeling System, *By* Chakraborty A., Sil S. and Jana S., *AOGS*, Singapore, (2012)
2. Estimation of Expanded Indian Coastal Area during 1975-2005, *By* S. Nayak and M. Mandal, *AOGS-AGU Joint Assembly 2012*, Singapore, (2012)
3. Forest, Biodiversity and ecosystem carbon sequestration in an Indian tropical forest, *By* Tripathi P, Chitale VS and Behera MD, *Mountain Resource management in a changing environment*, Kathmandu, Nepal, (2012)
4. Implication of Empirical Orthogonal Function Analysis to Objectively Analyzed Ocean Temperature Data of Bay of Bengal, *By* Tarumay Ghoshal, Sudip Jana and Arun Chakraborty, *OSICON 2011, NIOT, CHENNAI*, CHENNAI, INDIA, (2011)
5. Numerical Simulation of Estuarine Features for the Hooghly Estuary Using Regional Ocean Modeling System, *By* Deb S. and Chakraborty A., *AOGS*, Singapore, (2012)
6. Response of Oceansat II winds in the Bay of Bengal Circulation, *By* Sourav Sil, Arun Chakraborty, S. K. Basu and P.C. Pandey, *International Workshop of Pan Ocean Remote Sensing (PORSEC)*, CUSAT, Kerala, (2012)
7. Role of Cloud Microphysics in Mesoscale Simulation of Landfalling Bay of Bengal Cyclones, *By* M. Mandal and K S Singh, *AOGS-AGU Joint Assenbly 2012*, Singapore, (2012)
8. Sea Surface Temperature Assimilation Experiments in the Bay of Bengal, *By* Jana S., Sil S. and Chakraborty A., *AOGS*, Singapore, (2012)
9. Simulation of Plankton Dynamics in the Hooghly Estuary using a High Resolution Biophysical Model, *By* Deb S. and Chakraborty A.,, *IEEE Geoscience and Remote Sensing Symposium, ICM*, Munich Germany, (2012)
10. Stability Characteristics of Non-uniformly Saturated Atmosphere Associated with Pre-monsoon Thunderstorms Over Kolkata, *By* H P Nayak and M Mandal, *AOGS-AGU Jont Assembly 2012*, Singapore, (2012)
11. Surface meso-high and wake-low associated with pre-monsoon thunderstorm over the Kharagpur region, *By* S. Dawn and M. Mandal, *COMECAP 2012*, Athens. Greece, (2012)
12. The analysis of 20°C and 26°C isotherm variability over Bay of Bengal, *By* Tarumay Ghoshal, Sourav Sil and Arun Chakraborty, *Biodiversity 2012, International Conference by OMICS group at Hyderabad*, Hyderabad, India, (2012)
13. The Influence of Surface Energy Exchanges in Development of Pre-monsoon Thunderstorm Over the Kharagpur Region, *By* S. Dawn and M Mandal, *AOGS-AGU Joint Assembly 2012*, Singapore, (2012)

Cryogenic Engineering Centre

Head

Prof. Vutukuru Vasudeva Rao upto 31.12.2012
Prof. Kanchan Chowdhury from 01.01.2013

Professors

Bandyopadhyay, Syamalendu Sekhar Chowdhury, Kanchan *Ph.D.(IIT Kharagpur)*, Natural gas processing, Carbon dioxide capture and sequestration, Air breathing propulsion, Separation processes

Chowdhury, Kanchan *Ph.D.(IIT Kharagpur)*, Simulation of Helium Plants, Cryogenic Air Separation, Safety in Oxygen-enriched Systems, Conventional Refrigeration

Dey, Tapas Kumar *Ph.D.(Delhi Univ)*, Polymer Nanocomposites, Nanofluids and its applications, Magnesium Di-boride Superconductors

Rao, Vutukuru Vasudeva *Ph.D.(IIT Madras)*, Vacuum Technology, Cryo Physics, Applied Superconductivity

Sarangi, Sunil Kumar *Ph.D.(Stony Brook)*,

Assistant Professors

Adyam, Venimadhav *Ph.D.(IISc. Bangalore)*, Multiferroics Spintronics Thermoelectrics Nanomaterials and Thin film batteries

Ghosh, Indranil *Ph.D.(IIT, Kharagpur)*, Compact Heat Exchangers, Heat Transfer in Porous Media, Sorption Cooling

Ghosh, Parthasarathi *Ph.D.(IIT Kharagpur)*, Low Temperature Processes and equipment, Cryogenic turboexpander and expansion devices, Helium Refrigeration and liquefaction systems, Cryogenic storage and transfer, Thermodynamics and heat transfer of supercritical helium

Nandi, Tapas Kumar *Ph.D.(IIT Kharagpur)*, Perforated plate matrix heat exchanger, Cryogenic wave expander, Cryogenic rocket propulsion

Sandilya, Pavitra *Ph.D.(IIT Kanpur)*, Gas hydrates, Cryogenic transport Phenomena-based processes, CO₂ capture and sequestration, Space cooling

Faculty Appointments

Bandyopadhyay, Syamalendu Sekhar Visiting Professor

Faculty Retirement

Bandyopadhyay, Syamalendu Sekhar Professor

Brief Description of on-going activities

Cryogenic Engineering Centre is engaged in teaching at UG and PG levels, sponsored research and consultancy remain at the core activity of the Centre.

The Centre is also active in Continuing Education through training engineers from industries, faculty from academic institutions, and scientists from R&D organisations by conducting short term courses and workshops in specialised areas like Cryogenic Engineering, Air Seapartio, Vacuum Technology etc.

Thrust Areas

1. Cryogenic Engineering
2. Advanced Materials
3. Nonconventional Energy

Doctoral and MS Degrees Awarded

1. Rijo Jacob Thomas : Exergy Approach in Designing Large-Scale Helium Liquefier(Ph.D.)
2. Madhusree Kole : Thermophysical Properties, Pool Boiling Characteristics, and Heat Pipe Application of Nanofluids(Ph.D.)
3. Pattabhi Vishnuvardhan G : Development of an algorithm to analyse the conceptual design of three dimensional multi stage cabling scheme for cable in conduit conductor (CICC)(MS)

Member - Professional Bodies

1. Sandilya, Pavitra, *Life Member* - Indian Cryogenic council
2. Nandi, Tapas Kumar, *Life Member* - Indian Society for Technical Education (ISTE)
3. Nandi, Tapas Kumar, *Life Member* - Indian Cryogenics Council
4. Ghosh, Parthasarathi, *Regular* - Plasma Science Society of India, Ahmedabad
5. Ghosh, Parthasarathi, *Regular* - Indian Cryogenic Council
6. Ghosh, Parthasarathi, *Regular* - American Society of Mechanical Engineers
7. Adyam, Venimadhav, *Parmanent* - Magnetic Society of India
8. Dey, Tapas Kumar, *International Scientific Committee Member* - Asian Thermophysical Society
9. Dey, Tapas Kumar, *Regular (life Member)* - Indian Cryogenic Council
10. Dey, Tapas Kumar, *Fellow (Life member)* - Thermophysical Society of India
11. Dey, Tapas Kumar, *Regular (Life Member)* - Materials Research Society of India
12. Rao, Vutukuru Vasudeva, *Life* - Indian Cryogenics Council
13. Rao, Vutukuru Vasudeva, *Life* - Indian Vacuum Society
14. Chowdhury, Kanchan, *Member* - Indian Institute of Chemical Engineers
15. Bandyopadhyay, Syamalendu Sekhar, *Life Member* - Indian Institute of Chemical Engineers

Member - Editorial Board

1. Dey, Tapas Kumar (2011) *Member* - Indian Journal of Cryogenics

Awards & Honours

1. Bandyopadhyay, Syamalendu Sekhar (2012) *Member, Programme Advisory and Monitoring Committee (PAMC) of NPCSR of DST*

Sponsored Research Projects

1. A bridge project aimed at the expansion of Lithium ion battery research (SRIC, Rs.5.00 Lakhs)
2. Analysis & Development of Conceptual Design Methodologies for Air Collection and Enrichment System of Air Breathing Propulsion-Phase II (ISRO, Rs.20.00 Lakhs)
3. Design, Fabrication and Testing of Miniature Heat Exchangers and Heat Sinks (ON-GOING) (CSIR, New Delhi, Rs.10.61 Lakhs)
4. Fabrication of oxide multiferroic thin films by RF Magnetron Sputtering: Investigation of magnetodielectric and magnetoferroelectric properties (DST, Rs.17.00 Lakhs)
5. Investigation of the effects of tribocharging of solid particles on possible ignitions in gaseous oxygen systems: Experiments and Analyses (Department of Science and Technology, New Delhi, Rs.30.00 Lakhs)
6. Investigation on polymer nanocomposite for electronic packaging applications (CSIR, New Delhi, Rs.10.76 Lakhs)
7. Radiation Heat Transfer in Open Cell Metal Foam - An Experimental Study (ON-GOING) (CSIR, New Delhi, Rs.18.42 Lakhs)

8. Studies on novel Heusler alloys for the development of environmentally friendly thermoelectric materials (DST, Rs.34.00 Lakhs)
9. Synthesis and multiferroic properties of AFe₁₂O₁₉ (A= Ba, Sr) nanoparticles reinforced polymer nanocomposites for space applications (CSIR, Rs.18.00 Lakhs)
10. Thermal and Mechanical Properties of Polymer Nanocomposites and Agro-fiber based Biocomposites (Department of Science & Technology, Govt. of India, Rs.40.00 Lakhs)

Consultancy Projects

1. Characterization of cryochamber and soaking chamber (STNIL Cryogenics, Rs.1.00 Lakhs)
2. Conceptual Design of a Novel Method for Extraction of Methane Gas from Submarine Gas Hydrate by Seabed Heating (KDMIPE (ONGC), Rs.50.24 Lakhs)
3. Design and development of superconducting fault current limiters and vacuum technology (Completed) (Crompton Greaves Ltd, Rs.30.00 Lakhs)
4. Design of Support Structure for Cryogenic HTS Coil of HTSC Motor (BHEL, Rs.11.85 Lakhs)
5. Development of Gas Sweetening Technology for Removal of CO₂ from Natural Gas and Industrial Gas Streams by Using Blended/Activated Amine Solvents. (Engineers India Limited (EIL)), Rs.30.00 Lakhs)
6. Experimental setup for Cryogenic condition for Aerospace applications (Completed) (CIPET Bhubhaneswar, Rs.1.50 Lakhs)
7. Measurement of coefficient of thermal expansion of AA2219, SS321 & 07x16 H6 alloys between 77 and 300K (LPSC, ISRO, Trivandrum, Rs.2.50 Lakhs)
8. Measurement of CTE of 10 samples of polyimide rods at cryogenic temperatures (300 - 80K) (Vikram Sarabhai Space Centre (VSSC) Thiruvananthapuram, Rs.2.80 Lakhs)

Visits Abroad by Faculty Members

1. Ghosh, Parthasarathi - Attending 24th International Cryogenic Engineering Conference (Fukuoka Japan,) 13th -19th May 2012
2. Ghosh, Parthasarathi - Attending IIR conference Cryogenics 2012 (Dresden Germany,) 11th - 14th September 2012
3. Ghosh, Parthasarathi - Invited for technical discussion with Prof. H Neumann at Karlsruhe Institute of Technology (Karlsruhe Germany,) 15th -18th September 2012
4. Bandyopadhyay, Syamalendu Sekhar - To participate in ICREE-2013, Visit the Chemical Engineering Dept. of Univ. of Rome, La Sapienza (Rome, Italy,) 23-28 February 2013
5. Chowdhury, Kanchan - Guest Scientist (Physikalisch-Technische Bundesanstalt Braunschweig Germany,) 2 months (May-July, 2011)

Invited Lectures by Faculty Members

1. Multiglass behavior in La₂NiMnO₆ nanoparticles *by* Adyam, Venimadhav (MagMa-2012 ♦♦? IIT Madras, 2012)
2. Cryogenic Separation Processes *by* Bandyopadhyay, Syamalendu Sekhar (Haldia Institute of Technology)
3. Enhanced Heat Conduction of Nanofluids and its Application in Thermal Management of Modern Electronics *by* Dey, Tapas Kumar (Kakatiya University, Warangal)
4. Enhanced heat conduction of nanofluids & its applications in thermal management of high power electr *by* Dey, Tapas Kumar (Don Bosco College of Engineering & Technology, Assam)
5. High T_c Superconductors for Power Applications *by* Rao, Vutukuru Vasudeva (Institute for Plasma Research, Bhat, Gandhinagar)
6. VSM & SQUID Magnetometers *by* Rao, Vutukuru Vasudeva (S.V.University, Tirupati)
7. Superconducting Power Grid *by* Rao, Vutukuru Vasudeva (NIT Rourkela)
8. Superconducting Power Grid - Cryogenic Issues *by* Rao, Vutukuru Vasudeva (VECC, Kolkata)

Short-Term Courses, Training Programmes and Workshops organised

1. Cryogenic Air Separation and Oxygen Safety-2012 (6 days)
2. Two Week Short Term Course on Vacuum Technology and Process Applications (0st Nov. – 10th Nov. 2012)

Papers Published in Journals

1. A comparative study on Hysteresis losses in high Tc tapes for Superconducting fault current limiter applications By Soumen Kar, S. K. Sarangi, V. V. Rao *IEEE Transaction on Applied Superconductivity* 23 (3), 8200404 (2013)
2. Carbon Dioxide Capture: Absorption of Carbon Dioxide in Piperazine Activated Concentrated Aqueous 2-amino-2-methyl-1-propanol By Dash, S. K., Bandyopadhyay, S. S., *Journal of Clean Energy Technologies* Vol.1, P.184-188 (2013)
3. Conceptual Design of a 440 V/800 A Resistive Type Superconducting Fault Current Limiter Based on High Tc Coated Conductors By Soumen Kar, S. K. Sarangi, V. V. Rao *IEEE Transaction on Applied Superconductivity* 22(5), 5603405 (2012)
4. Design optimization of perforated heat exchangers using genetic algorithm By Ratna Raju, L. and Nandi, T. K., *Int. J. Adv. Materials Manufacturing and Characterization* 3,89-93 (2013)
5. Dynamic simulation of large-scale helium liquefier using Aspen Hysys®: Problems, solutions and prospect By • Rohan Dutta, Rijo J Thomas, Parthasarathi Ghosh, and Kanchan Chowdhury *Indian Journal of Cryogenics* Accepted (0)
6. Experimental and theoretical investigation of solubility of carbon dioxide in concentrated aqueous solution of 2-amino-2-methyl-1-propanol and piperazine. By Dash, S.K., Samanta, A.N., Bandyopadhyay, S.S., *The Journal of Chemical Thermodynamics* Vol. 51, P. 120-125 (2012)
7. Experimental investigation on the measurement deviations in recording brush discharges from insulating surfaces by Coulombmeters. By Kanchan Chowdhury, and Ulrich von Pidoll *Journal of Electrostatics* 70 (4) (2012)
8. Fabrication of Perforated plate heat exchangers By Sunil Kumar, S. and Nandi, T. K. *Journal of machining and forming technologies* 5 (2013)
9. Heat transfer and flow friction studies on perforated plates using Fluent™ By Sunil Kumar, S. and Nandi, T. K. *Indian Journal of Cryogenics* 37, 73-78 (2012)
10. Influence of mass flow rate on turbulent kinetic energy (TKE) distribution in cable-in-conduit conductors (CICC) used for fusion grade magnets By D. Raja Sekhar, V.V.Rao *Fusion Engineering and design (In Press)* 00 (2013)
11. Investigation of thermal conductivity, viscosity, and electrical conductivity of graphene based nanofluids By Madhusree Kole and T K Dey *Journal of Applied Physics* 113, 084307-1-8 (2013)
12. Mitigation of Effects of Pulsed Heat Load from Fusion Devices on Helium Refrigerator: A Novel Technique using Vapor Compression Cycle. By Rohan Dutta, Parthasarathi Ghosh, and Kanchan Chowdhury *International Journal of Refrigeration* (2013)
13. Mitigation of effects of pulsed heat loads in helium refrigerators for fusion devices using supercritical helium storage. By • Rohan Dutta, Parthasarathi Ghosh, and Kanchan Chowdhury *IEEE Transaction on Applied Superconductivity* 22(6) pp 4203712 (2012)
14. New Technique for Generating Continuous Sorption Cooling in a Single Adsorbent Column By Koley, S., and Ghosh, I. *Applied Thermal Engineering* Vol. 55, pp.33-42 (2013)
15. Percolation based enhancement in effective thermal conductivity of HDPE/LBSMO composites By MADHUSREE KOLE, D TRIPATHI and T K DEY *Bulletin of Materials Science* 35, 601–609 (2012)
16. Predicting the electrostatic charging behavior of insulating materials without charging tests. By Ulrich von Pidoll, and Kanchan Chowdhury *Journal of Electrostatics* 71 (3) (2013)
17. Pressure Drop and Heat Transfer Analysis of Long Length Internally Cooled HTS Cables By D. Raja Sekhar, V.V.Rao *IEEE Transaction on Applied Superconductivity* 23(3), 5400604 (2012)
18. Selection Criteria of High Tc Superconducting Tapes for Superconducting Fault Current Limiter Applications By Soumen Kar, Sandeep Kulkarni, Manglesh Dixit, Kuwar Pal Singh,

- Alok Gupta, P. V. Balasubramanyam, S.K. Sarangi and V.V. Rao *IEEE Transaction on Applied Superconductivity* 22(3), 5602804 (2012)
19. Spin glass behaviour and extrinsic origin of magnetodielectric effect in non-multiferroic La₂NiMnO₆ nanoparticles By K Devi Chandrasekhar, A K Das and A Venimadhav *J. Phys.: Condens. Matter* 24, 376003 (2012)
 20. Static and dynamic behavior of cryogenically cooled hydrostatic journal bearings for space applications By Kumar Mukesh and Nandi, T. K. *Indian Journal of Cryogenics* 37, 116-121 (2012)
 21. Study on Recovery Performance of High T_c Superconducting Tapes for Resistive type Superconducting Fault Current Limiter Applications By Soumen Kar, Sandeep Kulkarni, Manglesh Dixit, Kuwar Pal Singh, Alok Gupta, P. V. Balasubramanyam, S.K. Sarangi and V.V. Rao *Physics Procedia* 36, 1231-1235 (2012)
 22. Temperature dependent magnetic and dielectric properties of M-type hexagonal BaFe₁₂O₁₉ nanoparticles By J. Krishna murthy, C. Mitra, S. Ram, A. Venimadhav *Journal of Alloys and Compounds* 545 (2012) 545, 225–230 (2012)
 23. The extrinsic origin of the magnetodielectric effect in the double perovskite La₂NiMnO₆ By K Devi Chandrasekhar, A K Das, C Mitra and A Venimadhav *J. Phys.: Condens. Matter* 24, 495901 (2012)
 24. Thermal conductivity, coefficient of linear thermal expansion and mechanical properties of LDPE/Ni composites By D Tripathi and T K Dey *Indian Journal of Physics* DOI 10.1007/s12648-0 (2013)
 25. Thermal performance of screen mesh wick heat pipes using water-based copper nanofluids By Madhusree Kole, T.K. Dey *Applied Thermal Engineering* 50, 763 - 770 (2013)
 26. Thermophysical and pool boiling characteristics of ZnO-ethylene glycol nanofluids By Madhusree Kole, T.K. Dey *International Journal of Thermal Sciences* 62, 61-70 (2012)
 27. Three Dimensional CFD Analysis of Cable-in-Conduit Conductors (CICC) using Porous Medium Approach By D. Raja Sekhar, V.V.Rao *Cryogenics* 54, 20-29 (2013)

Papers Presented in Conferences

1. A comparative study on Hysteresis losses in high T_c tapes for Superconducting fault current limiter applications, By Soumen Kar, S. K. Sarangi, V. V. Rao, *Applied Superconductivity Conference 2012 (ASC-2012)*, Portland, Oregon, USA, (2012)
2. Analysis of various liquid nitrogen pre-cooling schemes for large-scale helium liquefiers/refrigerators., By Rahul Verma, Rohan Dutta, Parthasarathi Ghosh, and Kanchan Chowdhury, *24th National Symposium on Cryogenics*, IPR, Gandhinagar, (2013)
3. Carbon Dioxide Capture: Absorption of Carbon Dioxide in Piperazine Activated Concentrated Aqueous 2-amino-2-methyl-1-propanol, By Dash, S. K., Bandyopadhyay, S. S., *International Conference on Future Environment and Energy*, Rome, Italy, (2013)
4. Design optimization of perforated heat exchangers using genetic algorithm, By Ratna Raju, L. and Nandi, T. K., *Int. Conf. on Materials Processing and Characterization (ICMPC-2013)*, G R Inst of Eng. and Tech., Hyderabad, (2013)
5. Design optimization of perforated plate heat exchangers using Taguchi method, By Ratna Raju, L., and Nandi T. K., *24th National Symposium on Cryogenics (NSC-24)*, IPR, Gandhinagar, (2013)
6. Enhanced heat conduction of nanofluids and its applications in thermal management of high power electronic devices, By T K DEY, *NABSET-2013*, Don Bosco College of Engg. & Tec Gauhati, (2013)
7. Enhanced thermophysical properties of Nanofluids and its applications in electronic cooling, By T K DEY, *AMST 12*, Kakatiya University, Warangal, (2012)
8. Evaluation of a technique to mitigate effects of pulsed heat load of fusion devices on helium refrigerator, By •Rohan Dutta, Soumyarup Roy, Parthasarathi Ghosh, and Kanchan Chowdhury, *24th National Symposium on Cryogenics*, Gandhinagar, (2013)
9. Exergy analysis to determine appropriate design and operating parameters for Collins refrigerator-liquefier under mixed mode operation, By A. Kundu, R.J. Thomas, P. Ghosh, K. Chowdhury, *IIR Conference Cryogenics 2012*, Dresden, (2012)
10. Experimental studies on Cu-SS diffusion bonded perforated plate heat exchangers, By Sunil Kumar, S. and Nandi, T. K., *24th National Symposium on Cryogenics (NSC-24)*, IPR, Gandhinagar, (2013)

11. Influence of Aluminium Nitride (nano) on the superconducting properties of MgB₂, By D K Tripathi & T K Dey, *Nat. Conf. on Advances in Materials Science & Technologies*, Kakatiya University, Warangal, (2012)
12. Many hospital fires are due to oxygen enrichment: need for redesigning ventilation system, air conditioner and arrangement of intensive care units., By Shekhar Gaikwad, Kanchan Chowdhury, *24th National Symposium on Cryogenics*, Institute for Plasma Research, Gandhinag, (2013)
13. Mitigation of effects of pulsed heat load to helium refrigerator in fusion devices: use of a cold-compressor, By • Rohan Dutta, Parthasarathi Ghosh, and Kanchan Chowdhury, *24th National Symposium on Cryogenics*, Gandhinagar, (2013)
14. Numerical simulation of mixed convection heat transfer to forced flow supercritical helium, By N. Rebelo, P. Ghosh, *IIR Conference Cryogenics 2012*, Dresden Germany, (2012)
15. Performance of large-scale helium refrigerators subjected to pulsed heat load from fusion devices, By • Rohan Dutta, Parthasarathi Ghosh, and Kanchan Chowdhury, *International Cryogenic Engineering Conference 24-International Cryogenic Materials Conference 2012*, Fukuoka, Japan, (2012)
16. Predicting the electrostatic charging behavior of insulating materials without charging tests., By Ulrich von Pidoll, Kanchan Chowdhury, *12th European Conference on Electrostatics*, Budapest, Hungary, (2013)
17. Pressure Drop and Heat Transfer Analysis of Long Length Internally Cooled HTS Cables, By D. Raja Sekhar, V.V.Rao, *Applied Superconductivity Conference 2012 (ASC-2012)*, Portland, Oregon, USA, (2012)
18. Probing of phase separation dynamics in Pr_{0.6}Ca_{0.4}MnO₃ using dielectric spectroscopy, By K Devi Chandrasekhar, A K Das and A Venimadhav, *Novel Materials: Adding materialspecific reality in physicists models*, Natal, Brazil, (2012)
19. PROCESS INTENSIFICATION OF AIR SEPARATION USING CENTRIFUGAL FIELD, By P Sandilya, Rajan Kumar, Ramendra Kumar Sahu, *National Symposium on Cryogenics*, Ahmedabad, (2013)
20. Proposed experiments for tribocharging of dust particles and possible ignition upon discharge in oxygen environment., By Debanjana Bhattacharyya, Kanchan Chowdhury, *24th National Symposium on Cryogenics*, Institute for Plasma Research, Gandhinag, (2013)
21. Simulation studies on natural gas production from natural gas hydrate by thermal stimulation, By Pavitra Sandilya, Ramendra Kumar Sahu and Rajan Kumar, *CHEMCON 2012*, Jalandhar, (2012)

Materials Science Centre

Head

Prof. Shanker Ram

Professors

Adhikari, Basudam

Ph.D.(Calcutta Univ), Development of jute based fully biodegradable green composites, Development of jute-cement concrete composites, Development of jute based geotextiles, Development of jute based sound proofing panels, Development of a suitable processing technique for rubber coating of jute, Development of conducting polymer based gas sensors, Polymer based drug delivery systems, Development of volatile compound based biosensor for pest control, Development of polymer based taste sensor, Collagen and chitosan based scaffold for tissue engineering, Development of jute based baby diaper materials, Development of jute based fully biodegradable green composite

Banerjee, Susanta

Ph.D.(IIT Kharagpur), Fluorinated High performance polymers, Membrane based separation, Hyperbranched polymers, Light emitting polymers, Polymer synthesis and characterization

Bhattacharya, Debasis

Ph.D.(Calcutta Univ), Synthesis and processing of meso porous ceramics for catalytic applications, nano HAP for biomedical applications, Thin film ceramics for memory applications

Das, Chapal Kumar

Ph.D.(IIT Kharagpur), Nanocomposites, Direct fluorination, Insitu Nanocomposites for supercapacitor Application, Polymer Blends and its compatibilization, Insitu Nanocomposites for Microwave absorbing Materials, Graphene Based Nanocomposites, Organic Inorganic Hybrid Nanocomposites

Ram, Shanker

Ph.D.(BHU, Varanasi), Glasses and disordered solids, Alloys and intermetallics, Nanoceramics and hybrid composites, Magnetics and magnetocaloric materials, Ferroics and applications, Porous materials and applications, Metallic foams for biological applications, Nanofluids and nanoglues, Films, Optical materials and applications, Biomaterials, Phase transformations and phase transitions, Photonics

Associate Professors

Banerji, Pallab

Ph.D.(Jadavpur Univ), Low dimensional semiconductors for photovoltaic & thermoelectric applications

Jacob, Chacko

Ph.D.(Case Western, USA), Materials Science/ Nanomaterials and Nanotechnology/Semiconductors

Majumder, Subhasish Basu

Ph.D.(IIT Kanpur), Oxide gas sensors, Lithium rechargeable batteries, Natural fiber reinforced cement composites, Fly ash based ceramic products, Multiferroic thin films and composites

Assistant Professors

Khatua, Bhanu Bhusan

Ph.D.(IIT Kharagpur), Polymer-clay and Polymer-CNT Nanocomposites, Polymer Blends and Composites, Polymer Blend-Clay nanocomposites: Morphology control, Polymeric PTCR composites, Polymer-Graphene Nanocomposites, polymer-carbon nanohorn nanocomposites

Pradhan, Debabrata *Ph.D.(IIT Bombay)*, Nanostructured Materials, Physical Chemistry, Surface Science

Singh, Shubra *Ph.D.(IIT Madras)*, CIS based compounds for photovoltaic applications, ZnO nanostructures: synthesis and characterization, Thin film growth by PLD and spin coating, Brownmillerite compounds for SOFC applications

Faculty Appointments

Prof. Debabrata Pradhan Assistant Professor

Faculty Retirement

Ajit Kumar Banthia Professor

Brief Description of on-going activities

Apart from teaching various courses in our M. Tech. Program on Materials Science and Engineering we also teach undergraduate and post graduate level courses on biomaterials, ceramic, polymer and electronic materials to other departments of our Institute. So far as the research activity is concerned our Centre is engaged in development and application of novel polymers, ceramics and semiconductor materials supported by our Institute as well as by various funding agencies. In the area of polymer materials besides polymer modification we synthesize new polymers for application as electronic materials, membranes for gas separation, nanoclay and carbon nanotube reinforced composites for automobiles and other high performance speciality applications. Few research projects are in progress for jute fiber reinforced cement concrete and biodegradable rigid composites. The Centre is now also engaged in a new field of welding thermoplastics, recycling waste polymers and direct fluorination of polymers. Apart from activities on structural ceramics, refractories, and bioceramics, we are also investigating various research issues related to the synthesis of nano-crystalline shape memory materials for biomedical applications, nano-fluids, nano ceramics for drug delivery, nano-structured oxides for ceramic gas sensor and cathode materials for lithium rechargeable batteries. We are also actively involved in the research on ferroic and multiferroic thin/thick films, sensors magnetic and magnetocaloric materials. Novel inorganic and organic semiconductor materials are being synthesized and characterized for various electronic and optoelectronic applications. MOCVD growth of InGaP epitaxial layers as well as quantum dots are also being carried out for various applications such as solar cell, etc. Another important area of research is the synthesis and characterization of wide band gap materials like SiC, ZnO and nitride semiconductors and nano materials for device applications. Multiwall carbon nanotubes are also being synthesized by CVD on silicon substrates.

Thrust Areas

1. Biomaterials
2. Nanomaterials/nanocomposites/sensors

New Acquisitions

1. 1. Rotary vacuum evaporator (Heidolph), 2. Microwave synthesis system (China National Corp.), 3. Ageing oven, 4. Source Meter (Keithley), 5. Computerized 8 channel battery analyzer (MTI Corp.), 6. Precision Impedance analyzer (Waynekerr), 7. Moisture & oxygen control Glove box (Mbraum, Germany), 8. Single channel FFT analyzer, 9. Electrometer with GPIB & RS232 (Keithley).

Lectures by Visiting Experts

1. Printed electronics: challenges & perspectives by Dr. Heiko Kempa (Chemnitz University of Technology, Germany)
2. Developing magnetic nanostructures for cancer therapy by Prof. D. Bahadur (IIT, Bombay)
3. World of nanostructures & intelligent materials by Dr. Vijayamohan K. Pillai (NCL, Pune)
4. The fate of charge separation & charge recombination processes within the artificial light energy conversion by Dr. Tapan Ganguly (NML, Jamshedpur)

Doctoral and MS Degrees Awarded

1. M. Rajasekhar : Effects of alloying additives on structural, thermal and magnetic properties in exchange coupled Nd-Fe-B nanocomposites(Ph.D.)
2. Alok Kumar Sen : Taste response behaviour of functionalized polymers(Ph.D.)
3. Sayanee Majumdar : Structural, optical and electrical properties of nitrogen and lithium doped ZnO(Ph.D.)
4. Joydip Sengupta : Growth and characterization of multi-walled carbon nanotubes using chemical vapour deposition(Ph.D.)
5. Rajdeep Dasgupta : Transdermal iontophoretic drug delivery polymeric hydrogel membranes(Ph.D.)
6. Sarbani Adhikari : Synthesis, characterization and sensor applications of conducting polyaniline and its composites(Ph.D.)
7. Suman Kumar Sen : New cardo group containing fluorinated poly(ether imide)s and gas transport properties(Ph.D.)

Member - Professional Bodies

1. Jacob, Chacko, *Regular* - National Academy of Sciences, India
2. Banerji, Pallab, *Regular* - MRS, USA
3. Banerji, Pallab, *Member* - IEEE, USA
4. Banerji, Pallab, *Life* - IACS
5. Banerjee, Susanta, *Life Member* - Materials Research Society of India (MRSI)
6. Banerjee, Susanta, *Life Member* - Society for Polymer Science India (SPSI)
7. Majumder, Subhasish Basu, *Life Member* - Materials Research Society of India
8. Khatua, Bhanu Bhusan, *Life member* - Society of the Polymer Science India
9. Adhikari, Basudam, *Life Member* - Materials Research Society of India
10. Adhikari, Basudam, *Life Member* - Society of Biomaterials and Artificial Organs (India)
11. Adhikari, Basudam, *Life Member* - Society of Polymer Science India
12. Adhikari, Basudam, *Life Member* - Biosensor Society of India
13. Adhikari, Basudam, *Member of Regional Advisory Committee* - CIPET, Haldia, West Bengal
14. Ram, Shanker, *Regular* - Life member of powder metallurgy association of India
15. Ram, Shanker, *Regular* - Life member of laser and spectroscopy society of India
16. Ram, Shanker, *Regular* - Member of the national academy of sciences, MNSc, Allahabad
17. Ram, Shanker, *Regular* - Member of international board of biography (USA)
18. Ram, Shanker, *Regular* - Life member of society for materials chemistry (SMC), BARC, Mumbai
19. Ram, Shanker, *Regular* - Life member of MRSI (India)
20. Ram, Shanker, *Regular* - Life member of magnetic society of India

Member - Editorial Board

1. Adhikari, Basudam (2010) *Member of Editorial Board* - Indian Journal of Chemical Technology, CSIR
2. Banerjee, Susanta (2011) *Editorial Board Member* - International Journal of Plastic and Polymer Technology (IJPPT)
3. Das, Chapal Kumar (0) *Member of the Editorial Board* - WJNSE
4. Das, Chapal Kumar (0) *Member of the Editorial Board* - Research Letters in Materials science

5. Das, Chapal Kumar (0) *Member of the Editorial Board - Nano Trends*
6. Das, Chapal Kumar (0) *Member of the Editorial Board - Advances in Materials Science*
7. Majumder, Subhasish Basu (2011) *Editorial Board Member - Transaction of the Indian Ceramic Society*
8. Majumder, Subhasish Basu (2011) *Editorial Board Member - ISRN Materials Science*
9. Pradhan, Debabrata (2011) *Associate Editor - Materials Express*
10. Ram, Shanker (2011) *Editorial Board Member - ISRN Nanotechnology*
11. Ram, Shanker (2013) *Editorial Board Member - J. Nanofluids*

Awards & Honours

1. Majumder, Subhasish Basu (2004) *Alexander von Humboldt Research Fellowship*
2. Banerjee, Susanta (1997) *Alexander von Humboldt Research Fellowship*
3. Ram, Shanker (2004) *AvH Fellowship, 1994-96*
4. Banerjee, Susanta (2005) *Awarded GE Company Certification as a GE Green Belt - DFSS in Six Sigma*
5. Singh, Shubra (2008) *Best paper award at ISRS*
6. Khatua, Bhanu Bhusan (1996) *Biswanath De Gold Medal Winner in M. Sc. (Chemistry)*
7. Singh, Shubra (2009) *CEFIPRA Post doctoral Fellowship*
8. Banerjee, Susanta (2002) *DRDO Defence Technology Spin-off award*
9. Banerjee, Susanta (2005) *GE Management award for the development of new grade SILTEM Copolymer*
10. Khatua, Bhanu Bhusan (2002) *KOSEF Post Doctoral Research Fellowship from POSTECH-Pohang University of Science & Technology, South Korea*
11. Majumder, Subhasish Basu (2010) *Materials Research Society of India (MRSI) Medal*
12. Ram, Shanker (2003) *Materials Research Society of India (MRSI) Medal*
13. Khatua, Bhanu Bhusan (2006) *Patent Award from GE India Technology Centre, Bangalore*
14. Khatua, Bhanu Bhusan (2000) *Post Doctoral Research Fellowship from Technion-Israel Institute of Technology (IIT- Haifa), Israel*
15. Singh, Shubra (2009) *Prof. Lashkar award*
16. Banerjee, Susanta (2001) *Titanium Medal and Commendation Certificate by the SA to Defence Minister*
17. Khatua, Bhanu Bhusan (1996) *University Gold Medal Winner in M. Sc. (Chemistry)*

Fellowships

1. Banerjee, Susanta (2012) *Alexander von Humboldt Fellowship.*

Sponsored Research Projects

1. Development of cotton lap/cellulose pad substitute from jute (National Jute Board, Rs.41.08 Lakhs)
2. DEVELOPMENT OF CURED POLYPHOSPHAZENE FOR WIDE TEMPERATURE RANGE APPLICATIONS (DMSRDE Kanpur, Rs.23.00 Lakhs)
3. Development of durable water-repellent jute geotextiles with natural ecofriendly additive for application in erosion control in river banks (JMDC, Kolkata, Rs.168.73 Lakhs)
4. Development of eco-friendly / biodegradable rigid jute-based composites (JMDC, Kolkata, Rs.69.93 Lakhs)
5. Development of high energy density lithium ion prismatic batteries for laptops, solar and electric vehicles (Future Hi-tech batteries limited, Rs.3.00 Lakhs)
6. Development of jute based sound proofing composites (JMDC, Kolkata, Rs.32.26 Lakhs)
7. Development of jute fiber reinforced cement concrete composites (JMDC, Kolkata, Rs.75.60 Lakhs)
8. Development of MBE Cluster Tool Based Infrastructure and Process Integration Facility for Compound Semiconductor Nano-Devices (Department of Information Technology, Govt. of India, Rs.5000.00 Lakhs)

9. Development of membrane electrode array based novel sensing system for rapid taste characterization of food and agro products (C-DAC, Kolkata, Rs.41.50 Lakhs)
10. Development of novel paladium gas sensors (IBSA (DST Tri-National), Rs.16.28 Lakhs)
11. Development of Organic-Organic and Organic-Inorganic Hybrid Nanocomposites for Supercapacitor Applications (DRDO, New Delhi, Rs.45.00 Lakhs)
12. Development of Phase Morphology in Incompatible Polymer Blends by using Nanoclay (DST, New Delhi, Rs.17.18 Lakhs)
13. Development of sensing element and alarm circuit module for hydrogen detection from rechargeable batteries (Naval Science and Technological Laboratory (DRDO), Vizag, Rs.10.00 Lakhs)
14. Development of Suitable Production System for Natural Rubber Coated Jute Fabrics for Novel End Uses (JMDC, Kolkata, Rs.30.00 Lakhs)
15. Development of volatile compound based biosensor for pest control (DST, New Delhi, Rs.8.65 Lakhs)
16. GaN/InGaN based light emitting diodes, solar cells and photoelectrochemical devices by MOCVD epitaxial processes (DST, New Delhi, Rs.696.00 Lakhs)
17. Heterointerface characterization of MOCVD grown InP quantum dots on Si (Indian beamline, Photon Factory, Japan, Rs.0.00 Lakhs)
18. High strength polyimide-siloxane films with low heat shrinkage (Defence Research & Development Establishment, Gwalior, Rs.9.98 Lakhs)
19. Molecularly engineered novel membrane precursors and preparation of novel polymer nano-composite membranes for selective separation of gas mixture (DST (Completed), Rs.53.00 Lakhs)
20. Novel polymeric composite membranes for selective separation of gas mixtures (DST, New Delhi, Rs.55.00 Lakhs)
21. Novel polymeric composite membranes for selective separation of gas mixtures (DST, Rs.55.00 Lakhs)
22. Preparation and supply of poly(ether imide siloxane)s as membrane materials in bulk quantity for analytical sample inlet (DRDE (Completed), Rs.8.00 Lakhs)
23. Self-controlled growth of $\text{Fe}_3\text{BO}_6\text{-}\delta$ ($\delta = 0, 1$) nanofibrils with a bonded surface layer from a vitreous glass: A novel magnetodielectric material for (CSIR, New Delhi, Rs.20.00 Lakhs)
24. Silicon Carbide sensors as high temperature MEMS & MOSFET devices. (ISRO (KCSTC), Rs.5.88 Lakhs)
25. Synthesis and characterization of novel light emitting poly(arylene)s and poly(arylene ether)s and derivative thereof (CSIR (Completed), Rs.9.00 Lakhs)
26. Synthesis and multiferroic properties of AFe_2O_9 (A = Ba, Sr) nanoparticles reinforced nanocomposites for space applications (CSIR, New Delhi, Rs.14.56 Lakhs)
27. Synthesis of mixed metal oxide, and porous oxide nanostructured materials by using hydrothermal technique (ISIRD, SRIC, IIT-Kharagpur, Rs.5.00 Lakhs)
28. Synthesizing super-catalysts and tracking their catalytic pathways (DST, Indo-Korea Int., Rs.25.00 Lakhs)
29. Use of Nanocomposites for Efficient Welding of Thermoplastics (DST, New Delhi, Rs.7.90 Lakhs)

Consultancy Projects

1. Development of jute sapling pot (Indarsen Shamlal Pvt. Ltd., Kolkata, Rs.2.00 Lakhs)
2. Synthesis of the soluble para-aramid polymers (KERMEL-France, Rs.7.00 Lakhs)
3. Synthesis of the soluble para-aramid polymers (phase II) (KERMAL- France, Rs.3.50 Lakhs)
4. Thermoset polymer based meter boxes & distribution boxes: An ecological disaster (Ester Industries Limited, Gurgaon (Completed), Rs.5.00 Lakhs)

Patents (filed / granted)

1. A process for the production of ceramic tiles utilizing fly ash as main base material
2. Biodegradable and rigid natural resin matrix jute fiber reinforced composites
3. Casting of concrete pipe reinforced with chemically modified jute fiber and method of casting such fiber reinforced concrete pipe
4. Chemically modified jute fiber reinforced high strength concrete and process thereof

5. Composition And Method For Making Polyarylene Ether Copolymers
6. Conductive wire comporomising polysiloxane /polyimide copolymer blend
7. Conductive Wire Comprising A Polysiloxane /Polyimide Copolymer Blend
8. Conductive Wire Comprising A Polysiloxane/Polyimide Copolymer Blend
9. Durability enhansment of lignocellulosic fibers by vegetable oil treatment
10. Inherent Polymeric PTCR Composites: Article and Associated Device
11. Inherent Polymeric PTCR Composites: Composition and Associated Method
12. Inherent Polymeric PTCR Composites: Composition and Associated Method
13. Microbial transformation of lignocellulosic fibers using ecofriendly reagents for for strength and durability enhancement
14. Polysiloxane / polyimide copolymers and blends thereof
15. Polysiloxane/Polyimide Copolymers And Blends Thereof
16. Polysiloxane/Polyimide Copolymers And Blends Thereof
17. Process for Chemically Modified Jute Fiber Reinforced High Performance Cement Sheet
18. Process for chemically modified jute fiber reinforced high performance cement sheet
19. Process for making polysiloxane / polyimide copolymer blends
20. Process For Making Polysiloxane/Polyimide Copolymer Blends

Visits Abroad by Faculty Members

1. Das, Chapal Kumar - To deliver lecture in Kasam-2012 (Kathmandu, Nepal,) May, 2012
2. Das, Chapal Kumar - Collaborative work under INSA-DFG (Chemnitz, Germany,) July, 2012
3. Das, Chapal Kumar - To deliver lecture in seminar (Singapore,) November, 2012
4. Das, Chapal Kumar - To attend conference ACCM-8 for paper presentation (Bangkok, Malaysia,) November, 2012
5. Das, Chapal Kumar - To deliver lecture and discussion for collaboration (Budapest, Hungary,) June-July, 2012
6. Majumder, Subhasish Basu - Deliver seminar talks at Nature Conference entitled Frontiers in Electronic Materials (Aachen, Germany,) June 17th to 20th, 2012
7. Majumder, Subhasish Basu - Research (Return visit as Humboldt Fellow) (RWTH, IWE-II, Aachen University, Germany,) 15th May to 14th July 2011
8. Majumder, Subhasish Basu - Research (IBSA-DST funded project) (University of Cape Town, South Africa,) March 1-9, 2012
9. Pradhan, Debabrata - Collaboration work (Yeungnam University, South Korea,) 15 days
10. Banerjee, Susanta - Scientific resaerch through Alexander von Humboldt Foundation (Leibniz-Institut für Polymerforschung Dresden, Germany,) May-July, 2012 (Two months)

Invited Lectures by Faculty Members

1. New cardo group containing fluorinated poly(ether imide)s and gas transport properties *by* Banerjee, Susanta (Marburg, Germany)
2. Designing New Polymer Acceptor for Solar Cell Application *by* Banerjee, Susanta (Kolkata University)
3. Green synthesis of nanofluids and films with fast energy-transfer properties: cosmetics, medicals an *by* Ram, Shanker (100th Indian Science Congress, Calcutta University, Kolkata)
4. Green-synthesis of high-energy nanofluids and composites: novel materials of medicinal values *by* Ram, Shanker (4th International Conference on Recent Advances in Composite Materials, International Centre, Goa)
5. Localizing phonons and surface plasmons in optical nanofluids for fast energy-transfer applications *by* Ram, Shanker (6th India-Singapore Joint Physics Symposium on Physics of Advanced Materials, Dept. of Physics and Meteorology, IIT, Kharagpur)
6. Synthesis and applications of biological nanofluids *by* Ram, Shanker (National Conference on Advances in Materials Science and Technologies, Department of Physics, Kakatiya University)
7. Nanostructure and its role in shaping functional materials for diversified applications *by* Ram, Shanker (National Conference on Advanced Materials, Central Mechanical Research Institute, Durgapur)

8. Nanostructuring noble metals with surface-enhanced electronic transitions for biological sensors *by* Ram, Shanker (International Conference on Recent Trends in Applied Physics and Materials Science, Govt. College of Engineering and Technology, Bikaner)
9. Learning nanomaterials and applications from nature *by* Ram, Shanker (One Day Workshop on Advanced Materials and Technology, Dept. of Materials and Metallurgical Engineering, National Institute of Foundry and Forge Technology, Ranchi)
10. Phonon controlled electronic transitions in hybrid nanocomposites with noble metals for optical devi *by* Ram, Shanker (Third National Seminar on Recent Trends in Condensed Matter Physics Including Laser Application, The University of Burdwan, Golapbag Burdwan)
11. Development of Microwave Absorbing Materials Based on DBSA doped Polyaniline/Pb(Zr_{0.52}Ti_{0.48})O₃ Nano *by* Das, Chapal Kumar (Kathmandu, Nepal)
12. Fabrication of Graphene-Polypyrrole Nanofiber for Supercapacitor applications *by* Das, Chapal Kumar (Energy Research Institute, NTU, Singapore)
13. In-situ synthesis and electrochemical characterizations of Ni²⁺ doped Polyaniline/MWCNTs nanocomposi *by* Das, Chapal Kumar (Energy Research Institute, NTU Singapore)
14. Synthesis of fluorinated CNT/CuFe₂O₄ compos. & Graphene/MoO₃ Compos. for supercapacitor application *by* Das, Chapal Kumar (Energy Research Institute, NTU Singapore)
15. Thermo-mechanical properties of halloysite nanotubes filled Cyclic Olefin Copolymer (COC) nanocompos *by* Das, Chapal Kumar (CIPET Lucknow, India)
16. Graphene Supported MnO₂ NTs as cathode catalyst for improved power generation in sMFC *by* Pradhan, Debabrata (Korea)
17. Fabrication and performance evaluation of a microprocessor controlled VOC monitoring system *by* Majumder, Subhasish Basu (National Environmental Engineering Research Institute)
18. Nano-composite electroceramic thin films *by* Majumder, Subhasish Basu (University of Kolkata, Salt Lake, Kolkata)
19. Ceramic oxide gas sensor: Laboratory research to commercialization *by* Majumder, Subhasish Basu (Pricol Limited, Coimbatore, Tamil Nadu)
20. Jute Fiber Reinforced Concrete and Biodegradable Rigid Composites *by* Adhikari, Basudam (CIPET, Ahmedabad)
21. Novel Applications of Jute in Value Added Products *by* Adhikari, Basudam (CIPET, Lucknow)
22. GaAs MOS *by* Banerji, Pallab (Jadavpur University)
23. GaAs based MOS devices *by* Banerji, Pallab (Institute of Radiophysics & Electronics, Kolkata)

Short-Term Courses, Training Programmes and Workshops organised

1. Advanced materials ()
2. Nanotechnology for Electronics & Photonics Applications (2 weeks (3.10.12-17.10.12))
3. Renewable Energy Materials and Their Industrial Application (2 weeks)
4. Renewable Energy Materials and Their Industrial Applications (02 week)

Papers Published in Journals

1. A change from second- to first-order transition in (La_{1-x}Eu_x)_{0.67}Ca_{0.33}MnO₃ (0 ≤ x ≤ 0.2) *By* D. De, R. Rawat, S. Ram, A. Banerjee, and S. K. Roy *J. Phys.: Condens. Matter* 24, 076001-1-5 (2012)
2. A comparison study of two different techniques to grow ZnO thin films for gas sensor applications *By* S.B. Majumder, S. Pati and P. Banerji *AIP Conf. Proc* 1451, 136 (2012)
3. A facile route to develop electrical conductivity with minimum possible multi-wall carbon nanotube (MWCNT) loading in poly (methyl methacrylate)/MWCNT nanocomposites *By* Nilesh K Shrivastava, Prativa Kar, Sandip Maiti and B. B. Khatua *Polymer International* 61, 168-1692 (2012)
4. A strategy for achieving low percolation and high electrical conductivity in melt-blended polycarbonate (PC)/multiwall carbon nanotube (MWCNT) nanocomposites: electrical and thermo-mechanical properties *By* Sandip Maiti, Nilesh K. Shrivastava, B.B. Khatua *EXPRESS Polymer Letters* 7(6), 505-518 (2013)

5. A study on electrical transport vis-à-vis the effect of thermal annealing on the p-type conductivity in arsenic-doped MOCVD grown ZnO in the temperature range 10–300 K By . Pranab Biswas, Souvik Kundu and P. Banerji *Journal of Alloys & Compounds* 552, 304 (2012)
6. Adsorption of Anionic-Azo Dye from Aqueous Solution by Lignocellulose-Biomass Jute Fiber: Equilibrium, Kinetics, and Thermodynamics Study By Aparna Roy, Sumit Chakraborty, Sarada Prasad Kundu, Basudam Adhikari, and S. B. Majumder *Industrial and Engineering Chemistry Research* (in press) (2012)
7. An alternative approach for optimal carrier concentration towards ideal thermoelectric performance By Pankaj Kumar Rawat, Biplab Paul, and P. Banerji *Physica Status Solidi – Rapid Research Letters* 6, 481 (2012)
8. Anomalous Oxidation Resistance of “Core Only” Copper Nanoparticles Electrochemically Grown on Gold Nanoislands Prefunctionalized by 1,4-phenylene Diisocyanide By Y. Sohn, D. Pradhan, L. Zhao, K. T. Leung *Electrochem. Solid-State Lett.* 15, K35-K39 (2012)
9. Attenuating large magneto-entropy, heat-capacity and adiabatic temperature change in Heusler Ni_{41-x}Mn₅₀Sn_{9+x} (x≤1.5) alloys By A. A. Prasanna, S. Ram, V. Ganesan and S. Shanmukharao Samantham *J. Emerging Trends Eng. Appl. Sci.* 3, 601 (2012)
10. Catalyst-free direct growth of InP quantum dots on Si by MOCVD: a step toward monolithic integration By Nripendra N. Halder, Souvik Kundu, Rabibrata Mukherjee, D. Biswas and P. Banerji *Journal of Nanoparticle Research* 14, 1279 (2012)
11. Charge storage properties of InP quantum dots in GaAs metal-oxide-semiconductor based nonvolatile flash memory devices By Souvik Kundu, Nripendra N. Halder, Pranab Biswas, D. Biswas, P. Banerji, Rabibrata Mukherjee, and S. Chakraborty *Applied Physics Letters* 101, 212108 (2012)
12. Chemical synthesis of Co/Cu core/shell nanocomposites and evaluation of their magnetic properties By S. S. K. Kamal, P. K. Sahoo, B. Sreedhar, M. M. Raja, L. Durai, and S. Ram *Mater. Sci. Eng. B* 177, 1206-1212 (2012)
13. Chemically modified jute fibre reinforced non-pressure (NP) concrete pipes with improved mechanical properties By Sarada Prasad Kundu, Sumit Chakraborty, Aparna Roy, Basudam Adhikari, S.B. Majumder *Construction and Building Materials* 37, 841 (2012)
14. Chemically modified jute fibre reinforced non-pressure (NP) concrete pipes with improved mechanical properties By Sarada Prasad Kundu, Sumit Chakraborty, Aparna Roy, Basudam Adhikari, S.B. Majumder *Construction and Building Materials* 37,841–850 (2012)
15. CNT Based and Graphene Based Polymer Nanocomposites for Radar Absorbing Applications By Chapal Kumar Das and Chakkirala Venkata Sudhakar *Journal of Materials Science & Engineering B* 2, 368-375 (2012)
16. Collagen scaffolds derived from fresh water fish origin and their biocompatibility By Falguni Pati, Pallab Datta, Basudam Adhikari, Santanu Dhara, Kuntal Ghosh, Pradeep Kumar Das Mohapatra *Journal of Biomedical Materials Research, Part A* 100A,1068-1079 (2012)
17. Compatibilization Mechanism of Nanoclay in Immiscible PS/PMMA Blend Using Unmodified Nanoclay By Rajesh Iyer, Supratim Suin, Nilesh K Shrivastava, Sandip Maiti and B. B. Khatua *Polymer-Plastics Technology and Engineering* In Press (2012)
18. Copper chloride-doped polyaniline/multiwalled carbon nanotubes nanocomposites: Superior electrode material for supercapacitor applications By Saptarshi Dhibar, Sumanta Sahoo, C.K. Das *Polymer Composites* 4, 517-525 (2013)
19. Development of chitosan-tripolyphosphate non-woven fibrous scaffolds for tissue engineering application By Falguni Pati, Basudam Adhikari, Santanu Dhara *Journal of Materials Science: Materials in Medicine* 23,1085-1096 (2012)
20. Development of Electrical Conductivity in PP/HDPE/MWCNT Nanocomposite by Melt Mixing at Very Low Loading of MWCNT By Narendra A. Bhagat, Nilesh K. Shrivastava, Supratim Suin, Sandip Maiti, Bhanu B. Khatua *Polymer Composites* In Press (2013)
21. Durability of lignocellulosic fibers treated with vegetable oil-phenolic resin By Prosenjit Saha, Suwendu Manna, Ramkrishna Sen, Debasis Roy, Basudam Adhikari *Carbohydrate Polymers* 87,1628-1636 (2012)
22. Durability of transesterified jute geotextiles By Prosenjit Saha, Debasis Roy, Suwendu Manna, Basudam Adhikari, Ramkrishna Sen, Sukumar Roy *Geotextiles and Geomembranes* 35,69-75 (2012)
23. Effect of Jute as Fiber Reinforcement Controlling the Hydration Characteristics of Cement Matrix By Sumit Chakraborty, Sarada Prasad Kundu, Aparna Roy, Basudam Adhikari, and S. B. Majumder *Industrial and Engineering Chemistry Research* 52,1252 (2013)

24. Effect of Jute as Fiber Reinforcement Controlling the Hydration Characteristics of Cement Matrix By Sumit Chakraborty, Sarada P. Kundu, Aparna Roy, Basudam Adhikari, and S. B. Majumder *Ind. Eng. Chem. Res.* 52, 1252– 1260 (2013)
25. Effect of Nano Fillers on Polyphosphazene Elastomer under the influence of Temperature and Radiation: A Comparative Study By Mrinal Kanti Kundu, Chapal Kumar Das, Vineeta Nigam, Arvind Kumar Saxena, Uwe Gohs *International Journal of Scientific Engineering and Technology* 1, 169-176 (2012)
26. Effect of nanosilica and polyphosphazene elastomer on the in situ fibrillation of liquid crystalline polymer (LCP) and thermo-mechanical properties of polybutylene terephthalate (PBT)/LCP blend system By Goutam Hatui, Sumanta Sahoo, Chapal Kumar Das, A.K. Saxena, Tanya Basu, C.Y. Yue *Materials & Design* 42, 184-191 (2012)
27. Effects of gold nanoparticles on rheology of nanofluids containing poly(vinylidene fluoride) molecules By B. Susrutha, S. Ram, and A. K. Tyagi *J. Nanofluids* 1, 120-127 (2012)
28. Electronic Materials Based on Co_{0.5}Zn_{0.5}Fe₂O₄/Pb(Zr_{0.52}Ti_{0.48})O₃ Nanocomposites By Avinandan Mandal and Chapal Kumar Das *Journal of Electronic Materials* 42, 121-128 (2012)
29. Enhancement of Thermoelectric Power Factor Through Modification of Electronic Structure in PbTe:Cr By B. Paul and P. Banerji *AIP Conf. Proc.* 1349, 851 (2012)
30. Equilibrium, kinetic, and thermodynamic studies of azo dye adsorption from aqueous solution by chemically modified lignocellulosic jute fiber By Aparna Roy, Basudam Adhikari and S.B. Majumder *Industrial and Engineering Chemistry Research* (in press) (2013)
31. Exfoliated and Optically Transparent Polycarbonate/Clay Nanocomposites Using Phosphonium Modified Organoclay: Preparation and Characterizations By Supratim Suin and B. B. Khatua *ACS Industrial & Engineering Chemistry Research* 51, 15096-15108 (2012)
32. Fabrication and characterizations of biodegradable jute reinforced soy based green composites By Ajaya Kumar Behera, Sridevi Avancha, Ratan Kumar Basak, Ramkrishna Sen, Basudam Adhikari *Carbohydrate Polymers* 88,329-335 (2012)
33. Facile synthesis of polypyrrole nanofiber and its enhanced electrochemical performances in different electrolytes By S Sahoo, S Dhibar, CK Das *eXPRESS Polymer Letters* 6, 965-974 (2012)
34. Gas transport properties of new aromatic poly(ether amide)s containing cyclohexylidene moiety By D. Bera, P. Bandyopadhyay, B. Dasgupta, S. Banerjee *J. Membr. Sci.* Vol. 407-408, pp 162 (2012)
35. Gas transport properties of poly(arylene ether)s containing phthalimidine moiety in the main chain By S. Ghosh, P. Bandyopadhyay, A.K. Mohanty, S. Banerjee *Sep. & Puri. Tech.* Vol.103, pp. 222-229 (2013)
36. Graphene supported a-MnO₂ nanotubes as a cathode catalyst for improved power generation and wastewater treatment in single-chambered microbial fuel cells By S. Khilari, S. Pandit, M. M. Ghangrekar, D. Das, D. Pradhan *RSC Advances* DOI:10.1039/C3RA2256 (2013)
37. Graphene/polypyrrole nanofiber nanocomposite as electrode material for electrochemical supercapacitor By Sumanta Sahoo, Saptarshi Dhibar, Goutam Hatui, Pallab Bhattacharya, Chapal Kumar Das *Polymer* 54, 1033-1042 (2013)
38. High T_g and Processable Fluorinated Polyimides Containing Benzoisindole-1-one Unit and Evaluation of Their Gas Transport Properties By S. K. Sen, S. Banerjee *RSC Adv.* Vol. 2 pp.6274-6289 (2012)
39. Highly fluorinated sulfonated poly(arylene ether sulfone) copolymers: synthesis and evaluation of proton exchange membrane properties By A. K. Mohanty, E. A. Mistri, S. Banerjee, H. Komber, B. Voit *Ind. & Eng. Chem. Res.* Vol. 52, pp.2772-2783 (2013)
40. Improvement in mechanical properties of jute fibres through mild alkali treatment as demonstrated by utilisation of the Weibull distribution model By Aparna Roy, Sumit Chakraborty, Sarada Prasad Kundu, Ratan Kumar Basak, Subhasish Basu Majumder, Basudam Adhikari *Bioresource Technology* 107,222-228 (2012)
41. Improvement of the mechanical properties of jute fiber reinforced cement mortar: A statistical approach By S. chakraborty, S.P. Kundu, A. Roy, R.K. Basak, B. Adhikari, and S.B. Majumder *Construction and Building Materials* 38, 776 (2013)
42. In Situ Synthesis of Graphene/Amine-Modified Graphene, Polypyrrole Composites in Presence of SrTiO₃ for Supercapacitor Applications By Debasis Ghosh, Soumen Giri, Sumanta Sahoo, C.K. Das *Polymer-Plastics Technology and Engineering* 52, 213-220 (2013)

43. Influence of different carbon nanotubes on the electrical, mechanical and thermal properties of melt mixed poly(ether sulfone)-multi walled carbon nanotube composites By S. Chakraborty, B. Krause, J. Pionteck, S. Banerjee, B. Voit *Comp. Sci. and Tech.* Vol.72, pp.1933-1940 (2012)
44. Influence of Precursor Concentration, Surfactant and Temperature on the Hydrothermal Synthesis of CuS: Structural, Thermal and Optical properties Influence of Precursor Concentration, Surfactant and Temperature on the Hydrothermal Synthesis of CuS: St By J. Kundu, D. Pradhan *New J. Chem.* DOI: 10.1039/c3nj411 (2013)
45. Interface studies on high-k/GaAs MOS capacitors by deep level transient spectroscopy By Souvik Kundu, Y. Anitha, S. Chakraborty and P. Banerji *Journal of Vacuum Science & Technology B* 30, 051206 (2012)
46. Investigations on copper chloride doped polyaniline composites as efficient electrode materials for supercapacitor applications By Saptarshi Dhibar, Sumanta Sahoo, CK Das, R Singh *Journal of Materials Science: Materials in Electronics* 24, 576-585 (2013)
47. Investigations on the irreversible and reversible type gas sensing for ZnO and Mg_{0.5}Zn_{0.5}Fe₂O₄ chemi-resistive sensors By K. Mukherjee, A.P.S Gaur and S.B. Majumder *Journal of Physics-D: Applied Physics* 45, 505306 (2012)
48. Lignocellulosic Jute Fiber as a Bioadsorbent for the Removal of Azo Dye from Its Aqueous Solution: Batch and Column Studies By Aparna Roy, Sumit Chakraborty, Sarada Prasad Kundu, Basudam Adhikari, and S. B. Majumder *Journal of Applied Polymer Science* DOI: 10.1002/APP.382 (2012)
49. Lignocellulosic Jute Fiber as a Bioadsorbent for the Removal of Azo Dye from Its Aqueous Solution: Batch and Column Studies By Aparna Roy, Sumit Chakraborty, Sarada Prasad Kundu, Basudam Adhikari, and S. B. Majumder *Journal of Applied Polymer Science* 129,15-27 (2013)
50. Lithium Aluminium Layered Double Hydroxides: Synthesis and Application in Poly (Vinyl Chloride) By S. Gupta, D. D. Agarwal, S. Banerjee *Intern. J. Polym. Mater.* Vol. 61, pp. 985-998 (2012)
51. Local strains, calorimetry, and magnetoresistance in adaptive martensitic transition in multiple nanostrips of Ni_{39+x}Mn₅₀Sn_{11-x} (x≤2) alloys By A. A. Prasanna and S. Ram *Sci. Technol. Adv. Mater.* 14, 015004 (2013)
52. Low Percolation Threshold and High Electrical Conductivity in Melt-Blended Polycarbonate (PC)/Multiwall Carbon Nanotube (MWCNT) Nanocomposites in the Presence of Poly(caprolactone) (PCL) By Sandip Maiti, Supratim Suin, Nilesh K. Shrivastava, B. B. Khatua *Polymer Engineering and Science* In Press (2013)
53. Low Percolation Threshold in Melt-Blended PC/MWCNT Nanocomposites in the Presence of Styrene Acrylonitrile (SAN) Copolymer: Preparation and Characterizations By Sandip Maiti, Nilesh Shrivastava, Supratim Suin and B. B. Khatua *Synthetic Metals* 165, 40-50 (2013)
54. Low percolation threshold in polycarbonate (PC)/multi-wall carbon nanotubes (MWCNTs) nanocomposites through melt blending with polybutylene terephthalate (PBT) By Sandip Maiti, Supratim Suin, Nilesh K. Shrivastava, B. B. Khatua *Journal of Applied Polymer Science* In Press (2013)
55. Microwave absorption behaviour of MWCNT based nanocomposites in X-band region By P. Bhattacharya, S. Sahoo, C.K. Das *eXPRESS Polymer Letters* 7, 212-223 (2013)
56. Modification of CNT and its effect on thermo mechanical, morphological as well as rheological properties of Polyether Imide (PEI)/Liquid Crystalline Polymer (LCP) blend system By Goutam Hatui, Chapal Kumar Das *Journal of Polymer Research* 20, 77 (2013)
57. Nanomagnets La_{0.8}Pb_{0.2}(Fe_{0.8}Co_{0.2})O₃ assembled with a bonded surface graphene oxide: Sensitive for sensing small gas molecules By K. K. Bhargav, S. Ram, and S. B. Majumder *J. Nanosci. Nanotech.* 12, 2973-2982 (2012)
58. New semifluorinated aromatic copoly(ether amide)s containing heterocyclic moiety and a comparative study of gas transport properties with the homopolymers By D. Bera, P. Bandyopadhyay, S. Banerjee *Adv. Sc., Eng. and Med.* Accepted (2012)
59. One Pot Synthesis of Graphene by Exfoliation of Graphite in ODCB By Sumanta Sahoo, Goutam Hatui, Pallab Bhattacharya, Saptarshi Dhibar, Chapal Kumar Das *Graphene* 2, 42-48 (2013)
60. Optical characteristic of sol-gel synthesized lead lanthanum titanate-cobalt iron oxide multiferroic composite thin film By Subhasis Roy, S.B. Majumder *Journal of Applied Physics* 112, 043520 (2012)

61. Phase, morphology and core level electron spectroscopy of nano-sized La_{0.65}Sr_{0.35} MnO₃ powder prepared by solution combustion synthesis By S. Maity, S. K. Ray and D. Bhattacharya *J Phys Chem Solids* 315 - 321 (213)
62. Phase-Induced Shape Evolution of FeNi Nanoalloys and Their Air Stability by In-Situ Surface Passivation By N Moghimi, S Bazargan, D Pradhan, KT Leung *J. Phys. Chem. C* DOI: 10.1021/jp31239 (2013)
63. Phosphonium Modified Organoclay as Potential Nanofiller for the Development of Exfoliated and optically Transparent Polycarbonate/Clay Nanocomposites: Preparation and Characterizations By Supratim Suin, Nilesh K Shrivastava, Sandip Maiti and B. B. Khatua *European Polymer Journal* 49, 49-60 (2013)
64. Phthalimidine based new fluorinated sulfonated poly(arylene ether sulfone)s copolymer proton exchange membranes By R. Mukherjee, A. K. Mohanty, S. Banerjee, H. Komber, B. Voit *J. Membr. Sci.* Vol.435, pp. 145-154 (2013)
65. Poly (aniline-co-m-aminobenzoic acid) deposited on poly (vinyl alcohol): Synthesis and characterization By S. Adhikari and P. Banerji *Bulletin of Materials Science* Accepted (2012)
66. Poly(3-methylthiophene)/graphene composite: in-situ synthesis and its electrochemical characterization By Pallab Bhattacharya, C.K. Das *Journal of Nanoscience and Nanotechnology* 12, 7173-7180 (2012)
67. Positive Temperature Coefficient to Resistivity Characteristics of Polystyrene/Nickel Powder/Multiwall Carbon Nanotube Composites By Prativa Kar, Sandip Maiti, Nilesh K Shrivastava, Saptarshi Dhibar and B. B. Khatua *Polymer Composites* 33, 1977-1986 (2012)
68. Promising methane-sensing characteristics of hydrothermal synthesized magnesium zinc ferrite hollow spheres By K. Mukherjee and S.B. Majumder *Scripta Materialia* 67, 617 (2012)
69. Reduction of percolation threshold through double percolation in melt-blended polycarbonate/acrylonitrile butadiene styrene/multiwall carbon nanotubes elastomer nanocomposites By Sandip Maiti, Nilesh K. Shrivastava, B.B. Khatua *Polymer Composites* In Press (2013)
70. Role of oxygen vacancy in optical and gas sensing characteristics of ZnO thin films By Sumati Pati, S.B. Majumder, P. Banerji *Journal of Alloys and Compounds* 541 376 (2012)
71. Role of oxygen vacancy in optical and gas sensing characteristics of ZnO thin films By Sumati Pati, S.B. Majumder and P. Banerji *Journal of Alloys & Compounds* 541, 376 (2012)
72. Role of ultra thin pseudomorphic InP layer to improve the high-k dielectric/GaAs interface in realizing metal-oxide-semiconductor capacitor By Souvik Kundu, N.N. Halder, D. Biswas, P. Banerji, T. Shripathi and S. Chakraborty *Journal of Applied Physics* 112, 034514 (2012)
73. Schottky nanocontact on single crystalline ZnO nanorod using conductive atomic force microscopy By S. K. Panda, S. B. Sant, C. Jacob and H. Shin, *Journal of Nanoparticle Research* Vol 1, 1361 (2013)
74. Selective dispersion of different organoclays in styrene butadiene rubber in the presence of a compatibilizer By Asish Malas, Chapal Kumar Das *Materials & Design* 49, 857-865 (2013)
75. Solubility improvements in aromatic polyimides by macromolecular engineering (A review) By A. Ghosh, S. K. Sen, S. Banerjee, B. Voit *RSC Adv.* Vol.2 pp.5900-5926 (2012)
76. Sonochemical synthesis and characterization of amine-modified graphene/conducting polymer nanocomposites By Sumanta Sahoo, Pallab Bhattacharya, Goutam Hatui, Debasis Ghosh, Chapal Kumar Das *Journal of Applied Polymer Science* 128, 1476-1483 (2013)
77. Study of Copper Ferrite Nanowire Formation in Presence of Carbon Nanotubes and Influence of Fluorination on High Performance Supercapacitor Energy Storage Application By Soumen Giri, Debasis Ghosh, Alexander P. Kharitonov, Chapal Kumar Das *Functional Materials Letters* 5, 1250046 (2012)
78. Super rapid response of humidity sensor based on MOCVD grown ZnO nanotips array By Pranab Biswas, Souvik Kundu, P. Banerji, S. Bhunia *Sensors and Actuators B: Chemical* 178, 331 (2013)
79. Surface grafting of *Corchorus olitorius* fibre: A green approach for the development of activated bioadsorbent By Aparna Roy, Sumit Chakraborty, Sarada Prasad Kundu, Subhasish Basu Majumder, Basudam Adhikari *Carbohydrate Polymers* 92, 2118– 212 (2013)

80. Surface grafting of Corchorus Olitorius fibre: A green approach for the development of activated bioadsorbent By A. Roy, S. Chakraborty, S.P. Kundu, S.B. Majumder, and B. Adhikari *Carbohydrate Polymers* (in press) (2012)
81. Synergy of Low-Energy {101} and High-Energy {001} TiO₂ Crystal Facets for Enhanced Photocatalysis By N. Roy, Y. Sohn, D. Pradhan *ACS Nano* DOI: 10.1021/nn30587 (2013)
82. Synthesis and characterization of new fluorinated Poly(ether imide) copolymers with controlled degree of sulfonation for proton exchange membranes By E. A. Mistri, A. Mohanty, S. Banerjee *J. Membr. Sci.* Vol.411-412 pp.117 (2012)
83. Synthesis and characterization of novel fluorinated poly(arylene ether sulfone)s containing pendant sulfonic acid groups for proton exchange membrane materials By A. Mohanty, E. A. Mistri, A. Ghosh, S. Banerjee *J. Membr. Sci.* Vol.409-410 pp. 145 (2012)
84. Synthesis and Electrochemical Characterization of Modified Graphene/Polypyrrole Nanocomposites By Sumanta Sahoo, GC Nayak, Chapal Kumar Das *Macromolecular Symposia* 315, 177-187 (2012)
85. Synthesis and surface modified hard magnetic properties in Co_{0.5}Pt_{0.5} nanocrystallites from a rheological liquid precursor By S. S. Kalyan Kamal, P. K. Sahoo, L. Durai, P. Ghosal, M. Manivel Raja, and S. Ram *J. Magn. Magn. Mater.* 324, 3893-3898 (2012)
86. Synthesis of embedded and isolated Mg_{0.5}Zn_{0.5}Fe₂O₄ nano-tubes and investigation on their anomalous gas sensing characteristics By K. Mukherjee and S.B. Majumder *Sensors & Actuators: B. Chemical* 177 55 (2013)
87. Synthesis of gold nanoparticles in presence of poly(vinyl pyrrolidone) from gold hydroxide precursor salt By M. Behera and S. Ram *Adv. Mater. Res.* 585, 115-119 (2012)
88. Synthesis, characterization and gas transport properties of semifluorinated new aromatic polyamides By P. Bandyopadhyay, D. Bera, S. Banerjee *Sep. & Puri. Tech.* Vol.104, pp138-149 (2013)
89. Temperature dependent donor-acceptor transition of ZnO thin film gas sensor during butane detection By Sumati Pati, Arnab Maity, P. Banerji, and S.B. Majumder *Sensors & Actuators: B. Chemical* (in press) (2013)
90. Temperature dependent magnetic and dielectric properties of M-type hexagonal BaFe₁₂O₁₉ nanoparticles By J. Krishna Murthy, C. Mitra, S. Ram, and A. Venimadhav *J. Alloys Compd.* 545, 225-230. (2012)
91. Thin-Film Transistors with a Graphene Oxide Nanocomposite Channel By S. Mahaboob Jilani, Tanesh D. Gamot, and P. Banerji *Langmuir* 28, 16485 (2012)
92. Transition Metal Salt Doping on Polypyrrole/MWCNT Composites for Supercapacitor Applications By G. Karthikeyan, C. K. Das *Macromolecular Symposia* 315, 98-105 (2012)
93. Ultra-low Electrical Percolation in Poly(styrene-co-acrylonitrile)/Carbon Nanotube Nanocomposites By Nilesh Shrivastava, Supratim Suin, Sandip Maiti, Bhanu B Khatua *ACS Industrial & Engineering Chemistry Research* In Press (2013)
94. Utilization of lignocellulosic natural fiber (jute) components during a microbial polymer production By Sougata Roy Chowdhury, Ratan Kumar Basak, Ramkrishna Sen, Basudam Adhikari *Materials Letters* 66,216-218 (2012)

Papers Presented in Conferences

1. A facile synthesis and impedance properties of Fe₃BO₆ nanoplates prepared by self-combustion method, By K. Kumari, S. Ram, and R. K. Kotnala, *4th International Conference on Recent Advances in Composite Materials*, International Centre, Goa, (2013)
2. Attractive magnetic behaviour in citrate-gel synthesized zinc ferrite nanoplates, By S. Misra and S. Ram, *4th International Conference on Recent Advances in Composite Materials*, International Centre, Goa, (2013)
3. Copper Chloride Doped Polyaniline/Multi-Walled Carbon Nanotubes Nanocomposites for Supercapacitor Applications, By Saptarshi Dhibar, Sumanta Sahoo, C.K.Das, *21th International Symposium on Processing and Fabrication of Advanced Materials (PFAM XXI)*, IIT Guwahati, Assam, India, (2012)
4. Designing New Polymer Acceptor for Solar Cell Application, By S. Banerjee, *PRC 2012*, Kolkata, (2012)
5. Development of compatibilized styrene butadiene rubber hybrid nanocomposites containing different organoclays and carbon black, By Asish Malas, Chapal Kumar Das, *ICRRM 2013*, IIT Kharagpur, (2013)

6. Dielectric properties of Fe₃BO₆ nanoplates synthesized via a glass-route, By K. Kumari, S. Ram, and R. K. Kotnala, *17th National Seminar on Ferroelectrics and Dielectrics*, SOA University, Bhubaneswar, (2012)
7. Dielectrics and magnetization in partially Cr⁴⁺ substituted Zr_{1-x}Cr_xO₂ (x≤0.2) of a core-shell nanostructure, By A. Sengupta and S. Ram, *6th India-Singapore Joint Physics Symposium on Physics of Advanced Materials*, IIT, Kharagpur, (2013)
8. Dielectrics in ferromagnetic Zr_{1-x}Cr_xO₂ (x≤0.2) nanocrystallites of core-shell plates or cuboids, By A. Sengupta and S. Ram, *4th International Conference on Recent Advances in Composite Materials*, International Centre, Goa, (2013)
9. Dielectrics in ferromagnetic Zr_{1-x}Cr_xO₂ (x≤0.2) nanoplates grown in support over a polymer complex template, By A. Sengupta and S. Ram, *100th Indian Science Congress*, Calcutta University, Kolkata, (2013)
10. Effects of surface magnetism on spin glass and multiferroics in BiFeO₃ nanocrystallites, By T. Karan and S. Ram, *100th Indian Science Congress*, Calcutta University, Kolkata, (2013)
11. Electromagnetic behavior in Zn²⁺-substituted lithium ferrite nanoparticles, By S. Misra and S. Ram, *National Conference on Nanoscience and Nanotechnology*, Techno India, Salt Lake, Kolkata, (2012)
12. Electromagnetic interference shielding effectiveness of MWCNT-filled poly(ether sulfone) and poly(ether imide) based nanocomposites, By S. Banerjee, A. Das, A. K. Mohanty, P. Sawai, A. Ghosh, K. Pareek, P. Pötschke, B. Voit, *28th International Conference of Polymer Processing Society (PPS-28)*, Patayya, Thailand, (2012)
13. Ferroelectricity in Pb(Zr_{0.65}Ti_{0.35})_{0.6}(Fe_{0.5}Nb_{0.5})_{0.4}O₃ of single domain nanoplates, By N. Kumar, K. K. Bhargav, S. Ram, and R. N. P. Choudhary, *100th Indian Science Congress*, Calcutta University, Kolkata, (2013)
14. Ferroelectricity in Pb(Zr_{0.65}Ti_{0.35})_{0.7}(Fe_{0.5}Nb_{0.5})_{0.3}O₃ of single domain nanoplates, By N. Kumar, S. Ram, and R.N.P. Choudhary, *6th India-Singapore Joint Physics Symposium on Physics of Advanced Materials*, Dep. of Physics and Meteorology, IIT KGP, (2013)
15. Flexible nanocomposite for piezo and ferroelectric applications, By D. Mandal, S. Garain, S. Ram, K. Henkel, and D. Schmei[◆]?[◆]er, *4th Internnational Conference on Recent Advances in Composite Materials*, International Centre, Goa, India, (2013)
16. Frequency and temperature depedance of dielectric constant in Li_{0.5}(1-x)Zn_xFe_(2.5-x/2)O₄ (x≤1.0) nanopowders, By S. Misra and S. Ram, *National Conference on Sustainable Development through Innovative Research in Science and Technology*, Jadavpur University, Kolkata, (2012)
17. Frequency and temperature dependence of dielectric properties in Li_{0.25}Zn_{0.5}Fe_{2.25}O₄ spinel ferrite, By S. Misra and S. Ram, *6th India-Singapore Joint Physics Symposium on Physics of Advanced Materials*, IIT, Kharagpur, (2013)
18. Gas sensing properties of Fe₃BO₆ nanocrystallites prepared from a supercooled glass liquid, By K. Kumari, K. K. Bhargav, S. Ram, and R. K. Kotnala, *100th Indian Science Congress*, Calcutta University, Kolkata, (2013)
19. Gas sensing properties of ZnFe₂O₄ nanoparticles, By S. Misra and S. Ram, *International Conference on Recent Trends in Applied Physics and Materials Science*, Govt. College of Engg. & Tech., Bikaner, (2013)
20. Green synthesis of a core-shell ZnO nanostructure with a graphene like surface layer at low temperature, By S. Kumar, S. Ram, S. K. Roy, and R. Mitra, *100th Indian Science Congress*, Calcutta University, Kolkata, (2013)
21. Green synthesis of nanofluids and films with fast energy-transfer properties: cosmetics, medicals and biological sensors, By S. Ram, *100th Indian Science Congress*, Calcutta University, Kolkata, (2013)
22. Green-synthesis of high-energy nanofluids and composites: novel materials of medicinal values, By S. Ram, *4th International Conference on Recent Advances in Composite Materials*, International Centre, Goa, (2013)
23. Growth and Characterization of Poly 3C-SiC Films using a Single Source Precursor, By A. Khan and C. Jacob, *6th India Singapore Joint Physics Symposium (ISJPS 2013)*, Kharagpur, (2013)
24. In-situ synthesis and characterization of dielectric polymer nanocomposites with gold nanoparticles, By B. Susrutha, S. Ram, and A. K. Tyagi, *4th International Conference on Recent Advances in Composite Materials*, International Centre, Goa, (2013)

25. Influence of microstructure on the magnetic properties in nanocrystallites of $Zr_{1-x}Cr_xO_2$ ($x \leq 0.2$), By A. Sengupta and S. Ram, *International Conference on Recent Trends in Applied Physics and Materials Science*, Govt. College of Engg. & Tech., Bikaner, (2013)
26. Introduction to Nanotechnology: Synthesis and Characterization, By C. Jacob, *One Day Workshop on Nondestructive Characterization Sciences*, Allahabad University, (2013)
27. Investigation on the Electrochemical Performances of graphene/Poly(aniline-co-pyrrole) Nanocomposite for Supercapacitor Application, By Sumanta Sahoo and Chapal Kumar Das, *ICRRM 2013*, IIT Kharagpur, India, (2013)
28. Lattice strain and ferromagnetism in pure and substituted $BiFeO_3$ samples, By T. Karan and S. Ram, *International Conference on Recent Trends in Applied Physics and Materials Science*, Govt. College of Engg. & Tech., Bikaner, (2013)
29. Localizing phonons and surface plasmons in optical nanofluids for fast energy-transfer applications, By S. Ram, *6th India-Singapore Joint Physics Symposium on Physics of Advanced Materials*, IIT, Kharagpur, (2013)
30. Low temperature synthesis and radiative emission in graphitic carbon in support of gold nanoparticles, By A. Mishra and S. Ram, *100th Indian Science Congress*, Calcutta University, Kolkata, (2013)
31. Magnetodielectrics in $Zr_{1-x}Cr_xO_2$ ($x \leq 0.2$) nanocrystallites from a polymer precursor, By A. Sengupta and S. Ram, *National Conference on Sustainable Development through Innovative Research in Science and Technology*, Jadavpur University, Kolkata, (2012)
32. Mechanical and dielectric study in silver reinforced PVF2 nanocomposite films, By A. D. Phule, S. Ram, and A. K. Tyagi, *4th International Conference on Recent Advances in Composite Materials*, International Centre, Goa, (2013)
33. Methane sensing characteristics of modified lanthanum ferrite nano-particulate sensors, By K. K. Bhargav, S. B. Majumder and S. Ram, *17th National Seminar on Ferroelectrics and Dielectrics*, SOA University, Bhubaneswar, (2012)
34. Multiwall carbon nanotubes and other carbon nanostructures for composites, By C. Jacob, *4th International Conference on Advances in Composites and Related Materials (ICRACM-2013)*, Goa, (2013)
35. Nanostructuring noble metals with surface-enhanced electronic transitions for biological sensors, By S. Ram, *International Conference on Recent Trends in Applied Physics and Materials Science*, Govt. College of Engg. & Tech., Bikaner, (2013)
36. New fluorinated poly(ether imide)s containing pendant sulfonic acid groups for proton exchange membrane materials, By P. Sarkar, A. K. Mohanty, P. Bondyopadhyay, S. Chattopadhyay, S. Banerjee, *ICRRM-2013*, IIT Kharagpur, (2013)
37. Novel Application of Jute in Value Added Products, By Basudam Adhikari, *International Conference on Advances in Polymeric Materials*, CIPET, Lucknow, (2013)
38. Novel fluorinated poly(arylene ether sulfone)s containing pendant sulfonic acid groups for proton exchange membrane materials, By A. K. Mohanty, S. Banerjee, *Polymer & Rubber Technology for 21st century: A Kaleidoscopic View of Research & Industrial Progress (PRC 2012)*, Kolkata, (2012)
39. Novel fluorinated poly(Imidoarylene ether sulfone)s containing pendant sulfonic acid groups for proton exchange membrane materials, By A. K. Mohanty, S. Banerjee, *International Conference on Rubber and Rubber like Materials (ICRRM 2013)*, IIT Kharagpur, (2013)
40. Novel sulfonated poly(arylene ether sulfone)s containing cardo phthalimidine moiety in the main chain for proton exchange membrane materials, By R. Mukherjee, S. Banerjee, *PRC 2012*, Kolkata, (2012)
41. Optical and dielectric properties in $Zr_{1-x}Cr_xO_2$ ($x \leq 0.2$) of ferromagnetic nanocrystallites, By A. Sengupta and S. Ram, *National Conference on Nanoscience and Nanotechnology*, Techno India, Salt Lake, Kolkata, (2012)
42. Optical properties of growth-controlled bismuth ferrite nanocubes, By T. Karan and S. Ram, *National Conference on Nanoscience and Nanotechnology*, Techno India, Salt Lake, Kolkata, (2012)
43. Preparation and characterization of hydrolytically stable semifluorinated poly(ether imides) for proton exchange membrane, By E. A. Mistri, S. Banerjee, *PRC 2012*, Kolkata, (2012)
44. Preparation and characterization of Zr (IV) doped polyaniline for supercapacitor application, By Soumen Giri, Debasis Ghosh, Avinandan Mandal, C.K.Das, *Kathmandu Symposia on Advanced Materials (KaSAM-2012)*, Kathmandu, Nepal, (2012)

45. Preparation of CTAB assisted nanoplate Co(OH)₂/Graphene hybrid material as efficient supercapacitor electrode material, *By* Debasis Ghosh, Soumen Giri, Chapal Kumar Das, *ISJPS-2013*, IIT Kharagpur, India, (2013)
46. PVDF/ α -Fe₂O₃ polymer nanocomposite: A high dielectric material with superparamagnetism, *By* T. Karan and S. Ram, *4th International Conference on Recent Advances in Composite Materials*, International Centre, Goa, (2013)
47. Reducing gas sensing behavior of Fe₃BO₆ nanocrystallites prepared from a supercooled glass liquid, *By* K. Kumari, S. Ram, and R. K. Kotnala, *6th India-Singapore Joint Physics Symposium on Physics of Advanced Materials*, IIT, Kharagpur, (2013)
48. Role of Expanded Graphite as Reinforcing Nanofiller in Ethylene Propylene Diene Terpolymer Vulcanizates, *By* Asish Malas, Parthajit Pal, Chapal Kumar Das, *ICRACM 2013*, International Centre, Goa, India, (2013)
49. Semiconducting nano particles in the catalysis of one-dimensional carbon nano structures, *By* R K Sahoo, Damodar D and C. Jacob, *6th India Singapore Joint Physics Symposium (ISJPS 2013)*, Kharagpur, (2013)
50. Studies on multifunctional nanocrystalline LaFeO₃ perovskite oxides, *By* K. K. Bhargav, S. B. Majumder and S. Ram, *6th India-Singapore Joint Physics Symposium on Physics of Advanced Materials*, IIT, Kharagpur, (2013)
51. Synthesis and applications of biological nanofluids, *By* S. Ram, *National Conference on Advances in Materials Science and Technologies*, Kakatiya University, India, (2012)
52. Synthesis and characterization of nanostructured zinc hydroxysulphate: A precursor for zinc oxide nanocrystallites, *By* B. Venkateswarlu and S. Ram, *4th International Conference on Recent Advances in Composite Materials*, International Centre, Goa, (2013)
53. Synthesis and characterizations of modified expanded graphite/Styrene Butadiene rubber nanocomposites: mechanical, dynamic mechanical and morphological properties, *By* Asish Malas, Parthajit Pal, Chapal Kumar Das, *ISRS 2012*, IIT Madras, India, (2012)
54. Synthesis and optical properties of a core-shell ZnO nanostructure with a graphene like surface layer at low temperature, *By* S. Kumar, S. Ram, S. K. Roy, and R. Mitra, *6th India-Singapore Joint Physics Symposium on Physics of Advanced Materials*, IIT, Kharagpur, (2013)
55. Synthesis of multifunctional nanocrystalline LaFe_{0.8}Co_{0.2}O₃ for CH₄ sensor, *By* K. Bhargav, S. B. Majumder and S. Ram, *National Seminar on Advanced Functional Materials*, CMERI, Durgapur, (2013)
56. Synthesis of New Fluorinated Poly(ether imide) membranes for Gas Separation application, *By* T. Koley, P. Bondyopadhyay, S. Banerjee, *ICRRM-2013*, IIT Kharagpur, (2013)
57. Synthesis of well-dispersed gold nanoparticles using calotropis gigantea, *By* A. Agarwal and S. Ram, *6th India-Singapore Joint Physics Symposium on Physics of Advanced Materials*, IIT, Kharagpur, (2013)
58. Synthesis, characterization and gas transport properties of fluorinated aromatic polyamides derived from 2,5-di-*t*-butylhydroquinone-based ether-linked diamine and aromatic dicarboxylic acids, *By* P. Bondyopadhyay, S. Banerjee, *ICRRM-2013*, IIT Kharagpur, (2013)
59. Synthesis, Gas transport Properties of Aromatic Poly(arylene ether)s Containing Cyclohexylidene Moiety, *By* S. Ghosh, S. Banerjee, *ICRRM-2013*, IIT Kharagpur, (2013)
60. Synthesis, gas transport properties of new organo-soluble aromatic polyamides containing adamantane moiety, *By* D. Bera, S. Banerjee, *ICRRM-2013*, IIT Kharagpur, (2013)
61. Temperature dependent impedance properties in a ferromagnetic semiconductor Zr_{1-x}CrxO₂ (x \leq 0.2), *By* A. Sengupta and S. Ram, *International Conference on Materials Science and Technology*, St. Thomas College Pala, Kottayam, (2012)
62. The growth and characterization of carbon nanotubes using aluminium as the catalyst by atmospheric pressure chemical vapour deposition, *By* G. Sreekanth, R. K. Sahoo and C. Jacob, *6th India Singapore Joint Physics Symposium (ISJPS 2013)*, Kharagpur, (2013)
63. Thermal stability of core-shell ZnO nanostructure with a bonded graphene surface layer, *By* S. Kumar, S. Ram, S. K. Roy, and R. Mitra, *4th International Conference on Recent Advances in Composite Materials*, International Centre, Goa, (2013)
64. Tunable dielectric properties in Bi_{1-x}Fe_{1+x}O₃ granular nanostructures, *By* T. Karan and S. Ram, *17th National Seminar on Ferroelectrics and Dielectrics*, SOA University, Bhubaneswar, (2012)
65. Utilization of expanded graphite in butyl rubber compounds for the automobile tube applications, *By* Chapal Kumar Das, *India Rubber Expo & Tyre Show -2013*, Mumbai, India, (2013)

66. Zinc ferrite ZnFe_2O_4 nanocrystallites as a volatile organic compound gas sensor, By S. Misra and S. Ram, *100th Indian Science Congress*, Calcutta University, Kolkata, (2013)

Reliability Engineering Centre

Head

Prof. Biswajit Mahanty upto 31.12.2012
Prof. Manoj Kumar Tiwari from 01.01.2013

Professor

Naikan, V N Achutha *Ph.D.(IIT Kharagpur)*, Reliability and Quality Engineering, Condition Monitoring, System Simulation

Assistant Professor

Chaturvedi, Sanjay Kumar *Ph.D.*, Maintenance Engineering, System Reliability Modelling and Analysis, Reliability Data Analysis, Reliability Estimation

Senior Lecturer

Goyal, Neeraj Kumar *Ph.D.(IIT Kharagpur)*, Software Reliability, System Reliability Analysis, Probabilistic Risk Assessment, Network Reliability, Accelerated Life Testing

Faculty Appointments

Neeraj Kumar Goyal Assistant Professor

Brief Description of on-going activities

The Centre is developing a Virtual Lab on fault Diagnosis of Rotary Systems. This lab will be useful for virtually creating certain faults in rotating systems and then diagnose the fault and its severity. The centre is also developing a remote monitoring system for fault diagnosis of industrial system which can be used for e-maintenance. Other activities include organizing short term courses on latest topics of Reliability Engineering for officers and engineers of the Industry, Defense Organizations and R & D Establishments. safety and reliability studies of nuclear power plants and missile systems are other activities.

Thrust Areas

1. Software Reliability
2. Condition Monitoring and Maintenance
3. Reliability Testing and Estimation
4. Probabilistic Risk and Safety Analysis

International Collaborations

Collaborative Research work on "Software Reliability Modelling" with DNV Norway is progressing

Lectures by Visiting Experts

1. PHM and ALT *by* Dr. P.V. Varde (BARC Mumbai)
2. Research Trends in Power Systems Reliability *by* Dr. Vivek Srivastava (Goutam Buddha University, Greater Noida)
3. Training Workshop on Fuzzy sets and Fuzzy Logic Applications *by* Prof. Ashok Deshpande (University of Pune)

Member - Professional Bodies

1. Chaturvedi, Sanjay Kumar, *Life* - ISTE
2. Chaturvedi, Sanjay Kumar, *Member* - IEEE
3. Goyal, Neeraj Kumar, *Life Member* - Society for Reliability and Safety

4. Goyal, Neeraj Kumar, *Member* - IEEE
5. Goyal, Neeraj Kumar, *Member* - IEEE Reliability Society
6. Goyal, Neeraj Kumar, *Life Member* - SYSTEMS SOCIETY OF INDIA
7. Naikan, V N Achutha, *Regular* - IEEE Reliability Society
8. Naikan, V N Achutha, *Member* - System Society of India
9. Naikan, V N Achutha, *Member* - IEEE Society
10. Naikan, V N Achutha, *Regular* - Institution of Engineers (India)
11. Naikan, V N Achutha, *Life Member* - Society for Reliability and Safety

Member - Editorial Board

1. Chaturvedi, Sanjay Kumar (2011) *Member Group 2 of Editorial Board* - International Journal of Performability Engineering
2. Goyal, Neeraj Kumar (2013) *Associate Editor* - International Journal of Performability Engineering
3. Goyal, Neeraj Kumar (2013) *Reviewer* - Software Testing, Verification and Reliability
4. Goyal, Neeraj Kumar (2013) *Reviewer* - Quality and Reliability Engineering International
5. Goyal, Neeraj Kumar (2012) *Member* - Life Cycle Reliability and Safety Engineering
6. Goyal, Neeraj Kumar (2012) *Reviewer* - International Journal of Automation and Computing
7. Goyal, Neeraj Kumar (2012) *Reviewer* - International Journal of Performability Engineering
8. Naikan, V N Achutha (2012) *Asia Pacific Editor* - International Journal of Performability Engineering
9. Naikan, V N Achutha (2012) *Member, Advisory board* - SRESA Journal of Life Cycle Reliability and Safety Engg
10. Naikan, V N Achutha (2010) *Reveiwer* - International Journal of Production Research
11. Naikan, V N Achutha (2010) *Reviewer* - Journal of Loss Prevention in the Process Industries
12. Naikan, V N Achutha (2009) *Reviewer* - Computers and Industrial Engineering
13. Naikan, V N Achutha (2010) *Reviewer* - Defence Science Journal
14. Naikan, V N Achutha (2009) *Reviewer* - International Journal of Performability
15. Naikan, V N Achutha (2010) *Reviewer* - Society for Mining, Metallurgy, and Exploration, Inc
16. Naikan, V N Achutha (2009) *Reviewer* - International Journal of Quality and Reliability Management
17. Naikan, V N Achutha (0) *Ediorial Board Member* - Intl. jl. of Systems Assurance and Management

Fellowships

1. Naikan, V N Achutha (2012) *Visiting Researcher at University of Maryland, USA*

Sponsored Research Projects

1. Reliability Assessment of The Large Complex Computer Code (Atomic Energy Regulatory Board (AERB), Mumbai, Rs.6.86 Lakhs)
2. Reliability modeling, Analysis and Prediction of 21 NA (Absolute) Pressure Transducers (ISRO, Rs.8.40 Lakhs)
3. Rotating Machinery fault Simulation lab (MHRD, Rs.52.00 Lakhs)

Consultancy Projects

1. ADVANCE STUDIES ON HUMAN RELIABILITY ANALYSIS (NPCIL Mumbai, Rs.12.12 Lakhs)
2. RAMS for Garuda (DRDL Hyderabad, Rs.20.00 Lakhs)
3. Reliability analysis of Permanent magnet machine set and its associated controller' (BHEL, Rs.6.60 Lakhs)
4. RELIABILITY MODELING AND PREDICTION OF PROCESS CONTROL SYSTEM (DRDO Panagarh, Rs.8.03 Lakhs)
5. Reliability Prediction and FMEA/FMECA of CFF Oxygen System (DEBEL, Bangaluru, Rs.10.00 Lakhs)

6. Reliability Prediction and Testing of Electrical Products (Crompton and Greaves, Mumbai, Rs.10.00 Lakhs)
7. System study on remote assessment of residual mission reliability of equipment through condition based monitoring (MCEME, Rs.12.98 Lakhs)

Visits Abroad by Faculty Members

1. Naikan, V N Achutha - International Conference (Colombo,) 28-30 Dec 2011

Invited Lectures by Faculty Members

1. Reliability Introduction, HALT & HASS, RCM *by* Goyal, Neeraj Kumar (Engineering Staff College of India, Hyderabad)
2. Reliability Modeling and Estimation *by* Goyal, Neeraj Kumar (DRDO Panagarh)
3. Software Reliability Engineering Practices *by* Goyal, Neeraj Kumar (Vikram Sarabhai Space Centre, Trivendrum)
4. RAMS, HALT & HASS, RCM *by* Goyal, Neeraj Kumar (Engineering Staff College of India, Hyderabad)

Books Published

1. Ajeet Kumar Pandey and N. K. Goyal: Early Software Reliability Prediction Early Software Reliability Prediction: A fuzzy logic approach *published by* Springer (2013)

Short-Term Courses, Training Programmes and Workshops organised

1. RELIABILITY MEASUREMENT AND DEMONSTRATION METHODS (6 days)
2. Reliability Measurement and Demonstration Methods (October 17-21, 2011)

Papers Published in Journals

1. A Fuzzy Model for Early Software Quality Prediction and Module Ranking *By* Ajeet Kumar Pandey and N. K. Goyal *International Journal of Performability Engineering* Vol 8 (6) pp 689-698 (2012)
2. An Approach to Evaluate Multiple Node Pair Reliability for Simultaneous Capacity Requirements *By* T. Chandrashekar and N.K. Goyal *International Journal of Performability Engineering* Accepted (2013)
3. Earlier Software Defects using Fuzzy Logic *By* D. K. Yadav, S. K. Chaturvedi and R. B. Misra *Journal of Performability Engineering* 8(4), 399-408 (2012)
4. Evaluation of Mobile Ad Hoc Network Reliability using Propagation-based Link Reliability Model, , Vol. 115, pp. 1-9, 2013 *By* N. Padmavathy and S. K. Chaturvedi *Reliability Engineering and System Safety* 115, 1-9 (2013)
5. On the Design and Reliability Analysis of Electromagnetic Absorbers using Real-Coded Genetic Algorithm and Monte Carlo Simulation *By* Heeralal Gargama, S. K. Chaturvedi and A. K. Thakur *Progress in Electromagnetics Research B* 43, 169-187 (2012)
6. Software Reliability Prediction using Neural Network with Encoded Input *By* Manjubala Bisi and N. K. Goyal *International Journal of Computer Applications* 47(22):46-52 (2012)
7. The Influence of Scenario Metrics on Network Reliability of Mobile Ad Hoc Network *By* N. Padmavathy and S. K. Chaturvedi *Performability Engineering* 9(1), 61-74 (2013)

Papers Presented in Conferences

1. Security Assessment of Bus Voltages in Electric Power Systems, *By* Purobi Patowary and Neeraj K Goyal, *2012 International Conference on Power and Energy Systems*, Pune, India, (2012)

Rubber Technology Centre

Head

Prof. Golok Behari Nando

Professors

Bhowmick, Anil Kumar

Ph.D.(IIT Kharagpur),

Chaki, Tapan Kumar

Ph.D.(IIT Kharagpur), Electron beam modification of polymers, Polymer nanocomposites, Conductive rubber composites for EMI shielding application, Waste plastics modified bitumen for highway application, Dielectric elastomer for smart functions

Khastgir, Dipak

Ph.D.(IIT Kharagpur), Development of Polymer & Composites for Graded Dielectrics and High Voltage Insulation application, Polymer Composites & Nano Composites for Electrical and Electronic applications, Textile Technology for Rubber Product and Protection against Biodegradation

Nando, Golok Behari

Ph.D.(IIT Kharagpur), Polymer Blends and Polymer Nano-Composites, Chemical modification and Grafting of Rubbers and additives, TPEs and TPVs from waste polymers and Rubbers

Associate Professors

Chattopadhyay, Santanu

Ph.D.(IIT Kharagpur), Viscoelasticity of polymer composites and nanocomposites, Synthesis and application of block copolymers for drug delivery, Preparation and evaluation of smart / stimuli-responsive nanocomposite materials

Singha, Nikhil Kumar

Ph.D (IIT Bombay), Tailor-made polymers via Controlled Radical Polymerization, Block (AB & ABA) & graft copolymers, Smart and self-healing polymeric materials, Tailor-made polymer nanocomposites, Thermoplastic elastomers (TPE), Polyurethane, Tailor-made modification on elastomers

Assistant Professors

Chakraborty, Kalyan Kumar

Ph.D.(Calcutta Univ), Composite, Biomaterials, Characterization and utilization of Materials

Naskar, Kinsuk

Ph.D.(Univ.of Twente, The Netherlands), Short fibre reinforced composites, Thermoplastic elastomers (TPEs) and Thermoplastic vulcanizates (TPVs), Electron beam (EB) and photocrosslinking of polymers and elastomers, Tyre Technology, Shape memory polymer alloys

Brief Description of on-going activities

The Centre works in close collaboration with other departments and centers of this Institute and other R & D organizations in India and abroad. Several research projects sponsored by different agencies are in operation. The faculty members are engaged in different research areas : (1) Polymer composites and nanocomposites (2) Chemical modification of rubbers, (3) Thermoplastic elastomers based on novel blends and alloys, (4) Recycling of rubber waste (5) Ionomers, (6) Conductive rubber composites for electrical and electronics application, (7) Electron beam modification of polymers (8) Rheology and processability of rubber compounds and polymer blends, (9) Polymer foam and microcellular rubber composite for various critical and industrial applications, (10) Development of rubber blends and composites for different industrial application like cable, oil seal, tank track pad, vibration isolators, high voltage insulators (11) Development of adhesives and coatings. (12) Development of biodegradable polymer and recycling of rubber and polymer (13) Controlled radical polymerization, (14) Development of polymers for, biomedical application, electronic application. Centre will initiate two research projects under Centre for Railway Research(CRR), IIT Kharagpur.

Thrust Areas

1. Development of nanocomposites and polymer composites for electronic and electrical applications. Controlled polymerization for synthesis of new tailor-made and bio-active polymers. Electron beam treatment and Processing of polymer and polymer composites Recycling of waste polymer & rubber. Rubber in medical and health care applications. Rubber composites for high temperature and high voltage application.

New Acquisitions

1. Dynamic Mechanical Analyser(DMA)- Metraviv, France

Lectures by Visiting Experts

1. by Prof. H.A. Klok (EPFL, Switzerland)
2. by Dr. M. Moukwa (Vice-President Asian Paints Ltd. Mumbai)

Doctoral and MS Degrees Awarded

1. Madhuri Nanda : Effect of Conductive Carbon Black and Curing Systems on the Mechanical, Electrical and Rheological Properties of Chlorosulfonated Polyethylene Rubber(Ph.D.)
2. Ananta Kumar Mishra : Thermoplastic Polyurethane- modified Laponite Clay Nanocomposites(Ph.D.)
3. M. Thirumal : Rigid Polyurethane Foams : Preparation, Characterization and Specialty Applications(Ph.D.)
4. Suman Mitra : Nanogels and Nanocomposite Gels: Preparation, Characterization and Their Effect on the Properties of Virgin Elastomers(Ph.D.)
5. K. Dinesh Kumar : Influence of Tackifiers and Nanoclays on Autohesive Tack of Brominated Isobutylene-co-p-methylstyrene Elastomer(Ph.D.)
6. Mithun Bhattacharya : Structure-Property Relationships of Elastomer Nanocomposites with Particular Reference to Wear Resistant Applications(Ph.D.)
7. Amalin Kavitha A : Tailor-made Speciality Polymers Using Atom Transfer Radical Polymerization : Synthesis, Characterization and Their Applications(Ph.D.)
8. Thomas Paul K. : Nano Structured Fly Ash-styrene Butadiene Rubber Nano Composites(Ph.D.)
9. Jyoti Prakash Rath : Modifications of different fibrillar macro and nano fillers and their effects on natural rubber composites with special(Ph.D.)

Member - Professional Bodies

1. Singha, Nikhil Kumar, *Regular* - Member of Materials Research Society of India (MRSI)
2. Singha, Nikhil Kumar, *Life Member* - Chemical Research Society of India (CRSI)
3. Singha, Nikhil Kumar, *Member* - American Chemical Society (ACS), Rubber Division, USA
4. Singha, Nikhil Kumar, *Life Member* - Society of Polymer Science of India
5. Chattopadhyay, Santanu, *Member* - Materials Manufacturing Ontario (Ontario, Canada)
6. Chattopadhyay, Santanu, *Life Member* - Society for Polymer Science, India
7. Chaki, Tapan Kumar, *Life* - Indian Thermal analysis Society, India
8. Chaki, Tapan Kumar, *Life* - Materials Research Society of India
9. Chaki, Tapan Kumar, *Life* - Indian Rubber Institute, India
10. Chaki, Tapan Kumar, *Life* - Plasma Science Society of India
11. Chaki, Tapan Kumar, *Life* - Society of Polymer Science
12. Chakraborty, Kalyan Kumar, *Life member* - Institution of Engineers
13. Chakraborty, Kalyan Kumar, *Life Member* - Phi Lambda Upsilon, USA
14. Chakraborty, Kalyan Kumar, *Life Member* - Indian Institute of Chemical Engineers
15. Chakraborty, Kalyan Kumar, *Life Member* - Asiatic Society
16. Nando, Golok Behari, *Life* - Society for Polymer science, India
17. Nando, Golok Behari, *Regular member* - Indian Rubber Institute

18. Nando, Golok Behari, *Life* - Indian Association for Radiation Protection
19. Nando, Golok Behari, *Regular* - American Chemical Society, Rubber Division, Akron, Ohio, USA
20. Nando, Golok Behari, *Life* - Materials Research Society of India,
21. Khastgir, Dipak, *Member* - American Chemical Society, Rubber Division.
22. Khastgir, Dipak, *Life Member* - Indian Thermal Analysis Society
23. Khastgir, Dipak, *Life Member* - Polymer Society of India

Member - Editorial Board

1. Nando, Golok Behari (2010) *Associate Editor* - International Journal of Current Chemistry

Awards & Honours

1. Naskar, Kinsuk (2009) *Alexander von Humboldt Research Fellowship Award (Germany)*
2. Bhowmick, Anil Kumar (2002) *Chemistry of Thermoplastic Elastomers Award by the American Chemical Society*
3. Bhowmick, Anil Kumar (1990) *Commonwealth Award by the Association of Commonwealth Universities, UK*
4. Naskar, Kinsuk (2005) *Dutch Polymer Institute (DPI) Patent Award from The Netherlands for invention of multifunctional peroxides in thermoplastic vulcanizates (TPVs)*
5. Singha, Nikhil Kumar (2012) *Fifth Polymer Foundation Award by Professor Sukumar Maiti Polymer Award Foundation*
6. Bhowmick, Anil Kumar (1997) *George Stafford Whitby Award from the American Chemical Society*
7. Bhowmick, Anil Kumar (1991) *JSPS Award by the Japan Society of Promotion of Science*
8. Bhowmick, Anil Kumar (2001) *K. M. Philip Gold Medal Award by All India Rubber Industry*
9. Bhowmick, Anil Kumar (2001) *Khwarizmi International Award for Science by Iranian Research Organisation on Science & Tech.*
10. Bhowmick, Anil Kumar (1990) *MRF Award by the Indian Rubber manufacturer's Association*
11. Singha, Nikhil Kumar (2013) *MRSI Medal by Material Research Society of India (MRSI)*
12. Bhowmick, Anil Kumar (1995) *NOCIL Award by IRMRA-NOCIL*
13. Bhowmick, Anil Kumar (1989) *Stanton-Redcroft-Itas Award by the Indian Thermal Analysis Society*
14. Khastgir, Dipak (2013) *TWAS ASSOCIATESHIP*

Fellowships

1. Chaki, Tapan Kumar (2012) *Brain Pool Fellowship*
2. Khastgir, Dipak (0) *TWAS Fellowship to visit Argentina*

Sponsored Research Projects

1. Application of TPE-General Purpose Elastomer Blends for Use in PCR and TBR Tyres (CEAT Tyre, Vadodara, Rs.23.42 Lakhs)
2. Block and Graft Copolymers in Emulsion (BGC) (Asian Paints Limited, Rs.10.00 Lakhs)
3. Development of Advanced Polymer Materials for Improved electrical/ ESD properties using nana additives for space application (KCSTC, IIT Kharagpur, Rs.7.50 Lakhs)
4. Development of Novel Polymeric Materials for Self-healing Applications (PSA) (DRDO, Rs.16.00 Lakhs)
5. Development of rubber composites based on ethylene acrylic elastomers through electron beam radiation curing for mechanical and electrical application (Bhabha atomic research centre, Rs.18.72 Lakhs)
6. Development of special purpose heat resistant cable insulating compounds based on blends of LLDPE and PDMS rubber by electron beam irradiation techn (Department of Atomic Energy, BARC, Trombay, Mumbai, Rs.13.11 Lakhs)
7. Effect of additives on elec. proper. (Dielec. const. and dielc. stren.) with respect to frequency of Polyurathane and Silicone Rubber as smart materia (DMSRD, Rs.10.00 Lakhs)

8. Failure analysis of outdoor high voltage insulators from Silicone rubber and Silicone rubber blends used by Indian Railways(to be started) (Indian Railways, Rs.78.50 Lakhs)
9. Flexible EMI Shielding Materials from Conductive Rubber Based Composites (ARDB, New Delhi, Rs.14.10 Lakhs)
10. Flexible EMI Shielding Materials from Conductive Rubber Based Composites ((ARDB,Aeronautical Development Board, Govt of India), Rs.15.50 Lakhs)
11. Lab to Land Application of Modified Bituminous Binder using waste Plastics (DST, West Bengal, Rs.3.00 Lakhs)
12. Nanotechnology and radiation processing of organic-inorganic hybrid materials based on thermoplastic elastomer (DST, Rs.9.00 Lakhs)
13. Novel heat and oil resistant thermoplastic Vulcanizates (TPVs): development, characterization and performance (Council of scientific and industrial research, New Delhi, Rs.15.00 Lakhs)
14. Novel Microporous polymeric membrabnes for medical applications (Department of BioTechnology , Ministry of Science and Technology, Govt of India, Rs.34.44 Lakhs)
15. Novel Polymers by Controlled Radical Ring Opening Polymerization (CRROP) of Vinyl Cycloalkane (NVC) (DST, New Delhi, Rs.23.08 Lakhs)
16. Preparastion and characterization of PVC-Silicone blends (DRDO, New Delhi, Rs.24.57 Lakhs)
17. Segmented Polyurethane Laponite clay nano composites for fire and flammability (ISRO, Bangalore, Rs.10.52 Lakhs)
18. Study on Improvement of Adhesion of EPDM based Nanocomposites in Solid Rocket Thermal Insulation Application (KCSTC, IIT Kharagpur, Rs.14.26 Lakhs)
19. The Influence of Magnetic Nanoparticles to Enhance Thermomechanical Properties of SMPs (DRDO, Kanpur, Rs.9.90 Lakhs)

Consultancy Projects

1. Characterization of Emulsion samples (CESP) (Asian Paints Limited, Rs.0.80 Lakhs)
2. Development of Bonder compound without lead oxide (Phoenix Yule Pvt. Ltd., Rs.2.80 Lakhs)
3. Development of Elastomeric Bearings (Hindustan Aeronautics Limited(HAL), Foundry and Forge Division, Bangalore India, Rs.2.25 Lakhs)
4. Development of Two Part Compound for conveyor belt (Phoenix Yule, Kalyni, Rs.3.20 Lakhs)
5. Estimation of Rubber content (Modern Malleables Limited, Kolkata, Rs.0.28 Lakhs)
6. Failure analysis of adhesive joints (TISCO Jamshedpur, Rs.10.00 Lakhs)
7. Identification of polymers (Prag Industries Limited, Lucknow, Rs.0.15 Lakhs)
8. Identification of Rubber Gaskets (Electrosteel casting Ltd., Khardah, Kolkata-700115, Rs.1.68 Lakhs)
9. Research,Identify, Test Rubber Compounding ingredients from Sustainable Sources (Lanxess Elastomers, Geleen, The Netherlands, Rs.6.43 Lakhs)
10. Studies on Constant Contact side Bearer Rubber Pad (MGM Rubber Company, B T Road, Kolkata, Rs.0.50 Lakhs)
11. Thermoplastic Elastomers based on Polymer Blend and Their Nanocomposites(BBAT) (Bridgestone Corporation, Tokyo, Japan, Rs.3.68 Lakhs)
12. To identify and test rubber compounding ingredients from sustainable sources (GECN) (LANXESS Elastomers B.V., The Netherlands, Rs.6.43 Lakhs)

Patents (filed / granted)

1. A single pot process for polar modification on polyolefinic elastomers via controlled graft copolymerization
2. A single pot process for polar modification on polyolefinic elastomers via tailor-made graft copolymerization
3. Method for producing thermoplastic polymer compounds

Visits Abroad by Faculty Members

1. Naskar, Kinsuk - Researcher as Humboldt fellow (IPF Dresden, Germany,) 15 May- 15 July, 2012 (2 months)

2. Khastgir, Dipak - To present paper and Chair a session Polymer Matrix Composites (ECCM-15 European Conference on Composite Material, Venice Italy,) June 24-28, 2012
3. Naskar, Kinsuk - to Chair a session and deliver a talk at PPS-28 International Conference (Pattaya, Thailand,) 11-16 December, 2012
4. Singha, Nikhil Kumar - Invited Lecture (Virginia Institute of Technology,) June 24-29, 2012
5. Khastgir, Dipak - To discuss with Prof B Voit & G. Heinrich about joint collaborative programme between RTC and IPF . (IPF Dresden, Germany,) May 21-24, 2012
6. Khastgir, Dipak - As a member of CRR group to discuss on collaboration in railway research. (Lulea University, Sweden,) May 29- June 2, 2011
7. Chaki, Tapan Kumar - Invited lecture (University of Kent, UK,) 08 June, 2011
8. Naskar, Kinsuk - To deliver an invited talk and discuss about collaborative research work (University of Twente, The Netherlands,) 12-15 June, 2012

Invited Lectures by Faculty Members

1. PP-EPDM TPVs via EB-induced reactive processing by Naskar, Kinsuk (University of Twente, Enschede, The Netherlands)
2. Macromolecular Engineering via Atom Transfer Radical Polymerization (ATRP) by Singha, Nikhil Kumar (Darjeeling, West Bengal)
3. Tailor-made Functional Polymeric Materials by Controlled Radical Polymerization by Singha, Nikhil Kumar (IGCAR, Kalpakam)

Papers Published in Journals

1. Acrylic AB and ABA Block Copolymers Based on Poly(2-ethylhexyl acrylate) (PEHA) and Poly(methyl methacrylate) (PMMA) via ATRP By D. J. Haloi, S. Ata, N. K. Singha, D. Jehnichen, B. Voit *ACS Applied Materials & Interfaces*, 4(8), 4200-4207 (2012)
2. Aging of low-density polyethylene in natural weather, underground soil aging and sea water: Effect of a starch-based prodegradant additive By M. Elanmugilan, P. A. Sreekumar, N. K. Singha, M. A. Al-Harhi, S. K. De *Polymer Engineering & Science* DOI:10.1002/pen.2349 (2013)
3. Atom Transfer Radical Polymerization of Glycidyl Methacrylate (GMA) in Emulsion, By D. J. Haloi, P. Mandal, N. K. Singha *Journal of Macromolecular Science Part A Pure and Applied Chemistry* 50, 120–127. (2013)
4. Consideration of interface polarization in the modeling of dielectric property for ethylene vinyl acetate (EVA)/polyaniline conductive composites prepared through in-situ polymerization of aniline in EVA matrix By *European Polymer Journal* 48(7) 1241 (2012)
5. Correlation between Rheological and Dielectric Percolation of Conductive Carbon Black filled Ethylene Acrylic Elastomer By B. P. Sahoo, D. K. Tripathy and K. Naskar* *Journal of Elastomers and Plastics* In Press (2013)
6. Determination of Percolation Limits of Conductivity, Dielectric Constant, and EMI SE for Conducting Polymer Composites Using Sigmoidal Boltzmann Model By *Advanced Science Letters* 10 (1), 115-117 (2012)
7. Development of Natural Rubber-Fibrous Nano Clay Attapulgite Composites: The Effect of Chemical Treatment of Filler on Mechanical and Dynamic Mechanical Properties of Composites By J.P. Ratha, T.K. Chakia, D. Khastgira, *Procedia Chemistry* (4) p131 – 137 (2012)
8. Development of Poly (dimethylsiloxane)/BaTiO₃ Nanocomposites as Dielectric Material By S. Nayak, T. Kumar Chaki, D. Khastgir *Advanced Materials Research* 622, 897-900 (2013)
9. Development of polyurethane–titania nanocomposites as dielectric and piezoelectric material By Suryakanta Nayak, Banalata Sahoo, Tapan Kumar Chaki and Dipak Khastgir *RSC Advances* 3, 2620-2631 (2013)
10. Effect of electron beam irradiation on dynamic mechanical, thermal and morphological properties of LLDPE and PDMS rubber blends By R. Giri, K. Naskar, G. B. Nando *Radiation Physics and Chemistry* 81, 1930 (2012)
11. Effect of Nanoclay on in situ preparation of All Acrylate ABA Tri-block Copolymers via ATRP and their Morphology By N. K. Singha, A. Kavitha, D. J. Haloi, P. Mandal, A. Janke, D. Jehnichen, H. Komber and B. Voit *Macromolecular Chemistry and Physics*, 213(19), 2034-2043 (2012)

12. Electrochemical synthesis of nanostructured polyaniline: Heat treatment and synergistic effect of simultaneous dual doping By S Bhandari, NK Singha, D Khastgir *Journal of Applied Polymer Science* (2013)
13. Electrochemical synthesis of nanostructured polyaniline: Heat treatment and synergistic effect of simultaneous dual doping By S. Bhandari, N. K. Singha, D. Khastgir *J. Appl. Polym. Sci.* DOI: 10.1002/app.38 (2013)
14. Influence of carbon nanofibers reinforcement on thermal and electrical behavior of polysulfone nanocomposites By L Nayak, D Khastgir, T.K. Chaki *Polymer Engineering & Science* 52 (11), 2424- 52 (11), 2424 (2012)
15. Maleic anhydride grafted Polybutadiene as a Controlled Defibrillating and Dispersing Agent for Short Aramid Fiber Reinforced Thermoplastic Polyurethane Composite with Improved Mechanical Properties By G. S. Shibulal and K. Naskar* *Journal of Applied Polymer Science* In Press (2013)
16. Modeling of DC Conductivity for Ethylene Vinyl Acetate (EVA)/Polyaniline Conductive Composites Prepared through In-situ Polymerization of Aniline in EVA Matrix By M Rahaman, TK Chaki, D Khastgir *Composites Science and Technology* 72, 1575–1580 (2012)
17. Natural weather, soil burial and sea water ageing of low-density polyethylene: Effect of starch/linear low-density polyethylene masterbatch By M. Elanmugilan, P. A. Sreekumar, N. K. Singha, M. A. Al-Harhi, S. K. De *J. Appl. Polym. Sci.* 129(1), 449-457 (2013)
18. Optimising the silane coupling in tread compounds containing carbon silica dual phase fillers By P. Kumar, N. N. Kunti, A. K. Chandra and K. Naskar* *Rubber India* 64(12), 62 (2012)
19. Polyaniline, ethylene vinyl acetate semi-conductive composites as pressure sensitive sensor By M Rahaman, TK Chaki, D Khastgir *Journal of Applied Polymer Science* 128(1)161-16 (2013)
20. Reversible addition fragmentation chain transfer (RAFT) polymerization of 2,2,3,3,4,4,4 hepta fluoroacrylate (HFBA) By B. P. Koiry, M. Moukwa, N. K. Singha *Journal of Fluorine Chemistry*, DOI: <http://dx.doi.org/doi:10.1016/j.jfluchem.2013.04.005> DOI:10.1016(Inpress) (2013)
21. Scrutinizing the Influence of Strain Induced Fiber Orientation on the Melt Rheological Behavior of Short Aramid Fiber /Thermoplastic Elastomer Composite using Rubber Process Analyser By G. S. Shibulal and K. Naskar* *Journal of Applied Polymer Science* DOI:10.1002/app38600 (2012)
22. Study of dielectric relaxation behavior of electron beam cured conducting carbon black filled ethylene acrylic elastomer By B. P. Sahoo, K. A Duvey, R. N. P. Choudhary and D. K. Tripathy and K. Naskar* *Journal of Materials Science* DOI 10.1007/s10853 (2012)
23. Synthesis and Characterization of All Acrylic Block Copolymer/Clay Nanocomposites Prepared via Surface Initiated Atom Transfer Radical Polymerization (SI-ATRP) By D. J. Haloi, S. Ata and N. K. Singha *Industrial & Engineering Chemistry Research* 51(29), 9760-9768 (2012)
24. Synthesis and Characterization of Poly(2-ethyl hexyl acrylate) via ATRP, RATRP and FRP By D.J. Haloi, B. P. Koiry, P. Mandal and N. K. Singha, *Journal of Chemical Sciences* (Inpress) (2013)
25. Thermally amendable tailor-made polymer by RAFT polymerization and click reaction By N. Pramanik, D. S. Bag, S. Alam, G. B. Nando, N. K. Singha *Journal of Polymer Science Part A Polymer Chemistry* (Inpress) (2013)

Papers Presented in Conferences

1. ABA triblock copolymers having pendant reactive bicyclic ring: synthesis and characterization, By P. Mandal, N. K. Singha, *International Conference on Rubber and Rubber-like Materials (ICRRM 2013)*, Rubber Technology Centre, IIT Kharagpur, (2013)
2. Can ionic liquid play role in improving dispersion of CNT in acrylic rubber?, By B. P. Sahoo, K. Naskar and D. K. Tripathy, *International Rubber Conference: ICRRM 2013*, IIT Kharagpur, (2013)
3. Copolymerization of 2,2,3,3,4,4,4- heptafluoro butyl acrylate with butyl acrylate via RAFT polymerization and determination of reactivity ratios by different methods, By B. P. Koiry, N.K. Singha, *International Conference on Rubber and Rubber-like Materials (ICRRM 2013)*, Rubber Technology Centre, IIT Kharagpur, (2013)

4. Development of Poly(dimethylsiloxane)/BaTiO₃ Nanocomposites as Dielectric Material, By Suryakanta Nayak, T. K. Chaki, D. Khastgir, *International Conference on Nanostructures, Nanomaterials and Nanoengineering-ICNNN 2012*, Singapore, (2012)
5. Development of polyurethane/titania composites as dielectric material prepared by melt compounding-Effect of pressure on electrical properties, By Suryakanta Nayak, T. K. Chaki, D. Khastgir, *Advances in Materials and Processing-Challenges and Opportunities (AMPCO 2012)*, IIT, Roorkee, (2012)
6. Dielectric and Impedance behavior of BaTiO₃ filled Polymer Nanocomposites, By Suryakanta Nayak, Tapan Kumar Chaki, and Dipak Khastgir, *International Conference on Recent Advances in Composite Materials (ICRACM-2013)*, Goa, Organized by IIT Varanas, (2013)
7. Dielectric Relaxation Behavior of Flexible Poly(dimethylsiloxane)/BaTiO₃ Nanocomposites, By Dipak Khastgir, Tapan Kumar Chaki, and Suryakanta Nayak, *International Conference on Rubber and Rubber Like Materials (ICRRM-2013)*, IIT Kharagpur, India, (2013)
8. Effect of in process fibre orientation on the melt rheological behaviour of a short Aramid fibre reinforced TPE, By G. S. Shibulal and K. Naskar, *International Rubber Conference: ICRRM 2013*, IIT Kharagpur, (2013)
9. Electrical and Morphological Studies of Polyaniline/MWCNT Nanocomposites Synthesized by Different Methods, By Subhendu Bhandari, Nikhil K. Singha, Dipak Khastgir, *International Conference on Recent Advances in Composite Materials*, Goa, India (organized by IIT BHU), (2012)
10. Electrical and Morphological Studies of Polyaniline/MWCNT Nanocomposites Synthesized by Different Methods, By S. Bhandari, N. K. Singha, D. Khastgir, *International Conference on Recent Advances in Composite Materials (ICRACM-2013)*, Mechanical Engg Dept., IITBHU, Goa, (2013)
11. Electrochemical synthesis of acid doped polyaniline using copper electrode, By Subhendu Bhandari, Nikhil K. Singha, Dipak Khastgir, *International Conference on Rubber and Rubber-like Materials*, IIT Kharagpur, India, (2013)
12. Electrochemical Synthesis of Acid Doped Polyaniline Using Copper Electrode, By S. Bhandari, N. K. Singha and D. Khastgir, *Internationals Conference on Rubber and Rubber-Like Materials (ICRRM 2013)*, Rubber Technology Centre, IIT Kharagpur, (2013)
13. Functional Polymers by Controlled Radical Polymerization and Thiol-ene Reaction, By N. K. Singha, *International Conference on Advances in Polymeric Materials & Nanotechnology, PolyTech-2012*, Bharati Vidyapith, Pune, (2013)
14. Influence of Different Nanofillers in Polyimide Based EPDM for Rocket Motor Insulation: Structure and Properties, By S. Singh, P. K. Guchhait, N. K. Singha and T. K. Chaki, *International Conference on Rubber and Rubber-like Materials (ICRRM 2013)*, Rubber Technology Centre, IIT Kharagpur, (2013)
15. Influence of UV radiation on mechanical properties of a photo-initiator compounded high vinyl S-B-S block copolymer, By S. Datta and K. Naskar, *International Rubber Conference: ICRRM 2013*, IIT Kharagpur, (2013)
16. Polyimide and Nanosilica Filled EPDM Nanocomposites for Rocket Motor Thermal Insulation Application: Morphology and Thermophysical Properties, By S. Singh, P. K. Guchhait, N. K. Singha and T. K. Chaki, *National Seminar on Recent Advances in Polymer Science and Technology (Poly 2012)*, North Bengal University/SIT, Darjeeling, (2012)
17. Polymer-Ceramic Composites With controlled Dielectric and Piezoelectric Properties, By S D Khastgir, S Nayak, T.K. Chaki, *ECCM15 European Conference on Composite Materials*, Venice Italy, (2012)
18. Polymer-ceramic composites with controlled dielectric properties-Investigation on electrical and mechanical properties and modeling, By 4. Suryakanta Nayak, M. Rahaman, T. K. Chaki, D. Khastgir, *15th European Conference on Composite Materials*, Venice-Italy, (2012)
19. Polymethacrylate - Poss Composite Prepared via Thiol-ene Reaction and ATRP, By S. Ata, N. K. Singha, *International Conference on Rubber and Rubber-like Materials (ICRRM 2013)*, Rubber Technology Centre, IIT Kharagpur, (2013)
20. RAFT Polymerization of Furfuryl Methacrylate (FMA) and Click Reaction therein, By N. B. Pramanik, G. B. Nando, D. S. Bag, S. Alam, N. K. Singha, *International Conference on Advances in Polymeric Materials & Nanotechnology, PolyTech-2012*, Bharati Vidyapith, Pune, (2012)

21. Reactive Block Copolymer/clay Nanocomposites via Surface Initiated ATRP (SI-ATRP) and Click Reaction, *By* N. B. Pramanik, D. J. Haloi, N. K. Singha, *International Conference on Rubber and Rubber-like Materials (ICRRM 2013)*, Rubber Technology Centre, IIT Kharagpur, (2013)
22. Reversible Addition Fragmentation Chain Transfer (RAFT) Polymerization of a Fluoroacrylate in Miniemulsion, *By* A. Chakraborty, N. K. Singha, *International Conference on Advances in Polymeric Materials & Nanotechnology, PolyTech-2012*, Bharati Vidyapith, Pune, (2012)
23. Structure-Property Relationship of Dynamically Crosslinked PP-EOC and PP-EPDM TPVs: A Comparative Study, *By* R. Rajesh Babu and K. Naskar, *PPS-28*, Pattaya, Thailand, (2012)
24. Synthesis of Polyfluoroacrylate/clay nanocomposites by in situ RAFT polymerization in miniemulsion, *By* A. Chakraborty, N. K. Singha, *International Conference on Rubber and Rubber-like Materials (ICRRM 2013)*, Rubber Technology Centre, IIT Kharagpur, (2013)

Rural Development Centre

Head

Prof. P B Singh Bhadoria

Associate Professors

Bhowmick, Pradip Kumar	<i>Ph.D.,D.Litt.</i> , Tribal & Rural Development Planning
Lahiri, Debabrata	<i>Ph.D.(BHU, Varanasi)</i> , Economics of Renewable Energy Economics of Microfinance Monitoring & Evaluation Technology Transfer
Mahapatra, Subhash Chandra	<i>Ph.D.(IIT Kharagpur)</i> , Crop Production and Development Transfer & Management of Rural Technology

Brief Description of on-going activities

A. Teaching : two courses viz. RD30002 and RD30004 at undergraduate level as professional breadth
B. Research and Development: 1. Essential oil production technology; 2. Fish feed production from non-conventional biological sources; 3. Farm level technology for processing of agricultural products.
C. Extension: 1. Transfer of agricultural products processing technology; 2. Organization of training and workshops on rural technology application

Thrust Areas

1. Development and Transfer of Technology, Resource Planning and Marketing, Tribal Development

Lectures by Visiting Experts

1. Energy, Ecology and Rural Development by Professor Y P Singh (Distinguished former Professor and Alumnus of IIT Kharagpur)

Member - Professional Bodies

1. Mahapatra, Subhash Chandra, *Life Member* - Lok Swasthya Parampara Samvardhan Samithi
2. Mahapatra, Subhash Chandra, *Life Member* - Eastern India Horticulture and Biotechnology Centre
3. Mahapatra, Subhash Chandra, *Life Member* - Indian Mushroom Growers Association
4. Mahapatra, Subhash Chandra, *Life Member* - Indian Society of Agricultural Science
5. Mahapatra, Subhash Chandra, *Life Member* - Mushroom Society of India (MSI)
6. Mahapatra, Subhash Chandra, *Life Member* - Indian Society for Tuber Crops
7. Mahapatra, Subhash Chandra, *Life Member* - Association of Food Scientists and Technologists (India)
8. Mahapatra, Subhash Chandra, *Life Member* - Weed Science Society, West Bengal
9. Lahiri, Debabrata, *Annual* - Indian Society of Agricultural Economics
10. Lahiri, Debabrata, *Life Member* - Agricultural Economics Research Association
11. Lahiri, Debabrata, *Life Member* - Indian Academy of Social Sciences
12. Lahiri, Debabrata, *Regular* - American Agricultural Economics Association
13. Lahiri, Debabrata, *Regular* - International Institute of Fisheries Economics and Trade (IIFET)
14. Lahiri, Debabrata, *Life Member* - Indian Society of Agricultural Marketing
15. Bhowmick, Pradip Kumar, *Regular* - The Institute of Social Research and Applied Anthropology
16. Bhowmick, Pradip Kumar, *Regular* - Indian Political Economic Association

Member - Editorial Board

1. Bhowmick, Pradip Kumar (2010) *Editor - Man and Life*
2. Bhowmick, Pradip Kumar (2009) *Editorial Board Member - Indian Journal of Millennium Development Studies*
3. Lahiri, Debabrata (2006) *Member Editorial Board - Indian Journal of Agricultural Marketing*
4. Mahapatra, Subhash Chandra (2007) *Member, Editorial Board - Mushroom Research*

Awards & Honours

1. Lahiri, Debabrata (1973) *Awarded University Gold Medal for standing first in M.Sc. (Agricultural Economics) Examination of 1973*
2. Mahapatra, Subhash Chandra (2003) *Bharat Jyoti Award from India International Friendship Society*

Sponsored Research Projects

1. Demonstration of Technologies for Green House Production of Roses and Extraction of Rose Oil (Department of Science & Technology, New Delhi, Rs.17.60 Lakhs)
2. Innovative use of undulating drought prone fragile lateritic wastelands in the remote tribal belt recourse to larger scale production of a kharif mino (Department of Science & Technology, SEED Division, Technology Bhavan, New Mehrauli Road, New Delhi -, Rs.15.15 Lakhs)
3. Innovative use of undulating lands...Niger crop...(IUU) (DST, SEED Division (Tribal Sub Plan), Rs.15.15 Lakhs)
4. Res. & Dev. and Dissemination of Human Energy or Minimal Energy Driven Composit Devices for Farm Level Processing of Agricultural Products: 2nd phase (Directorate of Agricultural Marketing, Govt. of West Bengal under the RKVY Scheme of GoI, Rs.25.00 Lakhs)
5. Research & Development and Dissemination of Appropriate Technology for Small Scale Grain Storage for Value Addition, Improving Marketability and Incom (Department of Agriculture MW & C Branch Government of West Bengal Marketing, Rs.40.00 Lakhs)
6. Research & Development and Dissemination of Human Energy or Minimal Energy Driven Composit Devices for Farm Level Processing of Agricultural Products (Department of Agriculture, MW&C Branch, Government of West Bengal, Rs.43.00 Lakhs)
7. Research & Development and Dissemination of Human Energy or Minimal Energy Driven Composit Devices for Farm Level Processing of Agricultural Products: (Department of Agriculture MW & C Branch Government of West Bengal Marketing, Rs.25.00 Lakhs)

Technology Transferred

1. Rural Entrepreneurs - Pulse Dehusking : Rs. 0.17 Lakh
2. Rural Entrepreneurs - Seed oil Extractor : Rs. 0.22 Lakh
3. Rural Entrepreneurs - Spice & grain Grinder : Rs. 0.22 Lakh
4. Rural Entrepreneurs and SHGs - Starch Extroctor from Tuber crops : Rs. 0.12 Lakh

Patents (filed / granted)

1. A Composite Technology of Turmeric (*C. longa*) Processing Including Polishing, Grinding and Extraction of Turmeric Oil and Curcumin at Rural Level
2. Low cost extractor for Turmeric oil and curcumin

Invited Lectures by Faculty Members

1. Problem and Issues in Rural Development by Bhowmick, Pradip Kumar (Haldia Govt. College)

2. Role of Action Anthropology for Tribal Development by Bhowmick, Pradip Kumar (Mahisadal Girls College)

Papers Published in Journals

1. Aquatic Weeds as Potential feed for Mozambique tilapia, *Oreochromis mosambicus* By Mukti Pada Bag, Subhash Chandra Mahapatra and Puvuluri Srinivasa Rao *Journal of Aquaculture Research and Development* Vol 3 Issue 8 1000154 (2012)
2. Efficiency of Fermented Fish Offal Meal on Growth and fatty Acid Profile of Tilapia (*Oreochromis niloticus*) By Mukti Pada Bag and Subhash Chandra Mahapatra *Electronic Journal of Biology* Vol. 8(4): 62-66 (2012)
3. Evaluation of Growth Performance of Tilapia (*Oreochromis mossambicus*) using Low cost Fish Feed By Mukti Pada Bag, Subhash Chandra Mahapatra, Puvuluri Srinivasa Rao and Debajyoti Chakrabarty *Our Nature* Accepted (2012)
4. Issues and Challenges of Rural Development in India today By Prdip K.Bhowmick *The Anthropology* Vol.2 pp 78-84 (2012)

G S Sanyal School of Telecommunication

Head

Prof. Saswat Chakrabarti

Professor

Chakrabarti, Saswat *Ph.D.(IIT Kharagpur)*, Digital Communications, Wireless Communications, Bio-telemetry

Assistant Professors

Das, Goutam *Ph.D.(Univ. of Melbourn)*,

Das, Suvra Sekhar *Ph.D.(Aalborg Univ., Denmark)*, Broadband Mobile Communications, Physical & MAC Layer, 4G, OFDM, MIMO, Packet Scheduling, Link Adaptation, Femto Cells, Full Name: Suvra Sekhar Das

Faculty Appointments

Dr. Goutam Das Assistant Professor

Prof. Debasish Datta Professor and Head, GSSST

New Academic Programmes

With the emerging developments in the area of Telecommunications, it appeared worthwhile to work towards a specialized MTech programme on Telecommunication Network Engineering from GSSST, which should be non-overlapping but supportive to the existing MTech programmes in the related departments, viz., E&ECE, CSE, SIT, EE. In particular, to start with, GSSST can offer some worthwhile telecom-centric elective subjects for the MTech/PhD courseworks for the electrical-science group of the Institute, viz., Core Telecom Networks, Broadband Access Networks, Teletraffic Engineering, Telecommunication Network Management, Wireless Sensor Networks, Telecommunication Network Security etc., which are not currently offered from the other departments. From this viewpoint, the GSSST has started offering Broadband Access Networks from Spring 2011 with encouraging response from the student community. The lecture classes of this subject are currently being attended by about 35 BTech/MTech/MS/PhD students from E&ECE, CSE, EE Departments, GSSST and SIT. It is felt that, the other subjects, as envisaged, would also have similar response from the students. As planned at the moment, initially two/three new subjects from the above subject pool would be offered in the two semesters from the GSSST. In due course of time, having secured a critical mass in the faculty, the GSSST should be able to start the envisaged MTech programme. As a follow-up of the envisaged MTech programme, appropriate laboratory development activities for the course curriculum have also been started with the participation of PhD and MS students of GSSST.

Brief Description of on-going activities

1. MAC protocols in Wireless Adhoc Networks and WMAN
2. Physical Layer Technologies for Next Generation Cellular, WMAN and WLAN
3. Loss-less Compression Methods for Images and Pictures
4. Channel Estimation and Equalization Method for Multi-carrier Wireless
5. Synchronization algorithms for OFDM based wireless transmission
6. Physical Layer Modeling of Light Paths in WDM based Passive Optical Networks
7. Wireless Sensor Networks
8. Physical Layer Issues related to UWB communication
9. Radar signal processing
10. BioMedical Signal Acquisition and Processing

With the emerging developments in the area of Telecommunications, it appeared worthwhile to work towards a specialized MTech programme on Telecommunication Network Engineering from GSSST, which should be non-overlapping but supportive to the existing MTech programmes in the related departments, viz., E&ECE, CSE, SIT, EE. In particular, to start with, GSSST can offer some worthwhile telecom-centric elective subjects for the MTech/PhD courseworks for the electrical-science group of the Institute, viz., Core Telecom Networks, Broadband Access Networks, Teletraffic

Engineering, Telecommunication Network Management, Wireless Sensor Networks, Telecommunication Network Security etc., which are not currently offered from the other departments. From this viewpoint, the GSSST has started offering Broadband Access Networks from Spring 2011 with encouraging response from the student community. The lecture classes of this subject are currently being attended by about 35 BTech/MTech/MS/PhD students from E&ECE, CSE, EE Departments, GSSST and SIT. It is felt that, the other subjects, as envisaged, would also have similar response from the students. As planned at the moment, initially two/three new subjects from the above subject pool would be offered in the two semesters from the GSSST. In due course of time, having secured a critical mass in the faculty, the GSSST should be able to start the envisaged MTech programme. As a follow-up of the envisaged MTech programme, appropriate laboratory development activities for the course curriculum have also been started with the participation of PhD and MS students of GSSST.

Recently another new initiative has been undertaken with the encouragement from the DOT, Govt. of India, towards exploring a possible activity for developing a Telecommunication Equipment Testing and Security Certification Centre. The proposal is under progress and will soon be presented to the relevant committee of experts for necessary approval.

1. Current number of PhD Students involved in research within GSSST: No. of Scholars completed PhD 14 (07: GSSST enrolment, 07: E&ECE enrolment); No. of Scholars working towards PhD 11 (GSSST enrolment); 2. Current number of MS and MTech Students involved in research within GSSST: No. of students completed MS 10 (GSSST enrolment) No. of students working towards MS 07 (GSSST enrolment) No. of students worked on MTech projects 40 (GSSST enrolment) No. of students working on MTech projects 06 (E&ECE enrolment)

GSSST is currently involved in the following sponsored projects: 1. Project Title: Vodafone-Essar-IIT Centre of Excellence in Telecom. (VEICET); Project Investigator: Professor In-Charge, VEICET: Prof. S. Chakrabarti (15 faculty members from 06 departments are involved in 09 projects addressing various aspects of telecommunication systems and networks); 2. Project Title: Development of Interference Mitigation Methods through Base Station Cooperation in Next-Generation Wireless Broadband Mobile Communication Networks (4G & Beyond), DIT, Govt. of India; Project Investigator: Prof. S. S. Das; 3. Project Title: Studies on Fade Mitigation Techniques for Satellite Propagation in Ka-Band, ISRO, Govt. of India; Project Investigator: Prof. S. S. Das; 4. Project Title: Fading Channel & Mobile Comm., MHRD, Govt. of India; Project Investigators: Prof. S. S. Das

Publication Summary of GSSST: 1. No. of Journal papers (published/accepted) 30 (IEEE Trans. on Wireless Comm., IEEE/OSA Journal of Optical Comm. and Networks, IEEE Comm. Letters, Journal of Optical Comm., IET Electronics Letters, Springer Journal of Wireless Personal Comm. Systems etc.); 2. No. of Conference papers (published/accepted) 130 (International: 84, National: 46)

Thrust Areas

1. Currently GSSST has broadened its research horizon by incorporating signal processing, VLSI design and optical networks related research activities into its repertoire. The following areas are the major research focus of current GSSST activities: 1. Wireless Communication Systems & Networks 2. Optical Communication Systems & Networks 3. Broadband Access Networks 4. Signal Processing and Processor Architectures 5. Biomedical Signal Processing 6. VLSI for Telecommunication Systems

New Acquisitions

1. FPGA test/ Programming facility with data acquisition cards
2. Radio Transceivers with FPGA test/ Programming facility
3. Embedded DSP Board with data acquisition
4. OPTSIM: An Optical Communication System Design and Simulation tool

International Collaborations

In the spring semester, 2011, the school has also explored an overseas research collaboration by supervising a PhD scholar from University of California, Davis, who visited GSSST for two months (January – March 2011) on an NSF-funded project and carried out research in the area of optical networks, addressing the problems of metro-access network integration using WDM-based optical networking technologies.

Lectures by Visiting Experts

1. BioMEMS by Dr. A. T. Kalghatgi (CRL, BEL)
2. Next Generation Networks by Prof. Ramjee Prasad (University of Alborg)
3. by Prof. Partha P. Pande (Washington State University, Pullman)
4. by Arka Mazumder (E. L. Ginzton Laboratory, Stanford)
5. by Prof. B. Mukherjee (University of California, Davis)

Doctoral and MS Degrees Awarded

1. Jayadev Bhaumik : Error Control Coding and Cryptography(Ph.D)
2. Lakshi Prasad Roy : Radar Target Detection in Correlated non-Gaussian Clutter Environment(Ph.D)
3. Valadi Sivarama Krishna : Wireless Secured Communication(MS)
4. Satya Prasad R. : Underwater Acoustic Modem for Video Communication(MS)
5. Chinmay Chakraborty : PSTN-IP Telephony Gateway Over Heterogeneous Networks(MS)
6. Tuhin Subhra Chakraborty : MB-OFDM, VLSI Architecture(MS)
7. Sruti Ganchoudhuri : Video Communication(MS)
8. Chinmayee Nanda : Bio-medical Signal Processing and Acquisition(MS)

Member - Professional Bodies

1. Das, Suvra Sekhar, - IEEE
2. Das, Suvra Sekhar, *Member* - IEEE
3. Chakrabarti, Saswat, *Member* - IEEE

Awards & Honours

1. Chakrabarti, Saswat (2005) *B. R. Nag Design Contest Award for Best Design Entry; 18th Int. Conf. on VLSI Design and 4th Int. Conf. on Embedded Systems, 2005*

Sponsored Research Projects

1. Design and Simulation of Baseband Digital CDMA Transceiver (ITR, DRDO, Rs.9.50 Lakhs)
2. Development of Interference Mitigation methods through Base Station Cooperation in Next Generation Wireless Broadband Mobile Communications Networks (DIT, Rs.90.60 Lakhs)
3. Development of Interference Mitigation methods through Base Station Cooperation in Next Generation Wireless Broadband Mobile Communications Networks (DeITY, Rs.90.60 Lakhs)
4. Energy Efficient Radio for Next Generation Cellular (VIECET, Rs.100.00 Lakhs)
5. Energy Efficient Radio for Next Generation Cellular (Vodafone, Rs.185.00 Lakhs)
6. Fading Channel & Mobile Communications (MHRD, Rs.50.00 Lakhs)
7. Fading Channel & Mobile Communications (MHRD, Rs.53.00 Lakhs)
8. Self Configuring Networks: Flexible Spectrum Sharing for Home Base Station in Next Generation Mobile Telecommunication Systems (Vodafone, Rs.19.00 Lakhs)
9. STANDARDIZATION ACTIVITY IN 4G & BEYOND IN RAN. (Vodafone, Rs.32.75 Lakhs)
10. STANDARDIZATION ACTIVITY IN 4G & BEYOND IN RAN. (VIECET, Rs.32.00 Lakhs)

11. Studies on FadeMitigation Control for Microwave Satellite Signal Propagation (ISRO, Rs.10.00 Lakhs)

Patents (filed / granted)

1. A Method for Ensuring High Volp Capacity in LTE
2. A method to obtain high data rate and contiued service over multiple radio access networks
3. A novel multirate orthogonal frequency division multiplexing system proposal to reduce intercarrier interference
4. Enhancing spectral efficiency of OFDM systems by Data Transmission over Pilot Tones

Books Published

1. Ramjee Prasad, Muhammad Imadur Rahman, Suvra Sekhar Das, Nicola Marchetti: Single- and Multi-Carrier MIMO Transmission for Broadband Wireless Systems *published by* River Publishers (2009)
2. Ramjee Prasad, Suvra Sekhar Das, Muhammad Imadur Rahman: Adaptive PHY-MAC Design for Broadband Wireless Systems *published by* River Publishers (2010)

Papers Published in Journals

1. Comprehensive error analysis of multi-antenna decode and forward relay in fading channels *By* S. N. Datta, S. Chakrabarti and R. Roy *IEEE Communications Letters* vol.16, no.1, pp.47- (2012)
2. Impact of sensing model on wireless sensor network coverage *By* A. Hossain, S. Chakrabarti, P.K. Biswas *IET Wireless Sensor Systems* vol. 2, no. 3, pp. 2 (2012)
3. Improved consonant-vowel recognition for low bit rate coded speech *By* A. K. Vuppala, K. Sreenivasa Rao, S. Chakrabarti *Wiley International Journal of Adaptive Control and Signal Processing* vol.26, no.4, pp.333 (2012)
4. Improved Speaker Identification in Wireless Environment *By* A. K. Vuppala, K. Sreenivasa Rao, S. Chakrabarti *International Journal of Signal and Imaging Systems Engineering*, (2012)
5. Improved vowel onset point detection using epoch intervals *By* A. K. Vuppala, K. Sreenivasa Rao, S. Chakrabarti *Elsevier International Journal of Electronics and Communication* vol.66, no.8, pp. 69 (2012)
6. Spotting and recognition of consonant-vowel units from continuous speech using accurate vowel onset points *By* A. K. Vuppala, K. Sreenivasa Rao, S. Chakrabarti *Springer Circuits, Systems and Signal Processing* vol.31, no. 4, pp. 1 (2012)
7. Vowel onset point detection for low bit rate coded speech *By* A. K. Vuppala, J. Yadav, K. Sreenivasa Rao, S. Chakrabarti *IEEE Transactions on Audio Speech and Language Processing* vol.20, no.6, pp. 18 (2012)

Papers Presented in Conferences

1. Analysis of Area Spectral Efficiency for Co-Channel Deployed Macrocell-Femtocell OFDMA Networks, *By* Prabhu Chandhar, Suvra Sekhar Das, *IEEE International Conference on Communications (ICC 2013)*, Budapest, Hungary, (2013)
2. Analysis of Fractional Frequency Reuse in OFDMA Networks for Real Time and Best Effort Traffic, *By* Subba Rao Boddu, Atri Mukhopadhyay, Prabhu Chandhar, Bigi Varghese Philip, Suvra Sekhar Das, *IEEE International Conference on Communications (ICC 2013)*, Budapest, Hungary, (2013)
3. Analytical Evaluation of Offloading Gain in Macrocell-Femtocell OFDMA Networks, *By* Prabhu Chandhar, Suvra Sekhar Das, *2013 IEEE 77th Vehicular Technology Conference: VTC2013-Spring*, Dresden, (2013)
4. Bandwidth Partitioning and SINR Threshold Design Analysis of Fractional Frequency Reuse, *By* Subba Rao Boddu, Atri Mukhopadhyay, Bigi Varghese Philip, Suvra Sekhar Das, *National Conference on Communications 2013, (NCC13)*, IIT Delhi, (2013)

5. Call Admission Control for Real-Time Traffic in OFDMA Based Cellular Networks, *By* Subhendu Batabyal, Suvra Sekhar Das, *National Conference on Communications 2013, (NCC13), IIT Delhi, (2013)*
6. Energy Saving in OFDMA Networks through Base Station Sleep Mode using Genetic Algorithm, *By* Suvra Sekhar Das, Prachi Agrawal, Prabhu Chandhar, *2013 IEEE 77th Vehicular Technology Conference: VTC2013-Spring, Dresden, (2013)*
7. Factor Graph based Cooperative Spectrum Sensing in Cognitive Radio over Time varying Channels, *By* D. Bera, I. Chakrabarti, P. Ray and S.S. Pathak, *IEEE VTC (Spring), Dresden, Germany, (2013)*
8. Performance of VoIP in Presence of MIMO Interference in OFDMA (LTE) Networks, *By* Priyabrata Parida, Suvra Sekhar Das, Subhajit Paul, *2013 IEEE 77th Vehicular Technology Conference: VTC2013-Spring, Dresden, (2013)*

Rajendra Mishra School of Engineering Entrepreneurship

Head

Prof. Dhrubes Biswas

Professor

Biswas, Dhrubes

Ph.D. (Illinois USA), Experimental Analytical and TCAD Assessment of III-V material for More Moore Applications, Ideal Model Development for Effective Implementation of Scalable Inclusive Ventures, Education-Enterprise association through ideation incubation and entrepreneurial integration, Technology Interventions of Growth Ventures, High Performance Organizations, Business Architecture of Growth Venture, Inclusive scalable healthcare delivery system for developing nations, Heterostructure devices for RF front end, Analysis and fabrication of novel graded barrier AlGaIn/GaN heterostructure for HEMT, Innovation Ecosystem with Focus on Higher Education Institution, Low-Cost Product Development for Healthcare, Analytical modeling of insulated gate undoped AlGaIn/GaN heterostructure, High speed GaN based RTD on Silicon substrate for switching application in THz regime, GaN based Resonant Inter-band Tunneling Diode (RITD) on silicon substrate, Processing of III-V semiconductors, Experimental Analytical and TCAD Assessment of AlGaAs/GaAs HEMT for digital and RF application, Temperature dependent DC characterization of InAlN/(AlN)/GaN HEMT for improved reliability, Incompatible Growth of III-V Epi-Layers Materials on Silicon: Material Specifications and Analysis, Integrated product design and development for lowcost healthcare delivery system, Product Development Strategies using Technology Interventions, Social media for healthcare Service Delivery, Business Intelligence for Start-ups, Service Quality Management for Scalable Ventures, Gallium Nitride MISFETs for RF and Power applications, Marketing Strategy for Scalable Inclusive Ventures

Assistant Professors

Bhattacharjee, Titas

Fellow of IIM Calcutta,

Bhowmick, Bhaskar

FPM (IIM, Ahmedabad), Environment and Strategy, Designing Innovation & Entrepreneurship Platform, Strategy-Succession-Strategy

Chakraborty, Basab

Ph.D.(IIT Madras), Development of Entrepreneurs on Nano Technology & New Material, Product Design & Development, Development of Entrepreneurs on Energy Platform, Quality Management

Prabha Bhola

Ph.D.(IIT Kharagpur), MSME Growth and Sustainable Development, Modelling of Scalable Ventures, Service Quality and Performance Management

Roy, Ram Babu

Fellow, IIM Calcutta (Ph D), Social Network Analysis and Mining, Business Intelligence, Pattern Mining in Financial Markets, Product Development, Entrepreneurship Network

Member - Professional Bodies

1. Roy, Ram Babu, *Associate Member* - The Institution of Electronics and Telecommunication Engineers (IETE)

Sponsored Research Projects

1. Technology Incubation and Development of Entrepreneurs (TIDE) (DIT, Rs.155.00 Lakhs)
2. Technology Refinement & Marketing Programme (TREMAP) (TIFAC, Department of Science & Technology, Government of India, Rs.40.00 Lakhs)
3. TEPP Outreach Centre (DSIR, Rs.8.00 Lakhs)

Patents (filed / granted)

1. Low Water Loss Battery

Visits Abroad by Faculty Members

1. Biswas, Dhruves - Key note address (Univ of California, Berkeley, USA,) 05-11-2012 to 09-11-2012
2. Biswas, Dhruves - Collaboration between our two premier Universities, as a part of the Indo-Taiwan Science & Technolog (National Chiao Tung University, Taiwan,) 25-02-2013 to 28-02-2012
3. Biswas, Dhruves - Conference (17th International MBE conference , Japan,) 24-09-2012 to 28-09-2012

Invited Lectures by Faculty Members

1. Compound Semiconductor Devices *by* Biswas, Dhruves (NIT Rourkella,India)
2. Building Effective EDP model for S&T Group *by* Biswas, Dhruves (Lucknow, India)
3. Invited talk on Bio-Entrepreneurship, Technology Management and Entrepreneurship *by* Biswas, Dhruves (Dibrugarh University, Dibrugarh, India)
4. Keynote address on Innovation and Entrepreneurship *by* Biswas, Dhruves (Univ of California, Berkeley, USA)

Books Published

1. Dhruves Biswas and Donald A. Neaman: Semiconductor Physics and Devices (4th Edition) *published by* Tata McGraw Hill Education Private Limited (2012)
2. Prabha Bhola: Rural Poverty and its Determining Factors: An Empirical Analysis of Districts in Uttar Pradesh, India *published by* LAP Lambert Academic Publishing (2010)

Short-Term Courses, Training Programmes and Workshops organised

1. Faculty Development Programme - Academic Aspects of Entrepreneurship (2 weeks)
2. Faculty Development Programme - Entrepreneurship theory and Practice (2 weeks)

Papers Published in Journals

1. A Conceptual Framework to Identify Quality Attributes in Healthcare Organizations *By* Rana Basu and Dhruves Biswas *International Journal of Contemporary Business Studies* (2013)
2. A Social Network Approach to Change Detection in the Interdependence Structure of Global Stock Markets *By* Ram Babu Roy, Uttam Kumar Sarkar *Social Network Analysis and Mining* (2012)
3. A Study on Higher Educational Based Business Incubators in an Emerging Economy *By* Rana Basu and Dhruves Biswas *Journal of Enterprising Culture (World Scientific)* (2013)
4. An Approach to Identify Failure Factors of Enterprise Application Implementation in Micro Enterprises *By* Rana Basu and Dhruves Biswas *International Journal of Managing Value and Supply Chains* (2013)

5. Analytical Modeling of Transmission coefficient of Al_{0.2}Ga_{0.8}N/GaN Resonant Tunneling Diode In Presence and Absence of Electric Field By S. Chowdhury, D. Biswas *Journal of Electron Devices* 13, 1002-1005 (2012)
6. Developmental Impact Analysis of an ICT-Enabled Scalable Healthcare Model in BRICS Economies By P. Saurabh, B. Bhowmick, Amrita, and D. Biswas *Technology Innovation Management Review* (2012)
7. Effect of Device Parameters on Transmission Coefficient of Al_{0.2}Ga_{0.8}N /GaN Resonant Tunneling Diode grown on Silicon Substrate By S. Chowdhury, D. Biswas *Int. J. of Nanoelectronics and Materials* (2013)
8. Impact of aspect ratio on the logic performance of strained In_{0.53}Ga_{0.47}As metamorphic HEMT By U. P. Gomes, K. Takhar, S. Rathi and D. Biswas *Journal of Electron Devices* 13, 939-944 (2012)
9. Performances Comparison of Si, GaAs and GaN based Resonant Tunneling Diode in Presence and Absence of Electric Field By S.Chowdhury, D. Biswas *International Journal of Nano Device, Sensor and Systems (IJ-Nano)* (2013)
10. Prospects of III-Vs for Logic Applications By U.P. Gomes, Y.K. Yadav, S. Chowdhury, K. Ranjan, S. Rathi, D. Biswas *Journal Of Nano- And Electronic Physics* 4, 02009 (2012)
11. Quantitative assessment of the effects of strain on future III-V digital applications By U. P. Gomes, K. Ranjan, S. Chowdhury, P. Das, S. Rathi and D. Biswas *Int. Microelectronics Packaging Society* 9, 1551 – 4897 (2012)
12. Quantum well engineering of InAlAs/InGaAs HEMTs for low impact ionization applications By U.P.Gomes, Y. Chen, S.Kabi, P.Chow and D. Biswas *Current Applied Physics* (2012)
13. Role of ultrathin pseudomorphic InP layer to improve the high-k dielectric/GaAs interface in realizing MOS capacitor By S. Kundu, N.N. Halder, D. Biswas, P. Banerji, T. Shripathi, and S. Chakraborty *J. Appl. Phys.* 112, 03451 (2012)

Papers Presented in Conferences

1. A comparative TCAD assessment of III-V channel materials for future high speed and low power logic applications, By U. P. Gomes, K. Takhar, K. Ranjan, S. Rathi, and D. Biswas, *ICMST 2012*, Kerala, India, (2012)
2. A Strategic Review on Growth of GaN on Silicon Substrate for High Power High Frequency Microwave & Millimeter wave Switching Applications, By K Ranjan, Y Yadav , U P Gomes, S Rathi, D Biswas, *ICOCENT 2012*, Jaipur, India, (2012)
3. An Analytical Charge Based Drain Current Model for Insulated Gate Undoped AlGaN/GaN Heterostructure, By S. Ghosh, S. Rathi, P. Mukhopadhyay, S. k. Jana, D. Biswas, *ICAET-2012*, India, (2012)
4. An Analytical Charge Based Drain Current Model for Insulated Gate Undoped AlGaN/GaN Heterostructure, By S. Ghosh, S. Rathi, P. Mukhopadhyay, S. k. Jana, D. Biswas, *ICAET-2012*, Nagapattinam, India, (2012)
5. Analytical and Simulative Viewpoint of Graded Barrier AlGaN/GaN HEMT for High Input Impedance, Breakdown Voltage and Channel Mobility, By P. Das, P. Banerji, D. Biswas, *CS Mantech*, Boston, USA, (2012)
6. Comparative study and Characterization of buffer thin for AlGaN/GaN HEMT on Si(111) by MBE, By P. Mukhopadhyay, A. W. Chowk, A. Drabiran, P. Chow, D. Biswas, *NAMBE 2012*, (2012)
7. Future prospects of InGaN/GaN Multiple Quantum Well Solar Cells Research for High Quantum efficiency and Cost effectiveness, By A. Trivedi, Y. K. Yadav, K.Takhar, T.D Das, S. Rathi and D. Biswas, *ICMST 2012*, Kerala, India, (2012)
8. Investigation of Low Damage Inductively Coupled Plasma (ICP) Etching of GaN Epitaxial Layer by Applying the Gas Additives, By S. M. Dinara, A. Trivedi, S. Ghosh and D. Biswas, *ICMST 2012*, Kerala, India, (2012)
9. Logic Performance and Strain Analysis of Al_{0.50}In_{0.50}As/In_{0.53}Ga_{0.47}As/ Al_{0.50}In_{0.50}As Metamorphic HEMT, By U. P. Gomes, K. Takhar, S. Rathi and D. Biswas, *ICOCENT 2012*, Jaipur, India, (2012)
10. Metal-Insulator Field-Plate Technology for Alleviation of Short-Channel Effects in Nanoscale In_{0.52}Al_{0.48}As/In_{0.53}Ga_{0.47}As InP-based HEMTs, By Y. K. Yadav, K. Ranjan, S. Rathi, and D. Biswas, *ICOCENT 2012*, Jaipur, India, (2012)

11. Novel Analytical model for current-voltage characteristics and transconductance of undoped AlGaN/GaN MISHFET's and performance comparison with different high-k dielect, *By* R. Ganta, S. Ghosh and D. Biswas, *ICMST 2012*, Kerala, India, (2012)
12. Quantitative Comparative Analysis of Cubic & Hexagonal AlGaN/GaN HEMTs for High Power Applications, *By* K. Ranjan, S. Rathi, U. P.Gomes, K. Takhar, and D. Biswas, *ICMST 2012*, Kerala, India, (2012)
13. Simulation, Fabrication and Electrical Characterization of n-channel Al-Gate MOSFET, *By* A Trivedi, P.Rastogi, U.P.Gomes, C. Yadav, S. Rathi, B.R. Singh, D. Biswas, *International Conference on Computational Electronics and Nanotechnology, 2012*, , (2012)
14. Strain Effects on Band Structure of Wurtzite InGaN/GaN Quantum Well on Si Substrate, *By* S. K. Jana, S. Ghosh, S. M. Dinara, T. D. Das and D. Biswas, *ICMST 2012*, Kerala, India, (2012)
15. Temperature dependent DC characterization of InAlN/(AlN)/GaN HEMT for improved reliability, *By* K Takhar, U P Gomes, K Ranjan, S Rathi and D Biswas, *ICMST 2012*, Kerala, India, (2012)

Rajiv Gandhi School of Intellectual Property Law

Head

Prof. Sripada Venkata Joga Rao upto 14.09.2012
Prof. M. Padmavati from 15.09.2012
Prof. K. Vibhute from 04.03.2013

Associate Professor

M. Padmavati *Ph.D.(Central Univ. Hyderabad), Plant Metabolic Pathways Drug regulation TK and Biodiversity Patent analysis and commercialisation*

Assistant Professors

Bandyopadhyay, Tapas Kumar , 1.Geographical Indication 2.Software Protection 3. Nano-material and Toxicity 4.Material Processing

Banerjee, Arpan *LLM (Univ of London),*

Basu, Arindam *L.L.M.(NALSAR), Law and Economics, Social Ecology, Green Patent, Carbon Trading, Law of Contract*

Dube, Dipa *Ph.D.(Calcutta University), Violence against Women, Police Investigation and reforms*

Dube, Indrajit *Ph.D.(Calcutta University), Corporate Law & Governance, Environmental Governance, Competition Law*

Raju, K. D. *Ph.D.(JNU), International Law, Intellectual Property Law, Water Law, International Trade Law*

Shankar, Uday *L.L.M.(Univ. of Delhi), Constitutional Law: Human Rights (Social and Economic Rights) Energy Law Labour and Industrial Law*

Shreya, Matilal *LL.M.(Case Western), Secodary Copyright Infringement*

Subramanian *LLM, Euro-Master (Germany), International law, International Human Rights law, International Investment law*

Faculty Resignation

Archana Chugh Assistant Professor

Brief Description of on-going activities

Research in diverse issues of Intellectual Property Law and Policy framework under the Microsoft Centre of Excellence in Intellectual Property Research and Technology Policy TIFAC Eastern Region "Women Scientist Scholarship Scheme" Program Research in corporate legal affairs with special reference to Corporate Governance under the IICA Riven Basin Management- Development of Law and Policy framework with special reference to Ganga. Creation of Multimedia based Courseware for E&IT students to be implemented by IIT Kharagpur

Thrust Areas

1. Intellectual Property Law
2. Corporate Laws
3. Environmental Laws

Lectures by Visiting Experts

1. Patent Drafting by Mr. Anjan Sen (Anjan Sen and Associates)
2. Crisis in CJS in India by Prof. B.B. Pande (Ex- Prof. Delhi Univerity)
3. Doctrine of Equivalence by Prof. Martin J. Adelman (George Washington University)
4. Law of taxation by Mr. Khalid Aizaz Anwar (Joint Commissioner, Dept. of Commercial taxes)
5. Understanding the Human Rights Dimension of Investment Law by Prof. Susan Karamanian (George Washington University)

6. Competition Law *by* Prof. Morgan (George Washington University)
7. Judicial Accountability *by* Prof. M.P.Singh (Vice Chancellor, NUJS)
8. Corporate Human Rights *by* Vanessa Zimmerman (Legal Adviser to the Special Representative of the UN Secretary General on Business and Human Rights)
9. Government procurement Law in India and US *by* Prof. Chris Yukins (George Washington University)

Member - Professional Bodies

1. M. Padmavati, *Member* - Scientific Committee Member , Food Safety Standards Authority India
2. M. Padmavati, *Member* - West Bengal Science and Technology Council
3. M. Padmavati, *Life Member* - Biotech Research Society of India
4. M. Padmavati, *Member* - Zonal Institute of Technology Management Committee (ZITMC), NIRJAFT, Kolkata
Zonal Institute of Technology Management Committee (ZITMC), NIRJAFT, Kolkata
5. M. Padmavati, *Member* - International Patent Information User Group
6. M. Padmavati, *Member* - Biotech Consortium India Limited
7. M. Padmavati, *Member* - World Bioenergy Association
8. Dube, Indrajit, *Academic Member* - European Corporate Governance Institute, London
9. Dube, Indrajit, *Member* - Corporate Law Teachers Association, Sydney
10. Dube, Dipa, *Regular* - International Society of Victimology
11. Dube, Dipa, *Life* - Indian Society of Criminology
12. Raju, K. D., *Life Member* - Indian Society of International Law
13. Raju, K. D., *Nominated* - IUCN CEL
14. Shankar, Uday, *Member* - International Association of Constitutional Law
15. Basu, Arindam, *Member* - International Environmental Association
16. Basu, Arindam, *Member* - Greenpeace India
17. Subramanian, *Member* - Society for International Economic Law
18. Subramanian, *Associate Member* - Indian Society of International Law
19. Subramanian, *Member* - British Institute of International and Comparative Law

Member - Editorial Board

1. Bandyopadhyay, Tapas Kumar (2011) *Member* - Recent Patent in nano-technology
2. Dube, Dipa (2012) *Member* - International Law and Policy Research Journal
3. Dube, Dipa (2012) *Member* - Studies in Sociology of Science
4. Dube, Indrajit (2009) *Member* - International Journal on Corporate Governance
5. Dube, Indrajit (2011) *Member* - Public Administration Research
6. M. Padmavati (2010) *Editorial Member* - Biopharmaceuticals
7. Shankar, Uday (2012) *Editorial Advisory Panel* - Chotanagpur Law Journal (ISSN No. 0973 5858)
8. Shankar, Uday (2012) *Editorial Panel* - International Journal of Contemporary Laws (ISSN No.2277 3649)
9. Subramanian (2011) *Reviewer* - International Journal of Peace and Development Studies
10. Subramanian (2012) *Member, Board of Editors* - International Journal of Legal Studies and Research

Sponsored Research Projects

1. Bioactive peptide synthesis from honey protein and its characterisation (CSIR, Rs.18.42 Lakhs)
2. Corporate Governance in Energy Sector in India (NFCG, Rs.4.00 Lakhs)
3. Corporate Governance in Energy Sector in India (National Foundation For Corporate Governance, New Delhi, Rs.4.00 Lakhs)
4. Creation of Multimedia based Courseware for E&IT students to be implemented by IIT Kharagpur (Dept. of Information Technology, Rs.115.00 Lakhs)

5. Ganga River Basin Management Plan - Policy, Law & Governance (Ministry of Environment, Rs.30.00 Lakhs)
6. IICA Hub (Ministry of Corporate Affair, Rs.40.00 Lakhs)
7. Plant Metabolic Pathway Laboratory (MHRD, Rs.43.00 Lakhs)
8. VAW amongst Urban Slum Population (NCW, Govt. of India, Rs.3.50 Lakhs)

Consultancy Projects

1. Analyzing European and US patent cases (Longbow Legal Ltd., Rs.4.00 Lakhs)
2. Develop Knowledge Management for IICA (Ministry of Corporate Affair, Rs.6.48 Lakhs)
3. GI Registration of Traditional Handloom Textiles from Orissa (Department of Textiles, Government of Orissa, Rs.19.00 Lakhs)
4. Optimum Utilisation of Land Resources (GreenInfra Creation Pvt. Ltd., Rs.250000.00 Lakhs)
5. Registration of Kewda Flower from Ganjam District, Orissa (Ganjam Kewda Development Trust, Rs.0.59 Lakhs)
6. Registration of Kewda GI and Rooh from Ganjam District (Access Development Agency, Berhampur, Rs.0.56 Lakhs)
7. Review and Finalizing the Governance Structure of IICA (Ministry of Corporate Affair, Rs.3.24 Lakhs)
8. Review of Mysore 24x7 Water Supply Project Agreement (JUSCO, Rs.40.00 Lakhs)

Visits Abroad by Faculty Members

1. Raju, K. D. - To participate in IWA Conference (Murdoch University, Australia,) 22-27- November, 2012
2. Raju, K. D. - To participate in Lassnet Conference (Paradeniya University, Sri Lanka,) 13-16 December 2012

Invited Lectures by Faculty Members

1. Evolving Framework of International Trade Law *by* Raju, K. D. (GNLU, Gujarat)
2. Geographical Indications from North East *by* Raju, K. D. (Arunachal Pradesh)
3. Intellectual Property Protection in MSMEs *by* Raju, K. D. (Kolkata Small Scale Industries Workshop)
4. Overview of Laws on Protection of Women against Violence *by* Dube, Dipa (Vidyasagar University)
5. Law of Crimes *by* Dube, Dipa (National University of Study and Research in Law)
6. River Ganga- Need for a special legislation *by* Dube, Dipa (IPHE, Kolkata)
7. Introduction to Intellectual property *by* Bandyopadhyay, Tapas Kumar (Durgapur)
8. State Responsibility for War in International Law *by* Subramanian (Annual Combined Training of National Cadet Corps, Kharagpur)
9. Lecture on Constitutional Law *by* Shankar, Uday (National University of Study and Research in Law, Ranchi)
10. Institutions under the Constitution *by* Shankar, Uday (Indian Institute of Technology Kanpur)
11. Save Ganga Movement - Need of Legal Framework *by* Shankar, Uday (Institute of Public Health Engineers, Kolkotta.)
12. Judged Semi-Final of Moot Court *by* Shankar, Uday (MATS Law School)
13. Changing facet of Corporate Governance *by* Dube, Indrajit (London Global Convention 2012 & 12th International Conference on Corporate Governance, Nursery Pavilion Hall, Marylebone Cricket Club, London)
14. Comprehensive legislation on River Basins *by* Dube, Indrajit ('India Water Impact Summit 2012' held on 3 - 5 December 2012 at Habitat World, IHC, New Delhi, India)
15. Managing Ganga and Other Water Bodies *by* Dube, Indrajit (WaterEx World Conference 2013 held on 17th – 18th Jan 2013 at Bombay Convention & Exhibition Centre, Goregaon, Mumbai, India)
16. Benefit sharing in the Post GI Registration in Orissa *by* Raju, K. D. (Bhubaneswar)
17. Patenting strategy for Herbal Drugs in India. *by* M. Padmavati (1st International Conference on Management of Intellectual Property and Strategy Mumbai)

18. Bioenergy inventions in India: IP and Commercialisation by M. Padmavati (WoS-C 7th Batch Orientation Program, New Delhi)
19. IP and commercialisation of Recombinant Drugs by M. Padmavati (National Conference on IPR Kolkata)
20. Challenges of prosecution of nanotechnology inventions by M. Padmavati (Indo-US IPR Symposium)
21. Virtual laboratory for Flavonoid Pathway by M. Padmavati (National Seminar on Perspectives of Phytomedicine and Medicinal Plant Conservation, Tirupati)
22. Property Rights in Software- Patent v. Copyright by Shreya, Matilal (Kolkata)
23. Revisiting Internet Governance- Lessons Learned by Shreya, Matilal (Hyderabad)
24. Ganga Basin Management by Shreya, Matilal (Bhubaneswar)

Books Published

1. Indrajit Dube: Competition & Intellectual Property Law published by LAMBERT (2013)
2. KD Raju: Company Directors: Fiduciary Duties and Liabilities published by Eastern Law House, Kolkata (2013)
3. Uday Shankar: Constitutionalizing Intellectual Property published by Satyam Law International, Delhi (2012)

Papers Published in Journals

1. A Nuclear Liability Framework for South Asia. Formation of South Asia Association for Regional Cooperation (SAARC) Nuclear Risk Community By MP Ram Mohan, KD Raju *International Journal of Nuclear Law* Vol.4(1), 2013 (2013)
2. A Relook at Inventors Rights By Prerna Wardhan Padmavati M *Journal of Intellectual Property Rights* 8 (2): 168-173 (2013)
3. An Empirical Analysis of Registered Geographical Indications in Leading Jurisdictions: A Case Study of India By KD Raju and Seema Chowdhary *Foreign Trade Review* Vol.47 (2013)
4. Anti-competitive effects on Intellectual Property Rights: Emerging Jurisprudence and Lessons for India By KD Raju *Journal of Intellectual Property Law* Vol.18(2), 2013 (2013)
5. Comptroller and Auditor General: Treading the Road Less Travelled By ♦♦? By Uday Shankar(Co-Author) *Chotanagpur Law Journal* Vol. 4, No. 4 (2012)
6. Compulsory Licensing Provisions to deal with Access to Patented Medicines in India By KD Raju *NULS Law Journal* Vol.3 (2013)
7. Courts and Environmental Law in India: Triumph and Dissapointments By Arindam Basu & Rajrupa Sinha Roy *Chotanagpur Law Journal* Vol.5 pp. 173-182 (2012)
8. Evaluation of Corporate Board and Independent Director in India By Mr. Aparup Pakhira & Dr. Indrajit Dube *India International Journal of Judicial Science* Vol 1 (2012)
9. Expert Evidence- Admissibility & Appreciation By BHagwan R. Gawali & Dipa Dube *IJRCM* 2(10) pp.1-6 (2012)
10. Law and Process of Investigation by CBI: Issues and Perspectives By Bhagwan Gawali & Dipa Dube *Indian Journal of Human Rights and Law* Jan-June (In press) (2013)
11. Note on Independence of Independent Director By Dr. Indrajit Dube *Journal of Institute of Director* XVII, 12, p. 13 (2012)
12. Preponderance of Socio-Economic Rights in the Intellectual Property Era: Drawing Support from Indian Constitution By Uday Shankar (Co-Author) *City University of Hong Kong Law Review* Vol. 3, No.2 (2012)
13. Reparative Justice for Rape Victims in India By Dipa Dube & Bhagwan R. Gawali *International Journal of Advanced Research in Management & Social Sciences* 1(3), 257-269 (2012)
14. Resignation v. Removal: The Indian Impeachment Saga By Uday Shankar (Co-Author) *NLIU Law review* Vol. III, No. 1, 102 (2013)
15. Right to Environment and Right to Development: A Judicial Conundrum ♦♦? By Uday Shankar (Co-Author) *Christ University Law Journal* Vol 1, 49-62 (2012)
16. The Civil Liability for Nuclar Damage Act, 2010: A Review of Indian Exceptionalism By MP Ram Mohan, KD Raju *ILI Law Review* (Accepted) (2013)

17. The Notion of Single Directive as an Impediment to CBI Investigation By Bhagwan R. Gawali & Dipa Dube *IJJS* Vol. 1 (2), 89-101 (2012)
18. Traditional Knowledge Register of India: Techno-Legal Issues By Padmavati Manchikanti *International Journal of Intellectual Property Management* 5 (3/4): 254-265 (2012)
19. Women in BPO Sector in India By Dipa Dube, Indrajit Dube, Bhagwan Gawali & Subechhya Halder *Asian Social Science Journal* 8(7) 157-184 (2012)

Papers Presented in Conferences

1. Access to Clean Energy: Human Rights Perspective, By Uday Shankar, *International Symposium on New Horizons in Bio-Energy Research*, P. K. Sinha Centre of Bio Energy, (2013)
2. Access to Justice for Disabled in India, By Dipa Dube, *All India Criminology Conference*, NLU Delhi, (2013)
3. Do We Have a Right to Energy?, By Uday Shankar, *International Conference on "Public Policy and Governance 2012"*, Indian Institute of Science, Bangalore, (2012)
4. Environmental Governance a tool for sustainable business within larger canvas of Corporate Governance – argument in favor, By Dr. Indrajit Dube, *International conference on good governance, sustainable development and Environmental justice in SAARC region*, University of North Bengal, Darjeeling, (2012)
5. Evolving Frame Work of International Trade Law, By KD Raju, *International Conference on Trade and Competition*, National Law School, Gandhi Nagar, (2013)
6. Judicial Review and Policy Decision, By Uday Shankar, *National Seminar on "Judicial Review of Legislation, Executive and Administrative Decision: Need of Equilibrium"*, NUSRL, Ranchi, (2013)
7. Legal Framework on National River Ganga Basin Management Act, By Uday Shankar, *Workshop on Aviral and Nirmal Ganga: Environmental Flows, River Health, Legal and Institutional Aspects*, IIT Kanpur, (2012)
8. Need of Legislative Framework for managing Ganga River Basin, By Uday Shankar, *India Water Impact Summit, 2012*, IIT Kanpur, (2012)
9. Proposed 'The National River Ganga Basin Management Bill' – Issues & Perspectives, By Dr. Indrajit Dube, *International Conference on International Environmental Law, Trade Law, Information Technology Law and Legal Education*, Faculty of Law Banaras Hindu University, (2013)
10. Right to Environment and Right to Development: A Judicial Conundrum, By Uday Shankar (Co-Author), *National Seminar on Environment and Sustainable Development*, GGS Indraprastha University, Delhi, (2012)
11. The Sociological and Legal Effect of Compulsory Land Acquisition in India: The Way Forward, By KD Raju, *LASSNET Conference on Law and Society*, Paradeniya University, Sri Lanka, (2012)
12. The Wetland Jurisprudence in India: A Case Study of West Bengal Conservation and Management of Wetland Policy 2012, By KD Raju, *International Conference on Wetland Systems fir Water Pollution*, Murdoch University, Australia, (2012)
13. Vindicated Market and Vulnerable Health: Human Rights Perspective – Indian Experience ♦♦? in International Conference on Realisation of Socio-Economic Rights in Emerging Free Ma, By Uday Shankar, *International Conference on Realisation of Socio-Economic Rights in Emerging Free Markets: Perspective from China and India*, City University of Hong Kong, (2012)

Ranbir and Chitra Gupta School of Infrastructure Design and Management

Head

Prof. Uttam Kumar Banerjee

New Academic Programmes

The School currently offers one M.Tech programme in "Infrastructure Design and Management". The first batch of M.Tech students has been admitted during the 2008-2009 academic year

Brief Description of on-going activities

The school was inaugurated by Padma Bhushan Professor Lord Shusantha Kumar Bhattacharyya of Warwick Manufacturing group on 18th of August 2008 (Institute Foundation Day). An advisory Council comprising eminent experts from different fields as external experts has been constituted. The first meeting of the advisory council meeting was held on 29th March 2009

Thrust Areas

1. Transportation engineering (Planning, design, operation and management of highways, airport and seaport infrastructure) Environmental Engineering (Planning, design, operation and management of water supply and waste management systems, Environmental Impact Assessment) Facilities Infrastructure (Urban infrastructure planning and design, Facility programming and specialized building design, building automation systems design, building management systems, regional infrastructure planning and construction) Power systems (Planning, design, operation and management of Thermal, hydel and Nuclear Power Plants, Renewable Power Plants, Power generation, transmission and distribution, power system planning and reliability) Infrastructure Project management Infrastructure Financing and Infrastructure Regulatory Issues

New Acquisitions

1. The school has acquired 10 desk top computers, PRIMAVERA and MX Roads softwares

School of Information Technology

Head

Prof. Jayanta Mukhopadhyay

Professors

Gupta, Arobinda

Ph.D.(Iowa), Distributed Systems, Mobile Computing

Sural, Shamik

Ph.D., Information and System Security, Image and Video Processing

Associate Professors

Ghosh, Soumya Kanti

Ph.D., Geospatial Database and Web Services, Network Security, Cloud Computing

Misra, Sudip

Ph.D.(Carleton Univ., Canada), Wireless Ad Hoc and Sensor Networks, Internet of Things and Cyber Physical Systems, Computer Networks, Smart Grid Communication

Samanta, Debasis

Ph.D.(IIT Kharagpur), Biometric-Based System Security, Model-Based Software Testing, Human Computer Interaction

Sreenivasa Rao, Krothapalli

Ph.D.(IIT, Madras), Speech Processing, Multimedia Signal Processing, Pattern Recognition, Neural Networks

Assistant Professor

Sahay, Rajiv Ranjan

Ph.D.(IIT Madras), Image Processing and Computer Vision

Faculty Appointments

Prof. Sahay, Rajiv Ranjan Assistant Professor

Brief Description of on-going activities

Computer and Communication Networks: Development of architectures, protocols and algorithms for mobile ad-hoc networks, vehicular ad-hoc networks, wireless sensor networks and wireless mesh networks, smart grid communications, cloud computing. Geographical Information System: Enterprise-wide GIS database development and its policies and protocols to make it accessible as platform independent and support for decision making are under research and development. Human Computer Interaction: Development of user interfaces for the under privileged users such as language illiterate, physically disabled etc. Application of Information Communication Technology (ICT) for the mass such as multimodal interaction, multimodal text composition mechanism, user modeling, interface adaptation, personalization, evaluation are the some areas of research. Computational modeling to brain for informatics, cognitive behavior is also another active area of research. Speech Processing: Researchers working in this area are focusing on characterization and incorporation of emotions in speech, speaker recognition system for handheld devices in varying background environments and development of Text-to-Speech (TTS) system for Indian languages. Network Security: Various areas of network security are being explored, like penetrating testing, development of new algorithms for cryptography, their efficient and attack-resistant hardware implementation etc. Systems Security: Survivable information system architecture to tolerant with potential information warfare attacks is under development. Such systems are typically characterized by the presence of a large repository of sensitive data in a distributed environment. The architecture takes into account the presence of multiple operating systems and database platforms, their known and potential vulnerabilities as well as possibilities of simultaneous attacks from adversaries. It will be developed as a generic model which can be used to build specific information systems in a number of application domains like e-governance, finance and insurance, education, etc.

Thrust Areas

1. Distributed computing, wireless ad hoc and sensor networks, cloud computing, ubiquitous computing, network security, database systems and data mining, systems security, human computer interaction, geographical information system, speech processing, computer vision, VLSI design.

International Collaborations

1. Prof. Gerhard Rigoll, Dept. of EE, Technical University of Munich, Germany
2. Prof. V. Atluri, Dept. of MSIS, Rutgers University, USA

Lectures by Visiting Experts

1. A computational framework for exploring the role of speech production in speech processing/recognition *by* Dr. Prasanta Kumar Ghosh (University of Southern California (USC), Los Angeles, USA)
2. GCC Compiler Design Reserach *by* Prof. U. P. Khedkar (Indian Institute of Technology Bombay)
3. Cell Phone – the Most Trusted Personal Device (MTPD) for Universal Applications *by* Dr. Amalendu Chatterjee (Univista Inc. USA)

Doctoral and MS Degrees Awarded

1. Aditi Roy : Gait Recognition in the presence of Occlusion(Ph.D.)
2. Pushpita Chatterjee : Trust based Secure Clustering and Routing Schemes for Wireless Ad Hoc Networks(Ph.D.)

Member - Professional Bodies

1. Sural, Shamik, *Senior Member* - IEEE
2. Samanta, Debasis, *Senior Mameber* - IEEE
3. Sreenivasa Rao, Krothapalli, *Regular member* - IEEE
4. Sreenivasa Rao, Krothapalli, *Regular member* - IEEE Signal Processing Society
5. Sreenivasa Rao, Krothapalli, *Regular member* - International Speech Communication Association (ISCA)
6. Sreenivasa Rao, Krothapalli, *Life Member* - Indian Society for Technical Education (ISTE)
7. Misra, Sudip, *Senior Member* - IEEE
8. Misra, Sudip, *Member* - ACM
9. Ghosh, Soumya Kanti, *Member* - IEEE
10. Gupta, Arobinda, *Regular* - IEEE
11. Gupta, Arobinda, *Regular* - IEEE
12. Gupta, Arobinda, *Regular* - ACM
13. Gupta, Arobinda, *Regular* - ACM

Member - Editorial Board

1. Misra, Sudip (2011) *Editorial Board Member* - IET Networks
2. Misra, Sudip (2011) *Editor-in-Chief* - International Journal of Communication Networks and Distributed Systems (Inderscience)
3. Misra, Sudip (2011) *Associate Editor* - Telecommunication Systems Journal (Springer SBM)
4. Misra, Sudip (2011) *Associate Editor* - EURASIP Journal on Wireless Communications and Networking
5. Misra, Sudip (2011) *Associate Editor* - International Journal of Communication Systems (Wiley)
6. Misra, Sudip (2011) *Editorial Board Member* - IET Wireless Sensor Systems
7. Misra, Sudip (2011) *Associate Editor* - Security and Communication Networks (Wiley)

8. Samanta, Debasis (2008) *Honorary Member of the Editorial Board* - International Journal of Bio-Science and Technology
9. Samanta, Debasis (2008) *Member of the Editorial Board* - ICFAI University Journal of Information
10. Samanta, Debasis (2009) *Member of the Editorial Board* - International Journal of Communication Networks and Distributed Systems

Awards & Honours

1. Misra, Sudip (2010) *Alexander von Humboldt Fellowship (Germany)*
2. Misra, Sudip (2009) *First Best Paper Award, 7th ACS/IEEE AICCSA, Rabat, Morocco*
3. Misra, Sudip (2012) *IEEE ComSoc Asia Pacific Outstanding Young Researcher Award (Awarded during APB Meeting, IEEE GLOBECOM, USA)*
4. Misra, Sudip (2008) *The National Academy of Sciences, India – Swarna Jayanti Puraskar*
5. Misra, Sudip (2010) *Young Engineers Award, The Institution of Engineers (India)*
6. Misra, Sudip (2010) *Young Scientist Award, National Academy of Sciences, India (NASI)*
7. Misra, Sudip (2010) *Young Systems Scientist Award, Systems Society of India (SSI)*

Sponsored Research Projects

1. Adaptive Learning-Based Fault-Tolerant Routing in Adversarial Wireless Ad Hoc and Sensor Networks (Council for Scientific and Industrial Research, India, Rs.15.00 Lakhs)
2. Bio-inspired and nature-inspired solutions in wireless ad hoc and sensor networks (Department of Science and Technology, Govt. of India, Rs.7.20 Lakhs)
3. Building Delay Tolerant Peer to Peer Networks (DIT, Rs.55.00 Lakhs)
4. Characterization and incorporation of emotions in speech (ISIRD, IIT Kharagpur, Rs.3.00 Lakhs)
5. Design & Development of Models & Tools for Vulnerability Assessment of Embedded Systems, (Ministry of Defence, New Delhi, Rs.49.20 Lakhs)
6. Design and Development of Integrated Security Risk Management for an Enterprise Network (Department of Information Technology, New Delhi, Rs.73.13 Lakhs)
7. Development of Algorithms for Identifying Individuals using Gait in the presence of Occlusion (CSIR, Rs.12.89 Lakhs)
8. Development of an GeoSMS Framework to facilitate Location based Services (DST, New Delhi, Rs.26.85 Lakhs)
9. Development of Feasibility Assessment Model for Adaptation of Underground Coal Gasification Technology in the North-East Region of India (Department of Electronics and Information Technology, Govt. of India, Rs.32.14 Lakhs)
10. Development of Multimodal User Interface to Internet for Common People in India (Department of Information Technology, Ministry of Information and Communication Technology, Govt. of, Rs.58.00 Lakhs)
11. Development of text to speech (TTS) synthesis system for Indian languages (Phase-II) (Department of Information Technology, Rs.97.94 Lakhs)
12. Enhanced SANYOG: A Portable Communication Tool for the Speech and Neuro Motor Impaired People (Media Lab Asia, Rs.71.00 Lakhs)
13. Prosodically guided phonetic engine for searching speech databases in Indian languages (MCIT, DIT, Rs.60.38 Lakhs)
14. Speaker recognition system for handheld devices in varying background environments (Department of Science and Technology, Rs.23.03 Lakhs)
15. Synthesis of Low Power High Performance Mixed VLSI COME Circuits (Department of Science and Technology, Govt. of India, Rs.26.00 Lakhs)
16. Synthesis of Mixed CMOS VLSI Circuits (Department of Science and Technology, Rs.26.00 Lakhs)
17. Target tracking in Distributed Wireless Sensor Networks in the Presence of Misbehaving Nodes (ISIRD, IIT Kharagpur, Rs.5.00 Lakhs)
18. Towards Robust, Efficient and Secure Data Acquisition in Underwater Sensor Networks (Department of Electronics and Information Technology, Govt. of India, Rs.54.22 Lakhs)

19. Vehicular Communication & Security (under GM-CRL) (GM R&D, Bangalpre, Rs.500.00 Lakhs)
20. Virtual Lab in Software Engineering (Minstry of Humna Resource Development, Rs.42.00 Lakhs)
21. Virtual Labs: Advanced Network Technology (MHRD, Rs.35.00 Lakhs)
22. Virtual Labs: Software Engineering (MHRD, Rs.35.00 Lakhs)

Consultancy Projects

1. Design & Development of a Penetration Testing and Security Assessment Tool, (Ministry of Defence, New Delhi, Rs.49.00 Lakhs)

Visits Abroad by Faculty Members

1. Sural, Shamik - Research Collaboration (Rutgers university, USA,) 10-06-2012 to 17-06-2012
2. Misra, Sudip - Alexander von Humboldt Fellowship (Germany,) 3 months
3. Ghosh, Soumya Kanti - IEEE Globecom 2012 (Anaheim, CA, USA,) 03-07 December 2012
4. Ghosh, Soumya Kanti - Presenting Paper, Session Chair in COM.Geo 2011 conference (Washington DC, USA,) 23-25 May 2011

Invited Lectures by Faculty Members

1. Introduction to Speech Processing and its Applications *by* Sreenivasa Rao, Krothapalli (V. R. Siddartha Engineering College)
2. IP Education and Research in ICT *by* Sreenivasa Rao, Krothapalli (RGSOIPL, IIT Kharagpur)
3. Research Trends in Underwater Sensor Networks *by* Misra, Sudip (National Workshop on Wireless Sensor Network Applications for Environmental Monitoring (WSNAEM'13), Andhra University, Visakhapatnam, India)
4. Cooperation in Ad Hoc and Sensor Networks *by* Misra, Sudip (International Workshop on Ad Hoc Networks, University of Delhi, New Delhi, India)

Books Published

1. C. R. Kalmanek, S. Misra and R. Yang (Eds.): Guide to Reliable Internet Services and Applications *published by* Springer-Verlag (2010)
2. I. Woungang, S. C. Misra and S. Misra (Eds.): Selected Topics in Information and Coding Theory *published by* World Scientific (2010)
3. K. Sreenivasa Rao and Shashidhar G Koolagudi: Emotion Recognition using Speech Features *published by* Springer (2012)
4. M. S. Obaidat and S. Misra (Eds.): Cooperative Networking *published by* John Wiley & Sons (2011)
5. S. Misra, I. Woungang and S. C. Misra (Eds.): Guide to Wireless Sensor Networks *published by* Springer (2009)
6. S. Misra, I. Woungang and S. C. Misra (Eds.): Guide to Wireless Ad Hoc Networks *published by* Springer (2009)
7. S. Misra, S. C. Misra and I. Woungang (Eds.): Selected Topics in Communication Networks and Distributed Systems *published by* World Scientific (2009)
8. S. Misra, S. C. Misra and I. Woungang (Eds.): Guide to Wireless Mesh Networks *published by* Springer (2008)

Short-Term Courses, Training Programmes and Workshops organised

1. Short Term Coures on Internet Programming with Java (18 June - 05 July, 2012)

Papers Published in Journals

1. A Hierarchical Method Combining Gait and Phase of Motion with Spatiotemporal Model for Person Reidentification By Aditi Roy, Shamik Sural and J. Mukherjee *Pattern Recognition Letters* 33(14), pp 1891-1901 (2012)
2. A Learning Automata-Based Fault-Tolerant Routing Algorithm for Mobile Ad Hoc Networks By S. Misra, P. V. Krishna, A. Bhiwal, A. S. Chawla, B. E. Wolfinger, C. Lee *Journal of Supercomputing (Springer)* 62 4-23 (2012)
3. A Learning Automata-Based Uplink Scheduler for Supporting Real-time Multimedia Interactive Traffic in IEEE 802.16 WiMAX Networks By S. Misra, B. Banerjee, B. E. Wolfinger *Computer Communications (Elsevier)* 35 1871–1881 (2012)
4. A pitch synchronous approach to design voice conversion system using source-filter correlation By Rabul Hussain Laskar, Kalyan Banerjee, Fazal Ahmed Talukdar and K. Sreenivasa Rao *International Journal of Speech Technology (Springer)* Vol. 15, 419-431 (2012)
5. A Robust Method for Ventriculomegaly Detection from Neonatal Brain Ultrasound Images By Prasenjit Mondal, Jayanta Mukhopadhyay, Shamik Sural, Arun Kumar Majumdar, Bandana Majumdar, Suchandra Mukherjee and Arun Singh *Journal of Medical Systems* 36(5), pp. 2817-2828 (2012)
6. An Approach to Convert XMI Representation of UML Interaction Diagram into Control Flow Graph By Debasish Kundu, Debasis Samanta, and Rajib Mall *ISRN Journal of Software Engineering* Volume 2012 (2012)
7. An Approach to Design Virtual Keyboards for Text Composition in Indian Languages By Debasis Samanta, Sayan Sarcar, Soumalya Ghosh *International Journal of Human-Computer Interaction* September, 2012 (2012)
8. An Efficient Approach for Distributed Channel Allocation With Learning Automata-Based Reservation in Cellular Networks By S. Misra, P. V. Krishna and V. Saritha *SIMULATION: Transactions of the Modeling and Simulation International* 88 1166-1179 (2012)
9. Analysis of Adductors Angle Measurement in Hammersmith Infant Neurological Examinations using Mean Shift Segmentation and Feature Point based Object Tracking By D. P. Dogra, A. K. Majumdar, Shamik Sural, J. Mukherjee, S. Mukherjee and A. Singh *Computers in Biology and Medicine* 42(9), pp. 925-934 (2012)
10. Analysis of visual search features By Pradipta Kumar Saha, Debasis Samanta, Sayan Sarcar and Manoj Kumar Sharma *International Journal of Human Factors Modelling and Simulation* Vol 3(1),66-89 (2013)
11. Analysis on Users Errors in Virtual Keyboards By Soumalya Ghosh, Debasis Samanta *International Journal of Computer Application* Accepted (2013)
12. Analytical framework for measuring network security using exploit dependency graph By P. Bhattacharya, S. K. Ghosh *IET Information Security* 6 (2012)
13. Approximation Algorithms for Deployment of Sensors for Line Segment Coverage in Wireless Sensor Networks By D. Dash, A. Bishnu, A. Gupta, S. C. Nandy *Wireless Networks* Accepted (2012)
14. Automatic Code Generation from Unified Modelling Language Sequence Diagrams By Debasish Kundu, Debasis Samanta, and Rajib Mall *IET Software Journal* Vol 7(1),12-28 (2013)
15. Characterization and recognition of emotions from speech using excitation source information By K. Sreenivasa Rao and Shashidhar G Koolagudi *International Journal of Speech Technology (Springer)* Vol. 16, 181-201 (2013)
16. Co-operative Routing in Wireless Sensor Networks using Network Coding By Rashmi Ranjan Rout, S.K.Ghosh, Saswat Chakrabarti *IET Wireless Sensor Systems* 2 (2012)
17. Comparing ANN and GMM in a voice conversion framework By R. H. Laskar, D. Chakrabarty, F. A. Talukdar, K. Sreenivasa Rao and K. Banerjee *Applied Soft Computing (Elsevier)* Vol. 12, 3332-3342 (2012)
18. Emotion Recognition from Speech using sub-syllabic and pitch synchronous spectral features By Shashidhar G Koolagudi and K. Sreenivasa Rao *International Journal of Speech Technology (Springer)* Vol. 15, 495-511 (2012)
19. Enhancement of Lifetime using Duty Cycle and Network Coding in Wireless Sensor Networks By Rashmi Ranjan Rout, S.K.Ghosh *IEEE Transactions on Wireless Communications* 2 (2013)

20. Iris Data Indexing Method Using Gabor Energy Features *By* Somnath Dey, and Debasis Samanta *IEEE Transaction on Information Forensics and Security* Vol 7(4), 1192-2013 (2012)
21. Jamming in Underwater Sensor Networks: Detection and Mitigation *By* S. Misra, S. Dash, M. Khatua, A. Vasilakos and M. S. Obaidat *IET Communications* 6 2178–2188 (2012)
22. LACAV: An Energy-Efficient Channel Assignment Mechanism for Vehicular Ad hoc Networks *By* S. Misra, P. V. Krishna and V. Saritha *Journal of Supercomputing (Springer)* 62 1241-1262 (2012)
23. Learning Automata as a Utility for Power Management in Smart Grids *By* S. Misra, P. V. Krishna, V. Saritha, M. S. Obaidat *IEEE Communications Magazine* 51 98-104 (2013)
24. Localized Policy Based Target Tracking Using Wireless Sensor Networks *By* S. Misra and S. Singh *ACM Transactions on Sensor Networks* 8 Art. 27 (2012)
25. Neural network based feature transformation for emotion independent speaker identification *By* K. Sreenivasa Rao, Jainath Yadav, Sourjya Sarkar, Shashidhar G. Koolagudi and Anil Kumar Vuppala *International Journal of Speech Technology (Springer)* Vol. 15, 335-349 (2012)
26. Optimal weight tuning method for unit selection cost functions in syllable based text-to-speech synthesis *By* N. P. Narendra and K. Sreenivasa Rao *Applied Soft Computing (Elsevier)* Vol. 13, 773-781 (2013)
27. Pose Depth Volume Extraction from RGB-D Streams for Frontal Gait Recognition *By* Pratik Chattopadhyay, Aditi Roy, Shamik Sural and J. Mukherjee *Journal of Visual Communication and Image Representation* to appear (2013)
28. STACRP: a secure trusted auction oriented clustering based routing protocol for MANET *By* Pushpita Chatterjee, Indranil Sengupta, S. K. Ghosh *Cluster Computing* 15 (2012)
29. Syllable Specific Unit Selection Cost Functions for Text-to-Speech Synthesis *By* N. P. Narendra and K. Sreenivasa Rao *ACM Transactions on speech and language processing* Vol. 9, 24 pages (2012)
30. Synthesis of Test Scenario Using UML Sequence Diagram *By* Ashalatha Nayak, and Debasis Samanta *ISRN Journal of Software Engineering* Volume 2012 (2012)
31. Towards using Covariance Matrix Pyramids as Salient Point Descriptors in 3D Point Clouds *By* M. Kaiser, X. Xua, B. Kwolek, Shamik Sural and G. Rigoll *Neurocomputing* to appear (2013)
32. Two-Stage Database Intrusion Detection by Combining Multiple Evidence and Belief Update *By* Suvasini Panigrahi, Shamik Sural and A. K. Majumdar *Information Systems Frontiers* 15(1), pp. 35 - 53 (2013)
33. Unconstrained pitch contour modification using instants of significant excitation *By* K. Sreenivasa Rao *Circuits, Systems and Signal Processing (Springer)* Vol. 31, 2133-2152 (2012)
34. Using Periodic Contacts for Efficient Routing in Delay Tolerant Networks *By* R. Jathar, V. Yadav, A. Gupta *Adhoc & Sensor Wireless Networks* Accepted (2012)
35. Vowel Onset Point Detection for Noisy Speech using Spectral Energy at Formant Frequencies *By* Anil Kumar Vuppala and K. Sreenivasa Rao *International Journal of Speech Technology (Springer)* Vol. 16, 229-235 (2013)

Papers Presented in Conferences

1. A Cognitive Trust Model for Access Control Framework in MANET, *By* Soumya Maity, Soumya Kanti Ghosh, *8th International Conference on International Conference on Information Systems Security (ICISS 2012)*, LNCS, Guwahati, India, (2012)
2. A publish-subscribe based framework for event notification in vehicular environments, *By* J. C. Mukherjee, A. Gupta, *COMSNETS 2013*, Bangalore, (2013)
3. Adaptive Learning for Fault-Tolerant Routing in Internet of Things, *By* S. Misra, P. V. Krishna, H. Agarwal, A. Gupta, M. S. Obaidat, *Proceedings of the IEEE Wireless Communications and Networking Conference (IEEE WCNC 2012)*, Paris, France, (2012)
4. Advanced Network Technologies Virtual Lab: A Human-Computer Interface for Performing Experiments on Wireless Sensor Networks, *By* B. Pati, S. Misra, B. Saha, *Proceedings of the 4th International Conference on Intelligent Human Computer Interaction 2012 (IHCI 2012)*, IIT Kharagpur, India, (2012)

5. An Efficient Model-Guided Framework for Alignment of Brain MR Image Sequences, By Prasenjit Mondal, Jayanta Mukhopadhyay, Shamik Sural and Pinak Pani Bhattacharyya, *IEEE International Conference on Systems, Man and Cybernetics*, Seoul, Korea, (2012)
6. Analysis of attack graph-based metrics for quantification of network security, By A. Kundu, N. Ghosh, I. Chokshi, S.K. Ghosh, *IEEE INDICON 2012*, Kochi, Kerala, India, (2012)
7. Analyzing Temporal Role Based Access Control Models, By Emre Uzun, Vijayalakshmi Atluri, Shamik Sural, Jaideep Vaidya, Madhusudan Parthasarathy, Gennaro Parlato and Anna Lisa Ferrara, *ACM Symposium on Access Control Models and Technologies (SACMAT)*, Newark, USA, (2012)
8. Analyzing the performance of epidemic broadcasting in DTNs using directional antenna, By R. Maiti, N. Gaguly, A. Gupta, *COMSNETS 2013*, Bangalore, (2013)
9. Attacking Image Based CAPTCHAs Using Image Recognition Techniques, By David Lorenzi, Jaideep Vaidya, Emre Uzun, Shamik Sural and Vijayalakshmi Atluri, *International Conference on Information Systems Security*, Guwahati, India, (2012)
10. Better Human Computer Interaction by enhancing the quality of Text-to-Speech synthesis, By V. Ramu Reddy and K. Sreenivasa Rao, *4th International Conference on Intelligent Human Computer Interaction (IHCI-2012) (IEEE Explore)*, IIT Kharagpur, India., (2012)
11. BlindGuide: An Audio Based Eyes-Free Caller Guide for People with Visual Impairment, By Tuhin Chakraborty and Debasis Samanta, *4 International aconference on Intelligent Human Computer Intercation*, Kharagpur, India, (2012)
12. Classification of Infant Cries Using Dynamics of Epoch Features, By Avinash Kumar Singh, Jayanta Mukhopadhyay, Sreenivasa Rao K. and Viswanath K, *International Conference on Communications, VLSI and Signal Processing*, SIT Tumkur, India., (2013)
13. Classification of Infant Cries Using Epoch and Spectral Features, By Avinash Kumar Singh and K. Sreenivasa Rao, *Nineteenth National Conference on Communications (NCC) (IEEE Explore)*, IIT Delhi, India., (2013)
14. Classification of Infant Cries using Source, System and Supra-segmental Features, By Avinash Kumar Singh, Jayanta Mukhopadhyay and K. Sreenivasa Rao, *Indian Conference in Medical Informatics and Telemedicine (ICMIT-2013) (IEEE Explore)*, IIT Kharagpur, India., (2013)
15. Community Detection in an Integrated Internet of Things and Social Network Architecture, By S. Misra, R. Barthwal and M. S. Obaidat, *Proceedings of IEEE GLOBECOM 2012*, Anaheim, California, USA, (2012)
16. Cost of Error Correction Quantification with Bengali Text Transcription, By Soumalya Ghosh, Debasis Samanta and Monalisa Sarma, *4 International aconference on Intelligent Human Computer Intercation*, Kharagpur, India, (2012)
17. Could Human Intelligence Enhance Communication Opportunities in Mission-Oriented Opportunistic Networks?, By B. Saha and S. Misra, *Proceedings of the ACM MOBICOM Workshop on Mission-Oriented Wireless Sensor Networking (ACM MiSeNet 12)*, Istanbul, Turkey, (2012)
18. Detection and Removal of Hand-drawn Underlines in a Document Image using Approximate Digital Straightness, By S. Pratihar, P. Bhowmick, Shamik Sural and Jayanta Mukhopadhyay, *Workshop on Document Analysis and Recognition*, Mumbai, (2012)
19. Development of Multimodal User Interfaces to Internet for Common People, By Debasis Samanta, Soumalya Ghosh, Somnath Dey, Sayan Sarcar, Manoj Kumar Sharma, Pradipta Kumar Saha and Santa Maiti, *4 International aconference on Intelligent Human Computer Intercation*, Kharagpur, India, (2012)
20. Efficient Data Collection with Directional Antenna and Network Coding in Wireless Sensor Networks, By Rashmi Ranjan Rout, Saswati Ghosh, S. K. Ghosh, *6th IEEE Advanced Networks and Telecommunication Systems (IEEE ANTS)*, Bangalore, India, (2012)
21. Enforcement of access control policy for mobile ad hoc networks, By Soumya Maity, Soumya Kanti Ghosh, *5th International Conference on Security of Information and Networks (SIN 2012)*, Jaipur, India, (2012)
22. Error Quantifying Metrics for Text Entry Systems Augmented with Word Prediction, By Manoj Kumar Sharma, Pradipta Kumar Saha, Sayan Sarcar, Soumalya Ghosh, Debasis Samanta, Monalisa Sarma, *10th Asia pacific Conference on Computer Human Interaction (APCHI 2012)*, Matsue, Japan, (2012)
23. Exploiting Partial-Packet Information for Reactive Jamming Detection: Studies in UWSN Environment, By M. Khatua and S. Misra, *Proceedings of the 14th International Conference on Distributed Computing and Networking (ICDCN 2013)*, Mumbai, (2013)

24. EyeBoard: A Fast and Accurate Eye Gaze-Based Text Entry System,, By Prateek Panwar, Sayan Sarcar and Debasis Samanta, *4 International aconference on Intelligent Human Computer Intercation*, Kharagpur, India, (2012)
25. Fuzzy Active Contours Applied to Ear Biometrics, By J. Velez, A. Sanchez, B. Moreno and Shamik Sural, *International Conference on Applied Computing*, Madrid, Spain, (2012)
26. HASL: High-Speed AUV-Based Silent Localization for Underwater Sensor Networks, By T. Ojha and S. Misra, *Proceedings of the 9th International Conference on Heterogeneous Networking for Quality, Reliability, Security and Robustness (Qshine 2013)*, Greater Noida, India, (2013)
27. High Resolution 3-D MR Image Reconstruction from Multiple Views, By Prasenjit Mondal, Jayanta Mukhopadhyay and Shamik Sural, *Indian Conference on Computer Vision, Graphics and Image Processing*, Mumbai, (2012)
28. Icon-Based Representation of Web Information, By Santa Maiti, and Debasis Samanta, *4 Internation aconference on Intelligent Human Computer Intercation*, Kharagpur, India, (2012)
29. Identification of Languages using Mel Frequency Cepstral Coefficients, By Shashidhar G. Koolagudi, Deepika Rastogi and K. Sreenivasa Rao, *International Conference on Modeling Optimization and Computing (ICMOC-2012)*, India, (2012)
30. Indic Onscreen Keyboard for Text Entry in Bengali, By Sayan Sarcar, Debasis Samanta, Soumalya Ghosh, Monalisa Sarma, *10th Asia pacific Conference on Computer Human Interaction (APCHI 2012)*, Matsue, Japan, (2012)
31. Information Theoretic Self-Management of Wireless Sensor Networks, By S. N. Das and S. Misra, *Proceedings of the 19th Annual National Conference on Communications (NCC 2013)*, IIT Delhi, New Delhi, India, (2013)
32. Interference Mitigation Between WBAN Equipped Patients, By J. Mahapatro, S. Misra, M. Manjunatha, N. Islam, *Proceedings of the 9th International Conference on Wireless and Optical Communication Networks (WOCN 2012)*, Indore, India, (2012)
33. Interference-Aware Channel Switching for Use in WBAN with Human-Sensor Interface, By J. Mahapatro, S. Misra, M. Manjunatha, N. Islam, *Proceedings of the 4th International Conference on Intelligent Human Computer Interaction 2012 (IHCI 2012)*, IIT Kharagpur, India, (2012)
34. Intonation modeling using linguistic, production and prosodic constraints for syllable-based TTS system, By Ramu Reddy Vempada and K. Sreenivasa Rao, *International Conference on Modeling Optimization and Computing (ICMOC-2012)*, India, (2012)
35. Margin Noise Removal from Printed Document Images, By S. Dey, Jayanta Mukhopadhyay, Shamik Sural and P. Bhowmick, *Workshop on Document Analysis and Recognition*, Mumbai, (2012)
36. Minimum User Requirement in Role Based Access Control with Separation of Duty Constraints, By Arindam Roy, Shamik Sural and A. K. Majumdar, *International Conference on Intelligent Systems Design and Applications*, Cochin, India, (2012)
37. Mobil: A 3-Dimensional Localization Scheme for Mobile Underwater Sensor Networks, By T. Ojha and S. Misra, *Proceedings of the 19th Annual National Conference on Communications (NCC 2013)*, IIT Delhi, New Delhi, India, (2013)
38. Ontology based framework for semantic resolution of geospatial query, 12th International Conference on Intelligent Systems Design and Applications, By S. Bhattacharjee, R. R. Prasad, A. Dwivedi, A. Dasgupta and S.K. Ghosh, *International Conference on Intelligent Systems Design and Applications (ISDA)*, Kochi, India, (2012)
39. Ontology based spatial clustering framework for implicit knowledge discovery, By S. Bhattacharjee, A. Dwivedi, R. R. Prasad, and S. K. Ghosh, *IEEE INDICON 2012*, Kochi, Kerala, India, (2012)
40. Policy based ACL Configuration Synthesis in Communication Networks- a Formal Approach, By Soumya Maity, Soumya Kanti Ghosh, *International Symposium on Electronic System Design (ISED)*, Kolkata, India, (2012)
41. POSTER: Broadcasting in Delay Tolerant Networks Using Periodic Contacts, By P. Dhole, A. Gupta, A. Sharma, *ICDCN 2013*, Mumbai, (2013)
42. POSTER: Using Directional Antennas for Epidemic Routing in DTNs in Practice, By R. Maiti, N. Ganguly, A. Gupta, *ICDCN 2013*, Mumbai, (2013)
43. Real Life Emotion Classification using Spectral Features and Gaussian Mixture Models, By Shashidhar G. Koolagudi, Anurag Barthwal, Swati Devliyal, and K. Sreenivasa Rao,

- International Conference on Modeling Optimization and Computing (ICMOC-2012)*, India, (2012)
44. Recognition of Emotions from Speech using Excitation Source Features, *By* Shashidhar G. Koolagudi, Swati Devliyal, Bhavna Chavla, Anurag Barthwal and K. Sreenivasa Rao, *International Conference on Modeling Optimization and Computing (ICMOC-2012)*, India, (2012)
 45. Role Mining under Role-Usage Cardinality Constraint, *By* John C. John, Shamik Sural, Vijayalakshmi Atluri, and Jaideep Vaidya, *IFIP International Information Security and Privacy Conference (SEC 2012)*, Heraklion, Crete, Greece, (2012)
 46. Speaker Dependent, Speaker Independent and Cross Language Emotion Recognition From Speech Using GMM and HMM, *By* Manav Bhaykar and K. Sreenivasa Rao, *Nineteenth National Conference on Communications (NCC) (IEEE Explore)*, IIT Delhi, India., (2013)
 47. Speaker verification in noisy environment using GMM Supervectors, *By* Sourjya Sarkar and K. Sreenivasa Rao, *Nineteenth National Conference on Communications (NCC) (IEEE Explore)*, IIT Delhi, India., (2013)

School of Medical Science & Technology

Head

Prof. Pranab Kumar Dutta

Associate Professors

Chatterjee, Jyotirmoy *Ph.D., Multimodal Medical Imaging-Analysis Regenerative Medicine
Cancer Theranostics Natural Healing Agent*

Manjunatha M *Ph.D. (IIT Madras), Bioinstrumentation & Point-of-Care
Technologies, Functional Electrical Stimulation of Nerve and
Muscle, Medical Imaging & Biomedical Image/Signal
Processing, Neural Engineering and Retinal
Prosthesis, NeuroRehabilitation & Bio-Robotics, Telemedicine*

Assistant Professors

Bhattacharya, Sangeeta Das *MD (Johns Hopkins Univ.), Evidence Based Health Policy, Internal
medicine and pediatrics, Vaccine preventable diseases in HIV infected
children, Design and development of electronic health record systems
for the management of chronic diseases, Development of College
Mental Health Programs in the Indian Scenario*

Chakraborty, Chandan *Ph.D.(IIT Kharagpur), Biostatistics & Medical Informatics, Computer
Vision & Pattern Recognition for Medical Imaging, Quantitative
Microscopy & Computational Pathology, Statistical Machine Learning
& Computer Aided Diagnosis (CAD)*

Dhara, Santanu *Ph.D.(IIT Kharagpur), Biomaterials and Regenerative Medicine:
Fabrication Bioactivation Cell biology assay, Customized implant
development, Bioactivation of Implant, Tissue Engineering, Near Net
Shape Forming, Green machining, Medical Textile, Nano-Micro
Patterning, Dense and Porous Implants*

Faculty Re-employment

Prof. Sujay Guha Professor on Re-employment

Brief Description of on-going activities

• Development of micro-fluidic Biochips / Bio-MEMS for medical application. • Laser speckle imaging of blood-flow in microcirculation. • Development of statistical analyzer & disease pattern recognizer for Oral Pre-cancer and cancer. • Design of an intelligent diagnostic tool through the extraction of diagnostic rules for asthma. • Proteomics and reproductive health • Vaccine preventable diseases in HIV infected children • Integrated macro & micro-imaging on various healing & non-healing wounds including oral & breast precancer & cancer for their early characterization through image processing & analysis as well as integration with clinico-epidemiological features. • Physico-chemical characterization of natural wound healing agents for the development of wound dressing technology. • Development of detailed database on respiratory rhythms for identifying their temporal & spatial characteristics in health & disease. • Development of biodegradable scaffold for tissue engineering and wound research. • In vitro screening of anti-diabetes molecules. • Design of a three dimensional scaffold and drug delivery system in arthritic hip joint. • Signal Transduction • Cancer Biomarker • Oxidative stress and Infertility • Development of natural antioxidant nanoparticles • Proteomics and Metabolomics in Reproductive Health • Nutraceuticals and Herbal medicine

Thrust Areas

1. -Medical Imaging & Image Processing - Medical Instrumentation - Bio-MEMS - Medical Statistics & Pattern Recognition - Medical Expert System - Tissue Engineering - Bio-Materials - Cancer Biology - Signal Transduction - Proteomics and reproductive health -.Diabetology

and Herbal Medicine - Genetics & Molecular Profiling of Pre-cancer-Cancer & Wounds - Pediatrics HIV

International Collaborations

RIKEN, BSI Japan

Lectures by Visiting Experts

1. Forebrain development: Patterning, connection and adjustment *by* Prof. Tomomi Shimogiri (RIKEN, BSI Japan)
2. Astrocytic modulation of in vivo neural activity and sensory plasticity *by* Professor Hajime Hirase (RIKEN, BSI Japan)

Doctoral and MS Degrees Awarded

1. Richa Malviya : Evidence Based High Throughput Computer Assisted Cervical Cancer Pre-Screening System(MS)
2. Dev Kumar Das : Abnormal erythrocyte recognition using microscopic images of peripheral blood smears(MS)
3. Maitreya Maity : Web-enabled distributed healthcare system for pathological information management towards malaria and anaemia detection(MS)
4. Pallab Datta : Bioinspired Approach towards bone grafts based on nano and micro fabrication of Phosphorylated polymers(Ph.D.)
5. Rangadhar Pradhan : In vitro Characterization of Cellular Behaviours using Miniaturized Sensing Devices(Ph.D.)
6. Rashmi Mukherjee : Oxidative stress induced changes in early and late onset preeclamsia(Ph.D.)
7. Soumi Dey Sarkar : Towards Development of Bilayer Dermal Rudiment with Nano/Microfiber Architecture: A tissue Engineering perspective(Ph.D.)
8. Palak Mehrotra : Screening tool for polycystic ovary syndrome using clinical parameters and ultrasound images(MS)

Member - Professional Bodies

1. Chaudhury, Koel, *Member* - European Society of Human Reproduction and Embryology (ESHRE)
2. Chaudhury, Koel, *Life membership* - Indian Society for the Study of Reproduction and Fertility (ISSRF)
3. Chaudhury, Koel, *Life membership* - Indian Society of Biomaterials
4. Chaudhury, Koel, *Life membership* - National Magnetic Resonance Society
5. Chaudhury, Koel, *Life Membership* - The Society for Free Radical Research-India (SFRR-India)
6. Chaudhury, Koel, *Member* - American Society for Reproductive Medicine (ASRM)
7. Chaudhury, Koel, *Life membership* - Indian Society of Andrology
8. Bhattacharya, Sangeeta Das, *Regular* - American College of Physicians
9. Mandal, Mahitosh, *Associate Member* - American Association for Cancer Research
10. Mandal, Mahitosh, *Associate Member* - American Society for Biochemistry and Molecular Biology
11. Mandal, Mahitosh, *Associate Member* - Indian Association for Cancer Research
12. Mandal, Mahitosh, *Associate Member* - Indian Science Congress Association
13. Manjunatha M, *Senior* - IEEE-EMBS
14. Manjunatha M, *Senior* - IEEE
15. Manjunatha M, *Life Member* - Bio-medical Engineering Society of India
16. Manjunatha M, *Member* - The Institution of Engineers (India)
17. Dhara, Santanu, *Regular* - Powder Matrix (UK)
18. Dhara, Santanu, *Member (Annual)* - TERMIS
19. Dhara, Santanu, *Regular* - Society for Polymer Science, India

20. Dhara, Santanu, *Regular* - American Ceramics Society
21. Chakraborty, Chandan, *Regular Member* - Institute of Electrical and Electronics Engineers (IEEE)
22. Chakraborty, Chandan, *Life Member* - Indian Society for Medical Statistics (ISMS)
23. Chakraborty, Chandan, *Life Member* - Indian Science Congress Association (ISCA)
24. Chakraborty, Chandan, *Regular Member* - European Society of Human Reproduction and Embryology (ESHRE)
25. Chakraborty, Chandan, *Chairman, Institutional Review Board* - Tata Medical Center, Kolkata
26. Chakraborty, Chandan, *Regular Member* - Association for Computing Machinery (ACM)
27. Mitra, Analava, *Member* - Centre of Applied Medicine Kathmandu-Nepal
28. Mitra, Analava, *Member* - Society for Advanced studies in Medicine and surgery
29. Mitra, Analava, *Life Member* - Indian Medical Association
30. Mitra, Analava, *Life Member* - IMA College of General practitioners
31. Mitra, Analava, *Member* - National Association of Psychologists

Member - Editorial Board

1. Chakraborty, Chandan (2012) *Editorial Board Member* - Research & Reviews : Journal of Medical Imaging and Technology
2. Chakraborty, Chandan (2012) *Editorial Board Member* - International Journal of BioSciences and Technology
3. Chakraborty, Chandan (2012) *Member, International Editorial Board* - Artificial Intelligence Research (Canada)
4. Chaudhury, Koel (2013) *Member of Editorial Board* - Medical and Surgical Urology
5. Manjunatha M (2012) *Editor* - American Journal of Biomedical Research
6. Mitra, Analava (2008) *Member Editorial Board* - Medical equipment and Automation
7. Mitra, Analava (2011) *Member* - Indian Journal of Pharmacology
8. Mitra, Analava (2011) *Member* - Journal of Clinical and Diagnostic Research
9. Mitra, Analava (2010) *Member of Editorial Board* - International Journal of Life Sciences and Technology
10. Mitra, Analava (2009) *Member Editorial Board* - International Journal of BioSciences, Alternative and Holistic Medicine
11. Mitra, Analava (2011) *Reviewer* - Pharmaceutical biology
12. Mitra, Analava (2011) *Member of Editorial Board* - African Journal of Agricultural Research
13. Mitra, Analava (2009) *Member Editorial Board* - International Journal of Pharmaceutical Drugs, Sciences and Technology (IJPDEST)
14. Mitra, Analava (2011) *Member* - Pharmaceutics & Novel Drug Delivery Systems : Current Research.
15. Mitra, Analava (2009) *Member of Editorial Board* - International Journal of BioSciences, Healthcare Technology and Management
16. Mitra, Analava (2009) *Member of Editorial Board* - International Journal of BioEngineering and Technology
17. Mitra, Analava (2011) *Member* - World Journal of Diabetes
18. Mitra, Analava (2007) *Member Editorial Board* - Anthropology Today: Trends, Scope And Applications, Published by
19. Mitra, Analava (2011) *Member* - African Journal of Food Science
20. Mitra, Analava (2011) *Member* - Agricultural Science Research Journal

Awards & Honours

1. Bhattacharya, Sangeeta Das () *Associate Faculty, Johns Hopkins Bloomberg School of Public Health*
2. Mandal, Mahitosh (2013) *Best Poster Award at Indian Association of Cancer Research Meeting at Delhi,*
3. Chakraborty, Chandan (2009) *DST Fast Track Young Scientist Award*
4. Dhara, Santanu (2010) *Fast Track Scheme For Young Scientists (FAST) funded by DST, Govt. India*
5. Chakraborty, Chandan (2012) *IBM Faculty Award, NY, USA*

6. Chakraborty, Chandan (2011) *IBM-SUR Research Grant Award, India*
7. Dhara, Santanu (2005) *Incubiz (Anveshan III) silver award organized by IIM Ahmedabad for development of Protein coagulation Casting of Ceramics*
8. Chakraborty, Chandan (2007) *ISCA Young Scientist Award by President of India, Dr APJ Abdul Kalam*
9. Bhattacharya, Sangeeta Das (2010) *Master of Public Health, Johns Hopkins School of Public Health*
10. Dhara, Santanu (2005) *MRS Bulletin Research News - "Nanocrystalline Alumina Synthesized with Use of Egg White"*
11. Mitra, Analava (2012) *Rastriya Gaurav Award*

Sponsored Research Projects

1. Assessment of endometrial receptivity and its correlation with sub endometrial blood flow (SEBF) in women with latent genital tuberculosis (ICMR, Rs.30.86 Lakhs)
2. Characterization and classification of diabetic maculopathy (IBM Faculty Award Grant, NY USA, Rs.4.00 Lakhs)
3. Computer-aided fundus image analyzer for diabetic retinopathy screening (DBT, Rs.20.66 Lakhs)
4. Design & Feasibility Study of Versatile Low-cost Functional Electrical Stimulator (FES) for Hemiplegics (National Institute for the Orthopaedically Handicapped (NIOH)(Min. of Social Justice & Empowerment., Rs.16.50 Lakhs)
5. Development of a MEMS based assay for biomedical diagnostics (ISRO-IIT Kharagpur cell, Rs.5.50 Lakhs)
6. Development of a Statistical Analyzer based Computer Aided Diagnostic (CAD) System for Asthma (DST, Govt. of India, Rs.13.00 Lakhs)
7. Development of biodegradable polymer encapsulated besifloxacin nanoparticles: a novel therapeutic approach for endophthalmitis (Netra Jyoti Seva Mandiram Veerayatan, Nalanda, Rajgir., Rs.7.56 Lakhs)
8. Development of Ceramic Nanofiber-polymer Resin based Composite for Dental Filler (DST, Govt. of India, Rs.18.60 Lakhs)
9. Development of Ceramics Based Bioactive Scaffold Through Bone Tissue Engineering (BSH) (CSIR, Rs.17.00 Lakhs)
10. Development of Dense and Porous Titanium Components via Powder Metallurgy Route for Biomedical Applications (DRDO, Rs.67.83 Lakhs)
11. Development of neonatal patient care management system (Ministry of Communication and Information Technology, Gol, Rs.0.00 Lakhs)
12. Development of pattern recognition algorithms for quantitative characterization of ovarian ultrasound and Doppler images (WBDST, Rs.9.00 Lakhs)
13. Does in-vivo antioxidant administration improve semen parameters in infertile men? (Indian Council of Medical Research (ICMR), Rs.9.77 Lakhs)
14. Early prediction of gestational hypertension (Pregnancy induced hypertension): A proteomics approach (Department of Biotechnology, Rs.22.38 Lakhs)
15. Enhanced production, purification and characterization of marine bacterial lipopeptide as potential broad spectrum antimicrobial and anti cancer agent (Ministry of Earth Science, India, Rs.100.03 Lakhs)
16. Evaluation of S100A7 (Psoriasin) as an Early Detection Marker of Squamous Cell Carcinoma. (DST, India, Rs.35.00 Lakhs)
17. Identification of potential biomarkers for the diagnosis of endometriosis: a proteomics approach (DST, Rs.25.20 Lakhs)
18. Impact of immunization programs in children with HIV in West Bengal (IIT SRIC, Rs.3.00 Lakhs)
19. Indian Origin Silk based biomimetic scaffolds for engineering of load bearing tissue (Dept of Biotechnology, India., Rs.34.13 Lakhs)
20. Involvement of functional single nucleotide polymorphisms (DBT, New Delhi, India, Rs.52.57 Lakhs)
21. Involvement of functional single nucleotide polymorphisms (SNP) of matrix metalloproteinase (MMP) gene promoters in the cell type specific regulation (DBT, Rs.52.00 Lakhs)
22. Metabolomics study of women with polycystic ovary syndrome (PCOS): A system biology approach (Department of Biotechnology, Rs.25.99 Lakhs)

23. Net Shape Fabrication of Dental Crown using Computer Numerical Control (CNC) Machining of Green Ceramic Compacts (DBT, Govt. of India, Rs.46.02 Lakhs)
24. Prevention of Pneumonia in Children with HIV infection (ICMR, Rs.55.00 Lakhs)
25. Role of long-term doxycycline as matrix metalloproteinase (MMP-2 and MMP-9) inhibitor in chronic obstructive pulmonary disease (COPD) (WB DST, Rs.4.65 Lakhs)
26. Separation and electrical characterisation of biological cells using microfluidic device (ADA-NPMASS, Govt of India, Rs.86.75 Lakhs)
27. Sequence Dependent Molecular Action of ZD6474 with Paclitaxel and Radiation in Progress and Treatment of Breast Cancer (PRB) (DBT, India, Rs.35.00 Lakhs)
28. Structural & Molecular Characterization of Cutaneous Cells Behavior under Varied Physico-chemical Ambience towards Improving Skin Tissue Engg. (CCB) (SERB DST, Rs.51.65 Lakhs)
29. To Evaluate the Clinical Efficacy of the Functional electrical Stimulation (FES) therapy in Stroke Survivors (Indian Council of Medical Research, Rs.20.00 Lakhs)
30. To investigate the role of MMPs & TIMPs in follicular fluid of women with endometriosis undergoing IVF (DST (West Bengal), Rs.9.64 Lakhs)

Patents (filed / granted)

1. A process for Production of Collagen and By-Products from Fresh Water Fish Origin and Applications Thereof
2. Formulation of a nutraceutical butter for treating psoriasis & eczema
3. iMediX to A multi-tier secure modular system for telemedicine and e-healthcare
4. Method and apparatus for enhancing representations of microcalcifications in a digital mammogram image
5. VENUCAINE: An Electronic Travel Aid for Visually Impaired Blind People

Visits Abroad by Faculty Members

1. Dhara, Santanu - Presenting ongoing work (Vienna, TERMIS world congress,) 7 days
2. Das, Soumen - Visiting Scientist (FBK, University of Trento, Italy,) June - July, 2012
3. Mandal, Mahitosh - Collaborative Research (MD Anderson Cancer Center, Houston , TX, USA,) June, 2012
4. Mandal, Mahitosh - Collaborative Research (Virginia Commonwealth University, Richmond, USA,) 10th May - 10th July 2012

Invited Lectures by Faculty Members

1. Computer Assisted Screening of Malaria Parasite using Machine learning Approach *by* Chakraborty, Chandan (YCCE, Nagpur. India)
2. Bayesian approach to disease prediction *by* Chakraborty, Chandan (VNIT, Nagpur)
3. Histopathological Image Analysis and Machine Learning Methods for Detection of Oral Submucous Fibros *by* Chakraborty, Chandan (Center for Soft Computing Research, Indian Statistical Institute, Kolkata)
4. Phosphorylated Polymeric Fibrous Scaffolds: A Novel Approach towards Bioactivity in Bone Tissue E *by* Dhara, Santanu (IISC Bangalore)
5. Multimodal Imaging in Regenerative Medicine Research *by* Chatterjee, Jyotirmoy (IISc., Bangalore)
6. Multimodal & Multi-scale Imaging in Addressing Diagnostic Ambiguities of Oral Pre-cancers Maligna *by* Chatterjee, Jyotirmoy (Bengal Engineering and Science University, Howrah)
7. Retinal Prosthesis *by* Manjunatha M (Jawaharlal Nehru Centre for Advanced Scientific Research-Bangalore)
8. Retinal Prosthesis *by* Manjunatha M (Forus Health, Bangalore)
9. PET/ SPECT Imaging Techniques in medicine *by* Manjunatha M (QIP-Short term course on Medical Imaging in IIT Kharagpur)
10. The potential of celecoxib-loaded hydroxyapatite-chitosan nanocomposite for treatment of coloncancer *by* Mandal, Mahitosh (3rd International Cancer Research Symposium 2012 Kolkatta, W. B. India)

11. Antineoplastic and apoptotic potential of traditional medicines thymoquinone and diosgenin in Cancer *by* Mandal, Mahitosh (Indian Association of Cancer Research, New Delhi)
12. Principles and Clinical Applications of MRI *by* Chaudhury, Koel (IEEE Medical Imaging Workshop 2012, Indian Institute of Technology, Kharagpur, India)
13. Drinking Water Contaminants and Adverse Pregnancy Outcome *by* Chaudhury, Koel (Multidimensional technological innovations for water-linked health & wellness: A Bilateral Purdue – India Engagement Conference, Indian Institute of Technology, Kharagpur, India)
14. Cell manipulation in microfluidic device using Dielectrophoresis technique for clinical applications *by* Das, Soumen (India-Singapore Joint Physics Symposium on Physics of Advanced Materials at IIT Kharagpur)
15. MEMS and Microsystems *by* Das, Soumen (National seminar on Smart Instrumentation and Control Systems organised by Department of Electrical Engineering, BESU, Shibpur)
16. Techniques for nano-scale patterning *by* Das, Soumen (Short-term course on Nanotechnology for electronic & photonic applications organised by materials Science Centre, IIT Kharagpur)
17. Nano engineered MEMS device for space applications - A case study *by* Das, Soumen (Short-term course on Nanotechnology for electronic & photonic applications organised by materials Science Centre, IIT Kharagpur)

Books Published

1. Analava Mitra and Baishakhi Dey: Public Health, Diseases, Preventive strategies-A Multidisciplinary Approach *published by* Bhalani Medical Publishers (2012)

Papers Published in Journals

1. A metabonomics approach as a means for identification of potential biomarkers for early diagnosis of endometriosis *By* Dutta M, Joshi M, Srivastava S, Lodh I, Chakravarty B, Chaudhury K *Molecular BioSystems* 8(12):3281-7 (2012)
2. A novel pyrex/Si-bonded microvalve for precision applications in micropropulsion systems *By* B. Pramanick, S. Das and T.K. Bhattacharyya *J of Micro/nanolithography, MEMS, and MOEMS* Vol. 11 (2012)
3. A very-low cross-axis sensitivity piezoresistive accelerometer with an electroplated gold layer atop a thickness reduced proof mass *By* A. R. Sankar and S. Das *Sensors and Actuators A* Vol. 189, pp.125– (2013)
4. A web-accessible framework for automated storage with compression and textural classification of malaria parasite images *By* M Maity, AK Maity, PK Dutta, C Chakraborty *Int Jnl of Computer Applications* 52(15): 31-39 (2012)
5. AEE788 potentiates celecoxib-induced growth inhibition and apoptosis in human colon cancer cells. *By* 6. Venkatesan P, Bhutia SK, Singh AK, Das SK, Dash R, Chaudhury K, Sarkar D, Fisher PB, Mandal M *Life Science* Vol 91, 789-799 (2012)
6. Alpha-Alumina Fiber with Platelet Morphology through Wet Spinning *By* S. Mohanty, A. P. Rameshbabu., S. Dhara *J. Am. Ceram. Soc.* 94[4]1234-1240 (2012)
7. An Embedded System for Aiding Navigation of Visually Impaired Persons *By* A Kumar, R Patra, M Mahadevappa, J Mukhopadhyay and A K Majumdar *Current Science* 104, NO. 3, 10,302-6 (2013)
8. Antineoplastic and apoptotic potential of traditional medicines thymoquinone and diosgenin in squamous cell carcinoma *By* 8. Das S, Kaushik Dey K , Dey G, Pal I, Majumder A, MaitiChoudhury S, , Kundu SC, and Mandal M *PLoS ONE* Vol 7, A. No- 46641 (2012)
9. Application of higher order cumulant features for cardiac health diagnosis using ECG signals *By* R.J. Martis, U.R. Acharya, L.C. Min, K.M. Mandana, A.K. Ray, and C. Chakraborty *International Journal of Neural Systems* Accepted (2013)
10. Automated detection of atrial flutter and fibrillation using ECG signals in wavelet framework *By* RJ Martis, H Prasad, C Chakraborty, AK Ray *Journal of Mechanics in Medicine and Biology* 12(5) 1240023 (2012)
11. Bio-fabrications and Therapeutic Applications of Chitosan Nano particles *By* Analava Mitra, Dipak Kr Dash, Apurba Lal Das, Debasis Chakraborty, Baishakhi Dey *Pharmaceutics & Novel Drug Delivery Systems: Current Research* Accepted (2012)

12. Biofunctional phosphorylated chitosan hydrogels prepared above pH 6 and effect of crosslinkers on gel properties towards biomedical applications By Pallab Datta, Goutam Thakur, Jyotirmoy Chatterjee & Santanu Dhara *Soft Materials* DOI: 10.1080/153 (2012)
13. Breast fine needle aspiration cytology practices and commonly perceived diagnostic significance of cytological features: A pan- India survey By Garud HT, Sheet D, Mahadevappa M, Chatterjee J, Ray AK, Ghosh A *J Cytol.* 2012 Jul29(3):183-9 (2012)
14. Cardiac Decision Making Using Higher Order Spectra By RJ Martis, UR Acharya, KM Mandana, AK Ray, C Chakraborty *Biomedical Signal Processing and Control* 8(2)193-203 (2013)
15. Characterization of electrode/electrolyte interface of ECIS devices By R. Pradhan, A. Mitra and Soumen Das *Electroanalysis* Vol 24, pp. 2405–2 (2012)
16. Chitosan microspheres in novel drug delivery systems By AnalavaMitra and Baishakhi Dey *IJPS* Nov, IP,117.205.160 (2012)
17. Collagen intermingled chitosan-tripolyphosphate nano/micro fibrous scaffolds for tissue-engineering application By F. Pati, B. Adhikari, S. Dhara *Journal of Biomaterials Science, Polymer Edition* 23 (15) , 1923-1938 (2012)
18. Development of chitosan-tripolyphosphate non-woven fibrous scaffolds for tissue engineering application By F. Pati, B. Adhikari and S. Dhara *J Mater Sci: Mater Med* (23)1085-1096 (2012)
19. Effect of Neuromuscular Electrical Stimulation of Quadriceps Femoris and Tibialis Anterior in Children with Spastic Cerebral Palsy: A Pilot Study By WHO-International Clinical Trials Registry Platform search portal CTRI/2012/11/003128 (2012)
20. Electrospun nanofibers of a phosphorylated polymer-A bioinspired approach for bone graft applications By P.Datta, J.Chatterjee, S. Dhara *Colloids and Surfaces B: Biointerfaces* 94 (177-183) (2012)
21. Enhanced Redifferentiation of Chondrocytes on Microperiodic Silk/Gelatin Scaffolds: Toward Tailor-Made Tissue Engineering By S. Das, F. Pati, S. Chameettachal, S. Pahwa, A. R. Ray, S. Dhara, and S. Ghosh *Biomacromolecules* 14, 311 – 321 (2013)
22. Exploring the fluorescence switching phenomenon of curcumin encapsulated niosomes: In vitro real time monitoring of curcumin release to cancer cells By 3. Puvvada, N., Rajput, S., Kumar, B.N.P., Mandal, M., Pathak, A *RSC Advances* Vol-3, 2553-57 (2013)
23. Extended Stern model By R. Pradhan, A. Mitra, Soumen Das *J of Applied Solution Chemistry and Modelling* Vol. 1, pp.74-78 (2012)
24. Fabrication of polymer micro-tip by optical lensing technique By Pradip Kumar Dey, Soumen Das and P. Ganguly *J of Microsystem Technologies* Vol. 18, pp.623-62 (2012)
25. Feature Selection and Extraction in Computer Vision System for Breast FNAC Diagnosis: Commonly Perceived Diagnostic Significance of Cytological Features and Postliminary Analysis of an Existing Database By Garud HT, Debdoot Sheet, Ajoy Kumar Ray, Manjunatha Mahadevappa, Jyotirmoy Chatterjee *ACM Transactions on Intelligent Systems and Technology* [Accepted-JAN 2013] (2013)
26. Finding an optimum immuno-histochemical feature set to distinguish benign phyllodes from fibroadenoma By •Priti Prasanna Maity, Subhamoy Chatterjeeb, Raunak Kumar Das, Subhalaxmi Mukhopadhyay, Ashok Maityd, Dhruvajyoti Maulik, Ajoy Kumar Rayf, Santanu Dharaa, Jyotirmoy Chatterjee. *Micron* In Press (2013)
27. Functional Electrical Simulator for Hemiplegics By WHO-International Clinical Trials Registry Platform search portal CTRI / 2012/09/00301 (2012)
28. Functional electrical stimulation for stroke rehabilitation By Subramanya KB, Kanakabettu AK, Mahadevappa M *Med Hypotheses* 2012 May78(5):687 (2012)
29. Fuzzy expert system approach for coronary artery disease screening using clinical parameters By D Pal, KM Mandana, S Pal, D Sarkar and C Chakraborty *Knowledge-Based Systems* 36: 162-174 (2012)
30. Genipin crosslinked gelatin hydrogel:Tolbutamide release and cytocompatibility By G Thakur, S Banerjee, A Mitra and A Basak *J Tissue Eng Regen Med* (2012)
31. Impedimetric characterization of human blood using three-electrode based ECIS devices By Rangadhar Pradhan, Analava Mitra, Soumen Das. *J Electr. Bioimp* vol. 3, pp. 12–19 (2012)
32. Impedimetric characterization of human blood using three-electrode based ECIS devices By R. Pradhan, A. Mitra, Soumen Das *J of Electrical Bioimpedance* Vol. 3, pp. 12–19 (2012)
33. Influence of in situ TiB reinforcements and role of heat treatment on mechanical properties and biocompatibility of beta Ti-alloys By P. Majumdar, S.B. Singh, S. Dhara, M. Chakraborty *J. Mechanical Behaviour of Biomedical Materials* 10(1-10) (2012)

34. Machine learning approach for automated screening of malaria parasite using light microscopic images By DK Das, M Ghosh, M Pal, AK Maiti, C Chakraborty *Micron* 45:97-106 (2013)
35. Mechanistic studies of lifestyle interventions in Type 2 Diabetes By 16. Analava Mitra , Debasis Dewanjee, Baishakhi Dey. *World Journal of Diabetes* Accepted (2012)
36. Microtrap electrode devices for single cell trapping By Mondal D, RoyChaudhuri, Das L , Chatterjee J *Biomed Microdevices* 14(5):955-6 (2012)
37. Mitigation of endometriosis using regenerative cerium oxide nanoparticles By Chaudhury K, Babu K N, Singh AK, Das S, Kumar A, Seal S. *Nanomedicine : nanotechnology, biology, and medicine* 9(3):439-48 (2013)
38. MnO₂ nanowire embedded hydrogen peroxide monopropellant MEMS thruster By 1. P. Kundu, A.K. Sinha, T.K. Bhattacharyya and Soumen Das *IEEE J of Microelectromechanical Systems* DOI 10.1109/JMEMS.20 (2013)
39. Non-invasive Characterisation of Foot Reflexology Areas by Swept Source-Optical Coherence Tomography in Patients with Low Back Pain, By Krishna Dalal1, Elanchezhiyan D, Raunak Kumar Das, Devjyoti Dalal, R M Pandey, Subhamoy Chatterjee, Ashish D Upadhyaya, V Bharathi Maran, JyotirmoyChatterjee *Evidence-Based Complementary and Alternative Medicine (eCAM)* ID 983769, 11pages (2013)
40. Oxidative status in granulosa cells of infertile women undergoing IVF By Karuputhula NB, Chattopadhyay R, Chakravarty B, Chaudhury K *Systems Biology in Reproductive Medicine* 59(2):91-8 (2013)
41. Phosphate functionalized and lactic acid containing graft copolymer : Synthesis and evaluation as biomaterial for bone tissue engineering applications By Datta P, Chatterjee J , Dhara S *Journal of Biomaterials Science , Polymer Edition* Vol. 24(6) :696-713 (2012)
42. Physico-chemical/Biological properties of tripolyphosphate cross-linked chitosan based nanofibers By S.Dey Sarkar, B.Farrugia, T. Dargaville, S. Dhara *Materials Science and Engineering C* 33 (3) , 1446-14 (2013)
43. PI-3K and Akt as molecular targets for cancertherapy: current clinical outcomes By Pal I and Mandal M *Acta Pharmacologica Sinica* Vol 33, 1441-58 (2012)
44. PKI 166 induced redox signalling and apoptosis through activation of p53, MAP Kinase and caspase pathway in epidermoid carcinoma By 5. Das S, Dey K K, Bharti R , MaitiChoudhury S, Maiti S and Mandal M *Journal of Experimental Therapeutics and Oncology*, Volume 10, 139-53 (2012)
45. Posterior capsular opacification and intraocular lens surface micro-roughness characteristics: an atomic force microscopy study By Mukherjee R, Chaudhury K, Das S, Sengupta S, Biswas P *The International Research and Review Journal for Microscopy (Micron)* 43(9):937-47 (2012)
46. Proinflammatory cytokines induced altered expression of cyclooxygenase-2 gene results in unreceptive endometrium in women with idiopathic recurrent spontaneous miscarriage. By Banerjee P, Jana SK, Pasricha P, Ghosh S, Chakravarty B, Chaudhury K *Fertility and Sterility* 99(1):179-87 (2013)
47. Quantitative microscopy approach for shape-based erythrocytes characterization in anaemia By DK Das, C Chakraborty, B Mitra, AK Maiti, AK Ray *Journal of Microscopy* 249(2):136-49 (2013)
48. Recovery of Omega-3 Health Boosters from Fisheries and Poultry Wastes & their Micro-delivery Techniques By Mitra Analava, Dey Baishakhi, Mitra Anindya *International Journal of Drug Delivery Science* Accepted (2012)
49. Review of Laser Speckle-based Analysis in Medical Imaging By Basak K, Manjunatha M, Dutta PK *Med Biol Eng Comput.* 2012 Jun50(6):547-5 (2012)
50. Role of FT-IR in Food Safety & Control By Rapid Detections of Food Pathogens: A Review. By Dey Baishakhi and Mitra Analava *Serial Publications* Vol.4 ,1: 43-51 (2012)
51. Second Generation Liposomal Cancer Therapeutics: Transition from laboratory to clinic By K Sen , Mandal M *International Journal of Pharmaceutics* doi:p11: S0378-5173 (2013)
52. Segmentation of Chronic Wound Areas by Clustering Techniques Using Selected Color Space By MK Yadav, DD Manohar, G Mukherjee, and C Chakraborty *J. Med. Imaging Health Inf.* 3, 22-29 (2013)
53. Structural and textural classification of erythrocytes in anaemic cases: A scanning electron microscopic study By S Bhowmick, DK Das, AK Maiti, C Chakraborty *Micron* 44:384-394 (2013)

54. Structural characterization of worm images using trace transform and backpropagation neural network *By Chandan Chakraborty Int. Jnl. of Signal Processing, Image Processing and Pattern Recognition* 5(3): 27-48 (2012)
55. Surface Electrical Stimulation Technology for Stroke Rehabilitation: A Review of 50 Years of Research *By Subramanya, K. Pinto, A. J. Pius Kumar, M. K. Ajithanjaya Arya, Bikas K. Mahadevappa, Manjunatha Journal of Medical Imaging and Health Informatics* V2, No.1 pp1-14(14) (2012)
56. Synonymous codon usage pattern analysis of Hepatitis D virus *By Bishal AK, Mukherjee R, Chakraborty C. Virus Research* 173(2):350-353 (2013)
57. Synthesis of biocompatible multicolor luminescent carbon dots for bioimaging applications *By 4. Puvvada, N., Kumar, B.N.P., Konar, S., Kalita, H., Mandal, M., Pathak, A. Science and Technology of Advanced Materials* Vol 13, A No-045008 (2012)
58. Targeted apoptotic effects of thymoquinone and tamoxifen on XIAP mediated Akt regulation in breast cancer *By 1. Rajput S, Kumar BNP, Sarkar D, Das S, Azab B, Santhekadur PK, Das SK, Emdad L, Sarkar D, Fisher PB, Mandal M PLoS ONE* In Press (2013)
59. Textural Analysis of Spinous Layer for Grading Oral Submucous Fibrosis *By Patra R, Chakraborty C, Chatterjee J International Journal of Computer Applications* 48(22):33-37 (2012)
60. The Constants and Variables in Breast FNAC Practices and Commonly Perceived Diagnostic Significance of Cytological Features in Diagnosis of Benign and Malignant Nature of Breast Lesions –Pan-India Survey *By Garud H, Sheet D, Manjunatha M, Chatterjee J, Ray AK, Ghosh A Journal of Cytology* 29 : 3,183-189 (2012)
61. Therapeutic targeting of the TNF superfamily: a promising treatment for advanced endometrial adenocarcinoma *By Thangaraju S, Subramani E, Chakravarty B, Chaudhury K Gynecologic oncology* 127(2):426-32 (2012)
62. Time-dependent dosing of Fe 2+ for improved lipopeptide production by marine *Bacillus megaterium* *By 9. Rangarajan, V., Dhanarajan, G., Kumar, R., Sen, R., Mandal, M. Journal of Chemical Technology and Biotechnology* Vol 87,1661-69 (2012)

Papers Presented in Conferences

1. 2,5-dimethoxy-2,5-dihydrofuran crosslinked chitosan for bone tissue engineering application, *By P. Ghosh, S Dhara, TERMIS World Congress, Vienna, (2012)*
2. 5. Surface EMG analysis and changes in gait following electrical stimulation of quadriceps femoris and tibialis anterior in children with spastic cerebral palsy, *By Arya, B.K. Mohapatra, J. Subramanya, K. Prasad, H. Kumar, R. Mahadevappa, M., Conf Proc IEEE Eng Med Biol Soc., San Diego, USA, (2012)*
3. A simple model for bedside evaluation of current for neuromuscular electrical stimulation in cerebral palsy, *By Arya, Bikas K. Subramanya, K. Lenka, P. K. Mahadevappa, Manjunatha, Point-of-Care Healthcare Technologies (PHT), 2013 IEEE EMBS, Bangalore, (2013)*
4. Aberrant expression of pro-inflammatory and angiogenic cytokines in endometrium of women during implantation window in idiopathic recurrent miscarriage, *By Banerjee P, Pasricha P, Chakravarty BN, Chaudhury K, 28th Annual Meeting of European Society of Human Reproduction and Embryology, Istanbul, Turkey, (2012)*
5. Activity Estimation and Lineage Construction of Cells in Densely Populated Colonies Using Numerical Method Based Greedy Search, *By S. P. K. Karri, D. Sheet, H. Garud, A. Chaudhury, A. K. Ray, J. Chatterjee, D. Chakraborty, M. Mahadevappa,, Int. Symp. Biomed. Imaging, San Francisco, CA, USA, (2013)*
6. Appearance of Epithelial to Mesenchymal Transition (EMT) Features in Oral Sub-mucous Fibrosis as Potential Indicator for Potential Indicator for Neoplastic Progression, *By Das R.K., Pal M., Bag S., Majumdar S., Barui A., Paul R.R., Chakraborty C., Ray A.K., Sengupta S. and Chatterjee J, 3rd International Conference of Stem Cell and Cancer (ICSCCB- 2012) : Proliferation, Differentiation and Apoptosis, New Delhi, (2012)*
7. Automated Characterization of Pap Stained Cervical Smears Using Physics of Brightfield Microscopy Optics, *By S. P. K. Karri, H. Garud, D. Sheet, R. Malviya, L. Das, A. K. Ray, J. Chatterjee, D. Chakraborty, M. Mahadevappa,, Int. Symp. Biomed. Imaging, San Francisco, CA, USA, (2013)*
8. Automated detection of air embolism in OCT contrast imaging: Anisotropic diffusion and active contour based approach, *By Basak, K. Patra, R. Manjunatha, M. Dutta, P.K.,*

Emerging Applications of Information Technology (EAIT), 2012 Third International Conference on, ISI-Kolkata, (2012)

9. BI69A11, a novel small molecule inhibitor of AKT kinase with antitumor activity showed antiproliferative effect on colon cancer by induction of apoptosis, *By Ipsita pal, Mahitosh Mandal, Indian Association for Cancer Research, New Delhi, (2013)*
10. Biodegradable PEG-PCL Nanoparticles for Drug Delivery, *By Sanal P. S., S. Dhara, S. Chatterjee, ICRRM 2013, RTC, IIT KGP, (2013)*
11. Celecoxib synergistically potentiates diosgenin induced apoptosis in human colon cancer, *By Prashanth Kumar B. N. Mahitosh Mandal, 2nd Global Cancer Genomics Consortium Symposium, ACTREC, Mumbai, (2012)*
12. Combinatorial effect of ZD6474 and Thymoquinone inhibits Src mediated ERK-1/2/STAT3 signaling renders antimetastasis in breast cancer, *By Shashi Rajput, Mahitosh Mandal, 24th EORTC-NCI-AACR Symposium-2012 on Molecular Targets and Cancer Therapeutics EJC 48, , (2012)*
13. Computer - Assisted Approach to Anemic Erythrocyte Classification Using Blood Pathological Information, *By Maitreya Maity, Prabir Sarkar, Chandan Chakraborty, Third International Conference on Emerging Applications of Information Technology (EAIT), ISI, Kolkata, (2012)*
14. Computer assisted cervical cytological nucleus localization, *By Malviya, R. Karri, S.P.K. Chatterjee, J. Manjunatha, M. Ray, A.K., TENCON 2012 - 2012 IEEE Region 10 Conference, Philipines, (2012)*
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16. Correlating Expression of Angiogenic Factors (VEGF,CD 105) with E-Cadherin in Assessing Progression of Oral Sub-mucous Fibrosis, *By Anura A., Das R.K., Pal M., Pal R.R., Ray A.K., and Chatterjee J, 3rd International Conference of Stem Cell and Cancer (ICSCCB-2012) : Proliferation, Differentiation and Apoptosis, New Delhi, (2012)*
17. CTRL registration and protocol designing for clinical trial of medical devices: A case of FES device for foot drop, *By Shendkar, C. Arya, Bikas K. Lenka, P. K. Kumar, Ratnesh Mahadevappa, M., Point-of-Care Healthcare Technologies (PHT), 2013 IEEE EMBS, Bangalore, (2013)*
18. Detection of Retinal Vessels in Fundus Images through Transfer Learning of Tissue Specific Photon Interaction Statistical Physics, *By Sheet, S. P. K. Karri, S. Conjeti, S. Ghosh, J. Chatterjee, A. K. Ray, Int. Symp. Biomed. Imaging, San Francisco, CA, USA, (2013)*
19. Different Honey Dilution in Modulating Prime Epithelial Gene (p63, E-cadherin, and β -catenin) expression and in vitro Wound Healing of HaCaT Population(Accepted), *By Bag S., Chaudhary A., Barui A., Das R.K., Sheet D., Karry P..K, Banerjee P. and Chatterjee J., 23rd Conference of the European Wound Management Association, Copenhagen., (2013)*
20. Direct Laser Microgrooving of Ti6Al4V as a Surface Modification Method for Biological Implants, *By Partha Saha, Sumanta Mukherjee, Santanu Dhara, International Conference (PSAM), IIT Guwahati, (2012)*
21. Endometrial receptivity assessment in women with latent genital tuberculosis., *By Chaudhury K, Subramani E, Pasricha P, Chakravarty B., 28th Annual Meeting of European Society of Human Reproduction and Embryology, Istanbul, Turkey, (2012)*
22. Enhanced susceptibility to apoptotic induction by Mcl1 inhibition through synergistic mechanism of celecoxib and betulinic acid in breast cancer, *By Prashanth Kumar B. N. Mahitosh Mandal, 24th EORTC-NCI-AACR Symposium on Molecular Targets and Cancer Therapeutics, Dublin, Ireland, (2012)*
23. Estimation of Stimulation Current For FES In Stroke Survivors Based On Surface EMG, *By Shendkar C, Mahadevappa M, Lenka PK, Kumar R, Smart Machines – Neural Evolution Annual International Conference of IFESS, Banff, Alberta, Canada, (2012)*
24. Flexible flow sensor over Polymer substrate for Biomedical application, *By Debashis Maji and Soumen Das, Third International Conference on Sensors and Related Networks (SENNET'12),, VIT University, Vellore, India, (2012)*
25. Honey in Modulating Epithelial Stem Cell Markers (p63 & E-cadherin) in vitro and in vivo Findings, *By Chaudhary A., Barui A., Das R. K., Mandal M., Banerjee P. and Chatterjee J, 3rd International Conference of Stem Cell and Cancer (ICSCCB- 2012) : Proliferation, Differentiation and Apoptosis, New Delhi, (2012)*

26. Integrating proteomics and metabonomics to understand the pathophysiology of endometriosis, *By* Dutta M, Joshi M, Sarkar C, Srivastava S, Lodh I, Chakravarty B, Dasgupta S, Chaudhury K, *National Magnetic Resonance Society Symposium*, Mumbai, India, (2013)
27. Interference mitigation between WBAN equipped patients, *By* Mahapatro, Judhistir Misra, Sudip Manjunatha, M. Islam, Nabiul, *Wireless and Optical Communications Networks (WOCN), IEEE 2012 Ninth International Conference on*, , (2012)
28. Laser Microgrooving of Ti6Al4V and its Effect on Viability Human Osteoblast-like MG63 Cells, *By* Partha Saha, Sumanta Mukherjee, Santanu Dhara, *International conference (AIMTDR'12)*, Jadavpur University, (2012)
29. Machine Learning of Ultrasonic Statistical Physics Primal for Tissue Characterization in Intravascular Ultrasound[Late Breaking Research], *By* D. Sheet, A. Karamalis, N. Navab, A. F. Laine, J. Chatterjee, A. K. Ray, S. G. Carlier, A. Katouzian, *Conf. IEEE Engg. Med. Biol. Soc. (EMBC)*, San Diego, (2012)
30. Method and System for Segmentation of Clustered Nuclei in Microscopic Images of Breast Fine Needle Aspiration Cytology Smears, *By* Hrushikesh Garud*, Sri Phani Krishna Karri, Debdoot Sheet, Ajoy Kumar Ray, Manjunatha Mahadevappa, Jyotirmoy Chatterjee, *Conference: 2013 International Symposium on Biomedical Imaging: From Nano to Macro*, San Francisco, (2013)
31. Multi-parameter analysis of electroencephalogram (EEG): A diagnostic measure for epilepsy, *By* Tibdewal, Manish N. M, Manjunatha Ray, A.K. Malokar, Monica, *Point-of-Care Healthcare Technologies (PHT), 2013 IEEE EMBS*, Bangalore, (2013)
32. Multiscale Fibrous Scaffolds for Skin Tissue Engineering, *By* S.Dey Sarkar, B.Farrugia, T. Dargaville, S. Dhara, *TERMIS World Congress*, Vienna, (2012)
33. New approach to evaluate improvement in gait of hemiplegics after Functional Electrical Stimulation, *By* Shendkar C., Mahadevappa M.,P. K. Lenka, Ratnesh Kumar, D. Biswas, *The Int. Conf. on Biomedical System, Signals and Images*, IIT Madras, (2012)
34. Non-invasive diagnosis of endometriosis: Proton-NMR based metabolomics approach, *By* Dutta M, Joshi M, Srivastava S, Lodh I, Chakravarty B, Chaudhury K, *28th Annual Meeting of European Society of Human Reproduction and Embryology*, Istanbul, Turkey, (2012)
35. Non-invasive Optical Coherence Tomography Evaluation of Wound Healing Progression under Topical Application Honey with Immuno-histochemical Corroboration(Accepted), *By* Chaudhary A., Bag S., Das R.K., Barui A., Sheet D., Karry P..K, Banerjee P. and Chatterjee J, *23rd Conference of the European Wound Management Association*, Copenhagen, (2013)
36. Pro-EMT and Neo-angiogenic attributes of Oral Sub-mucous Fibrosis and Visualization of Stage Progression Panorama through Automated Image Stitching, *By* Anura, A., Das, R. K., Pal, M., Bag, S., Conjeti, S., Sheet, D., Paul, R. R., Sengupta, S., Ray, A. K., Chakraborty, C., and Chatterjee, J, *3rd International Cancer Research Symposium*, Kolkata, (2012)
37. Random forest learning of ultrasonic statistical physics and object spaces for lesion detection in 2D sonomammography, *By* D. Sheet, A. Karamalis, S. Kraft, P. B. Noel, T. Vag, A. Sadhu, A. Katouzian, N. Navab, J. Chatterjee and A. K. Ray, *SPIE Medical Imaging*, Florida, (2013)
38. Reconstruction of mandible using 3D imaging, rapid tooling and molding, *By* P. Srivas, P. Saha, S. Dhara, *Bind 12*, IISC Bangalore, (2012)
39. Role of lipoproteins in the pathophysiology of endometriosis, *By* Dutta M, Sarkar C, Joshi M, Srivastava S, Lodh I, Chakravarty B, Chaudhury K, *International Symposium on Proteomics Beyond Id's*, Pune, India, (2012)
40. Segmentation and 3-D Visualisation of MR Images using Sliceomatic Tool, *By* Rahul R.Ambalkar, M.N.Tibdewal, Manjunatha M., A.K.Ray,, *Int. Conference, IIT Patna*, IIT-Patna, (2012)
41. Simulation and Feasibility Study of Flow Sensor on Flexible Polymer for Healthcare Application, *By* Debashis Maji and Soumen Das, *IEEE EMBS Special Topic Conference on Point-of-Care Healthcare Technologies (POCHT)*,, Bangalore, India, (2013)
42. Single Step Sintered Calcium Phosphate Fibres from Avian Egg Shell, *By* P. Dadeech, B. Das, S. Dhara, *ICC 2012*, Bikaner, (2012)
43. Synthesis, Characterization and In Vitro Biocompatibility study of Patterned Calcium Phosphate Fibrous Scaffold from Sea Shell, *By* B. Das, P. Dadeech, S. Dhara, *Bind 12*, IISC Bangalore, (2012)

44. The endometrium is the most significant contributory factor for poor outcome following ART in severe endometriosis - a study using recent technology, *By Ghosh S, Chattopadhyay R, Jana S, Goswami SK, Bose G, Chakravarty M, Chaudhury K, Chakravarty BN, 28th Annual Meeting of European Society of Human Reproduction and Embryology, Istanbul, Turkey, (2012)*
45. Thymoquinone alters Akt phosphorylation and mediates apoptotic induction in Human breast cancer cells, *By Shashi Rajput, Mahitosh Mandal, ICSCC, New Delhi, (2012)*
46. Topological features of the endometrium during implantation window in women with endometriosis: SEM, AFM and OCT study, *By Jana SK, Chaudhury K, Chattopadhyay R, Chakravarty BN., 28th Annual Meeting of European Society of Human Reproduction and Embryology, Istanbul, Turkey, (2012)*
47. Way-finding Electronic Bracelet for visually impaired people, *By Bhatlawande, Shripad Mahadevappa, Manjunatha Mukhopadhyay, Jayanta., Point-of-Care Healthcare Technologies (PHT), 2013 IEEE EMBS, Bangalore, (2013)*

School of Water Resources

Head

Prof. Dhrubajyoti Sen

Assistant Professor

Sahoo, Bhabagrahi

Ph.D.(IIT Roorkee), Water Management, Flood Analysis, Open Channel Hydraulics, Meso-scale Solute Transport Dynamics, River Basin Management, Hydro- and Agro-meteorology, Soft Computing in Hydrology

New Academic Programmes

The M. Tech. Programme in Water Management aims at providing integrated and interdisciplinary approaches, involving hydrological, biophysical, chemical, economic, institutional, legal, and policy-planning aspects, to solve water-related challenges in agriculture, industry, and domestic sectors. The Programme is designed for professionals and fresh graduates with Agricultural Engineering and Civil Engineering background. It aims to develop knowledge, insight and skills required to design, implement, and evaluate water management policies and strategies for making judicious use of water and achieving effective governance of water resources. The programme consists of foundation, specialization, and integration phases. The foundation phase provides latest insights, context, and concepts in integrated water and environment management issues. In the specialization phase, the students choose to make in-depth study either in Rural and Urban Water Management or Biosystems Engineering. In the integration phase, the students are challenged to bring together and apply their cumulative learning process in the form of an M. Tech. thesis.

Brief Description of on-going activities

A sponsored network project entitled "Land Use and Land Cover (LULC) Dynamics in Relation to Human Dimensions and Climate in Mahanadi River Basin, Orissa", funded by NRSC, Hyderabad, 2009-2012

A sponsored research project on "Groundwater modelling in selected basins between Farakka and Ganga Sagar" under Water Resources Management Group of Ganga River Basin Management Plan, funded by the Ministry of Environment and Forest, Govt. of India, 2010-2012

A sponsored network project entitled "Interdisciplinary network for holistic environment system analysis, eco-system services, integrated modelling and sustainable resources management (INNO-ASIA)", funded by the German Federal Ministry of Education and Research (BMBF), 2010-2012

Initiated a collaborative project with the Purdue University, USA on "Multidimensional Technological Innovations for Water-linked Health and Wellness" whose host-meeting was held during March 4-6, 2013.

A research project on "Development of a 1-D Transient Conservative Pollutant Transport Model for Meso-scale Application" is sponsored by SRIC, IIT Kharagpur under ISIRD to Dr. B. Sahoo, Assistant Professor for Feb. 2013 – Jan. 2015.

"Preparation of Ganga River Basin Management Plan" (Principal Investigator : Joint Project of 7 IITs; Sponsor: National River Conservation Directorate, MOEF, India; Duration: 2010 – Dec. 2013).

The faculties associated with the School of Water Resources, Department of Civil Engineering, and Rajiv Gandhi School of Intellectual Property Law have undertaken a consultancy project entitled, "Technical Review of Current 24x7 Water Distribution Project in Mysore", funded by JUSCO for a duration from 17th February to 30th June, 2012, amounting Rs. 39.71 lakhs.

Organized a Workshop in collaboration with the Purdue University, USA on “Multidimensional Technological Innovations for Water-linked Health and Wellness” during the First Meeting held during March 4-6, 2013

Thrust Areas

1. Integrated Water Resources Management; Supply of Equitable Water Quantity; Ensuring Minimum Acceptable Water Quality; and Regulatory and Water Governance Issues.

New Acquisitions

1. Acquisition of a Server; TDR Probe soil moisture meter; Conference Table and Chairs; Books for departmental library; Acquisition of meteorological data from IMD, Pune.

International Collaborations

Under the MOU signed between IIT Kharagpur and Leibniz University Hannover (LUH), Germany, Dr. Bala Ramani, Program Coordinator (India/South Asia), LUH has visited the School of Water Resources during February 17-18, 2012 to discuss with IIT authority for further extension of MOU period and intensification of student/faculty exchange between two institutes.

Initiated collaboration with the Purdue University, USA for taking up joint projects, faculty and student exchange program, and design of joint course curriculum during March 4-6, 2013.

Initiated collaboration with the Danish Hydraulic Institute (DHI)-India: Water & Environment Pvt. Ltd., New Delhi from 2013 onwards for joint research guidance of two M.Tech. students for enhancing their employment opportunity.

Prof. Sylvia Herrmann, Leibniz University, Hannover, Germany visited the School during January 18-23, 2013 for possible research collaboration.

Dr. Didier Bellefleur, International Relation Manager (Water), ENGEES, National School for Water and Environmental Engineering, Strasbourg, France visited the School on 09.11.2012 for possible research collaboration.

Pr Dr Eric Dubreucq, Axe Chimieverte, ecotechnologies, Deptt. des Sciences pour lesAgro bioprocedes, SupAgro Montpellier 2, France visited the School on 09.11.2012 for possible research collaboration.

Dr. Christophe SODORE, Director, Office of International & Corporate relations, Paris Inst. of Technology for Life, Food and Environmental Sciences, Paris Cedex, France visited the School on 09.11.2012 for possible research collaboration.

Lectures by Visiting Experts

1. Integrated Land Management System (ILMS) for Water Management and Regional Planning by Dr. Wolfgang-Albert Flugel (Chair Professor, Hydrology & Modeling, Friedrich-Schiller University, Jena (FSU-Jena), Jena, Germany)
2. Introduction of the distributed urban storm runoff model (Tokyo Storm Runoff model) with an advanced GIS catchment delineation by Prof. Akira Kawamura (Professor & Head, Civil & Environmental Engineering, Tokyo Metropolitan University, Tokyo, Japan)
3. Predictability and Diagnostics of Western Himalayan Satluj River flow: Spring seasonal inflow into Bhakra Dam in India by Dr. Indrani Pal (Assistant Professor, University of Colorado, Denver, USA)

Member - Professional Bodies

1. Sahoo, Bhabagrahi, *Life Member* - Indian Association of Hydrologists (IAH)
2. Sahoo, Bhabagrahi, *Regular Member* - American Geophysical Union (AGU)

Sponsored Research Projects

1. Development of a 1-D Transient Conservative Pollutant Transport Model for Meso-scale Application (ISIRD, SRIC, Rs.5.00 Lakhs)
2. INNO-ASIA networking project (Federal Ministry of Education and Research (BMBF), Germany, Rs.0.00 Lakhs)

Books Published

1. B. Sahoo and B.P. Bhatt: Multiple Water Use System for Sustainable Agriculture in the North-Eastern Hilly Regions of India (Chapter-9) *published by* IWMI-Tata Water Policy Res. Prog., Bloomsbury Pub. India Pvt. Ltd., New Delh (2013)

Papers Published in Journals

1. Errata for: Standardization of reference evapotranspiration models for a sub-humid valley rangeland in the Eastern Himalayas, *By* Sahoo, B., Walling, I., Deka, B.C., and Bhatt, B.P. *J. Irrigation and Drainage Engineering, ASCE* 139 (5) (in Print) (2013)
2. Field application of the multilinear Muskingum discharge routing method, *By* Sahoo, B. *Water Resources Management, Springer, doi: 10.1007/s11269-012-0228-5*, 27(5), 1193-1205 (2013)
3. Standardization of reference evapotranspiration models for a sub-humid valley rangeland in the eastern Himalayas *By* Sahoo, B., Walling, I., Deka, B.C., and Bhatt, B.P., *Journal of Irrigation and Drainage Engineering, ASCE* 138(10), 880-895. (2012)

Papers Presented in Conferences

1. A simplified channel routing scheme suitable for adoption in SWAT model, *By* Perumal, M., B. Sahoo, and M.S. Rao, *2012 International SWAT Conference*, Indian Institute of Technology Delhi, Ne, (2012)
2. Matched diffusivity theory of the Muskingum method - is it needed?,, *By* Perumal, M., and B. Sahoo, *World Environmental & Water Resources Congress 2013: Showcasing the Future*, Cincinnati, USA, (2013)
3. Recent advances in simplified hydrodynamic modelling of river flood waves (Keynote Paper), *By* Perumal, M., and B. Sahoo, *International HYDRO-2012 Conference on Hydraulics, Water Resources, Coastal and Environmental Engineering*, IIT Bombay, (2012)

Vinod Gupta School of Management

Head

Prof. Arabinda Tripathy

Professors

Guin, Kalyan Kumar *B.Tech.(IIT Kharagpur),*
Mukerjee, Prithwis *Ph.D.(Texas),*
Rajib, Prabina *Ph.D.(IIT Kharagpur), Corporate Finance, Derivatives (Financial & Commodity), Indian Capital Market*
Sinha, Gautam *Ph.D.(IIT Kharagpur),*
Teltumbde, Anand ,

Associate Professor

De, Sadhan Kumar *Ph.D.(UK),*

Assistant Professors

Barai, Parama *Fellow (XLRI, Jamshedpur),*
Bhattacharya, Sujoy *Ph.D.(IIIT&Mgt, Gualior), Data Analytics, Option Pricing, Quantitative Marketing*
Datta, Biplab *Ph.D (IIT Delhi), Marketing Management, Leadership and Teamwork*
Madhavan, Vinodh *D.B.A.(USA), Credit Default Swap Indices, Long-Term Dependence, Nonlinear Time Series Analysis*
Malik, Aradhna *Ph.D.(Univ of Denver), Communication Disorders, Intercultural Communication, Human Technology Interaction, Management of Public Health, Neuro Linguistic Programming (NLP)*
Mallick, Sudeep *Ph.D.(IIM Bangalore), Operations Management*
Mishra, Chandra Sekhar *Ph.D.(Utkal University), Financial Reporting and Analysis, Mergers and Acquisitions, Business Valuation, Financial Markets*
Misra, Arun Kumar *Ph.D.(IIT,Mumbai), Capital Market, Financial Markets, Commercial Banking, Corporate Finance, International Finance, Risk Management, Financial Economics, Competition Assessment*
Mukhopadhyay, Susmita *Ph.D.(Calcutta Univ.), Organizational Health and spiritual health, Human Resource Management, Business Ethics, Microfinance, Competency Mapping*
Nag, Barnali *Ph.D. (IGIDR, Mumbai), Economics of Climate Change, Energy and Environment Policy, Productivity and efficiency in industries*
Pradhan, Rudra Prakash *Ph.D.(IIT Kharagpur), Econometric Modelling, Infrastructure Finance, Financial Markets*
Sahney, Sangeeta *Ph.D.(IIT Delhi), Organizational Behavior, Marketing Management, Consumer Behavior, Services Marketing, Sales and Distribution Management, Services Quality, Quality in Education*
Sarkar, Ashutosh *Ph.D.(IIT Kharagpur),*

Visiting Facultys

Chattopadhyay, Siddhartha *Ph.D.(Univ. at Albany, SUNY),*
Ghosh, Kunal Kanti *M.Tech.(IIT Kharagpur), Supply chain management*

Faculty Resignation

P. Arunprasad Assistant Professor

New Academic Programmes

Dual Degree Postgraduate programme in Financial Engineering with interested departments at IIT Kharagpur.

Launched 3-Year Executive MBA (EMBA) Programme in Kolkata and Bhubaneswar in July-September 2010.

Brief Description of on-going activities

Currently offering M.B.A. and Ph.D. degrees. Launched VGSOM Working Paper Series in February 2010. Conducting Management Development Programs and In-House Training Programs for various industries.

Thrust Areas

1. Entrepreneurship
2. Financial Engineering
3. Small and Medium Enterprises
4. Process Industries

International Collaborations

Continuing collaboration with University of Nebraska, Omaha, and Creighton University

Lectures by Visiting Experts

1. General Management *by* Mr. Vijay Raghavan (Board of Directors, Birla Group)
2. Derivatives and Commodities *by* Mr. Shanmugham (Chief Economist, NCDEX)
3. Virtual World *by* Siddhartha Banerjee (CEO, Indus Geek Solutions)
4. Entrepreneurial plans *by* Rubel Ghosh (Founder & President, ERevMax)
5. IFRS *by* Rajiv Singh (CA, Joint technical Director, valuation & MBF course (ICAI))
6. Credit Rating vis-à-vis Risk Analysis *by* Sukanta Nag (General Manager, Care Ratings)
7. Positioning yourself for the future *by* Mr. Awdhesh Krishna (MD, Nomura India)
8. Global Retailing -- A Global Perspective *by* Mr. Samaresh Shah (Sales & Business Development Manager, Capgemini, India)
9. Marketing strategies and Brand Building *by* Mr. Anshul Asawa (GM and East India Head, HUL)
10. Managing HR in Large Organizations *by* Mr. Indrajit Sen Gupta (Director, Personnel Department , Andrew Yule & Company Ltd.)
11. 'New Product Development' ,while taking Scooty Pep as an example *by* Captain Mohan Ram (Advisor,TVS Motor Company (Alumnus of IIT Kharagpur, ex naval officer))
12. Managing an Enterprise *by* Mr Harsh Jha (MD Tata Metaliks Ltd and the Chairman of Tata Metaliks Kubota Pipes Ltd)
13. Management involved in setting up of new steel manufacturing plants in Jharkhand and West Bengal (Shalboni) *by* Mr. Biswadip Gupta (MD & CEO of JSW Bengal Steel)
14. Current Challenges in Supply Chain Management *by* Mr. Sukanta Padhy (Supply Chain Management Head of Cummins India (Alumnus of IIT Kharagpur))
15. Customer value Management - An initiative taken by us with some of the key customers *by* Mr Harsh Sachdev (Chief of Marketing & Sales, Tata Bearings)
16. Data Driven Decision Making *by* Prof. Sudip Bhattacharjee (Associate Professor ,Deptt. Of Operations & Information Mgmt, School of Business, University of Connecticut)
17. Managing in the volatile, Hi Tech and Global World *by* Mr. R. Ravimohan (MD S&P, Head South Asia, Chairman CRISIL)

Member - Professional Bodies

1. Datta, Biplab, *Regular* - Council of Architecture
2. Sahney, Sangeeta, *Member* - Indian Society for Quality (ISQ) (Asian Network for Quality)
3. Sahney, Sangeeta, *Member Category* - All India Management Association
4. Pradhan, Rudra Prakash, *Member* - Transportation Research Group of India
5. Pradhan, Rudra Prakash, *Member* - International Association of Financial Engineers
6. Pradhan, Rudra Prakash, *Senior Member* - Regional Science Association, India
7. Pradhan, Rudra Prakash, *Senior Member* - Operational Research Society of India
8. Pradhan, Rudra Prakash, *Member* - International Project Finance Association
9. Pradhan, Rudra Prakash, *Member* - Sustainability Research & Policy Network
10. Pradhan, Rudra Prakash, *Senior Member* - Indian Econometric Society
11. Pradhan, Rudra Prakash, *Member* - Indian Institute of Banking & Finance
12. Pradhan, Rudra Prakash, *Member* - Indian Science Congress
13. Pradhan, Rudra Prakash, *Member* - Global Development Network
14. Pradhan, Rudra Prakash, *Member* - Eco-Ethic International Union, Germany
15. Pradhan, Rudra Prakash, *Member* - Society for Sustainable Infrastructure Development & Healthy Environment
16. Pradhan, Rudra Prakash, *Senior Member* - Multiple Criteria Decision Making, USA
17. Pradhan, Rudra Prakash, *Member* - Society for Infrastructure System
18. Pradhan, Rudra Prakash, *Member* - Indian Society for Probability & Statistics
19. Mishra, Chandra Sekhar, *Life Member* - Indian Accounting Association
20. Sarkar, Ashutosh, *Life Member* - Society of Operations Management
21. Sarkar, Ashutosh, *Life Member* - Indian Institute of Industrial Engineering
22. Sarkar, Ashutosh, *Member* - Production and Operations Society USA
23. Malik, Aradhna, *Regular* - International Communication Association
24. Malik, Aradhna, *Life Member* - Indian National Portage Association
25. Malik, Aradhna, *Regular* - Academy of Management
26. Malik, Aradhna, *Member* - Asian Society Against Dementia
27. Malik, Aradhna, *Mentor* - National Mentoring Network
28. Mukerjee, Prithwis, *Founder* - ACM India Council - official India affiliate of the Association of Computing Machinery, US
29. Tripathy, Arabinda, *Senior* - Operational Research Society of India

Member - Editorial Board

1. Datta, Biplab (2011) *Reviewer* - Globsyn Management Journal
2. Malik, Aradhna (2009) *Associate Copy Editor* - Asian English as a Foreign Language Journal
3. Mukhopadhyay, Susmita (2009) *Member* - Pragyaan : Journal of Management
4. Mukhopadhyay, Susmita (2009) *Member* - JIS Management Vista,
5. Mukhopadhyay, Susmita (2009) *reviewer* - Psybernews
6. Mukhopadhyay, Susmita (2009) *Reviewer* - PRAYAAS - The Journal of Management,
7. Nag, Barnali (2004) *Associate Editor* - South Asia Economic Journal
8. Nag, Barnali (0) *Reviewer* - International Journal of Environment and Waste Management
9. Nag, Barnali (2003) *Associate Editor* - South Asia Economic Journal
10. Nag, Barnali (2005) *Associate Editor* - South Asia Economic Journal
11. Nag, Barnali (2006) *Associate Editor* - South Asia Economic Journal
12. Nag, Barnali (0) *Reviewer* - Energy - The International Journal
13. Nag, Barnali (0) *Reviewer* - Energy Policy
14. Nag, Barnali (0) *Reviewer* - International Journal of Environmental Technology and Management
15. Pradhan, Rudra Prakash (0) *Reviewer* - Malaysian Journal of Economic Studies
16. Pradhan, Rudra Prakash (0) *Member* - Journal of Applied Economics and Policy Analysis
17. Pradhan, Rudra Prakash (0) *Member* - International Journal of Financial Research
18. Pradhan, Rudra Prakash (0) *Reviewer* - African Journal of Economic and Management Studies
19. Pradhan, Rudra Prakash (0) *Member* - Pragyaan
20. Pradhan, Rudra Prakash (0) *Reviewer* - South Asia Economic Journal

21. Pradhan, Rudra Prakash (0) *Member* - ARASH
22. Pradhan, Rudra Prakash (0) *Member* - African Journal of Science and International Relations
23. Pradhan, Rudra Prakash (0) *Reviewer* - Energy Systems
24. Pradhan, Rudra Prakash (0) *Member* - International Journal of Happiness and Development
25. Pradhan, Rudra Prakash (0) *Member* - Journal of Management and Strategy
26. Pradhan, Rudra Prakash (0) *Reviewer* - Economic Modelling
27. Pradhan, Rudra Prakash (0) *Reviewer* - Journal of Social Sciences
28. Pradhan, Rudra Prakash (0) *Reviewer* - Journal of Developing Areas
29. Pradhan, Rudra Prakash (0) *Reviewer* - Cities
30. Pradhan, Rudra Prakash (0) *Reviewer* - Journal of Research in International Business and Management
31. Pradhan, Rudra Prakash (0) *Reviewer* - Journal of Management and Business
32. Pradhan, Rudra Prakash (0) *Reviewer* - International Journal of Educational Research
33. Pradhan, Rudra Prakash (0) *Reviewer* - International Research Journal of Management and Business Studies
34. Pradhan, Rudra Prakash (0) *Reviewer* - International Journal of Peace and Development Studies
35. Pradhan, Rudra Prakash (0) *Reviewer* - Neural Computing and Applications
36. Pradhan, Rudra Prakash (0) *Member* - The Management Accountant
37. Pradhan, Rudra Prakash (0) *Member* - Journal of Social Welfare and Management
38. Pradhan, Rudra Prakash (0) *Reviewer* - Review of Economics and Finance
39. Pradhan, Rudra Prakash (0) *Reviewer* - Kindler
40. Pradhan, Rudra Prakash (2009) *Reviewer* - Journal of Economics and International Finance
41. Pradhan, Rudra Prakash (0) *Reviewer* - Journal of Social and Management Sciences
42. Pradhan, Rudra Prakash (0) *Reviewer* - Universal Journal of Marketing and Business Research
43. Pradhan, Rudra Prakash (0) *Member* - International Journal of Economics and Management Sciences
44. Pradhan, Rudra Prakash (0) *Reviewer* - Review of Urban and Regional Development Studies
45. Pradhan, Rudra Prakash (0) *Member* - Australian Journal of Business and Management Research
46. Pradhan, Rudra Prakash (0) *Reviewer* - Journal of Management and Technology
47. Pradhan, Rudra Prakash (0) *Member* - Asian Economic and Financial Review
48. Pradhan, Rudra Prakash (0) *Reviewer* - British Journal of Economics, Management and Trade
49. Pradhan, Rudra Prakash (0) *Reviewer* - Arth Anvesan
50. Pradhan, Rudra Prakash (0) *Reviewer* - South Asian Journal of Management
51. Sahney, Sangeeta (2012) *Member of Editorial Board* - The International Journal of Engineering, Science and Technology
52. Sahney, Sangeeta (2012) *Member of Editorial Board* - The International Journal of Business, Management and Social Sciences
53. Sahney, Sangeeta (2012) *Member of Review Committee* - Globsyn Management Journal
54. Sahney, Sangeeta (2012) *Member of Review Committee* - The TQM Journal
55. Sahney, Sangeeta (2012) *Member of Review Committee* - The International Journal of Organizational Analysis
56. Sahney, Sangeeta (2012) *Member of Editorial Advisory Board* - Emerald Emerging Markets Case Studies
57. Sahney, Sangeeta (2012) *Member of Review Committee* - Quality Assurance in Education
58. Sahney, Sangeeta (2012) *Member of Review Committee* - The International Journal of Business and Information
59. Sarkar, Ashutosh (2009) *International Editorial Review Board* - International Journal of Applied Industrial Engineering

Awards & Honours

1. Madhavan, Vinodh (2010) *2009-2010 Outstanding Graduate Student Doctor of Business Administration Program, Golden Gate University, San Francisco*
2. Pradhan, Rudra Prakash () *BEST PROFESSOR IN INFRASTRUCTURE FINANCE*
3. Datta, Biplab (1992) *Institute Silver Medal*
4. Datta, Biplab (1992) *Institute Silver Medal, IIT Kharagpur*

5. Datta, Biplab (1985) *SAIL Merit Scholarship*
6. Pradhan, Rudra Prakash () *SAP FELLOW*
7. Mukhopadhyay, Susmita () *University Gold Medal for topper in MSC 1997*

Sponsored Research Projects

1. A Comparative Assessment of Performance of Select Institutes of Higher Education. (Indian Council of Social Science Research, ICSSR, Rs.4.86 Lakhs)
2. Econometric Modelling on Data Analysis (, Rs.5.00 Lakhs)
3. Econometric Modelling on Time Series (, Rs.2.50 Lakhs)
4. Money management Issues and Practices of the Ultra Poor Populations in West Bengal (ISIRD, Rs.0.00 Lakhs)
5. Risk Management in Supply Chain: A Study from the Perspective of Indian Industry (ISIRD, IIT Kharagpur, Rs.5.00 Lakhs)
6. Socio Economic Development in India (, Rs.0.00 Lakhs)

Consultancy Projects

1. Delay analysis of 2nd Phase Expansion of NALCO's Alumina Refinery (NALCO, Rs.0.00 Lakhs)
2. Operations Gurukul Workshop (Tata Management Training Centre [TMTTC] Pune, Rs.3.00 Lakhs)
3. Performance Evaluation of Continuous Surface Miner at Panchpatmali Bauxite Mines (NALCO, Rs.0.00 Lakhs)
4. Project Management for Coal India Executives (Indian Institute of Coal Management [IICM], Ranchi, Rs.2.50 Lakhs)
5. Project Management Module for Voltas Executives (Tata Management Training Centre [TMTTC] Pune, Rs.1.50 Lakhs)

Visits Abroad by Faculty Members

1. Pradhan, Rudra Prakash - Conference (UK,) 2012
2. Pradhan, Rudra Prakash - Conference (Canada,) 2012
3. Sarkar, Ashutosh - Collaborative Research (Center for Logistics & Supply Chain Management, Faculty of Business, Statistics and Economics, University of Vienna,) 54 days

Books Published

1. Dr Amita, Dr D Acharya, Dr I Roy Chowdhury, Dr lakshmi Kumar, Dr S Mukhopadhyay, Dr Veerashankarappa: EFFECT OF RESERVE BANK OF INDIA REGULATIONS ON PUBLIC SECTOR LENDING FOR MICROFINANCE INSTITUTIONS *published by IFMR Chennai (2012)*
2. Dr. Amita Dharmadhikary-Yadwabkar, Dr. Lakshmi Kumar, Dr. Mani Nandhi, Dr. Susmita Mukhopadhyay, Dr.: RETHINKING RESERVE BANK OF INDIA (RBI) REGULATIONS FOR MFIS AN ANALYSIS OF MICROFINANCE CLIENTS FROM URBAN AND SEMI-URBAN COMMUNITIES *published by IFMR Chennai (2013)*

Short-Term Courses, Training Programmes and Workshops organised

1. Advanced Management Programme for Executives from Mining Industry (February 18-22, 2012)
2. AICTE Approved Short Term Course. Title: "Consumer Behavior: Role Of Market Research" (Five days. 21st May, 2012 – 25th May, 2012)
3. Development Programme for E-2 & E-3 Executives of Uranium Corporation of India Limited (March 31-April2, 2011)

Papers Published in Journals

1. A case study on the ethical issues in MFIs By Saswat barpanda and Susmita Mukhopadhyay *Journal of Business Ethics in Developing Economies* Vol 1 (2013)
2. Designing Quality for the Higher Educational System: A Case Study of Select Engineering and Management Institutions in India By Sahney, S. *Asian Journal of Quality* Vol13, No1,pp116-37 (2012)
3. Post Acquisition Performance of Indian Manufacturing Companies: An Empirical Analysis By Leepsa, N. M. & Mishra, C. S. *Asia-Pacific Finance and Accounting Review* 1(1), pp. 17-33 (2012)
4. Post Merger Financial Performance: A Study with Reference to Select Manufacturing Companies in India By Leepsa, N. M. & Mishra, C. S. *International Research Journal of Finance and Economics* 83, pp. 6-17 (2012)
5. Post-service Recovery Customer Satisfaction in Indian Retail Banking: A Qualitative Approach By Mandal, P.C. and Bhattacharya, S. *International Journal of Qualitative Research in Services(accepted)* (2013)
6. Winner and Loser of M&A Game: Evidence from Manufacturing Companies in India By Leepsa, N. M. & Mishra, C. S. *Journal of Management Research* Oct-Dec, Forthcoming (2013)

Papers Presented in Conferences

1. Crompton Greaves: A Case Study on What Makes A Merger Successful, By Leepsa, N. M. & Mishra, C. S., *2nd International Conference on Management*, Langkawi Kedah, Malaysia, (2012)

Advanced Technology Development Centre

Head

Prof. S. DasGupta.

Associated Faculty

Prof. S. DasGupta, ChE	Microscale Transport Process and Microfluidics
Prof. P.P. Chakrabarti, CSE	Artificial Intelligence, CAD for VLSI Design of Algorithms, Formal Verification
Prof. S.K. Lahiri, Advisor, SRIC	Microelectronics, VLSI, MEMS, Integrated optics
Prof. S.K. Sen, Advisor SRIC	Advanced Plant Genetics.
Prof. S. Sengupta, E & ECE	Computer vision, Multimedia
Prof. D. Biswas, E & ECE	III-V Semiconductor Device Technology
Prof. A. Patra, EE	VLSI Design of Power Converters, Industrial Information Technology
Prof. A. Basu, CSE	Embedded Systems, Artificial Intelligence application
Prof. S. K. Roy, Physics	Solid State Physics, thin film, nanotechnology
Prof. S. P. Pal, CSE	Computational geometry, Design and analysis of algorithms
Prof. B. Bhattacharya, CE	Structural Engineering, Reliability
Prof. A. Ghosh, BT	Virology and Molecular Biology
Prof. Pallab Dasgupta, CSE	VLSI CAD & Electronic Design Automation
Prof. S. Chakraborty, ME	Micro fluidics
Prof. R. Banerjee, AFE	Food Biotechnology, Bioenergy, Enzymology and its biotechnological applications, Protein chemistry.
Prof. S. Mukhopadhyay, EE	Failure Diagnostics and Prognostics and Tolerance for Vehicular Systems, Industrial Instrumentation and Control and Automation.
Prof. P.K. Chattaraj, Chem	Density functional theory, Chemical reactivity, ab initio calculations, Quantum chaos, Aromaticity in metal clusters.
Dr. T.K.Bhattacharyya, E & ECE	Microelectronics, VLSI, MEMS
Dr. S. Das, SMST & ATDC	Microsystem Technology, BIOMEMS, Electro-physiological characterisation of biospecies, Medical electronics.
Dr. Chacko Jacob, Mat. Sc.	Wide Bandgap Semiconductors/ Nanomaterials/ Direct Fluorination of Materials/Oxide semiconductors
Dr. Pallab Banerjee, Mat. Sc.	Semiconducting materials, Materials for energy conversion: Photovoltaic and Thermoelectric, III-V and II-VI MOCVD, Organic semiconductor
Dr. A. Dhar, Physics	Condensed matter Physics, nanotechnology
Dr. Pranabendu Gangopadhyay	Microphotonics, Integrated Optics, Fiber Optics, MOEMS.

LABORATORIES / CENTRES INVOLVED IN ATDC

- a) MEMS and Microelectronics Laboratory
- b) MEMS Design Centre
- d) Microphotonics Laboratory
- c) Micro-fluidics Laboratory
- d) Kalpana Chawla Space Technology Cell
- e) Microscience Laboratory
- f) Advanced VLSI Laboratory

- g) Advanced Laboratory for Plant and Genetic Engineering
- h) Communication Empowerment Laboratory
- j) General Motors Collaborative Research Laboratory
- k) P.K. Sinha Centre for Bio-energy
- l) Centre for Railway Research
- m) Centre for theoretical Studies

RESEARCH AND DEVELOPMENT

Brief descriptions of on-going activities

Micromachining and MEMS are one of the major areas of research at Advanced Technology Development Centre. In addition to that, the fabrication of silicon and non silicon based microelectronic devices and ICs are also focused area of research at different laboratories under ATDC. Several government departments including NPSM/ADA, ISRO, DRDO, DST and BARC have funded projects to develop microsensors for special applications. During the last one year the MEMS devices developed in the laboratory include silicon piezoresistive accelerometer and microthruster and flow sensors. The technology for fabrication of silicon accelerometer has been transferred to Semiconductor Complex Limited, Chandigarh. Activities have been started on development of high sensitive MEMS accelerometer based on quantum tunneling phenomena and silicon MEMS pressure sensor. Design and development of MEMS based micropropulsion devices for micro/nano satellite programme such as Microthruster, Microvalve and Micropump.

The MEMS design laboratory, a national facility created under NPSM programme is actively involved with design work on MEMS including microfluidic devices. A number of students from various departments like ATDC, E & ECE, Electrical, Mechanical, Biotechnology, Material Science Department / Centre are involved in the Design Centre to do their project / thesis works. Other academic Institutions like Jadavpur University and CMERI, Durgapur, are also involved in the Design Centre.

Research and development is also undertaken in the field of Integrated Optics & Micro-Photonics. An integrated-optic design software have been developed and copyrighted. This software can design single-mode step-index and graded index waveguides along with bending losses and mode profiles. Fabrication and characterization of titanium indiffused lithium niobate waveguides, directional couplers, power splitters, switches for fiber-optic communication networks have been performed. Recently polymer based microstructures for microphotonic applications have been developed in the centre. Polymer integrated-optic waveguides have been fabricated and characterized in the centre for possible applications in passive devices.

Research is being carried out on thin film nanostructures, semiconductor, ferroelectric and magneto-resistive films for microelectronics and sensor applications under various government sponsored projects at MicroScience Laboratory of Dept. of Physics & Meteorology. A number of thrust areas have now emerged based on core competency available in the Advanced VLSI Laboratory. These include analog and RF circuits, wireless communication and Baseband processing, direct conversion receivers, power management circuits, processors and IP cores for embedded applications and design for testability. More than 60 different chips have been fabricated and tested. 15 leading companies have joined the AVLSI Consortium. More than 12 ongoing collaborative research projects funded by the Govt. of India and leading companies including National Semiconductors, Intel, Synopsys, Infineon, Texas Instruments, Si2 Microsystems, Agilent, Tessolve, Analog Devices and General Motors. The laboratory also offers regular intensive training to students of IIT Kharagpur. Buoyed by these initial successes, the laboratory is striving to attain still higher levels of excellence. Research directions are diversifying to new areas of mixed-signal SOCs, IP cores for embedded applications and analog DFT. Existing expertise on formal verification and optimization methods is being applied to design verification, synthesis and CAD Tool development for the deep sub-micron processes. More than fifty Doctoral and Masters students are working on various emerging areas. The Centre for Theoretical Studies (CTS) is primarily engaged to generate and nucleate theoretical research on fundamental aspects of basic and engineering sciences.

The Advanced Laboratory for Plant Genetic Engineering is dedicated to develop technologies suitable to enhance the productivity potential of some of our major crop plants through biotechnological

approach. The laboratory has met with some success in identifying specific genetic elements associated with fiber development in jute stem through functional genomic approach. Additionally, attempts to map the individual seven linkage groups of jute are underway. Discovery of certain plant genes and regulatory elements involved in the metabolic pathway of fatty acid synthesis and modification of their functional role in case of synthesis of seed oil of Indian mustard (*Brassica juncea*), are in active state of pursuit. Additionally, attempts have been initiated to genetically tamper the lignin biosynthetic pathway in vegetative parts of jute and sorghum plants by anti-sense approach. Major attempts have also been made in strategy development for generation of genetically modified crop plants resistant against insect pests belonging to lepidoptera, coleoptera and homoptera. Some success could be attained in case of cotton, Brassica and rice. Discovery of novel insecticidal genes from plants and bacteria and generation of transgenic crop plants expressing these insecticidal genes have been accomplished. Attention has also been directed towards development of efficient transformation methods for certain recalcitrant crop plants that have not yet been accessible to gene transfer methodologies. Further, development of marker free transgenic plant generation and site-specific integration of transferred DNA have figured as major targets of activities in order to enhance the efficacies of gene transfer techniques to a great height. The laboratory has also developed a microbial bioprocess technology using the state of the art of bio-film technology for high through-put production of superior quality of jute fibers. The technique reduces production time by ~70% and results significantly low effluents and green house gases. The process thus developed is safe for human handling and offers excellent quality control ensuing at least 2-3 grades better fiber quality against methods that are in use by the jute growers. Further, attempts to explore the possibilities for generation of jute fiber based bio-composites have also been initiated. The laboratory is further working on microbial bio-film based technology for high through-put production of specific carbohydrate macerating enzymes that carries industrial significance.

Thrust Areas

Inertial MEMS, Micro Sensors and actuators for automobile, space, and defense applications, Micropropulsion device for micro/nano satellite application, RF-MEMS, Bio-MEMS, Optical-MEMS, Semiconductor devices, Nanotechnology, Integrated Optics, Microfluidics, Biophotonics, Nonlinear Sciences, Theoretical condensed matter physics, Wireless communication and Baseband processing, Analog and RF circuits, Plant biotechnology.

New Acquisitions

MEMS vaporising liquid microthruster, Microflow for microvalve, micropump, MEMS flow sensors, SU8 Optical Waveguides, MEMS accelerometer for aircraft motion sensing. Tunneling accelerometer and Capacitive accelerometer, SU-8 smart microneedles.

ON-GOING RESEARCH PROJECTS

Sponsored Projects

SL. No.	Title of the project	Sponsor(s)
1	Indo-US Joint Centre on Advanced and Futuristic Manufacturing	Indo-US Science & Technology Forum,
2	Development of Silicon Microsensors for Flow Measurement	MHRD
3	Design, analysis and optimization of navigation grade silicon based MEMS accelerometer	ISRO-KCSTC cell
4	Upgrading facilities for MEMS design activities at national resource centre	NPMASS, ADA, Bangalore
5	Development of MEMS based components for RF applications	NPMASS, ADA
6	Development of MEMS based accelerometers for Aerospace applications	NPMASS, ADA
7	MEMS based micro-propulsion devices for micro-satellite programme	ISRO
8	Multi-scale modeling to study the role of atomic scale defects in CNT-based nanocomposites	DST
9	Effects of non-linearity and viscoelasticity of blood and wall tissues and magnetohydrodynamic effects on the flow field	CSIR, New Delhi

	in arteries in normal and pathological states (ENV)	
10	Kinematics of flows in diverse contexts (KFD)	DST, New Delhi
11	Measuring the HI power spectrum with the GMRT (MRT)	BRNS, DAE, Mumbai
12	Targeted gene integration in rice and cotton	National Fund for Basic Science, ICAR
13	Establishment of independence of Linkage Groups of jute through trisomic analysis in order to construct the genetical and physical map of jute genome.	DBT
14	Application of technology for tomato hybrid seed industry involving rural women for employment and income generation	DST
15	Recombinant DNA for development of a male-sterility system in jute.	DBT
16	Generation and cataloguing of bast fibre developmental stage specific EST library from jute	DBT
17	Design and fabrication of high sensitivity micro machined silicon tunneling accelerometer with micro-g resolution	ISRO
18	Development & characterization of nanostructured thin films for SiGe quantum well infrared photodetector and ferroelectric based gas/chemical sensors	DRDO
19	Terahertz emission of Si/SiGe structures doped with shallow acceptors	DST
20	Synthesis and characterization of nanostructured materials for functional and structural applications	DST
21	Fabrication and characterization of Novel Photonic Crystal Structures and Si/Ge Quantum Dots for Photonic Applications	DST-ITPAR, Italy
22	Design, analysis and optimization of navigation grade silicon based MEMS accelerometer	ISRO-KCSTC
23	Medical image analysis and MEMS based flow sensor development	Texas Instruments
24	Feasibility study of MEMS based biochip platform for characterisation of biospecies	IIT Kharagpur
25	Effects of non-linearity and viscoelasticity of blood and wall tissues and magnetohydrodynamic effects on the flow field in arteries in normal and pathological states (ENV)	CSIR, New Delhi
26	Kinematics of flows in diverse contexts (KFD)	DST, New Delhi
27	Measuring the HI power spectrum with the GMRT (MRT)	BRNS, DAE, Mumbai
28	All India Coordinated Research Project on Post Harvest Technology	ICAR, New Delhi
29	A Value Chain on Aloe Vera Processing	ICAR, New Delhi
30	Development of Silicon Carbide Thin Films for High Temperature and High Power Devices	DRDO
31	All India Coordinated Research Project on Post Harvest Technology	ICAR, New Delhi
32	Development of a MEMS based assay for biomedical diagnostics.	ISRO-IIT Kharagpur Cell
33	Development of SU-8 based microstructures for Integrated-Optic and Bio-applications	ISIRD, SRIC, IIT Kharagpur
34	Synthesis of functional groups for immobilization of functional proteins on MEMS based micro-sensor surfaces	Indo-Trento Program for Advanced Research
35	Upgrading Facilities for MEMS design activities at National resource centre.	NPMASS, ADA, Bangalore,
36	AVLSI Consortium	Multiple Industrial Organisation
37	Separation and electrical characterization biological cells using microfluidic devices.	Sponsored by NPMASS, ADA, Bangalore.

38	Droplet based microfluidics for electronics cooling.	Intel Corporation.
39	Indo-US Centre on Fabronics	Indo-US Science and Technology Forum.
40	A study of Microscale transport processes leading to the development of a cooling strategy for electronic components.	Department of Information Technology
41	Development of low cost household filter for arsenic and other pollutant free drinking water using modified laterite.	Department of Science and Technology
42	Rapid DNA hybridization in microfluidic channels.	DBT
43	Droplet based screening of Amyloid β -peptide aggregation	DBT

Consultancy Projects

SL. No.	Title of the project	Sponsor(s)
1.	Development and realization of high Q-factor quartz double ended tuning forks using micromachining technology	ISRO-IISU
2	Development of ADC and Receiver for wireless applications	Si2 Microsystems
3	Design of RFIC modules	National Semiconductor Corporation, USA
4	Design and processing of MEMS microstructure for mechanical property evolution	DMRL, Hyderabad
5	Thin Film Characterization	Various agencies

New M. Tech. Course

Apart from Ph.D. and M.S. degrees the centre has started a new M. Tech. course on embedded control and software (ECS). The course covers Design, Analysis and Implementation of high quality, functionally accurate embedded software incorporating complex intelligent control mechanisms across a wide range of hardware and software platforms. The methods address issues to Performance, Power / Energy, Fault Tolerance, Real-Time Operations, Safety-Criticality, Communication, Security, Parallel / Distributed Implementations, Software Engineering, etc. It will incorporate important applications, development of CAD tools and include Laboratory and Industry experience. The course is Interdisciplinary and Collaborative in nature and faculty members from several departments along with industry and other external experts are taking classes. It includes possibilities of industry based projects, sponsored candidates and participation in national level programmes. Research-orientation is a focus of this course which aims at developing new methods of intelligent control and software technology.

RESEARCH PUBLICATIONS

Research publications of associated faculty are listed in their corresponding departmental pages.

FACILITIES NEW ADDITION

Vacuum Probe Station.
Semiconductor parameter analyzer and Probe station interface using Labview setup.
Network Analyzer.
High Precision LCR Meter.
Wire Bonder.
Diffusion Furnace.
Nano Enabler for Bio-Assay Preparation.
Bio Safety Cabinet.
UV Ozonizer for Surface Oxidation.
Precision Crystal Cutter.
Vibration free Optical bread-board table.

COLLABORATIVE EFFORTS

- A joint collaboration research project on "Development of micromechanical inertial and flow sensors for environmental / biomedical application" sponsored by DST, Govt. of India is going on under an Indo-Italian research programme. (ITPAR). Collaborating Institute - ITC - IIST, Trento, Italy.
- A Proposal on "Indo - US centre for advanced and futuristic manufacturing" has been submitted by IIT Kharagpur to Indo -US Science and Technology forum. Under this proposal Advanced Technology Development Centre, IIT Kharagpur will be a partner institution.
- A joint collaborative research on "UV-written waveguides and microstructures on lithium niobate" is going on with Optoelectronics Research Centre, University of Southampton, U.K.

Alumni Affairs and International Relations

Dean of Alumni Affairs & International Relations

Prof. Amit Patra, Electrical Engineering

Managing Director, Institutional Development Program

Chinna Boddipalli,

Standing Committee on Alumni Affairs & International Relations:

Dean (P & C) and Professor-In-Charge of Information Cell

Prof. B.K. Mathur, Physics

Professor-In-Charge of News Letters / Publications

Prof. Joy Sen, Architecture & Regional Planning - Chief Editor

Technology Alumni Association Secretariat

Late Prof. Goutam Bandyopadhyay, Aerospace Engineering -President

Dr. Dilip. K. Nanda, Computer Informatics Centre-Secretary

Prof. Kajal Biswas, Mechanical Engineering-Joint Secretary

Prof. Joy Sen, Architecture & Regional Planning-Treasurer

Office of AA & IR

Shampa Goswami – Technical Superintendent

Shreyoshi Ghosh – Institutional Development Executive

Shruti Gupta - Institutional Development Executive

Anupam Sarkar - Institutional Development Executive

Institutional Development (ID) Program

IIT Kharagpur has initiated the Institutional Development (ID) program to leverage the alumni and corporate relations to support the all-round development of the Institute. Approved by the Board of Governors on February 20, 2010, the program was formally launched on July 1, 2010 with the recruitment of the Managing Director of the program, Mr. Chinna Boddipalli ('72, AE).

Mission

The program aims to support institute's offer to enhance its international ranking.

Vision

- Provide support for all-round growth plans of the Institute
- Implement a Sustainable and scalable resource development program
- Leverage the alumni and corporate relations for the growth of the Institute
- Promote the KGP Brand

Key components of the program:

- Alum connectivity
- Sustainable Fundraising
- Industrial Collaborations
- KGP brand building
- Recruitment and Retaining

The various activities of the Office of Alumni Affairs & International Relations under the banner of ID Program over the past one year are as follows:

Present Activities and Achievements

Alum Connectivity

Portal Migration

1. Content and database migrated successfully to Eklavya Creations, Development activities work-in-progress.
2. Separate content management system has been developed for offline content development. Video upload has been made possible.
3. The website is now offering secured directory service through emailing facility. Alumni can now network with each other through the email option made available wherein an alumnus can send email to a registered user's email id without the email id getting disclosed.
4. The portal has also proved to be an effective tool to accept donations campaign wise from alumni and generate receipt immediately. Pledges for donation can also be made through the website. Faculty registration facility has been made available.

KGP Connection

1. This is a fortnightly e-newsletter providing a platform to news and information related IIT-KGP students, alumni and faculty.
2. The monthly registrations at the web portal www.iitkgp.org increases substantially as and when the newsletter is mailed out.
3. The email database had 6000 email contacts initially and has increased to a figure of 32000.

Social Media Engagement

1. Facebook group has been created and has over 1500 members. It is being used for networking and promotions.
2. LinkedIn is being actively used for networking. It has over 11000 members.
3. Yahoo groups are also being approached.
4. Twitter account and YouTube Channel have been created.
5. 15000 alumni including faculty and students are connected via social media.

Email Service – Mass mailing service has been opted with new organization with customized mailing and specific reports generation. This service connects with alumni registered with us and also those whose email contacts are available with us.

Publications

1. Annual and quarterly print publications help exchange of news and stories to and fro alumni, students and faculty. Among these the key one is KGPian.
2. The Alumni Annual Report is the initiative of ID Program which maintains accountability and also shares information about fundraising initiatives, donors and its beneficiaries, new projects in the Institute etc. It gives donation details of IIT Foundation US as well.

Database Management: This has two aspects –

CRM

1. Development activities are work-in-progress; integration is done with website
2. Special modules developed for entering and tracking donation, receipts and pledge details. Database will be managed through CRM entirely.
3. Donor status, awards etc. have been linked to individual alumni profile.
4. Integration with email server is pending to help avail campaign mailing service through CRM

Data mining

1. Overall 30000 individuals are connected with via various interfaces – email, social media platforms and phone. This includes alumni, faculty and students.
2. 60 years database, convocation as well as contact details are being verified from old convocation brochures, online search and all available interfaces.
3. Departments are contacted for collecting alumni and faculty data. Students' data collected from ERP section.

Fundraising Campaigns

Under ID Program, several fund raising campaigns have been formulated –

1. **Founding Endowment Batch campaign – Grass-roots campaigning** have been tremendously successful with ID Program gearing up for fundraising; while it was a few lakhs in the past 60 decades, in one year the amount has crossed the figure of INR 3 crores. The Founding Endowment Batch campaign is for alumni across all the batches to donate for their respective batches and a classroom when they reach the minimum target of INR 50lakhs. Batch Leaders are being identified and communicated accordingly to encourage them to network with their batchmates and promote the campaign. This campaign has been successfully led by the 1991 batch that has already reached the initial target of INR 50 lakhs and got a classroom named after them. Other batches are also in the process of becoming Founding Endowment Batches. Promotion of this campaign is being done through personal contact, group meeting, events, mass mailing, customized mailing, social media and peer group motivation.
2. **My Imprint Campaign** – This campaign is for passing out students to contribute their caution money for becoming Founding Endowment Batch and also pledge a small percentage of their annual income. This campaign was fully launched in the year 2012 with 500 students signing up for the campaign. This novel initiative was reported in media as well as the youngest alumni donating their caution money and pledging.
3. **Parents Campaign** – This was launched before convocation 2012 requesting parents to donate. Contact has been established with parents on festive occasions to make them engage with the Institute
4. **Specific Endowment Programs** – Endowments for Chair Professorship, Young Faculty Award and Scholarship are being promoted as per requirement of the Institute or on special request of the alumni

Branding:

1. **Public Relations (PR):** News items are being made available to the media at regular intervals through print, electronic and online. List of media houses and PR sites across the country have been created and rapport are being developed to ease disbursement of news and information. Event and need based PR activities are being done successfully since the launch of ID Program and is considered as a thrust area under its KGP Branding initiative.
2. **Students' PR Cell:** This student body has been set-up to support the entire gamut of PR activities and make the Institute website dynamic and informative. This cell will work under the guidance of ID Program PR initiatives and will support the same.
3. **Ranking:** Initiatives are being taken to improve the international as well as domestic ranking of the Institute. The ranking parameters and procedures are being studied and strategic decisions need to taken based on the research. Data is being submitted annually for domestic and international ranking. Analysis report is being made suggesting scope of improvement The Institute has featured the first time in Times HE ranking and has been noted as the top most higher educational institution in India

Recruitment and Retaining of Faculty and Students:

1. Initiatives have been taken to collect data pertaining to Adjunct Faculty from among alumni and also maintaining track of all academic and industrial visitor profiles.
2. Peer data collection is a key initiative.
3. Awards are being initiated to attract and retain young faculty while Chairs are constituted to attract world-class faculty.
4. On the students front branding and networking by current students is an important initiative.

R&D: Certain corporate houses have been approached but the entire activity requires different logistics and organization and it is best to be addressed by Vision 2020. ID program will provide the necessary support as and when required.

Foundation Day – The office of the Dean organizes events on the occasion of the Foundation Day of the Institute. The 62nd Foundation Day was celebrated on August 18, 2012. The event was graced by alumnus Dharam Vir IAS (Retired), State Election Commissioner, Haryana.

Distinguished Alumnus Award 2012

Dr. P. C. Varghese (61/PhD/CE)
Prof. Viswanatha Ramamurti (63/MTech/ME/GH)
Prof. Sanjoy Banerjee (65/BTech/ChE)
Prof. Farrokh Mistree (67/BTech/NA/Azad)
Prof. Subrata Sengupta (69/BTech/ME/NH)
Prof. Dipankar Raychaudhuri (76/BTech/ECE/Patel)
Prof. Pinakpani Chakrabarti (76/MSc/Chem)
Mr. V. P. Sandlas (67/BTech/ECE/VS)
Mr. Sandipan Chakravorty (70/BTech/ME/RK)
Dr. Supratik Guha (85/BTech/Met/RP)
Dr. Anand Deshpande (84/BTech/CSE/Patel)
Mr. Pronob Kumar Sandell (55/BTech/ME)

Institute Lecture Series

Speaker: Prof. Chun-Yen Chang, President Emeritus, National Chiao Tung University, Taiwan
Topic: “The Post PC Era – The Scientific, Economic & Humanitarian Thoughts”

Speaker: Dr. Supratik Guha, Director, Physical Sciences Department, IBM Thomas J. Watson Research Center, New York, USA
Topic: “Energy efficient computing technologies towards the end of and beyond silicon scaling”

Speaker: Prof. Christian Rohde, Chair of Applied Mathematics, Institute of Applied Analysis & Numerical Simulation, University of Stuttgart, Germany
Topic: “A trip through fluidic interfaces in compressible fluid flow : shock waves, contact waves and phase transitions”

Speaker: Dr. Ajoy Banerjee, President, BIYA Global Inc., USA
Topic: “Construction, operation and management of Electric Power Plants”

Speaker: Prof. C. Raj Kumar, Vice Chancellor, O P Jindal Global University, Haryana
Topic: “Disaster Management and Governance”

Some of the recent visits of alumni are as follows:

- ❖ **Mr. Rajesh Pandey, IAS, Chairman and MD, West Bengal State Electricity Distribution Co. Ltd.**, visited IIT Kharagpur on 13th April 2012 to deliver a guest lecture on ‘Careers in Indian Civil Service’ for the students.
- ❖ **Dr. Lim Siow Jin, CEO, DXN Holdings, a Malaysia based MNC**, visited IIT Kharagpur on 20th April 2012 for some scientific discussions.
- ❖ **Mr. Vijay Varki and Mr. Mukul Mitra**, visited the Institute during 20-22 June 2012 for Amphitheatre project and renovation of TOAT.

- ❖ **Mr. Dharam Vir, State Election Commissioner, Haryana**, visited the Institute on 18th August 2012 to deliver the Foundation Day Lecture as Chief Guest and to receive the Distinguished Service Award 2011.
- ❖ **Dr. Supratik Guha, Director, Physical Sciences Department, IBM Thomas J. Watson Research Center, USA**, visited the Institute on 24th August 2012 to deliver an Institute lecture.
- ❖ **Dr. Ajoy Banerjee, President, BIYA Global Inc., USA**, visited the Institute on 3rd January 2013 to deliver an Institute lecture.
- ❖ **Prof. Subrata Sengupta, University of Michigan, USA**, visited the Institute during 4-6 January 2013 to receive the Distinguished Alumnus Award 2012.
- ❖ **Dr. Prabhakant Sinha** attended the International Conference on “New Horizons in Bioenergy Research” at the Institute during January 14-16, 2013

Details of Distinguished Visitors during the period 2012-2013

Sl. No.	Name & Details of Visitors	Date of Visit	Purpose of Visit
1	Mr. Anshuman Mishra Sr. Consultant, KPMG India	8 th August 2012	Delivered a lecture to the students on Careers in Consulting
2	Dr. Peter Gevorkian, President / CEO, Vector Delta Design Group, Inc. Mr. Subhasish Mitra, Chairman, Pelican Group Mr. Rathindra Mohon Datta, Director, Pelican Group Mr. Arunava Barua, Vice President, Pelican Group.	20 th November 2012	For establishing academic / collaborative relationship
3	Prof. Chris Somerville, Advisor of P K Sinha Centre for Bioenergy	14-17 January 2013	Attended the International Conference on “New Horizons in Bioenergy Research” at the Institute
4	Prof. C Raj Kumar, Vice Chancellor O.P. Jindal Global University, Haryana	12 th February 2013	To deliver an Institute lecture on "Disaster Management and Governance"
5	Prof. Marie-Louise Klotz and Prof. Gautam Saha, Rhein-Waal University	27 th February 2013	For signing the MoU

The Institute signed the following MoUs during the period April 2012 - March 2013

- i) University of New South Wales, Australia
(signed on 13th April 2012)
- ii) Renewal of agreement with The Universite Lille, France and its Graduate School of Engineering, Polytech Lille
(signed on 16th April 2012)
- iii) Govt. of Chhattisgarh for creation of Extension Centre of IIT Kharagpur at Raipur
(signed on 17th April 2012)
- iv) Joining and Welding Research Institute, University of Osaka, Japan
(signed on 20th September 2012)
- v) Membership agreement with the United Nations University, Japan
(signed on 24th September 2012)

- vi) Friedrich Schiller University, Jena (FSU-Jena), Germany
(signed on 17th September 2012)
- vii) Govt. of Andaman & Nicobar Islands for creation of Extension Centre of IIT Kharagpur at Port Blair
(signed on 9th November 2012)
- viii) MCX Stock Exchange Limited, Mumbai
(signed on 22nd January 2013)
- ix) Rhein-Waal University of Applied Sciences, Germany
(signed on 27th February 2013)
- x) International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad
(signed on 6th March 2013)
- xi) Leibniz-Institut für Polymerforschung, Dresden, Germany
(signed on 6th March 2013)
- xii) The University of British Columbia Applied Science
(signed on 25th March 2013)

As per MoU, the Institute permitted the following students to undergo the academic courses/internship at IIT Kharagpur during April 2012 – March 2013:

Name of the University	Name of the student (s)	Duration of visit
Polytech Lille, France	Ms. Fanny Tissot Ms. Julie Deschamps	<u>Dept. of Agricultural & Food Engineering</u> 01.05.2012 – 31.07.2012
University of California, Berkeley	Ms. Katherine He Ms. Ramya Prathuri Ms. Akshita Dutta Mr. Jay Patel Mr. Rohan Jonnalagadda	<u>Dept. of Chemical Engineering & Dept. of Electrical Engineering</u> 16.06.2012 – 12.08.2012
Technische Universität, Darmstadt, Germany	Ms. Judith Elin Vesper	<u>Dept. of Mechanical Engineering</u> 18.07.2012 – 30.04.2013
Leibniz University, Hannover, Germany	Mr. Tim Federmann	<u>Dept. of Architecture & Regional Planning</u> August 2012 – July 2013
Virginia Commonwealth University, USA	Mr. Demetrius Adams Mr. Joshua Monday Mr. David Tchao Ms. Abigail McFarland	06.01.2013 – 11.01.2013

Central Library

The Central Library, IIT Kharagpur is one of the largest technological libraries in Asia which is fully automated and facilitates more than 10,000 users from students, research scholars, faculty and staff of the Institute. Its website address is <http://www.library.iitkgp.ernet.in>

Chairman

Professor S. Chattopadhyay
Ph. D (IIT Kharagpur), MURP (SPA Delhi), B. Arch (Calcutta), Cert, Housing (Newcastle, UK), Dip, Housing (Lund, Sweden), AITP, Housing, Urban Planning and Building Materials.

Librarian

Sutradhar, B. Ph.D., M.Sc., M.Lib.I Sc., C.C.A

Assistant Librarians

Shankar, U M.Lib.I.Sc., M.A.
Mazumdar, K Ph.D., M.Lib.I.Sc., B.Com, CPDA
Nandi, A M.Lib.I.Sc., M.Sc.

Retirement

Mr. Biswanath Sinha, Library Information Officer, retired on September'2012
Mr. A.R. Chowdhury, Technical Superintendent, retired on October'2012

Print and Electronic collection added during 2012-13

Books			Journals/ e-Resources		
General	Text Books	e-Books database	Print	Only online	e-databases
1154	1149	03	02	890	05

Besides, 696 bound volumes of periodicals, a good number of theses, reprints and annual reports of other Universities have been added to the Central Library collection during 2012-13.

New Journals/ e-databases added during the year 2013

1. ECS Digital Library Package (8 new titles)
2. RSC Core Chemistry Collection (5 new titles)
3. Sage Premier Package (613 new titles)
4. Wiley Customs Collection (233 new titles)
5. Elsevier Journals (2 new titles)
6. American Journal of Respiratory and Critical Care Medicine/ American Thoracic Society
7. Cambridge Law Journals/ CUP
8. Diabetes/ American Diabetes Association
9. International Journal of Aeroacoustics/ Multi-Science Publishing
10. Journal of Electronic Imaging/ SPIE
11. More Material and Engineering Science Collection Online (19 new titles)
12. Science and Culture/ Indian Science News Association

13. Royal Society Journals (Physical and Engineering Sciences)
14. Annual Review Archives
15. EzProxy (for remote Access)
16. IOP Science Back Files (Access from Vol.1, Issue 1)
17. Elsevier Science Back Files on Science collection

INDEST-AICTE Consortium

As a core member of INDEST-AICTE Consortium, Central Library has been getting access to all the fulltext databases, journals subscribed by the consortium. This year Taylor & Francis journals and JSTOR database have been included in the subscription list of the consortium to provide access to all the member institutions.

New Library Services Introduced

- Online Document Delivery Services
- Weekly current arrival list of PhD theses submitted by the students of the Institute

Circulation Section

Circulation section is the gateway between users and documents so it plays a major role to any Library and Information System. Circulation Section performs issue, renewal, return of books using the library management software LibSys. Apart from this basic task many other jobs like membership registration, issue no-dues certificate, inter library loan, overdue fine collection, book reservation, various e-mail alert generation, etc. and all kind of queries by the users are being performed by this section. Central Library Circulation Section is kept open for 63 hours a week.

Institutional Digital Repository:

Institutional Digital Repository (IDR): Central Library has developed an **Institutional Digital Repository using open source software namely DSpace**. The IDR collects, preserves and disseminates in digital format the research output (PhD theses, Technical reports, Faculty publications, etc.) of IIT Kharagpur research community. It enables the Institute community to deposit (self archiving) their preprints, post prints and other scholarly publications using a web interface, and organize these publications for easy retrieval. At present, the access of 'Institutional Repository' is restricted within the IIT Kharagpur campus LAN only and submission of documents to this repository is also limited to the IIT Kharagpur research community only.

Renovation Works

The Lift in the Library Main Building has been renovated

Facilities created for Library Users in Annexe Building

- Group Discussion Room
- Group Study Room
- Research Scholar Study Room
- 100 Electric power points created for laptop connection

New software/ hardware/ equipment/ furniture

- Libsys version 7
- 12 new CCTV
- 12 desktop Computers

- 1 Server for Libsys
- 71 Reading tables made by CWIS department of IIT Kharagpur
- 300 Reading chairs

Award

Mr. N.C. Das, Staff of the Central Library has been awarded Prof. S. Parthan Library Service Award

Added qualification/attended short term courses

- Mr. Atin Nandi, Assistant Librarian, attended UGC Sponsored Refresher Training Course held at the Department of Library & Information Science, Jadavpur University, Kolkata from 22 August to 11 September, 2012.
- Mr. Arup Kumar Goswami, SLIA, has obtained first class in M. Sc. (Environmental Science) from Vidyasagar University.
- Mr. Arup Kumar Goswami and Mr. Samrat Guha Roy, SLIA, have successfully completed the NET qualification held in June 2012, conducted by the UGC.
- Mr. K. Venu Gopala Rao, Senior Technician, acquired Master of Library & Information Science degree from Annamalai University

New Appointments

Five Professional Trainees have joined the Central Library for one year training programme.

Invited Lectures

- Sutradhar, B. delivered an invited lecture on Future role of Academic Librarians at ICSSR National Seminar on ' Electronic Librarianship in India: Issues and Trends ' held on 19th May 2012, organized by OUAT, Bhubaneswar
- Sutradhar, B. delivered an invited lecture on Library Activities and services at Tagorean Concept on Library Activities and services held on 17th December, 2012. Organized by K.D. College of Commerce and General Science, Midnapore
- Sutradahr, B. acted as chairperson in technical session of the National Seminar on the theme "A CENTURY OF LIS EDUCATION IN INDIA : PAST, PRESENT AND FUTURE" to commemorate the centenary of LIS education in India during 02-04 February, 2012
- Sutradhar, B. delivered an invited talk on Self Archiving of Faculty Publication in to Institutional Repository at National Conference on Reprographic Rights and Copyright Act: Challenges and Management (NCRCA-2013) during March 7-8, 2013.
- Samrat Guha Roy and K. Venu Gopala Rao presented a paper 'Emerging technologies creates infinite opportunities' at UGC Sponsored National Seminar on Professionalism in Librarianship: issues and challenges in 21st Century at Department of Library & Information Science, Vidyasagar University during 7th to 8th March, 2013

Central Research Facility

Chairmen

Prof. Rahul Mitra, MME Materials Sc. Division
Prof. Ananta Kumar Ghosh, BT, Life Sc. Division

Associated Faculty

Prof. A. Basak,	- In charge, CD Polarimeter
Prof. M. Bhattacharjee	- In charge, EPR
Prof. S. K. Srivastava	- In charge, ESCA
Prof. S. K. Ghosh	- In charge, FACS
Prof. S. K. Pabi	- In charge, XRD, HRXRD
Prof. J. Dutta Majumder	- In charge, FE-SEM
Prof. B. Adhikari	- In charge, FTIR
Prof. T.K. Nath	- In charge, Hall Effect
Prof. R. Banerjee	- In charge, HPLC
Prof. Rahul Mitra	- In charge, HRTEM
Prof. K.K. Ray	- In charge, UTM (Instron)
Prof. A.K. Das	- In charge, MALDI, XRD (Protein Crystallography)
Prof. S. Das Gupta	- In charge, ITC
Prof. T. Pathak	- In charge, Mass Spectrometer
Prof. S.B. Singh	- In charge, OES
Prof. J. Dutta Majumder	
Prof. K. Biswas	- In charge, Optical Microscopy
Prof. P. Roy Chowdhury	- In charge, Optical Fiber
Prof. A.K. Ghosh	- In charge, PCR, 2-D Gel. DNA Sequencer
Prof. R. Mitra	- In charge, SEM
Prof. C. Jacob	- In charge, SPM
Prof. S. Das	- In charge, TEM
Prof. K. Das	- In charge, Thermal Analysis
Prof. S.H. Dey	- In charge, LC-MS/MS
Prof. V. Adyam	- In charge, SQUID
Prof. A. Roy	- In charge, Raman Spectrometer
Prof. T. Laha	- In charge, Nanoindentation & Nanotribology

Senior Scientific Officers

Dr. Amal Kumar Datta	Ph. D. (IIT Kharagpur), Experimental & theoretical condensed matter physics.
Dr. Rabindranath Maiti	M.Sc., Ph. D. (IIT Kanpur), Inorganic Chemistry, Scanning Electron Microscopy and Metal Matrix Composites

Brief descriptions of on-going activities

Life Science Division

- (I) **2D GEL Laboratory:** Two-dimensional gel electrophoresis system: this equipment is used for analyzing protein samples (qualitative and quantitative) provided by investigators (students, scholars and faculty of the department of Biotechnology, SMST, and ALPGE).
- (II) **DNA Sequencer; Real time Polymeric Cyclic Reaction (PCR) analyzer, 2- Dimensional gel electrophoresis Laboratory:** This equipment is use to determine nucleotide sequence

- of DNA samples provided by different investigators (students, scholars and faculty of the department of Biotechnology, SMST, ALPGE and AgFE).
- (III) **Real Time PCR machine Laboratory:** this machine is used to analyze gene expression level (quantitative) in different tissue samples provided by investigators (students, scholars and faculty of the department of Biotechnology, SMST, ALPGE).
 - (IV) **FACS Laboratory:** the BD FACSCalibur™ system is four-color, dual-laser, bench top system capable of both cell analysis and sorting. This machine is designed specifically to support a wide range of applications like immunophenotyping, absolute counting, residual white blood cell enumeration, stem cell analysis and isolation by sorting. Recent Experiments carried out with this instrument include drug delivery, detection of apoptotic cell death by TUNEL Assay, interaction between cell and fluorescent labeled toxin molecules, and cell cycle analysis.
 - (V) **High Pressure Liquid Chromatography Laboratory:** HPLC is an efficient technique used for the separation of macro/micro molecules such as organic compound, amino acids, nucleotides, aroma/fragrance, enzymes and proteins etc. this equipment has quaternary pumps, along with different detectors like Refractive Index (RI) and Photo diode array at variable wavelengths, manual injecting valves, ports as well as various columns for separating different molecules.
 - (VI) **MALDI_ToF Laboratory:** Matrix Assisted laser Desorption Ionization (MALDI)- Time of flight (ToF) mass spectrometry is used for mass analysis of polymers, proteins and other small molecules (>500Da),. As well as for biomarker identification of different species.
 - (VII) **Protein Crystallography: Protein X-ray Crystallography (PX) Laboratory:** Rigaku Micromax 007^{HF} X-ray generator is equipped with RaxisIV++ detector and X-steam cryo for X-ray diffraction studies of protein crystals to determine their 3D structure in atomic resolution. Three dimensional structures of proteins from pathogenic organisms like *M. tuberculosis* and *S. aureus* have been determined.
 - (VIII) **Isothermal Titration Calorimetry (iTC200 Systems):** iTC200 is used for characterization of molecular interactions of small molecules, proteins, antibodies, nucleic acids, lipids and other biomolecules. Enzyme kinetics, assessment of the effect of molecular structure changes on binding mechanisms, assessment of biological activity are also possible. Direct measure of sub-millimolar to nanomolar binding constants (10^2 to 10^9 M⁻¹) and measurement of nanomolar to picomolar binding constants (10^9 to 10^{12} M⁻¹) using the competitive binding technique.

Materials Science Division

- (IX) **Field Emission Scanning Electron Microscope Laboratory:** the field emission gun assisted scanning electron microscopy (FE-SEM, Supra 40V, Carl Zeiss, Germany) provides an excellent scope of microstructural characterization using secondary or back scattered imaging, energy dispersive spectroscopy and electron back scattered diffraction analysis. The samples analysed include various metals and alloys, semi-conducting and insulating films, refractories, polymeric and ceramic powders, failed engineering components and hybrid./composite materials.
- (X) **FTIR Laboratory:** FTIR analysis of different samples in powder, liquid and also film form in MID-IR and FAR-IR range are done at both ambient and above ambient temperatures by our institute students and faculties.
- (XI) **Hall Effect Laboratory:** Electrical resistivity (conductivity), Magnetoresistance and Hall voltage measurements of metals, semiconductors, oxides, heterostructures, etc. Are carried out in the temperature range of 10 – 300 K by employing a closed cycle Helium refrigeration cryostat in the magnetic field range of -10 kOe -0 -+10 kOe. The magnetoresistance and Hall measurements employing a Vander Pauw four probe technique are also used for characterization of materials like magnetic oxides, spintronic materials, nanometric materials, spin sensor material, magnetic multilayers, semiconducting materials, etc.

- (XII) **High Resolution Transmission Electron Microscope Laboratory:** The HRTEM laboratory is equipped with the JEOL JEM-2100 High Resolution Transmission Electron Microscope, OXFORD INCA EDS microanalytical system and GATAN CCD camera. This instrument is used for observation of specimens to observe the microstructures at high resolution, up to the level of arrangement of atoms, and determination of the crystal structure defects and grain sizes as well as chemical composition at selected positions. In metals, ceramics, polymers rubbers and semiconductor. The machine is routinely used for research on nano-structured materials, bulk alloys, thin films powders, and composites. In addition, it is possible to study phase transitions at low temperatures using the specimen holder operating at the liquid nitrogen temperature.
- (XIII) **Optical Emission Spectrometer Laboratory:** Optical emission spectrometer (Model No. ARL 3460) is used for very fast, reliable and accurate analysis of chemical composition. In this machine, the energy coming out from a spark formed between sample and an electrode is converted into a spectral pattern, which is used to analyze the presence of element and its quantitative analysis (from the intensity of spectrum).
- (XIV) **Optical Fiber Laboratory:** The research in this laboratory is based on design, fabrication and analysis of microstructured optical fiber. The optical fiber perform fabrication unit mainly consists of optical lathe machine, real time monitoring system for temperature and gas flow controller, movement/speed controller of the mechanical stack-holding assembly, and the flame-brush unit. The accessory units like nitrogen plant, chiller plant are integral part of the system.
- (XV) **Scanning Electron Microscope (SEM) Laboratory:** The SEM laboratories are equipped with 1) JEOL JSM-5800, 2) ZEISS EVO-60 Scanning Microscopes. The analytical attachments with these instruments are OXFORD ISIS-300, INCA Energy-250 EDS systems, INCA Wave-500 WDS system and HKL Channel-5 EBSD system. The projects associated with the instrument are aluminium alloys, In-situ composites, failure analysis of materials, Biomaterials, Nanostructured materials, Microalloyed steel, Laser surface alloying, Cutting tool materials, Functionally graded materials, Intermetallics, Rubber and Polymer based composites, Ceramic materials etc.
- (XVI) **Scanning Probe Microscope Laboratory:** A wide variety of samples have been examined using the Scanning Probe Microscope in the last year. These include metals, polymers semiconductors, nanomaterials, etc.
- (XVII) **TEM Sample Preparation Laboratory:** This laboratory provides services for preparing samples of different types of TEM study using instruments like cryo-ultramicrotome jet polisher, and precision ion polishing system (PIPS) etc.
- (XVIII) **Thermal Analysis Laboratory:** The thermal analysis laboratory I equipped with Differential Scanning Calorimeter (DSC), Thermo-gravimetric and Differential Thermal Analyzer (TG-DTA) and Thermo Mechanical Analyzer (TMA). The DSC is being extensively used to study the thermal stability of nanocomposites, glass transition temperatures of polymeric materials, and curing of polymeric materials. The recent works of significance done with the TG-DTA system include the evaluation of thermal stability of polymer nano composites, TG studies have been carried out on the calcinations of aqueous combustion synthesized metal oxide powders, analysis of reactions towards formation of new ceramic compounds, effect of mechanical milling on the reaction onset temperature of aluminium based nano composites, etc. The TMA is being used to study the sintering behavior of nano composite materials as well as to determine the thermal expansion coefficients of some newly developed materials.
- (XIX) **X-ray Diffraction Laboratory:** X-ray diffraction (XRD) facility includes three units: PW Philips 1710, Expert PRO I and Expert PRO II. While the first unit is used for routine powder diffraction studies, Expert PRO I is dedicated to texture and residual stress analysis and high temperature XRD. Expert PRO II unit is utilized for powder diffraction at normal and high resolution and low angle incidence mode. These units are extensively used to conduct phase

analysis and identification, crystallite size determination, plastic strain measurements, texture evolution, surface residual stress measurements, phase transition studies (ex situ and in situ), volume fraction determination and failure analysis of engineering components.

(XX) **Circular Dichroism (CD) Spectrometer Laboratory:** Circular Dichroism (CD) J-810-150-S Model, 150W air-cooled Xenon Lamp, Head-on photomultiplier tube, 163-900 nm measurement range Circular Dichroism (CD) is observed when optically active matter absorbs left and right hand circular polarized light slightly differently. It is measured with a CD spectropolarimeter. The instrument needs to be able to measure accurately in the far UV at wavelengths down to 190-170 nm. The difference in left and right handed absorbance $A(l)$ - $A(r)$ is very small (usually in the range of 0.0001) corresponding to an ellipticity of a few 1/100th of a degree. The CD is a function of wavelength. It has become a powerful tool to analyze the structure of biomolecules and their interaction with various ligands. Changes in the CD spectra reflect a perturbation in the structure of biomolecules brought about by changes in conditions like temperature, pH or drug binding. Protein folding/unfolding can be followed by changes in the CD spectra. Stereochemistry of products through enzymatic reactions is also an important activity of CD spectroscopy, which is related to the 3D-structure of the active site of an enzyme. Stereochemistry of products through enzymatic reactions is also an important activity of CD spectroscopy, which is related to the 3D-structure of the active site of an enzyme.

(XXI) **Mass Spectrometer Laboratory:** Mass Spectrometer LCT is a compact, fully integrated, computer controlled, high performance, orthogonal acceleration Time-of-Flight (oa-TOF) Mass Spectrometer that can be configured for a wide range of LC-MS applications. It provides both exact molecular weight (HRMS) and structural information (LRMS) for characterization of mainly organic compounds and some organometallic compounds and metal complexes with excellent sensitivity. Both synthesis and elemental confirmation can be obtained that is essential for the support of patent applications or for the submission of data to scientific journals. The types of projects on which the equipment can be associated with are based on Synthesis Confirmation, Elemental Confirmation, Structure of Natural Products, Drug Discovery, Supramolecular Interactions/Drug-Receptor Interactions, and Environmental Monitoring. The equipment has been rendering extremely valuable service since its inception to the users within IIT, Kharagpur and external users from various academic institutes, R & D laboratories and industries.

(XXII) **SQUID VSM Laboratory:** The Quantum Design MPMS SQUID VSM EverCool system features an integrated pulse-tube cryocooler-dewar system. This eliminates the need to use any liquid cryogen for the operation of the MPMS SQUID VSM. It offers 1×10^{-8} emu sensitivity with fast data acquisition. A maximum DC magnetic field up to 7T in temperature range 2-1000K is available in both DC and AC magnetization measurements. Information about hysteresis loops, relaxation times, magnetic field and temperature dependence of magnetic moment can be obtained. Magnetic properties of broad range of samples related to materials, geological and biological can be analysed. System Model No:- SVSM-EC, Serial No. SMT 043

(XXIII) **Transmission Electron Microscope Laboratory:** Transmission Electron Microscope with ability to study structure and composition is being procured. The chosen electron microscope is operated at acceleration voltages up to 200 kV. The machine is equipped with high tilt specimen stage, which is essential for examination of structural defects in materials. It will be possible to study specimens using bright and dark field imaging, selected area diffraction, convergent beam electron diffraction and energy dispersive spectroscopy. The Energy Dispersive X-Ray Analyzer provided with the transmission electron microscope will be able to detect element composition, both qualitatively and quantitatively. The CCD Camera records images on high resolution transmission electron microscope electronically. The accompanying softwares are going to be used in analyses of images. Model FEI-TECNAI G2 20S- TWIN.

- (XXIV) **Raman Spectrometer Laboratory:** Raman spectroscopy is an efficient non-destructive tool, which provides enormous information on various physical properties of new state of art materials. The Triple Raman Spectrometer, T64000 from Jobin Yvon, Horiba, France, is equipped with Ar-Kr ion laser (with 10 laser lines) as an excitation source, a triple monochromator and a CCD detector (1024×256 pixels). It has a capability to reject Rayleigh line to a very high extent for all 10 laser lines. Hence, using this instrument one can record spectra from as low as 2 cm^{-1} Raman shift. Other than material characterization, it can be used for resonance Raman measurements and acoustic phonon measurements. No tool-specific sample preparation is required for the measurements. The incident radiation can directly interact with the sample. The system works for all types of sample, solid (powder or crystalline), liquid and gas.
- (XXV) **Nanoindentation & Nanotribology Laboratory:** The nanoindenter with nano-tribological testing facility (*TI 950 TriboIndenter, Hysitron Inc., USA*) in the “Nanoindentation & Nanotribology Laboratory” at Central Research Facility in IIT Kharagpur is a Nanomechanical characterization instrument with in-situ SPM (Scanning Probe Microscopy) imaging, facility, through which mechanical properties like hardness, Young’s modulus, stress-strain behavior, creep indentation fatigue resistance and fracture toughness of thin films, coating, individual phases in a multiphase alloy, composites and soft biological tissues can be studied. The instrument is capable of carrying out various mechanical testing operations in nano -scale as well as in micro-scale, owing to its dual head testing capability. The various mechanical testing could be carried out at higher temperature (up to 400°C) also. Integrated with low-noise three-plate capacitive transducers and electronics, the multi-layered enclosure and active vibration isolation system provide excellent environmental separation for the instrument.
- (XXVI) **High Resolution Mass Spectrometry Laboratory:** Mass Spectrometer Model Xevo G2 QT of waters UK Ltd. The Xevo G2 QToF Mass Spectrometer is a highly sensitive, exact mass bench top system. The instrument is equipped with a T-wave collision cell and with a orthogonal acceleration Time-of-Flight (oa-ToF) mass analyzer with a wide mass range up to 100,000 m/z and a resolving power of 20,000 FWHM. It provides both exact molecular weight (HRMS) and structural information (LRMS) for characterization of mainly organic compounds and some organometallic compounds and metal complexes with excellent sensitivity. The range of compounds for which the instrument can be used varies widely from small organic, inorganic, compounds to oligomers, polymers and biomolecules. The instrument will provide elemental confirmation that is essential for the support of patent applications or for the submission of data to scientific journals. The system incorporates IntelliStart™ technology, for automated system optimization and status monitoring, ensuring that the highest quality data is routinely available to all levels of operation.
- (XXVII) **Isothermal Titration Calorimeter:** Model, ITC200 Systems (GE Healthcare, USA), Non-reactive Hastelloy® cells for chemical resistance, Peltier controller for rapid temperature equilibration, operating within a temperature range of 2°C to 80°C .

New Acquisitions

1. DUAL/ CROSS BEAM FEG/FIB, MICROSCOPE CARL ZEISS GmbH, GERMANY.
2. AVANCE III HD 600 MHz ONEBAY HIGH PERFORMANCE DIGITAL NMR SPECTROMETER, BRUKER BioSpin INTERNATIONAL, SWITZERLAND.
3. SCANNING PROBE MICROSCOPE SYSTEM WITH DIFFERENT MODULES FOR MORPHOLOGICAL AND STRUCTURAL CHARACTERIZATION, AGILRNY TECHNOLOGIES, SINGAPORE.

4. PHI 710 SCANNING AUGER NANOPROBE, PHYSICAL ELECTRONICS, USA
5. FLUORESCENCE ACTIVATE CELL SORTER, Model- FACS ARIA-III, BECTON DICKINSON HOLDING, SINGAPORE.
6. GENETIC ANALYZER (APPLIED BIO SYSTEM-3500), LIFE TECHNOLOGIES HOLDINGS Pte. Ltd, SINGAPORE.
7. 380 KVA SILENT DIESEL GENERATOR SET WITH AMF PANEL, KIRLOSKAR Make.

Seminars, Conferences and Workshops Organised

- Dr. Ritwik Basu (Oxford Instruments), Electron backscattered diffraction, March 5-6, 2013
- Dr. Partha Pratim Das (Nano Megas), Precession Electron Diffraction and 3D Diffraction Tomography, February 7, 2013
- Dr. Yashveer Singh (Anton Paar Ltd.), Small Angle X-Ray Scattering, February 5, 2013
- Dr. John Hammond (Physical Electronics, USA), Scanning Auger Nanoprobe, December 8, 2012

Central Workshop and Instruments Service Section

Chairman

Prof. A. Roy Choudhury

AWS

Dr. S. Patra

The Central Workshop & Instruments Service Section (CWISS), a unique service centre at IIT, Kharagpur was established in 1965 to cater to the fabrication of custom made Instruments to sustain the Post Graduate & Research activity in the Institute for all the departments and centres.

It is one of the major service sections of the Institute having following units:

- (1) Mechanical
- (2) Glass Blowing
- (3) Carpentry
- (4) Electronics
- (5) Audio Visual

Apart from executing Work Orders from various Depts./Centres/Sections of the Institute, CWISS also undertakes Work Orders from outside on cost basis.

Mechanical Section

Mechanical Section in CWISS comprises Mechanical fabrication, Mechanical Instrument and Glass Blowing Section.

1.1. Mechanical Fabrication Section

It is equipped with various types of machines like CNC Lathe, table mounted CNC Lathe, CNC Engraving, CNC Milling, EDM, Milling, Conventional Lathe, Bench Lathe, Watch Maker's Lathe, Drilling, Shaping Machine, Bench Drill, Bench Shaper, Grinding Machines (Surface, Cylindrical, Pedestal, Belt and Hand operated), Jig Boring, Power Saw, Shearing Machine, Polishing, Press, Arc Welding, Brazing and Soldering, etc.. We have recently purchased one CNC WEDM and Laser welding machine these has enhanced our fabrication quantity and quality as well.

The Mechanical Fabrication Section caters the service to almost all the departments of the Institute for any type of Precision and complicated mechanical fabrication or repair with various types of metals with the machines available in section mostly for research and project works and regular experiment classes for B. Tech. and M. Tech. as per design.

In CNC Machines we use different types of software for drawings like Auto CAD, Rhinoceros, 3D Studio Max, Solidworks etc. for drawing works of the components to be fabricated and also use different types of CAM software for their fabrication.

During the year 2012-13 the Mechanical Section has performed jobs of about 140 work orders.

Some of the notable fabrications successfully completed by CWISS are as follows.

- 1) Fabrication of different types of nozzle.
- 2) Chassis of Robot for Robocup project.
- 3) Fabrication of Vibration absorber.
- 4) Fabrication of different types of Wave Guides.
- 5) Fabrication of Die and Extruder.
- 6) Fabrication of Die-Punches of different sizes.

- 7) Fabrication of different sizes tensile, Charpy specimens of different materials.
- 8) Fabrication of Rack, Pinion & Gears.
- 9) Fabrication of Moulds with different type of metals.
- 10) Fabrication of Venturimeter.
- 11) Fabrication of different types of grippers.
- 12) Fabrication of Micro- channel of various sizes.
- 13) Fabrication of different types of adopters.
- 14) Fabrication of various types of electrodes.
- 15) Fabrication of fixtures for experiments.
- 16) Fabrication of shaft encoder.

2.0. Glass Blowing Section

This section is equipped with glass blowing lathe, glasscutter, glass grinder, glass annealing chamber, etc. Mainly glass work of Borosilicate glass is done here with the help of oxygen & LPG for Departments, like Chemistry, Bio-Technology, Chemical, Cryogenic, Mechanical, Material Science, Metallurgical Engg., Agriculture & Food Engg. , Aquaculture, Physics & Meteorology etc. The main fabrication jobs of this section include different type of condensers, Dewars, different volume capacity F.B, R.B., Flusk with neck joints, manometer, U & S Tubes, glass bubbler, glass coil for oil bath, gas collector, etc. The fabrication of Glass ware items are done as per drawing and design of the equipments.

3.0 Carpentry Section

Housed in the workshop complex behind Chemical Engg. & Automobile Section, This section has Auto Planner, Joints Nature's machinery, Vertical Band Saw and Multipurpose Machine. Apart from carpentry jobs, as per requirement of the Institute it does also undertake construction of MS Frames, Hand painting, Spray painting, Polishing, Writing of name Plates, display board & jobs as required by students projects. This year this section has manufactured 26 Nos. special reading computer tables for our Central Library. 20 Nos. of special purpose table for research scholars in Mechanical Engineering Department and other useful furniture for various departments.

This section also meets the major requirements of furniture of the Institute. During the year 2012-13, this section has completed 51 Work Orders of various departments of the institute.

Details of some of the Work done during period:

1) Faculty Table	--	04 Nos.
2) Office Table	--	02 Nos.
3) Computer Table (Special/Ordinary)	--	24 Nos.
4) Laboratory Table	--	45 Nos.
5) Counter Table Set	--	02 Nos.
6) Book Shelf	--	18 Nos.
7) Students' model of different shape	--	31 Nos.
8) Wooden Pointer	--	01 No.
9) Gate Pass Box	--	10 Nos.
10) Repair of Table/Rack/First Aid Box	--	07 Nos.
11) Name Plate/ Sign Board	--	20 Nos.
12) Cup Board	--	01 No.
13) Wall Cabinet	--	01 No.
14) Wooden Platform	--	01 No.
15) Foot Rest	--	07 Nos.
16) Key	--	01 Nos.
17) Big (3ft. long) wooden spoon	--	01 No.
18) A.C. Window sealing Ply	--	05 Nos.
19) Inclusion of name on different incumbency board	--	02 Nos.

4. Electronics Section

Electronics section of CWISS has facilities for repair of different types of electronic equipments. It also helps users in their design and development activities. A LPKF PCB Prototyping machine is available in this section which helps the users of different departments in fabrication of double sided PCBs.

5.0 Audio Visual Section

Audio Visual Cell is primarily involved in providing audio visual support for conducting regular classes at different lecture halls (approximately 150 classes per week). It supports audiovisual facilities with Multimedia projectors, Document cameras, PCs and PA system with wireless microphones for the following class rooms: V1, V2, V3 & V4 at Vikramshila complex and F116, F127, F142, F232 & F244 at main building area. AV Cell used to provide support about 5000 regular classes throughout the year in aforesaid classrooms. Besides these the Cell provides AV facilities for all seminars, symposiums, workshops, short term courses and meetings at Gargi, Moitrei, S. N. Bose Auditorium and associated programme at Netaji, Kalidas Auditorium, Senate hall, Committee room and Board room. All the T. S. G. activity programmes are also supported by the Cell. AV Cell also provides support to various student activities like Quiz, Plays, Spring festival, Kshitij, Inter Hall competitions and T&P activities. It also helps in various other academic activities like Convocation, Senate Meeting, National & International seminars, Conferences and Workshops and also including JEE & GATE units. AVCell also given technical support for pre-placement talk during office hours & beyond office hours and sometime till midnight for special cases.

The Audio Visual Cell has a number of sophisticated equipments like Multimedia Projectors, Document Cameras, High quality Amplifiers and Mixtures, Wireless Microphones & Conference Systems and other peripheral supporting systems. Primary maintenance of these equipments are also maintained by AVCell staff itself.

From next academic section 44 Nos. new class rooms will be started at Nalanda class room complex. For the smooth running of these classes all the AV facilities would be supported by AVCell of CWISS.

Centre for Theoretical Studies

Head

Pratim Kumar Chattaraj

Concerned Faculty / Officers

P. K. Chattaraj	M. Sc., Ph.D (IIT Bombay), Chemistry (Theoretical Chemistry, Quantum Chaos) Ph.D (IIT Kharagpur),
A.R.Roy	General Theory of Relativity, Theoretical Cosmology, Algebra and Application of Soft Set theory, Dynamics of Nonlinear Systems
A. Taraphder	M. Sc., Ph.D (IISc Bangalore), Physics (Theoretical Condensed Matter Physics)
S.Bharadwaj	M. Sc., Ph.D (IISc Bangalore), Physics (Theoretical Astrophysics and Cosmology)
Sayan Kar	M. Sc., Ph.D (IIT Kanpur), Physics (Relativity and High Energy Physics)
S. Pratik Khastgir	M. Sc., Ph.D (IOP, Bhubaneswar), Physics (Mathematical Physics and Integral Models)
Anirvan DasGupta	B.Tech, M.Tech., Ph.D (Kanpur), Mechanical (Dynamics, Control and Robotics.)
S.P.Pal	B. Tech (Hons.), M. Tech, Ph.D (IISc Bangalore), Computer Sc. and Engg. (Computational geometry, Design and analysis of algorithms.)
S. Bandyopadhyay	M. Sc., Ph.D (IISc Bangalore), Chemistry (Computational Chemistry, Molecular Modelling)
Somesh Kumar	MSc.,Ph.D (IIT Kanpur), Statistical Decision Theory and Inference, Quantum Computing
Suman Chakraborty	Ph.D, Microfluidics and Nanofluidics, Interfacial Phenomena, Transport Phenomena in Materials Processing, Computational Fluid Dynamics (CFD)
G.P.Raja Sekhar	Ph.D.(Hyderabad Univ), Boundary integral methods for viscous flows, Mass transfer in porous biological pellets
Pratima Panigrahi	Ph.D.(Bangalore), Combinatorics, Graph Theory

Staff

Name	Degree	Specialization
Ujal Halder	Post Diploma in Computer App., Diploma in Electrical Engg.	Computer (Administration, Networking, Web development, Troubleshooting etc.)

Project Staff:

Name	Project, Post	Period
Subhasis Panda	CSIR JRF	3 years
Rajibul Shaikh	CSIR JRF	1 year

RESEARCH AND DEVELOPMENT

A) Brief Descriptions on-going activities :-

Research is carried out in CTS on the following areas :

I. Astrophysics, Cosmology and Relativity

- (i) Magnetic fields of strange stars and neutron stars
- (ii) Large scale structure formation in the Universe
- (iii) Bulk--brane dynamics

II. Dynamics and control

- (i) Nonlinear dynamics: Bifurcation Theory and Chaos
- (ii) Control theory
- (iii) Vibrations

III. Mathematics, Mathematical physics and Theoretical Computer Science

- (i) Integrable models
- (ii) Computational and combinatorial geometry
- (iii) Pure and applied mathematics
- (iv) Quantum computation and quantum information
- (v) Graph and Hypergraph Theory

IV. Theoretical Condensed Matter Physics

- (i) Computational Condensed Matter and Statistical Physics
- (ii) Superconductivity

V. Theoretical Chemistry

- (i) Large scale simulations of complex systems
- (ii) Density functional theory, quantum chaos

B) Thrust Areas:-

- ☒ Astrophysics, Cosmology & Relativity
- ☒ Nonlinear Sciences
- ☒ Mathematics, Mathematical physics and Theoretical Computer Science
- ☒ Theoretical Condensed matter Physics
- ☒ Theoretical Chemistry

ACTIVITIES

Courses and Graduate Programme:

CTS is offering new advanced post-graduate courses which are relevant across departments through involvement of faculty from various departments. These courses are:

1. Methods in molecular simulations (TS70001)
2. Advanced dynamics (TS70002)
3. Wave propagation in continuous media (TS70003)
4. Advanced Mathematical techniques (TS70004)

- 5. Advanced quantum theory (TS70005)
- 6. Quantum mechanics and quantum computing (TS70006)

CTS are also admitting PhD students through institute fellowships, CSIR fellowships. Currently two such students are enrolled.

CTS courses taught (2012-13):

- Advanced dynamics (TS70002) (Autumn)
- Advanced Mathematical techniques (TS70004) (Autumn)
- Methods in molecular simulations (TS70001) (Spring)
- Wave Propagation in continuous media (TS70003) (Spring)

SPONSORED RESEARCH

SI No	List of Project	Sponsoring Agency	Duration	
			From	To
1.	Theoretical studies on transition metal dichalcogenides (TID)	DST, New Delhi	Nov, 2010	Oct, 2012
2.	Gauge-Gravity Duality and D-brane Dynamics (GGD)	DST, New Delhi	Aug, 2009	Aug, 2012

FACILITIES

- A Computer Lab with 11 Pentiums, 2 Quad core server and 2 AMD Opteron Server, HP color Laserjet duplex network printer, HP Laserjet duplex network printer, Scanner, Multimedia Projector, Canon copier
- Software (Mathematica, Matlab, Maple, Scilab, IDL, Aips, Comsol etc.)
- CTS library

Aims & Objectives:

- ☒ To generate and nucleate theoretical research
- ☒ To organize seminars on diverse topics
- ☒ To organize Conferences/Workshops
- ☒ To provide research facilities to students/faculties from within and outside IIT Kharagpur
- ☒ To offer postgraduate level elective courses

The Centre for Theoretical Studies (CTS) at the Indian Institute of Technology, Kharagpur (IIT Kgp) has been in existence since 1998 and is located in the first floor of the Sahid Bhavan (Old Institute Building) at the Eastern end of the IIT campus. Its primary goal is to generate and nucleate theoretical research on fundamental aspects of basic and engineering sciences. The role of the CTS in the academic framework of IIT Kgp is to bring together people of similar interests under a common umbrella. The CTS, apart from acting as a facility for research in theoretical studies in science and engineering, also trains graduate students and provide opportunities to post-doctoral workers and researchers from outside IIT Kgp. Additionally, the CTS has an active visitors programme of both short and long term visitors. The CTS also organizes seminars, workshops on a regular basis on diverse topics. An important component of CTS workshops and seminars is to motivate young

students (both undergraduates from IIT Kgp and graduate students from within and outside IIT Kgp) to actively pursue theoretical research in front-line areas of science and engineering. Finally, besides promoting research on specialised topics within a given sub field, the CTS hopes to cultivate interdisciplinary theoretical research as a major goal, tapping the diversity available in the academic population of an Institute like IIT Kharagpur.

Visitors Programme:

Objective:

To provide facilities to faculty members, postdoctoral fellows and students from academic and research institutions in India and abroad to conduct research on theoretical problems in science and engineering in collaboration with faculty members of IIT Kharagpur.

COLLABORATIVE EFFORTS

The Center for Theoretical Studies has very active collaborative research programmes in the board areas of Astrophysics and Cosmology. The research carried out under this collaboration is focused mainly on Cosmology. The collaboration with NCRA, TIFR, Pune is through a sponsored project funded by BRNS, DAE, Mumbai. This focuses on the possibility of using low-frequency radio wave observations to study a variety of astrophysical processes through the 21 cm neutral hydrogen radiation, including turbulence in the interstellar medium and the early universe.

Visitors during 2012 – 2013 under CTS Visitors Programme

SL. NO.	NAME OF THE VISITOR	INSTITUTE/UNIVERSITY	ASSOCIATED FACULTY
1	Dr. Sujit kumar Bose	Prof.[Retd.], S.N.B.N.C.B.S, Kolkata	Prof. S.Dey Civil Engg. Dept.
2	Mr. Debajyoti Choudhuri	Ph.D., Univ. of Hyderabad	Prof. G.P.Raja Sekhar Dept. of Mathematics
3	Dr. Sk. Saiyad Ali	Lecturer, Dept. of Physics, Jadavpur University	Prof. S.Bharadwaj Dept. of Physics
4	Dr. Prasun Dutta	PDF, NCRA-TIFR, Pune	Prof. S.Bharadwaj Dept. of Physics
5	Dr. Abdul Kadir	Post Doc, Institute of Solid State Physics, Berlin	Prof. S.Majumdar Dept. of Physics
6	Dr. Sanjit Das	PDF, IMSc, Chennai	Prof. S.Kar Dept. of Physics
7	Dr. Santanu Sengupta	Asso. Prof., CVRCE, Bhubaneswar	Prof. P.K.Chattaraj Dept. of Chemistry
8	Dr. Satadal Paul	Lecturer, Dept. of Chemistry, Siliguri	Prof. P.K.Chattaraj Dept. of Chemistry
9	Dr. Utpal Sarkar	Asst. Prof., Assam University, Silchar	Prof. P.K.Chattaraj Dept. of Chemistry
10	Mr. Pratap Kumar Swain	Ex Research Scholar, Dept. of Physics, IIT Kharagpur	Prof. K.L.Panigrahi Dept. of Physics

LECTURES BY VISITING EXPERTS

Seminars

1. Title: From Natural Numbers to Numbers and Curves in Nature
Professor Ashok K. Mallik
Bengal Engineering and Science University, Shibpur
Date: September 7, 2012
2. Title: Solar Magnetic Fields, Space Weather and Climate
Dr. Dibyendu Nandi
Indian Institute of Science Education and Research, Kolkata
Date: October 30, 2012
3. Title: Magnetic coupling and anisotropy in Metal-based Systems
Anirban Misra
Department of Chemistry, University of North Bengal, Siliguri
Date: November 09, 2012
4. Title: What is hyperbolic geometry?
Prof. Mahan Maharaj
Ramakrishna Mission Vivekananda University, School of Maths., Belur Math, Howrah
Date: November 15, 2012
5. Title: Dependence of diffusion on diffusant diameter in different condensed phases of matter
Professor S. Yashonath
Solid State and Structural Chemistry Unit, IISc, Bangalore
Date: December 04, 2012
6. Title: Oscillators: Old and New
Prof. Jayanta K. Bhattacharjee
Director, Harish-Chandra Research Institute (HRI), Allahabad
Date: January 15, 2013
7. Title: Design of NLO-materials through sum-over-state approach
Professor Prasanta K. Nandi
Department of Chemistry, BESU, Shibpur
Date: February 11, 2013
8. Title: DFT of atoms and molecules in Cartesian grid
Professor Amlan K. Roy
Department of Chemical Sciences, IISER, Kolkata
Date: February 25, 2013
9. Title: An Unbiasedness Approach to Linear Regression Analysis
Professor P. Vellaisamy
Department of Mathematics, IIT Bombay
Date: February 28, 2013
10. Title: Selecting the Better of Two Gamma Populations Having Unequal Shape Parameters
Professor Neeraj Misra
Department of Mathematics and Statistics, IIT Kanpur
Date: March 01, 2013

S.Datta Majumdar Memorial Lecture

Title: The Higgs Boson/God Particle: A story of particles and interactions
Professor Amitava Raychaudhuri
Sir Tarak Nath Palit Professor of Physics, University of Calcutta
Date: October 15, 2012

RESEARCH PUBLICATIONS

In Journals (Publications involving Visitors under CTSVP and Ph.d. student of CTS only)

1. Reza, M. and Gupta, A. S (November 2012): MHD stagnation-point flow of an electrically conducting fluid on the surface of another quiescent fluid. *Acta Mechanica* (Springer-Verlag), Volume 223, Issue 11, pp 2303-2310. DOI: 10.1007/s00707-012-0708-y (Impact Factor: 1.292).
2. Reza, M. and Gupta, A. S., (July 2012): An Adhesive Problem for a Power-law Fluid, *Chemical Engineering Communication* (Taylor & Francis) Volume 199, Issue 10, 1-11, DOI:10.1080/00986445.2012.655811; (Impact Factor 0 .65).
3. Ganguly, A., Reza, M. and Gupta, A. S., (Apr 20, 2012): Thin-film flow of a power-law fluid down an inclined plane, *ASME Journal of Fluid Engineering*, (USA). 134 (4), 044502, <http://dx.doi.org/10.1115/1.4006406> (Impact Factor 1.25).
4. Layek, G, Kryzhevich, S. G., Gupta, A. S. Reza, M., (February 2013) Steady magnetohydrodynamic flow in a diverging channel with suction or blowing , *Zeitschrift für Angewandte Mathematik und Physik (ZAMP)*, Springer-Verlag, , 64, 123-146, DOI: 10.1007/s00033-012-0225-9. (Impact Factor 1.139).
5. Subhasish DEY, Ratul DAS, Roberto GAUDIO, and Sujit K. BOSE, Turbulence in Mobile-Bed Streams, *Acta Geophysica*, vol. 60, DOI: 10.2478/s11600-012-0024-x.
6. Sujit K. Bose and Subhasish Dey, Instability Theory of Sand Ripples Formed by Turbulent Shear Flows, *JOURNAL OF HYDRAULIC ENGINEERING © ASCE / AUGUST 2012*.
7. Sujit K. Bose; Oscar Castro-Orgaz; and Subhasish Dey, Free Surface Profiles of Undular Hydraulic Jumps, *JOURNAL OF HYDRAULIC ENGINEERING © ASCE / APRIL 2012*.
8. Sujit K. BOSE and Subhasish DEY, Turbulent Unsteady Flow Profiles over an Adverse Slope, *Acta Geophysica*, vol. 61, no. 1, Feb. 2013, pp. 84-97, DOI: 10.2478/s11600-012-0080-2.
9. Characterization of foregrounds for redshifted 21-cm HI signal: GMRT 150 MHz Observations Ghosh, A., Bharadwaj, S., Prasad, J., Ali, S. S. & Chengalur, J. N. 2012, *MNRAS*, 426, 3295.

Computer and Informatics Centre

Head

Prof. Prabir Kumar Biswas

Faculty / Officers

Dilip Kumar Nanda	M.Sc, DIIT, PhD (IIT Kharagpur), IT Infrastructure Management and Operations, Application Software & Numerical Techniques
Partha Goswami	BTech (C.U), M.Tech (IIT Kharagpur), Enterprise & Optical transport network
Alok Baran Das	B.Tech (CU), Networking, Hardware Specialist & Trouble shooter
Bimal Kanti Dutta	M.Sc, P.G.D.C.S (Roorkee Univ.), DBMS, OS, Algorithms, Computer Networks, Distributed DBMS & Graphics Programming.
Surid Kumar Das	B.Tech, MTech (Rajasthan Vidyapith Deemed University), Hardware, Computer Network
A. Chattopadhyay	M.Sc, M.S (IIT Kharagpur), Hardware, OS, Network Security & Applications
Sudipto Das	B. Tech, MTech (Rajasthan Vidyapith Deemed University) , OS, Network Applications and Security
Deepan Banerjee	B.Tech (WBUT), Networking, Routing Switching & Wireless
Tanumoy Ghosal	B.Tech (WBUT), Networking & Security Aspects
Subhasish Chattopadhyay	B Tech (WBUT), Networking & Specialist in FTTH

RESEARCH PUBLICATION

Partha Goswami, Rajarshi Mahapatra and Sw. Divyasukhananda, " Bridging the Digital Gap in Rural India; VIVEKDISHA: A Novel Experience, " 19th annual National Conference on Communications (NCC-2013), Delhi, February 15-17, 2013.

FACILITIES

Networking Facilities in the Institute

In continuation of the networking services that is being provided to the Institute community by CIC, it has installed 10Gbps redundant fiber optic backbone to interconnect all Department/Centre/Schools. It has also provided 1Gbps access link to each individual user of the Institute in academic and hostel area. The telephone network is spread over copper cables. The Network Infrastructure is now extended to the residential area through Gigabit Passive Optical Network (GPON). This has been implemented under Quadruple Play Network (QPN) project. As a result Institute Network infrastructure is capable to cater to Data, Voice, Video & Wi-Fi to the Institute Community throughout the campus. The upgradation of the network infrastructure has been carried out to cater to the network demands of the Institute for the next ten years. The upgraded network has the following features:

- All distribution switches are connected to dual core switches through 10 Gbps redundant link.
- Access link is 10/100/1000 Mbps to support the present network interface card of the computers.
- A Wi-Fi network has been overlaid in all Hostels and all departments (locations mentioned above) to avoid any further adhoc UTP cabling.
- All network switches located at various locations have been housed in a structured fashion.
- Existing Computational facility has been upgraded to high performance by using blade servers

- f) Video conferencing with higher bandwidth allocation is possible with NKN connection
- g) All the schools in the campus area has been connected through GPON technology
- h) Additional fiber and copper cable will be laid in the next phase wherever required.
- i) All the Security surveillance cameras is being planned to be connected through GPON technology
- j) Electrical meter reading will be collected over network from different multi Storied through Network

Salient Features:

1. Implemented a state of the art “**Quadruple Play**” services integrating Data, Voice, Video and Wireless.
2. The system has been designed keeping in mind not only the present population and their activities but will take into account the **Institutional Development Programme (IDP)**.
3. The old quarters, which are planned to be demolished, are **now covered only by wireless** services. However fiber has been taken to each sub zone.
4. The system is designed in such a way that full services may be extended to any new unit (whether residential or academic) coming up by making only **local connections**.
5. The **Wireless Coverage** in the campus have the following features:
 - a. The wireless service is expanded from the earlier state of a few hot spots in the academic area to the entire campus.
 - b. Some of the access points are fed from the CIC through fiber while others are fed through a Wi-Mesh. Wi-Mesh has been designed to extend the reach of Wi-Fi networks over long distances by allowing multiple access points to carry each other's traffic. Unlike Wi-Fi hotspots, which need a direct wired connection to the network, mesh networks will pass the data request to the adjacent access points until a network connection is found.
 - c. Access points are hosted on the Lamp post and its power is being fed from the nearest electrical junction box.
6. The new **Voice Services** encompass the following:
 - a. There is a provision of at least 5000 new lines.
 - b. The PBX of TTC, which has a life of two to five years more, and the existing copper plant will be retained and used as it is for as long as possible.
 - c. New voice services, based on VOIP technology, are coming mainly from the new system through GPON infrastructure and there is a seamless integration between the two using appropriate gateways.
 - d. The integration components have been chosen in such a fashion so that they continue to work even if the existing PBX is replaced in future.
 - e. New telephone connections have minimized the requirement of digging in the campus to lay new telephone cables.
 - f. New telephone connections are a mix and match solution with possibility of giving services through analog POTS, IP Phones or Wi Fi enabled handsets.
7. The **Data Services** involved the following:
 - a. Data services at hostels and academic areas have been upgraded.
 - b. Data services have also be extended to the new Laboratory complexes.
 - c. Wireless data services are available everywhere in the campus.
 - d. Ethernet data services are available in the academic areas, hostels, flats and other important buildings like guesthouses.
 - e. Each zone in the campus has a minimum 2.5 Gbps link.
8. The **Video services** have the following features:
 - a. Provision of IP Video is available at all Ethernet points.
 - b. Provision of RF Video is available all over the campus through a hybrid Fiber-coaxial infrastructure.
 - c. There is a facility to take RF Video feed from more than one service provider.
 - d. Radio over fiber has been integrated with IP streams over the same fiber using WDM.

9. The **Backbone Fiber Plant** as follows:

- a. The earlier existing fiber plants in the Hostel and Academic area have been used.
- b. The rest of the campus has been divided into 12 zones.
- c. One 48 core fiber has been taken to each zone and terminated in a hut.
- d. Passive splitting using PON technology has been used where FTTx is implemented.
- e. EDFA amplifiers have been used for managing the optical power.
- f. Each zone is divided into 4 to 6 sub-zones. 24 Core Fiber has been taken to each sub-zone from the zonal huts.
- g. Fiber has been taken to the base of the few access points, which are fed from the CIC for the Wireless networks.
- h. Each residence with FTTH has an ONT unit with uninterrupted power supply.
- i. The units (huts), which are placed outside, contains only passive elements so that maintenance requirement is minimum.

Laboratory Facility

The Computer laboratories 4 in number are being utilized to the fullest by engaging them to support the Institute academic activities and also for the Training & Placement as well as all students requirements related with Techno fests organized by them.

Software Facility

- Institute is successfully utilizing the antivirus software “Trend Micro Enterprise Security Suite with Advanced Reporting Module” for 20000 User licenses. This software would be protecting the Endpoint Security, Gateway security, Web Gateway, Messaging Gateway, Mail Servers, File Servers and also be capable of providing advanced reporting on possible threats.
- Software for Mail Messaging Solution for 20000 users is also providing excellent service for the past three years which is available for faculty, staff and students of the Institute.
- Other software available to the user community include, Microsoft campus wide licensing, Software's like Abacus (for finite element modeling and analysis), MATLAB (for integrated technical computing), Solid Works (for engineering drawing), PASW (statistical package) and ANSYS etc.

Continuing Education Center

Dean

Prof. Somnath Sengupta

A) Short Term Courses Organized by the Unit

Sl. No.	Short term courses organized under	No. of Courses	No. of participants	Remarks
1.	QIP (AICTE) Short Term Courses	08	240	12 Weeks
2.	Sponsored/Self finance Short term courses	53	1330 (approx.)	
3.	Workshop/ National & Int. national Conference	13	512	
Total =		74	2082	

B) M. Tech Programme organised by the Unit

Sl. No.	Name of the Subject	No. of Students	Remarks
1.	Electrical Engineering	45	3 Years
2.	Electronics and Electrical Communication Engineering	75	3 Years
3.	Information & communication Technology	56	3 years

Facilities :

Transit Hostel Accommodation for 40 Beds Capacity.

Dormitory accom. In Kolkata Extension Centre for 12 beds capacity.

Operational Studios at Kolkata (3), Bhubaneswar (3) and Kharagpur (3) & Raipur (2) Seating Capacity (60 + 40 + 40 + 40 + 40)

Equipments

- Lap Top (Eleven numbers)
- High luminosity overhead projectors.
- LCD Panel for multimedia projection. (12nos.)
- 3M Multimedia Projector. (06 nos.)
- Shure cordless microphone and transmitter/receiver set. (2 nos. for each class room.)
- Ahuja tape recorder and public address system.

C) Seminars/Workshops/Conferences Organized by the Unit

Total No. of Workshops/Conferences Organized : 13
Total No. of participants attended : 512 +

D) Particulars of M.Tech and Ph.D scholars joined/completed :

A. No. of Teachers completed Ph.D degree : 11
B. No. of Teachers completed M.Tech programme : 30
C. No. of Teachers joined Ph.D programme : 22
D. No. of Teachers taking advance admission to Ph.D programme : 12
E. No. of Teachers joined M.Tech. programme : 09

Estate (E&M) Works Section

Professor-In-Charge

Prof. Debapriya Das

Executive Engineers (Electrical)

Sabyasachi Ghosh

Estate (E&M) undertook various electrical works in the Academic Area, Substations & Distribution, Residential Area and Hostels. Brief description of major activities completed during 2012-13 are as follows :

Academic Area

1. Electrification of Steel Technology Centre & New Mechanical Workshop.
2. Electrification of Annex Building of Computer Science & Engineering Dept.
3. Installation of Cable Tray & Trunkbusbar System in the Main Building of the Institute.
4. Electrification of 2nd floor of Chemical Engineering & I.E. & Management Dept.
5. Electrification of 2nd & 3rd floor of J C Bose Laboratory Complex.
6. Major renovation works of IEM, Civil, Metallurgical Engg., E & ECE, O.E. & N.A., Laboratories in the hanger, Chem. Engg. Bio-Tech, SMST, CORAL, A & R.P. & Nehru Museum.
7. Green LED lighting in the corridor of Main Institute Building.

Substations & Distributions

1. Installation of New 3 x 500 kVA, 11/4.15V Substation for Railway Research Centre.
2. Modification of S/Stn Nos. 7 & 13 with installation of 2 additional 11kV Vacuum Circuit Breakers and new battery chargers and battery banks assembly in S/Stn. Nos. 3, 7 & 11. This has been done to ensure automatic operation of switchgears which could enable future implementation of remote operation of Substations.
3. Conversion of all manual operated 11kV VCB into Auto operating circuit breakers.
4. Installation of 9 KWP Solar Power Station and illumination of Lake & Park adjacent to Alumni Guest House.
5. Illumination & augmentation at TATA Sports Complex.
6. Area lighting with LED lights in the parking space of Alumni Guest House and New Central School.

Residential Area

1. A new auto operative 125 kVA DG Set at B.C.Roy Tech. Hospital
2. Total renovation & complete conceal wirings of
 - i) G Type Qrts., 150 nos.
 - ii) H₁ Type Qrts., 40 Nos.
 - iii) H Type Qrts., 20 Nos.
 - iv) C Type Qrts. 25 Nos.
 - v) C₁ Type Qrts., 30 Nos.
 - vi) B Type Qrts. 80 Nos.
 - vii) A Type 19 Nos.
 - viii) Bachelor Flat 72 Nos.,
 - ix) Radar Flat 5 Nos.
 - x) 1BR 30 Nos.
 - xi) 2BR 25 Nos.
 - xii) FA flats 10 Nos.
 - xiii) FTA Qrts. 10 Nos.
 - xiv) 2BRF 12 Nos.
 - xv) ISRO flats
3. Total conceal wirings in Visveswarria Guest House, Technology Guest House & Alumni Guest House.
4. Electrification of operation theatre & morgue of B.C.Roy Tech. Hospital.

Hostels

1. Renovation & complete concealed re-wirings of 70 Nos. Zakir Hussain Flats
2. Replacement of 1400 Nos. Fans in various Halls of Residence.
3. Electrification in New Common Rooms of Azad, MS, RP, JCB, SN/IG Hall of Residences.
4. Renovation of Kitchen & Dinning Hall of Azad, Nehru, Patel, B C Roy, RK, RP Hall of Residences.
5. Replacement of 25 Nos. electric distribution old panels with new ones in various Halls of Residence.
6. Installation of Cable Tray System at VS & LLR Halls of residence.

On Going Projects

1. Electrification of new 2nd floor of Bio-Technology & Metallurgical Dept.
2. Installation of lightning protection using Early Streamer Emission Technology in the main Institute Building and IIT Tower.
3. Electrification of old NCC Building for NANO Science Tech. Centre.
4. Remote energy monitoring of residential quarters at IIT Kharagpur and replacement of old energy meter.
5. Re-arranging of distribution system including cable tray & new panels etc. in the Dept. of Chem. Engg. & Metallurgical Dept.
6. Renovation of the electrical system in the CWISS Building and old building.

Estate Civil Head Office

As a part of the ongoing infrastructural development, various construction projects have been taken up by Estate Civil Head Office. Current status of those projects is as follows:

A. Students Accommodation

The entire Lal Bahadur Shastri Hall of Residence with 667 rooms have been handed over. One more Block of Bachelor Flat has been renovated and handed over for use of Girl students.

B. Nalanda Classroom Complex

44 class rooms have been handed over & Furniture etc. for 30 class rooms have been completed for use.

C. J.C. Ghosh Science Block & P.C Roy Laboratory Block

Floor slabs for both the Blocks up to 5th floor is complete.

D. Residential Apartments for Faculty and Staff

64 Nos. 1BR Flats have been handed over and occupied. 64 Nos. 2BR Flats have been handed over and occupied.

E. A. J. C. Bose Laboratory Complex

Construction of extension portion is already over and 4 more laboratories have been handed over.

F. New Water Supply Project

8.00 km. of pipelines have been laid. Construction at river bed is going on.

G. Construction of New Kendriya Vidyalaya

Construction is already complete and area development has also been completed. The School is already shifted to the new location and functioning.

H. New Market Complex Behind B.C. Roy Hospital

Four shops have been newly constructed and the old shops near Electric Overhead Office have been demolished. A new block has also been constructed.

I. Development of Children Parks at Campus

Six children parks at Campus have been developed.

J. Expansion Work in Academic Buildings

Entire Expansion work of Department of IE&M, Chemical Engineering and New buildings for Department of Mechanical Engineering and Computer Science & Engineering have been completed. Expansion work of Department of Biotechnology is going on.

Extra Academic Activities

This is the only Institute where EAA is included in the course curriculum at Undergraduate level(4 semesters in 1st and 2nd Year). It has 3 principal branches viz. NCC (Air Wing and EME), NSO(Various sports & games; Health & Fitness and Yoga) and NSS. Following is the brief report for the year 2012-13.

National Service Scheme (NSS), IIT Kharagpur

National Service Scheme at IIT Kharagpur comprises of about one thousand students from UG and seventeen faculty members drawn from various departments. It is divided into fifteen units and serve eighteen villages and slums in the neighbourhood. They are: Rakhalgeria, Rangametia, Malmar, Porapara, Gholgharia, Kashijora, Ayodhyagarh, Salboni, Balarampur, Shyamraipur, Gaighata, Gangadharpur, Pariapara, Talbagicha, Ayma, Sonamukhi, Jhuli and Soladahar. NSS team enjoys the support from local people, panchayat members, BDO and SDO.

NSS volunteers are actively engaged with school students of villages / slums in complementing the education they receive in the school like exposure to spoken English, Vedic Math., Science and Nature etc. Thirteen primary schools and three high schools are visited by the volunteers every Saturday. Various competitions are held at school level and prizes are given to encourage students. Each primary school receives two and each high school receive four scholarships named PRERANA which is sponsored by our alumni who once were part of NSS, IIT Kharagpur. Each primary school was provided with water filter for safe drinking water.

NSS volunteers took up various village level works in different units during the year. These include: Facilitating cleaning of village wells, repairing defunct tubewells, cleaning of public monuments / place of worship, tree plantation, rally on dengue prevention, use of plastic and other health issues, street-play on social issues like child marriage, dowry, alcoholism, conduct of medical camp, computer education to village youth, providing sewing machine to village self-help group of lady members which was funded by office of Alumni Affairs. Clothes collected from campus community were distributed among the needy in four villages and more than five hundred people benefited.

In 12th January, 2013, Vivekananda's birthday the NSS team brought out a morning rally. This being 150th birth centenary of Vivekananda there were rallies by NCC, campus residents. The Annual NSS Camp was held in the village Gholgharia during 29th Nov to 5th Dec. 2012 with more than 500 student-volunteers and 15 local youth. It was a great experience for all the campers to interact with the village community. Besides observance of Independence Day, Republic Day, NSS Day, and NSS Annual Function, it organized a Voluntary Blood Donation Camp with the help of Blood Bank, Sub-Division Hospital, Kharagpur and B. C. Roy Technology Hospital, IIT Kharagpur on 16th March, 2013. More than 100 students donated blood in the camp.

Health and Fitness, IIT Kharagpur

Health and Fitness program is an important component of Extra Academic Activity at IIT Kharagpur. This engages undergraduate students in first and second year in healthy exercises and promoting a healthy life style. Currently, it serves about eight hundred fifty students who are divided in nine units. Every week, on Wednesday and Saturday, the students gather in the Jnan Ghosh stadium at sunrise. After brief warm-up, they participate in free hand exercise. There are short duration innovative field games everyday. The program ends with de-stretching and breathing exercise. As a part of promoting healthy life-style the team organized a huge rally. The theme was 'anti-addiction' and the student members designed many placards on that. It maintains a *blog*, a *youtube channel* and a *website* to encourage larger participation across boundaries. There are ten faculty members associated with this and this is ably supported by 3 Bengal Tech Air Sqn, NCC Wing and certain staff of Technology Students' Gymkhana. It receives due support from Institute administration and the dedicated website was launched by Director, IIT Kharagpur. This activity had reinforcement in terms of overhaul of the program in Spring semester 2012-2013 and was found to be more effective among the student community with large increase in participation.

National Cadet Corps

1 Bengal EME Coy. NCC and 3 Bengal Tech Air Sqn NCC are the two units of NCC functioning at this Institute with more than 400 1st year and 2nd year undergraduate students. Besides regular training (training to “Gen – Next”; Soft Skills; Air mindedness, drills and parades etc.) it took up certain social service and community oriented programs like Environment conservation, Sadbhavana Run, Disaster Management, Anti Tobacco and Cancer awareness, Anti Dowry and Anti Female Foeticide, World AIDS awareness Day, Vigilance Awareness, Communal Harmony, National Youth Day, Thalassemia awareness, National Voters day, Conservation of Water body, Healthy Heart Day, World Forestry Day, Observance of Earth Hour . The units organized various Seminars and Workshops which include Environment Conservation and Waste Management; Aeromodelling Seminar; Workshop on Fire Fighting; Workshop on First Aid; Workshop on Air Traffic Control Tower and lecture on operation of an Air Force Base. It held NCC Examinations including ‘C’ Certificate Exam and ‘B’ Certificate Exam for Training Year 2012-13 as usual.

Major Achievement

Governor’s Medal (2012-13): A history in IIT Kharagpur was created when Cadet Sergeant Tippa Muniraja (11AE30016) of 3 Bengal Tech Air Sqn was awarded with Governor’s medal of West Bengal state on 07 Feb 2013.

Information Cell

Prof.-in-Charge

Prof. Balbir Kumar Mathur

The Information Cell has been the hub of academic information service of the Institute all round the year. In the past year, the Cell has renovated the web sites of the Institute and Online Notice-Board. The Cell also created and hosted sites of about forty conferences, seminars, workshops and short-term courses held during the past year and to be held in the next academic year. In addition to regular updating information on departmental pages, academic programmes, profiles of all faculty, halls of residences and administrative positions in the Institute

The Cell also developed additional information modules for in-house application and they can be used in any other academic organization as well. These are: on-line Faculty Self Appraisal Package, Departmental Report Package, Online Voting System, Guest House Booking Package, Extension of on-line Message Board facility to the Academic Section, Training and Placement Section and Doctorates Information System. In a major development of Guest House Management, all guest houses are brought under a common operating system and online booking facility has been extended to faculty. The Cell has made available the basic information about all Institute Staff on the LAN. The Cell has also developed software for various service sections for online filling of complaints.

Kalpana Chawla Space Technology Cell

Head

Prof. Dipanwita Roy Chowdhury

Associated Faculty

Dr. D. R. Chowdhury	Ph.D, Cryptography and Security, VLSI
Dr. Somnath Sengupta	Ph.D, Image & Video Processing
Dr. B. K. Sarkar	Ph.D, RF & Microwave Engineering
Dr. S. Sanyal	Ph.D, RF & Microwave Engineering
Dr. S. Chakraborti	Ph.D, Communication
Dr. S. S. Bandyopadhyay	Ph.D., Cryogenic Engg
Dr. K. Bandyopadhyay	Ph.D, Satellite Communication
Dr. I. Manna	Ph.D, Material
Dr. I. Sengupta	Ph.D, Mobile Communication, VLSI
Dr. S. Banerjee	Ph.D, VLSI based embedded system design for signal/image processing , Biomedical Instrumentation
Dr. T. K. Chaki	Ph.D., Rubber
Dr. N V A Naikan	Ph.D., Reliability and Quality Engineering
Dr. Sunando Dasgupta	Ph.D., Microscale Transport Process and Microfluids
Dr. Ajay Chakraborty	Ph.D., EMI/EMC

Associate Professor

Dr. G. Saha	Ph.D, Communication
Dr. C. Chakraborty	Ph.D., Control System
Dr. S. B. Sant	Ph.D, Material
Dr. J. Datta Majumdar	Ph.D, Nano fluid based
Dr. T. K. Bhattacharya	Ph.D., RF MEMS
Dr. Raja Datta	Ph.D., Optical & Wireless Network
Dr. D. Chakravarty	Ph.D., Mining & Geostatics
Dr. B. Samanta	Ph.D., Mining & Geostatics

Assistant Professor

Dr. M. Sinha	Ph. D, Aerospace Engineering
Dr. A. Bhattacharya	Ph.D, RF & Microwave Engineering
Dr. P. K. Chakraborty	Ph.D, Solid-State Science and Technology
Dr. A. Mitra	Ph.D., Nutraceuticals & herb based medicine/Diabetology , Drug encapsulation ,Clinical Trials
Dr. Soumen Das	Ph.D., MEMS & Microsystems
Dr. T. K. Nandi	Ph.D., Cryogenic Engg
Dr. R. Roy	Ph.D., Numerical Computation of Wave functions
Dr. D. Mukhopadhyay	Ph.D., VLSI , Cryptology
Dr. M. K. Mondal	Ph.D., Microwave circuits
Dr. Arijit De	Ph.D., EMI/EMC, RF Microwave

Emeritus Professor

Dr. K. G. Naryanan Ph.D, Microwave Engineering

Chair Professor:

Dr. B. K. Sarkar Ph.D., RF & Microwave Engineering

Dr. K. Bandyopadhyay Ph.D., Satellite communication

Visiting / Adjunct Faculty

Dr. A. Bose M. E., Mechanical Engineering

Dr. S. Dasgupta Ph.D., Control System

Dr. B. B. Das Ph.D., Control System

Officer

Dr. Saswati Ghosh Ph.D., EMI/EMC, RF Microwave Circuit & Antenna

Mr. P. K. Guchhait M.Tech., Nano fluid

Faculty Appointed as Emeritus Professor:

Dr. K. G. Narayanan Professor

Research and Development**Brief description of on-going activities:**

Space Technology Cell, IIT Kharagpur was renamed as Kalpana Chawla Space Technology Cell and was formally inaugurated by Chairman ISRO on 17th November 2004 this Cell has been functioning under the supervision of chairman of Space Technology Cell since June 1998. The Cell is being funded by ISRO, DRDO, CMPDIL Ranchi, etc. During the period under report the following highlights of sponsored research activities in this inside KCSTC and in different of departments of IIT

1. Dual Mode Ring Resonator Bandpass Filter with wide stopband
2. Design of Wide-band, Sharp-rejection Bandpass Filters with Parallel – coupled Lines
3. Compact Bandpass Filters with Wide Controllable Fractional Bandwidth
4. Analysis of linear tapered waveguide by two approaches
5. Compact Sharp cutoff wide stopband low-pass filter using defected ground structure and spurline
6. Size Reduction and Harmonic Suppression of Microstrip Branch – Line Coupler Using Defected Ground Structure
7. On An Algorithm for Boundary Estimation of Commonly Occuring Heart Value Diseases in Time Domain
8. Log Gabor Wavelet and Maximum a Posteriori Estimation in Speaker Identification
9. A Robust Heart Sound Segmentation Algorithm for Commonly Occuring Heart Value Diseases
10. An object based coding scheme for frontal surface of defective fluted ingots
11. A Hierarchical Framework for Generic Sports Video Classification
12. Texture Classification Using a Novel, Soft-Set Theory Based Classification Algorithm
13. Performance of high rate data in wideband CDMA with correlated interferers
14. An Energy – Efficient Packet Filtering Architecture for Wireless Sensor Nodes
15. Effects of correlated interferers on packet data in presence of voice in cellular CDMA
16. Resource allocation for data in presence of voice in cellular CDMA with correlated interferers
17. Estimation of Antenna Factor of Wire Antenna as EMI Sensor Fusion
18. An Evolutionary Algorithm based approach to Automated Design of Analog and RF circuits using Adaptive Normalized Cost Functions
19. Image – based classification of Defects in Frontal Surface of Fluted Ingot
20. Impedance Calculation of Broadwall Longitudinal Slot on Rectangular Waveguide
21. Harmonic Suppression and Miniaturization of Microstrip Branch Line Couplers
22. Method of Moment Analysis of Arbitrary Length Longitudinal Slot on Broadwall of Rectangular Waveguides

23. Analysis of Longitudinal Slot Antennas in the Broadwall of Standard and Non-standard Rectangular Waveguides
24. Planar Compact, Wideband Bandpass Filters with Wide Upper Stopband
25. Estimation of EMI from Waveguide Joints and Analysis of Thick Rectangular windows and Open-end of a Rectangular Waveguide as EMI Sensors
26. Compact Bandpass Filter for Ultra –Wide Band Communication
27. U-Shaped microstrip structure to decrease DGS resonance frequency
28. Analysis of Wire Antennas as an Element in Reflect Array Antennas
29. Theoretical Investigation of Phase Control Using Variable Length Dipole and Loaded Dipole in Reflectarray Antenna
30. Monopole Antenna Loaded with Dielectric Resonator as EMI Sensor
31. Designing Matched Filter for Imaging of Buried Objects, Water Layer and Voids within the Earth Surface & b amp; Underground Coal Mines using Electromagnetic Wave
32. Detection of Water Layer within the Earth Surface & Underground Coal Mines using Electromagnetic Wave
33. Imaging of Water Layer and buried object using Electromagnetic wave
34. Compact Wideband Bandpass Filters with Extended Upper Stopband
35. Harmonic Suppression and Size Reduction of Planar Branch Line Couplers
36. Method of Moment Analysis and Impedance Calculation of Broadwall Longitudinal Slot on Rectangular Waveguides
37. Compact Highpass Filter using Complementary Split Ring Resonator
38. Switched Beam Array Antenna for Sectorized Optimum Power Distribution into Discrete Localities of Rural Area
39. Augmentation of Anti-Jam GPS system on Moving Platform using Adaptive Array Antenna: a Low Side Lobe- Constant Radiated Power Algorithm and DOA Estimation Algorithm measuring the Deviation of Look Angle
40. Multiple Beamforming using Switched Beam Array Antenna
41. Application of Multiple Cavity Modeling Technique for Accurate Analysis of Waveguide Fed Thick Rectangular Window
42. Comparison of IE3D and CST-Microwave Studio Simulator for Planar Microwave Filter design
43. Study on the Effect of Different Shapes of Defective Ground Structures Using Finite-Difference Time-Domain Technique
44. The role of GTD in the analysis and design of Antennas on shipboard platforms
45. A Wide-band Lumped Element Compact CAD Model of Si-Based Planar Spiral Inductor for RFIC
46. Design of a 1 V Low Power 900 MHz QVCO, 19th IEEE/ACM International Conference on VLSI Design
47. High Level Synthesis of Linear Analog Systems, International Conference on Emerging Applications of IT (EAIT 2006)
48. AGC of a Hydrothermal System with Thyristor Controlled Phase Shifter in the Tie-Line
49. Texture Classification Using a Novel, Soft-Set Theory Based Classification Algorithm
50. TEM Characterization of Polyester – Urethane – Clay (3 Weight%) nanocomposite
51. Improvement of performance of planar antenna using composite dielectric. EBG, RIS, SIAD structure are used for the improvement (Graind and Bandwidth enhancement, Miniaturization)
52. Efficient permittivity and permeability, slow wave structure and its application in electromagnetic wave propagation in media
53. Numerical Analysis of periodic structure.

i) Multimedia and Video Processing:

An FPGA – based state – of – the art video codec is being developed. The system under development finds its usage in Digital Video Broadcasting (DVB) system and performs real time encoding of colour videos frams size (352×288 pixels) at 30 frames/sec.

iii) Radiation patterns of antennas on satellite:

Radiation due antennas in free space can be readily computed and measured. However, when the antenna platform, that is the satellite structure need to be accounted for, then it becomes impractical to measured even in the must modern Anechoic Chambers of the world. Also, numerical techniques fail to predict the effect of the large structure on antenna radiation due to the limitations of computer memory and speed, even in today's world. Hence,

analytical like STD needs to be developed for this purpose. This has been the field of study for the present investigator.

- iv) **Monopulse Comparator:**
Design of highly compact comparator for monopulse radar application using reduced height Ku-band waveguided.
- v) **DRA**
Design, Simulation and fabrication of CPW feed DRA to the narrow band application.
- vi) **IRA (Impulse Radiating Antenna)**
Impulse Radiating Antenna is an UWB, directive and non-dispersive antenna. It was modeled and simulated using CST microwave studio and various parameters like Reflection Coefficient, VSWR, Gain, directivity and Radiation patterns were studied. A detailed study and simulations of various models for use of this antenna for high power applications was carried out.
- vii) **MPCA**
Miniaturized Printed Circuit Antenna Design, Simulation and fabrication, Testing of Antenna for different Applications like Mobile, UMTS etc.
- viii) **RFID**
Radio Frequency Identification – Design Implementation of Tracking Algorithm and the simulation of the Antenna.
- ix) **MTMs**
Gain Enhancement of electrically small antennas using Metamaterials:- Design and Simulation of an electrically small antenna surrounded by Metamaterial shell/sphere
- x) **MOM**
Method of Moment (MOM) analysis, design, fabrication and testing of various types of waveguide slot excited Dielectric resonator Antennas (DRAs)
- xi) **Electromagnetic Modelling of high frequency electronic systems to estimate EMC**
Electromagnetic interference is becoming a crucial issue in the design of modern high frequency electronic systems. In the conventional design methodology, EMC issues in the design of modern high frequency electronic systems. In the conventional design methodology, EMC issues are addressed only after a prototype is built. However, this process has a potentially significant impact on the cost and time – to – market of the products. This needs to develop an accurate and efficient electromagnetic analysis and modeling to analyze the performance of high frequency electronic circuits for verifying the design against all sorts of electromagnetic interference before fabrication. This has been taken up as the present work. Different conducting and dielectric bodies have been modeled using Method of Moments and the radiation and reception characteristic have been studied.
- xii) **GPS**
Global positioning system (GPS), Adaptive Equalizer, Adaptive Array Antenna (Smart Antenna), Digital Signal Processing, Microwave Communication, Image processing & Numerical Techniques in Electromagnetic.
- xiii) **Antenna Design**
Project title: Reduction of Mutual Coupling between microstrip antennas.
Use Software: HFSS, CST
- xiv) **Impulse Radiating Antenna (IRA)**
CST MS Software is being used to design and simulate an Ultra wideband Impulse Radiating Antenna (IRA), a TEM horn antenna (sensor), a 50 to 100 ohm impedance transformer and a splitter (50 ohm to 100 ohm coaxial cable) for differential feed to a full (4 arm) IRA.
- xv) **Site-Specific Propagation Channel Modeling**
Our goal is to develop deterministic propagation channel model for micro and Pico cell scenario. Now-a-days, industry are using statistical channel modeling to characterize the wireless channel but following the reduction in call size, accurate characterization of channel becomes of vital significance. This leads to further investigation into the model which accurate, deterministic and amenable to industry requirement.
- xvi) **Ka Band Propagation Channel Modelling for Satellite Communication System**
Communication systems, vapour, fog, oxygen, rain and several other gases which make up the air, cause propagation attenuation. Among these different atmospheric constituents, rain induced attenuation is the most severe, except for the degradation that occur near 22 GHz or 60 GHz due to vapour or oxygen. In particular, if a high frequency band of 10GHz and above is used the propagation attenuation due to rainfall is most dominant to overcome a signal degradation even on must either avoid it or compensate for it.

- xvii) Satellite Navigation**
Study and implementation of CDMA codes Binary offset carrier (BOC) modulation techniques and code tracking methods for Indian Regional Navigation Satellite Systems (IRNSS).
- xviii) Development of thiol terminated and PU polymers based nano composites adhesive for cryogenic propellant tank insulation applications**
The research work relates to the development of formulation of adhesive and coating nano compounds consisting of thiol terminated polymers and / or polyurethane polymers, filled with nanostructured materials and room temperature curators. These coating have barrier properties who find uses over cryogenic propellant tank multilayer layer – insulation.
- xix) Test Simulator for Satellite-based AIS**
The aim of the proposed system is to develop a test bed which deals with the possible challenges need to be overcome to successfully operate satellite based automatic identification system.
Satellite based automatic identification system is a unique way to monitor the vessel traffic movement by neighboring ships to avoid physical clash. An AIS receiver on a satellite may provide global or wide-region coverage and the monitoring can be extended to a central agency responsible for safety of vessels in territorial water. High carrier doppler, channel frequency shift, range variation play significant role in determining the satellite based receiver performance. The simulator is being built taking care of all these parameters which contribute to distortion in signal detection.
- xx) Digital Beam forming Techniques**
The project deals with formation of multiple beams by calculating the antenna weights in the receiver side. An algorithm has been proposed and the simulation results verifies the proposed method. However, further work is carried out so as to implement the proposed method in FPGA kit. A new hardware interface has been proposed that can serve as a junction between the RF section and the DSP kit. Validation of the emulated result with that of the simulation output is yet to be carried on.
- xxi) GNSS Signal Processing and Detection theory**
Global Navigation satellite system (GNSS) are Direct sequence spread spectrum systems (DSSS) used to spread the navigation message which serve as basic tool for measuring transmission time from satellite to receiver. The pseudo-ranges between satellite and user provides the satellite position and corrections required for increasing the pseudo – range precision. GNSS finds numerous civilian and Military applications. In this work, code optimization and signal detection are carried out.
- xxii) Microwave Imaging (MI)**
Microwave Imaging is a retrieval of object characteristics by analyzing scattered electromagnetic field from the object in the microwave region. The scattered fields from the objects are generated by incident electromagnetic fields from antennas which we placed around the objects. MI has widerange of applications in biomedical, Industrial, military, consumers etc.
- xxiii) Dielectric Resonator Antennas (DRA) Analysis**
DRAs are highly efficient, low profile and low loss radiating structures, which can be used in microwave and millimeter wave applications. Among various shapes of available DRA structures, rectangular DRAs (RDRA) are less analyzed despite their several advantages. This is due to the reason that rectangular structures are not formed as bodies-of-revolution (BOR) and hence its analysis is quite involved. In this work RDRA is analyzed using volume integration technique and its design and simulation is carried out in HFSS tool.
- xxiv) Filter design for satellite application**
Microstrip filters have found wide applications in many RF/Microwave circuits and systems. For the satellite communication, compact size and high performance are most desirable. Here a band pass filter whose frequency band can be tunned with the compactness in size will be analyzed and developed.
- xv) Theory of Characteristic Mode**
Theory of Characteristic Modes can be used to perform a systematic design of different types of antennas. However, this work shows that what makes characteristic modes really attractive for antenna design is the physical insight they bring into the radiating phenomena taking place in the antenna. The resonance frequency of modes, as well as their radiating behaviour, can be determined from the information provided by the

eigenvalues associated with the characteristic modes. For Analysis purpose MoM code has been developed in MATLAB platform using RWG basis function.

xvi) Computational Electromagnetics: (Method of Moments)
Microstrip Patch Antennas- Antenna Factor

xvii) Cryptography and Security

Xviii) Design of UWB pulse generator and design of pulsed power amplifier

b) Thrust Areas

- 1) Liquid Combustion, Propulsion and Cryogenics
- 2) Space Communications and EMI/EMC
- 3) Micromachine Sensors
- 4) Control , Navigation and Guidance
- 5) Embedded Systems and IP-Cores
- 6) Life Support Engineering
- 7) Smart Materials & Exotic Materials
- 8) Power Electronics
- 9) Space Education
- 10) Electronics Devices
- 11) Cryogenics

c) New Acquisitions

- i) CST Software-Microwave studio, version-5
- ii) IE3D – version – 9 by Zeland Software Inc.
- iii) MATLAB
- iv) WIPL-D
- v) HFSS
- vi) VCO-Model no – ZOS-1025, Freq. Range – 685 -1025 MHz

vii) LNA-

- a) Model – ZEL – 0812 LM, Freq. Range- 800-1200 MHz
- b) Model – ZHL – 0812 HLN, Freq. Range – 800 -1200 MHz
- c) Model – ZHL – 2HAD, Freq. Range – 50-1000 MHz
- d) Model – ZFL – 1000VH2, Freq. Range- 10 -1000 MHz

viii) Filters

- a) LOW PASS FILTER:- Model.no- BLP-550, Freq. Range – DC-520
- b) HIGH PASS FILTER :- Model no- NHP-1000, Freq. Range-DC – 550

ix) Mixers:-

- a) Model. No- ZLW – 2, Freq. Range – 685-1025MHz
- b) Model.No. – ZEM-4300, Freq. Range- 300-4300MHz

SPONSORED RESEARCH (Sponsored by ISRO-IIT Kharagpur Cell)

1. Design of an Integrated code for Authentication and Error correction (AEC)
2. Test Simulator for satellite based AIS (TSS)
3. Design of radiation hardened data converters (HDC)
4. Design and Development of CMOS based 8 Bit 250 to 500 MSPS Analog to Digital and Digital to Analog Converter (DAC)
5. Silicon Carbide as high temperature MEMS and MOSFET devices (HTM)
6. FPGA-based design and development of H-264 codec (PGA)
7. KaBand Propagation Experiments over Indian Topical Region for Improvement of Ka Band Satellite Communication (KPE)

8. Studies on the Construction and Performance Evaluation of Multiplexed Binary Offset Carrier (MBOC) Spreading Modulation for Improved Satellite Radio Navigational Signal and System Design (CPE)
9. Feasibility Study of Microwave Imaging for Material Resource Exploitation in Planetary Missions (SMI)
10. Enhancement of Transport Layer performance for Inter Planetary Network (ETP)
11. Design and Analysis of a Light Weight Cryptographic System on FPGAs (LCF)
12. Analysis and Design of wideband compact Rectangular Patch Antenna Embedded on Cylindrical Pin Structure (PIC)
13. Development of Advanced Polymeric Material for Improved Electrical / ESD Properties Using Nano Additives for Space Application (APM)
14. Analysis and Development of Conceptual Design Methodologies for Air Collection and Enrichment System of Air Breathing Propulsion Phase II (ADP)
15. Development of a MEMS based Assay for bio-medical diagnostics (ABD)
16. Nano-fluid Based coolant and combustion fuel system(NBS)
17. Study on Improvement of adhesion of EPDM based nanocomposites in solid Rocket Motor Thermal Insulation applications (MTI)
18. Interplanetary Satellite Orbit Determination Using Ground based Observations (ISD)
19. Synthesis of satellite footprint patterns from planar array antennas by combination of particle swarm optimization and fast fourier transform (SFP)
20. Analysis of different conducting and dielectric structures as EMI sensors (ADS)
21. Design & Development of High speed miniaturized RF MEMS switched capacitor (MSC)
22. Reliability Modeling Analysis and Prediction of 21NA (Absolute) Pressure Transducers (RAP)
23. Use of Hyperspectral remote sensing imagery for mineral identification and mineral potential mapping (HIS)
24. Testing and Characterization of In-house developed MEMS capacitive accelerometer (TCA)
25. Theoretical and Experiment Analysis of Evaporation in the Grooves of a Micro Heat Pipe (EGP)
26. Design and Development of Application tool for InSAR to Determine Ground surface Movement (ITG)
27. Studies on Retro-Directive Array for Space Applications
28. Model Based Error Concealments (SVD)
29. Studies on new modulation techniques for satellite navigation (NSN)

Publications and Distinctions of associated faculty are presented in their respective Departmental pages.

Rajbhasha Vibhag

Chairman

Prof. U. C. Gupta

Hindi Officer

Dr. Rajeev Kumar Rawat

On Going Activities of Vibhag

Translation

All the documents, correspondence, Institute's Annual Report and Annual Accounts statement are translated by Rajbhasha Vibhag apart from the routine translation of various technical / non technical documents, administrative orders and letters from English to Hindi and vice versa. In addition to the translation of documents, the Vibhag ensures the bilingual display of different nameplates, notice boards, rubber stamps, and preparation of Degrees / Diplomas certificates awarded by the institute.

Hindi Training

Rajbhasha Vibhag has initiated Hindi Training to Institute employees for Praveen and Pragya course under Hindi Teaching Scheme. The classes are arranged in Institute with the help of Sri K K Pathak, Hindi Pradhyapak, Hindi Teaching Scheme. Upto December 2012, 170 employees have been trained up to Pragya level.

Hindi Workshops and Seminars

With a view to create awareness for use of Hindi as Official Language in official work as well as to accelerate the pace of its progressive use, Rajbhasha Vibhag used to organize various training programmes, Workshops and Seminars for the employees / Officers of the Institute throughout the year. In the previous year 2012-13 the following events took place:-

On 20th May, 27th September, & 17th October, 2012, three Hindi workshops were organized for the employees. In these Dr. Rajeev Kumar Rawat, Hindi officer briefed the employees about the techniques for doing their day to day official work in Hindi and also hands-on training was given to them to be able to work on computer in hindi, noting and drafting.

Celebration of HINDI DIVAS

During the month of September, Rajbhasha Vibhag has organized "Hindi Saptah" from 12- 19th Sep 2012. Several programmes and competitions in Hindi were organised for employees and students of the Institute as well as for the students of nearby schools. Winners were motivated with certificates and cash prizes.

Publication

Rajbhasha Vibhag publishes a monthly News Magazine "Jharokha" in Hindi covering all the academic, cultural, extra-curricular activities of the institute with the rules , regulations, policy matters related to Rajbhasha.

Resources and Achievements

Softwares

Rajbhasha Vibhag has several Hindi Softwares like i-leap, ISM Publisher, ISM Office, Leap Office etc. Vibhag also uses the tools, PARIVARTAK, MANTRA, TRANSLITERATION, etc developed by Department of Official Language , MHA, Government of India, C-DAC and other agencies. Recently ISM V.6 was procured which is Unicode compatible.

UNICODE

The Vibhag has activated UNICODE in all the computers of departments and trained the employees to work in Hindi.

Rajbhasha Library

Rajbhasha Vibhag has a full fledged Library with a collection of more than 1200 books of different writers on literature, fiction, poetry, prose, play and various subjects of translation and language.

Bilingual web site

The Rajbhasha Vibhag has made its website bilingual. Useful information links are available on Vibhag Website regarding training programmes, incentives schemes, different tools etc. The Rajbhasha Vibhag has also made the Institute's website bilingual and efforts are being made to make the contents of the website also bilingual.

Committees

Official Language Implementation Committee and Progress Measurement Committee

The Institute has constituted two committees named as Official Language Implementation Committee (OLIC) and Progressive Measurement Committee (PMC) for the implementation of Rajbhasha Policies and monitors the progressive use of Hindi in the Institute in day-to-day work. A combined meeting of the OLIC and PMC is held quarterly and is chaired by the Director. This year the meetings were held on 25.06.2012, 27.09.12 and 12.03.2012 to discuss various issues. The Progressive Measurement Committee (PMC) inspects each department and monitors the progressive use of Hindi in the Department and submits the report to Director.

Town Official Language Implementation Committee (TOLIC)

In addition to this, Rajbhasha Vibhag, IIT Kharagpur plays a vital role in co-ordination for implementing the Official Language policy in the town. As the Director of the Institute is the senior most officer of Central government in Kharagpur, Rajbhasha Vibhag, Ministry of Home Affairs, Government of India has nominated him as Chairman of Town Official Language Implementation Committee (TOLIC). All the central government offices, Banks, Corporations, Autonomous bodies and enterprises are the members of TOLIC. At present there are 42 member Offices in the committee. The committee has been assigned the task of implementing the Rajbhasha policies and ensuring the orders and directives of government. The Director, Prof. D. Acharya has nominated Prof. U. C. Gupta, Chairman/Rajbhasha Vibhag as Executive Chairman and Dr. Rajeev Kumar Rawat, Hindi Officer as Member- Secretary of TOLIC to look after the routine work of committee. As per the calendar, the meetings of TOLIC Khargpur are fixed to be held in January and August. In the previous year two meetings were held on 10.10.2012 and 29.01.13. The meetings were chaired by the Chairman TOLIC and attended by Heads of the member offices with their Hindi Staff. Rajbhasha Vibhag invites the employees of TOLIC member offices to participate in the workshops, seminars and training programmes organized in IIT Kharagpur

Science & Technology Entrepreneurs' Park (STEP)

Prof-in-Charge

Prof. Dhruves Biswas

Major Activities

- (a) High end TBI lab with VLSI based equipments has been established to facilitate the entrepreneurs under TBI/STEP incubation.
- (b) Infrastructure facilities created:
 - (1) Construction of incubation facilities 13,500 sq ft is under process out of that 4500 sq ft is nearing completion at STEP Gopali.
 - (2) A set of ten premium cubicles for the usage of Entrepreneurs have been established in the main building of STEP IIT Kharagpur.
 - (3) The companies can access these cubicles and avail the facilities for their design and testing.
- (c) A dedicated business development executive for STEP has also been recruited.
- (d) **SRISHTI 12:** Science and Technology Entrepreneurs' Park (STEP) IIT Kharagpur, Rajendra Mishra School of Engineering Entrepreneurship (RMSoEE) and Entrepreneurship Cell (E-Cell), IIT Kharagpur took a joint initiative for first year B-tech students of IIT Kharagpur to facilitate an opportunity for presenting their creative business ideas. The startup ideation contest "Srishti '12" was initiated with the primary goal to open a door to a new facet of exploration and exploitation. "Srishti '12" will encourage students to take their innovative ideas further as a new business.

The contest was conducted with objectives of

- Stimulating interest in entrepreneurship
- Provide individuals the opportunity to develop their ideas for new businesses
- Allowing the best ideas to be presented for financing further through TIDE activities
- Allowing the best submissions to win prize money for their idea
- Exposing individuals to the resources available that encourages entrepreneurship

This contest was conducted on November 12, 2012 in STEP IIT Kharagpur Avenue. We are looking forward to take this initiative further with a motive of encouraging students in the direction of entrepreneurship, innovation and promoting the entrepreneurial essence among the students of IIT Kharagpur.

(e) **Entrepreneurs Meet cum Product Exhibition:** On July 03, 2012 an entrepreneur's meet cum product exhibition was organized at STEP, IIT Kharagpur. Chief guest Mr. S. Ramakrishnan, Regional Manager, SIDBI, inaugurated the programme. Mr. S. Ramakrishnan in the introductory session interacted with the incubatees about the guidelines and policies of SIDBI financial support. Prof. Dhruves Biswas (MD, STEP), shared his experience and appreciated the step taken by the young entrepreneurs and innovators for their development. Mr. S. C. Santra (GM, STEP) explained the activities of the centre and support mechanisms for the grassroots entrepreneurs and innovators.

(f) **FDP Programme:** We have successfully conducted entrepreneurship (academics and practice) based two faculty development programme (FDP) in 2012-13. Fifty faculty members participated in FDP programme. The FDP participants were taught how to start E-Cell in their respective institution, how to create courseware on entrepreneurship, and how to promote entrepreneurial activity in their corresponding areas.

(g) **The Global Entrepreneurship Summit (GES):** The annual flagship event of E-Cell IIT Kharagpur unfurled in a grand style on 11 January 2013 as more than 2000 students from all over the country watched in awe. The GES summit 2013 witnessed workshops, interactive sessions and lectures from eminent personalities like Dr. Hande, Founder Selco Solar, Prof. Paul Lilrank, Alto University, Finland, Mr. Madan Mohanka, CMD of Tega Industries, Dr. B.S. Ajaikumar among others. Professor Damodar Acharya, ex-director IIT Kharagpur, inaugurated the summit; Dr. Amarendra Mishra and Professor Devendra Mishra also were present. Dr Harish Hande and Professor Paul Lilrank were the keynote speakers for the inauguration ceremony. The three day conference served as a platform for

discussion of opportunities and programs for promoting entrepreneurship at IIT Kharagpur and in India on the whole and chalk out common strategies. The GES witnessed several programs and conclaves as well which were widely appreciated by the participants.

(h) **Technopreneur Promotion Programme (TePP) - Product Exhibition:** TePP project review held on September 06, 2012. Another TePP Product display took place on November 29, 2012 at STEP IIT Kharagpur which was inaugurated by Dr Ramanuj Banerjee, Scientist D, Department of Scientific and Industrial Research (DSIR), Government of India. The exhibition of products showcased innovations being carried with TePP, DSIR support and was participated by TePP innovators. The TePP innovators presented their innovations, which were widely appreciated by the visiting scientists and the professors.

(i) **PAN IIT 2013** was held in Kolkata on December 2012. This was followed by IIT Kharagpur campus visit on 9th December 2012 by esteemed participants. The participants made it a point to visit the STEP/ RMsEE campus and know firsthand the progress made by IIT-KGP in advancing entrepreneurship and innovation. The visitors which included the likes of Shri Arjun Malhotra, Co-Founder of HCL Infosystems and Ex-President, IIT-Foundation were highly impressed with the achievements and efforts of STEP IIT-KGP and appreciated Professor Dhruves Biswas, MD STEP IIT Kharagpur and his team for their contribution.

(j) **TIDE-DeitY Program Evaluation:** A high level team from Department of Electronics and Information Technology (DeitY), Government of India, under the leadership of Dr. G.V Ramaraju (Scientist G) visited STEP IIT Kharagpur on January 09, 2013, to oversee and evaluate the progress made by TIDE entrepreneurs supported by DeitY. A formal presentation to the dignitaries followed by briefings about the funded companies was also made by the Prof. Dhruves Biswas. The visiting team appreciated the progress made by IIT Kharagpur and the professionalism in overseeing the projects towards their success.

Research And Development

Thrust Areas of Research

TBI Research:

Following fields of development are well supported and bolstered by TBI (Test/Masurement, Design and Characterization lab)

- Embedded System Design & Development (High and Low End FPGA/DSP development board) for major below application.
 - Cordless phone
 - Component level design
 - RF MMIC design in High frequency applications
 - Automobile
- Wireless Communication
 - Satellite communication
 - ODU form S-Band to K band
 - Collision avoidance RADAR for automotive
 - Dual Band Radio
 - RFID
 - Search & Rescue transponder for civil application
 - Board level design
 - Optical communication
- Image Processing
 - New codec based video transfer technology
- Medical
 - Biometric passports
 - Active & Passive semiconductor devices design & Modeling
 - Low Noise receiver & Power amplifier
- Design & Development for medical instrumentation

Management Research

- Business Architecture/Business Networks for SME
- Information & Communication Technology (ICT) applications in Healthcare
- Technology Interventions of Growth Ventures
- The Education-Enterprise association for entrepreneurship through ideation, incubation and entrepreneurial integration
- Product Development Strategy for Startup Firm
- Business Intelligence for Entrepreneurial venture
- Quality of Service for SME

Research on Health Care Delivery model

- ICT based healthcare delivery model
- Integrated devices to capture real time data
- To provide services to the rural and semi urban sectors of India

Brief descriptions of on-going entrepreneurial activities at STEP

Total No. of companies: 61

STEP IIT Kharagpur Campus: 50

STEP Gopali Campus: 11

Companies at STEP IIT Kharagpur Campus

Sl. No.	Companies of STEP/TBI	Major Entrepreneurial Activity
Old Companies		
1.	M/s. Sankalp Semiconductor Pvt. Ltd.	Analog and mixed signal chip design/layout.
2.	M/s. Centre for Advanced Communication	Interactive Software Integrated Learning System (ISILS)
3.	M/s. P2 Power Solutions Pvt. Ltd.	Power Quality enhancement at distribution level.
4.	M/s. ElectroSoft Consultants	Involved in several sponsored and consultancy projects
5.	M/s. Intellisys Technologies Pvt. Ltd.	Video Conferencing Systems, Live collaboration software, Embedded Technologies
6.	M/s. Focus R&D Pvt. Ltd.	Software Research
7.	M/s. KE Technical Textile Pvt. Ltd.	Control system design based facilities of weaving, processing and coating of fabric with various Polymers & Resin systems
8.	M/s. Sparsha Learning Technologies Pvt. Ltd.	Education Technology Development, Development of market software, teaching, learning in different areas.
9.	M/s. PervCom Consulting Pvt. Ltd.	Developing devices and system solutions for remote tracking and monitoring.
10.	M/s. Aptsource Software Pvt. Ltd.	Business workflow automation and integration, business intelligence and decision support, and service-oriented architecture/enterprise.
11.	M/s. Delta Electrical Industries	Green lighting manufacturing and

		commercialization
12.	M/s. Ikure Tech Soft Pvt. Ltd.	Health applications to facilitate the patient's data delivery
13.	M/s. GreenInfra Creations Pvt. Ltd.	Software development & Consultancy
14.	M/s. Novellion Batteries Pvt. Ltd.	Battery and electrical good applications
15.	M/s. Itobuz Technologies Pvt. Ltd.	Integrated real time systems using Web 2.0 for mobile and desktop based solutions.
16.	M/s. RISUG (Reversible Inhibition of Sperm Under Guidance)	RISUG is an injectable compound that partially blocks the vasa Differentia (tubes that carry sperm), providing effective contraception for up to 10 years per dose.
17.	M/s. Nucleodyne Computer System Pvt. Ltd.	Software Development and education based consultancy services
18.	M/s. Medtel Systems Pvt. Ltd.	Medical technology, Prototype for Medical Image Management solution
19.	M/s. SenseNet Technologies Pvt. Ltd.	Educational & learning solutions, providing the "Self -Learning Processing (SLP) system"
20.	M/s. People's Advanced Communication Centre Pvt. Ltd.	Delivers multimedia content and interacting with the user.
21.	M/s. Abzooba India Infotech Pvt. Ltd.	They are focused on Smart Health Information Platform technology.
22.	M/s. Advatech Healthcare Pvt. Ltd.	Medical tourism in India in association with travel operator and medical service providers.
23.	M/s. Dearleaf Technology Solutions Pvt. Ltd.	Online carrier guidance platform.
24.	M/s. Emotions Infomedia Pvt. Ltd.	Image processing for security systems.
25.	M/s. Think Innoventions Pvt. Ltd.	Provide simpler and cheaper digital pen technology solutions
26.	M/s. Matrix Ventures Pvt. Ltd.	Mobile network technology.
27.	M/s. Invntn Wireless Solution Pvt. Ltd.	Innovative technologies in wireless software, hardware and mobile technologies in India.
28.	M/s. Univect Education Solution Pvt. Ltd.	Univect provides an e-learning curriculum and a product portfolio in synchronization with school curriculum
29.	M/s. Peobrics Software Pvt. Ltd.	End to end Business Solutions using a range of ERP, CRM and SCM
30.	M/s. Sisa Communication Pvt. Ltd.	Uninterrupted Video Messaging services
<u>New Acquisitions</u>		
31.	M/s. Zreyas Technology Pvt. Ltd.	Software designing, development, customization, implementation and maintenance
32.	M/s. Advenio Solutec Pvt. Ltd.	Early detection of diabetes from retinal image processing
33.	M/s. Qarth Technologies Pvt. Ltd	Mobile apps for easy payments
34.	M/s. Tradelab Software Pvt. Ltd.	Software solutions for channel marketing

35.	M/s. Yotto Labs Pvt. Ltd.	Mobile & tablet apps - interactive food menu
36.	M/s. S.M.Technologies Pvt. Ltd.	Fabless semiconductor wireless solutions
37.	M/s. Gazak Technologies Pvt. Ltd.	R & D for Semiconductors and IP Core
38.	M/s. Amnivor Medicare Pvt. Ltd.	Biomedical Applications
39.	M/s. In Tution E'Learning Pvt. Ltd.	Interactive online indexed video sharing platform students
40.	M/s. Aadhar Solutions Pvt. Ltd.	Technical consulting, ranging from development of software and hardware tools
41.	M/s. Biraja Infotech Pvt. Ltd.	Software designing, IT Solutions, Embedded System
42.	M/s. Ideazfirst Marketing Services Pvt. Ltd.	Technical consulting for business
43.	M/s. Perceptivo Imaging Technologies Pvt. Ltd.	Technical Consulting for Business
44.	M/s. STEP - UP Career Builders Pvt. Ltd.	Technology Driven Education and Training
45.	M/s. Technoquips Separation Pvt. Ltd.	Technical consulting for business
46.	M/s. Drisyayon Education Pvt. Ltd.	Online Education with Authenticated Access
47.	M/s. Sencilo Technology Solutions Pvt. Ltd.	Designing and Development of Home Appliances for Automated Cooking by ICT Applications
48.	M/s. Green Think Agri Management Pvt. Ltd.	Agri Consultancy in the Field of Agri Input and Output
49.	M/s. Emsig Technologies Pvt. Ltd.	Technical Consulting for Business
50.	M/s. Ecofrost Technologies Pvt. Ltd.	Micro scale solar power hybrid cold storage

Companies at STEP Gopali Campus

Sl. No.	Companies of STEP Gopali	Major entrepreneurial activity
1.	M/s. Electro Thermal Insulation	In the field of Insulation wires and polymer insulations
2.	M/s. Sandhya Glass works	Glass cutting work. Design of glass mirrors
3.	M/s. Gulton Rubber works	Making of Risk husk rollers
4.	M/s. Balaji Mushroom	Engaged in the production of mushrooms
5.	M/s. Raghunath Fertilizer	Vermi-compost and organic vegetables
6.	M/s. Renuka Polymer	Rubber husk polishers for rice mills
7.	M/s. Ashtami Enterprise	Manufacturing the rubber works for industrial purpose
8.	M/s. Balaji Enterprise	Manufacturing the ball bearing assembly material for Tata Metallic's.
9.	M/s. Shradhanjali Nurseries	Horticulture & organic culture
10.	M/s. Dreamz Perfumes Pvt. Ltd.	Manufacturing of various perfumes
11.	M/s. Pine Electronics	Manufacturing of UPS batteries

Other Assistance of Entrepreneurial Activities:

- Entrepreneurship support through MSME grant.
MSME IIT Kharagpur centre has funded 9 innovators.

Awards and Recognition to STEP Entrepreneurs

Sankalp Semiconductor Pvt. Ltd.: Red Herring 2010 & Deloitte technology fast 50 India 2011.

P2Power Solutions Pvt. Ltd.:

- I. Company's flagship product icon has been selected as the top most techno innovation at the i3-India Innovation.
- II. Initiative Awards 2010, organized by DST, CII, and Agilent technologies.
- III. Recognized amongst the 15 technologies in India at the DST- Lockheed Martin India Innovation Growth Programme 2010 organized by FICCI.

Intellisys Technologies Pvt. Ltd.: NASCOM listed the company twice as one of the most IT innovative companies in India in the year 2005 & 2007.

Meridian Software Technology Pvt. Ltd.:

- I. Company's flagship product icon has been selected as the top most techno innovation at the i3-India Innovation Initiative Awards 2010, organized by DST, CII, and Agilent technologies.
- II. Recognized amongst the 15 technologies in India at the DST- Lockheed Martin India Innovation Growth Programme 2010 organized by FICCI

Ikure Techsoft Pvt. Ltd.:

- I. Recognized as top 100 Social Entrepreneurship technology Companies by Action for India Led by Sam Pitroda , Advisor to PM
- II. Selected as top 2 companies for pitch presentation out of 29 companies in Healthcare at Action for India

GreenHAT Ventures Pvt. Ltd.:

- I. Deals with IDP for Australia and US (6L+ worth).
- II. Order to conduct next fair for British council for Jun-Jul (8L+ worth)

RISUG:

- I. Homi Bhabha award
- II. ICMR award
- III. IMA award
- IV. IDPL award

Delta Electrical Industries: i3- India Innovation Initiative Awards 2011, organized by DST,CII

Advatech Healthcare Pvt. Ltd. : TIE (The Indus Entrepreneurs) has awarded Advatech Healthcare The Best Start Up Company of the year 2011

Collaborative Efforts

Both national and international partnership has been built keeping IIT-KGP's interest in mind.

i. International:

- a. Center for Entrepreneurship and Technology, Berkeley, USA
- b. Jyväskylä University, Finland with School of Business and Economics
- c. John Hopkins University Business School, Baltimore, USA
- d. Laval University, Quebec, Canada
- e. National Chiao Tung University, Taiwan,
- f. Advanced Technology Development Center, Georgia Tech,
- g. Atlanta Deming Center of Entrepreneurship,
- h. Colorado State University, Boulder, Colorado with Business School

ii. National:

- a. IIM Ahmedabad
- b. IIM Bangalore
- c. IIM Calcutta

Lecture By Visiting Expert:

- A. IEEE President Dr. Peter W. Staecker visited in the month of July'12 and had an interactive session with the UG, PG and research scholars over technological applications (ICT) to minimise the healthcare challenges in rural and semi-urban area.

- B. Mr. Venkatraman.S (IIM-C) has given lecture to the students of IIT Kharagpur on “Stock market and start up businesses” on August 7, 2012
- C. Dr. Indrajit Mukherjee (XLRI) delivered lecture to IIT Kharagpur students on “Entrepreneurship in India: Prospects and Problems” on August 21, 2012.
- D. Prof. CY Chang, Prof. Ed. Chang and Prof. Stela Wen of NCTU have visited IIT Kharagpur during August 22-24, 2012 for inaugurating NCTU centre at IIT Kharagpur. Conducted an interactive sessions with the IIT Kharagpur students (UG, PG and research scholars at the STEP conference room)
- E. Dr. Mark Harris (InnovaVentures) visited the school on August 27-31, 2012 and interacted with the dual degree and doctoral students regarding their ongoing projects. He also delivered lectures on “Technology Entrepreneurship” as well as shared his own entrepreneurial journey.
- F. Mr. Anjan Ghosh (IIM-C) addressed the combined classes to the dual degree and doctoral students and delivered lectures on award winning case “Entrepreneurship: A success story on September 4, 2012”.
- G. Prof. Indrajit Dube Delivered a lecture on corporate governance to the STEP authority, UG, PG and research scholars on October 2012.
- H. Prof. P. L. Narasimhan (IIT KGP-IEM) delivered lecture on how to enhance productivity in order to improve the operational performance to UG, PG and research scholars on October 2012.
- I. Prof. M. Padmavati from RGSolPL had delivered lecture on IPR to the potential student entrepreneurs of IIT KGP in the STEP conference room.
- J. Prof. Rakesh Basant, Chairman at CIIE, IIM Ahmedabad had visited STEP, IIT Kharagpur on December 12, 2012 and interacted with the dual degree and doctoral students. He expressed his interest about the entrepreneurship and other incubation programs of STEP IIT Kharagpur. Prof Basant had long research discussion with doctoral students also.
- K. Prof. Paul Lillrank (Aalto University, Finland) visited STEP, IIT Kharagpur in the month of January, 2013 and delivered lectures to the dual degree students on “Quality Management for Entrepreneurial ventures”.
- L. PAN-IIT 2012 portfolio members Mr Aniruddha Roy and Mr Pralay Guha visited STEP IIT Kharagpur on February 2013 to explore out opportunities for possible collaboration in the health care project.

SEMINARS/WORKSHOPS/CONFERENCES:

Sl. No.	Name of the Seminars / Workshops / Conferences / Symposia	Date
1	Entrepreneurs meet	July 03, 2012
2	TePP Project Review	September 06, 2012
3	SRISHTI 12	November 12, 2012
4	TePP Product Exhibition	November 29, 2012
5	FDP	December 10-23, 2012
6	GES (Global Entrepreneurship Summit)	January 11-13, 2013
7	FDP	February 04-18, 2013

Sponsored Research & Industrial Consultancy (SRIC)

The synthesis of teaching and research is fundamental to IIT Kharagpur. IIT Kharagpur is highly rated for the quality and breadth of its research enterprise, for the innovation of its faculty, for the excellence of its Ph.D programs, and for the amount of funding received in support of its research initiatives. We are particularly noted for our openness to multidisciplinary research, and several new initiatives expand a long IIT Kharagpur tradition of cross-disciplinary research and collaboration. Today, our faculty and researchers in energy and the environment are exploring the development of renewable technologies to enable us to coexist with a bio-diverse planet. Through computation and information technologies, IIT Kharagpur researchers are deepening our comprehension of a multi-faceted world. Our research groups in nanotechnology and microscale processes are enabling the development of new materials and methods that support a safer, more cost-effective, and sustainable environment. The impact of our research ripples through India and around the world. IIT Kharagpur's research programs reach across the campus and beyond, linking together 19 departments, 16 academic centers and a large number of advanced R&D laboratories, stimulating the integration of inquiry, new knowledge, and education.

Today, our faculty and researchers in energy and the environment are exploring the development of renewable technologies to enable us to coexist with a bio-diverse planet. Through computation and information technologies, IIT Kharagpur researchers are deepening our comprehension of a multi-faceted world. Research in biological and related areas focuses on the interface of biosciences and bioengineering in diverse and multidisciplinary areas such as biochemistry, molecular biology, physiology, cell and developmental biology, tissue engineering and bioinformatics. Our research groups in nanotechnology and microscale processes are enabling the development of new materials and methods that support a safer, more cost-effective, and sustainable environment.

Some of the noteworthy research initiatives and collaborative research facilities in recent years include:

- Centre for Railway Research
- P. K. Sinha Centre for Bioenergy
- Steel Technology Center
- R&D Center in collaboration with DVC
- Tea Engineering Research Center
- Centre of Excellence in Information Assurance
- National Program in Marine Hydrodynamics
- Vodafone-Essar-IIT Kharagpur Centre of Excellence in Telecommunications
- National facilities for EPMA
- Rural Technology Action Group (RUTAG)
- General Motors Collaborative Research Program
- Advanced VLSI Design Laboratory
- Research Laboratory in Electronics Controls and Software

In the past year IIT Kharagpur has received a number of high-value and flagship projects from the government and the industry such as,

- Online monitoring system for OHE traction parameters by RDSO, Lucknow
- Design & development of an on-board intelligent embedded platform for detection of weak failure modes and prognosis of severe faults in locomotives and associated equipment by RDSO, Lucknow
- Preparation, characterization and performance of functionalized membrane with improved anti-fouling properties by BRNS, DAE, Mumbai
- Thermomechanically processed high strength bainitic steel rails for Indian Railways by RDSO, Lucknow
- Aerodynamic design of traction rolling stock with speed potentials of 250 km/h upgradeable up to 350 km/h by RDSO, Lucknow
- Teachers empowerment, student empowerment and integration of tools for improvement - synchronous delivery (talk to a teacher) by MHRD, New Delhi

- Studies on shrinkage swelling characteristics of some Indian coals to ascertain recoverability of CBM from deep seated coal and shale resources by CMPDI, Ranchi
- Development of rubber compound and repair techniques for trailing cables of underground mining machines, by CMPDI, Ranchi
- Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning ice - main phase by MHRD, New Delhi

Besides these newly initiated research projects, IIT Kharagpur has been engaged in a number of ongoing innovative and socially relevant funded research activities. A partial list of which includes the following:

- Scientific evaluation of high voltage insulator conditions/predictions of residual life of composite insulators by RDSO, Lucknow
- Total synthesis of mayamycin, a c-glycosidic angucycline by SERB, New Delhi
- Smart nano-sensors for medical, coal mine and environmental monitoring by SERB, New Delhi
- Development of composition and standardization of properties of composite brake blocks for application in coaches of indian railways by RDSO, Lucknow
- Experimental & numerical studies on deep excavation under static & seismic conditions by SERB, New Delhi
- Novel polymeric composite membranes for selective separation of gas mixtures by SERC, New Delhi
- Development of microbial fuel cell for direct electricity recovery during waste water treatment by SERC, New Delhi.
- Development of expert system for indian blast furnace by Ministry of Steel, New Delhi.
- Aakash Development Laboratory (AADL) at IIT Kharagpur by MHRD New Delhi.
- Catalytic hydrolysis by a microbial enzyme with potential of an antibiotic target by DST, New Delhi
- Suspension and bogie technology for high speed trains by RDSO, Lucknow.
- Supporting consolidation, replication and upscaling of sustainable waste water treatment and reuse technologies for india (saraswati) by DST, New Delhi.
- Fast fixed point algorithms for identifying alertness and emotions, Sumsung, Korea.
- Development of technology and prototype facility for enhancement of shelf life of fruits and vegetables through active packaging & modified atmosphere storage by DBT, New Delhi.
- Involvement of functional single nucleotide polymorphisms (SNP) of matrix metalloproteinase (MMP) gene promoters in the cell type specific regulation of human MMPs: intrinsic genetic characteristics in cancer cell progression by DBT, New Delhi.
- Development of pilot scale palletisation technology for Indian geothitic/hematite ore with varying degree of fineness by Ministry of Steel, New Delhi.
- Tracking of ultrasonography machines towards prevention of its misuse by Ministry of Health and Family Welfare, New Delhi.

During the year 2012-2013 the Institute received from the Government, private and international funding agencies/enterprises **145 research projects for a total value of Rs. 129.87 crores and 151 consultancy projects worth Rs. 14.5 crores** aggregating a **total of 296 projects for Rs. 144.37 crores.**

The Intellectual Property Rights and Industrial Relations (IPR & IR) Cell under SRIC is responsible for the licensing and the transfer of technologies developed by researchers at IIT Kharagpur to the commercial sector. Till date, more than 400 patents were filed and more than 120 were granted and a total of 19 technologies were transferred. This year IPR&IR Cell under SRIC carried out **unique drive – 100 Days 100 Patents**. The Institute Faculties, students and staff supported and responded whole heartedly and more than 200 abstracts were received and finally more than 100 patent applications have been sent out to patent attorneys for the filing applications to patent office.

IPR&IR Cell in collaboration with Rajiv Gandhi School of Intellectual Property Law conducted **3rd Intellectual Property Rights Researcher's Confluence on Information Technology-Telecommunication (ICT): Emerging Issues in Intellectual Property (IP)**.

The Entrepreneur Cell under SRIC supports a variety of incubation programmes funded by the Government.

Students are encouraged and supported to take up innovative challenging problems. One of the examples is **TeamKART** under Formula Student. Formula Student (FS) is Europe's most established educational motorsport competition, run by the Institution of Mechanical Engineers. It seeks to challenge university students to conceive, design, build, cost, present and compete as a team with a small single-seat racing car in a series of static and dynamic competitions. Recently IIT Kharagpur team has participated in Silverstone track in UK.

Technology Transfer Group (TTG) is a students' initiative under the aegis of SRIC, IIT Kharagpur, which believes in the potential of the Institute as a premier Research & Development centre. TTG acts as a link between the industry and the academia to facilitate transfer of industry ready technologies and presenting IIT Kharagpur as a research consultant. TTG also organized **TED^x IIT Kharagpur event on the theme – The Unturned Page**. The event hosted eminent speakers such as Professor Sugata Mitra, Mr. Shubhranshu Choudhary, Mr. Kailash Satyarthi, and Mr. Aniruddha Sharma who mesmerized the IIT community by sharing their experiences.

Technology Students Gymkhana

President

Manish Bhattacharjee

Physical Training Instructor

Mondal. S	B.A, M.P.Ed , Diploma in Sports Coaching in Basketball from NSNIS, Ph.D perusing, Qualified (BFI) National Referee 'A' Class.
Kumar S.	B.Sc in Phy. Edn ,Master's in Phy.Edn. & Spors Science.
Ghosh .A. K.	B.A. B.P Ed, Sports Coaching in Football from NSNIS, Kolkata.
Gyan .S	B.P.E, M.P.E, M.Phil, Ph.D, Diploma in Sports Coaching in Hockey from NSNIS, Qualified National Referee.

Developments

- New Electric illumination facility at Cricket nets at TSC.
- New Electric illumination facility at Football Ground at TSC.

Facilities

- Modern Gymnasium
- Billiards
- Athletics Stadium
- Two Cricket Fields with two turf wickets. Jogging track along with modern practice facilities in Tata Steel Sports Complex
- Six Tennis Courts including four flood light Courts
- Three flood light Basketball (Cemented) Courts
- Three flood light Volleyball Courts
- Four wooden Badminton Courts
- Table Tennis room with four tables
- Yoga room
- Standard Swimming Pool
- One Squash court

Activities

Inter IIT Sports Meet

IIT Roorkee was host of 48th Inter IIT Sports Meet. The first phase of Sports Meet began with the Inter IIT Aquatic meet held during the period October 2nd to 5th, 2012. IIT Kharagpur secured 1st in Swimming and 3rd in water polo. Darshan Varriar, a final year UG student was the individual champion of the meet. The second phase which includes all other games, started from December 17th to 24th, 2012. The men section IIT Kharagpur secured second position in lawn tennis, 3rd in volleyball , 4th in athletics and the women section first in athletics and first in lawn tennis. Mr. Inter IIT position was secured by Nitish Balal of IIT KGP.

All India invitation Sports Competition-Shaurya

Technology Students' Gymkhana was conducted all India invitation College Tournament from 12th October to 14th October-12, following events have been organized: Athletics, Basketball, Badminton, Cricket, Football, Hockey, Table Tennis, Lawn Tennis, Volleyball.

Inter Hall Competition in Sports & Games :

During the autumn semester inter hall competition started with the inter hall athletics championship and Rajendra Prasad hall of residence won the championship, 2nd position secured by Nheru hall of residence and 3rd position was secured by Patel of residence .

In the spring semester the second phase of inter hall competition were held in badminton ,basketball, cricket, football, hockey, volleyball, table tennis, lawn tennis, squash, weight lifting. Patel Hall won the General Championship with 74 points, Nheru hall secured second position with 61 points and third position was secured by Radhakrishnan hall with 49 points.

The inter hall competitions among the girl's hostels were conducted in athletics, basketball, badminton, table tennis, lawn tennis.

Gymkhana Awards

During the annual prize distribution and farewell function ,13 Institute blues, 11 Order of Merits , 25 Honorable mention and 14 Special mention have been awarded to the students for their outstanding achievements in Sports & Games, Social & Cultural and Technology activities.

Inter Hall Competition in Social Culture Events

As usual the inter hall competition in various social & culture event were organized. The traditional inter hall Illumination & Rangoli competition was organized.

Inter Hall Competition in Technology

Inter Hall competition InTechnology are held in various categories.

Major Events Organized

SPRING FEST 2013

The Spring fest 2012 was organize during January 23rd to 26th, 2013. This year students from colleges from various parts of country participated.

KSHITIJ 2013

The Annual Tech Fest Kshitz'12was organized during 1st February to 4th February, 2013.

Technology Telecom Centre

Prof-in-Charge

Prof. Raja Datta

Engineer

Mr. Pankaj Gupta

Work Carried Out

- A 48V/300A power system has been installed along with 48V/1000AH battery bank to provide the redundancy to the power system thus making it robust as well as increasing the backup time.
- An automatic alarm system has been installed interfaced with GSM to send SMS as well call to the predefined numbers at the time of failure of AC power/ restoration of power as well as voltage drop in the battery bank.
- A software of mobile integration has been installed in the EPABX which forwards the incoming calls to the extension to predefined mobile phone, in case the extension does not lift the phone during the predefined fixed time
- The Restructuring of internal cabling in the main building is completed.
- The new telephone cable has been laid to the old building to replace the old and damaged lead cable as well as to provide the connections in the sheds behind the old building.
- The telephone cable has been laid to the newly built Mechanical workshop.
- The internal telephone wiring work has been completed in the new building of Dept. Of Computer Science & Engg.
- The restructuring as well as of maintenance work of the telephone cables completed in the old A type qtrs.
- A new EPABX has been installed at the Kolkata Extension Centre along with the associated cabling work
- The Airconditioner m/cs has been installed in Exchange room and in power room to provide ambient temperature for the smooth running of equipments.

Ongoing Works:

- The tender process is going on for the restructuring of telephone cables in Dept. Of Chemical Engg and Dept. Of Geology and Geophysics.

New Planning:

- The phase wise restructuring as well as maintenance of telephone cables inside the academic campus.
- Provide the telephone connections in every room of VGH.

Training & Placement Section

Professor in charge

Dr. Sudhirkumar Barai

Placement Details

The Training and Placement Section is responsible for arranging practical training for 3rd year students and job placement of final year students graduating from the Institute. The Section is actively engaged in forging synergistic relationships between the Institute and various industries and user systems of technical and scientific manpower. Based on these interactions, the T&P Section gives feedback to the Institute on the academic programmes.

A total of 3500 companies/organizations in India and abroad were contacted for placement at IIT Kharagpur. **Two hundred and three (203)** companies/ organizations visited the campus for recruitment. Additionally, **Ten (10)** companies preferred to have telephonic interviews, videoconference interviews and personal interviews at their offices premises during 2012-2013. The details of number of students who had registered for placement and those actually placed through campus interviews including those who expected to have opted for higher studies/got jobs through off campus as on 13.05.2013 are as follows:

Course/Degree	No. of students registered	No. of students placed	In percentage
B.Tech. (Hons.)	506	446	88.14
B.Arch. (Hons.)	21	17	80.95
5-year M.Sc.	121	94	77.69
2-year M. Sc.	114	91	79.82
Dual Degree (B. Tech + M.Tech.)	289	262	90.66
M.Tech./MCP/MMST/LLB/MHRM	724	452	62.43
M.B.M.	101	89	88.12
Ph.D./ MS	40	40	100
Total	1916	1491	77.82

Summer Training

Eight weeks of summer practical training at the end of 3rd year B. Tech/Dual Degree and 4th year M.Sc. degree is a compulsory part of the curriculum at IIT Kharagpur, carrying 2 credits. All efforts are made to place the concerned students in the best of organizations in India and abroad for summer training through Training and Placement section and various departmental supports. An emergent trend is that more and more students are seeking summer training abroad.

A total of 1400 companies/organizations in India were contacted for training facilities for the current summer vacations in May-July 2013. Among these 110 in India had offered training facilities, out of which 45 organizations had extended out-of pocket allowances (covering 270 students) and many other extended subsidized transport, subsidized canteen, subsidized accommodation and to-and fro travel expenses (e.g. 3AC fare, air fare etc.) for our students. The highest out of pocket allowance of Rs. 60,000/- per month was paid by ITC Ltd. and Hindustan Unilever. Some other organizations such as GIDA offered Rs 52,500/- per month, Times Internet and American Express offered Rs. 50,000/- per month, Directi offered Rs. 45,000/- per month, Google, Amazon and Adobe offered Rs. 30,000/- per month, Yahoo, Qualcomm, and Microsoft offered Rs. 20,000/- per month. There are about fifteen (15) companies like Shree Cement, Tega Industries, Reliance India Limited, Infosys, Tata Motors, Siemens, Tata Steel, Schlumberger, Goldman Sachs offered stipend in the range Rs. 10,000/- to 20,000/- per month. Around fifteen companies offered below Rs. 10,000/- per month. In addition to the above some students arranged internship by themselves with good amount of stipend.

Out of 1180 third/fourth year B.Tech/Dual Degree/M. Sc. students, 90 students have taken up summer internship abroad in many Institutes/organizations likes EPFL, Switzerland , University of Warwick, Deakin University, Australia, National University of Singapore, Memorial University, Canada University of Tokyo, Max Plank Institute for Software Systems, Germany University of Alberta, Biotechnology & Bio Chemical Engineering, Belgium Iowa State University, U.S.A., Rice University, Technical University of Berlin , Kyoto University, Japan Rhinewall University, Germany University of Freiburg University of Michigan, University of Hagen, University of Leeds, Bremen University Dong A University, Busan , Stanford University etc. and foreign companies like Finisar ,Malaysia , Mitsubishi , Works Application , Japan , ST Engineering Marine Ltd., Singapore during May-July, 2013.

Student Participation

To harness the student power, a formal system of student participation in the process had been initiated during 2005-06. This has evolved and the 2012-13 placements saw students participating in running placement process. In fact, through this participation it was possible to run up to FOURTEEN/FIFTEEN companies per day and round the clock. Students take active part in calling up companies and managing the logistics of placement.

Water Works Section

Professor –In-Charge

Professor Ashok Kumar Gupta

Executive Engineer

Shyamal Kumar Biswas,

On-going works / Job

1. Annual repair and maintenance in connection with plumbing and water supply at Academic Campus for the year 2012-13
2. Annual repair and maintenance in connection with plumbing and water supply at Old Residential Campus for the year 2012-13
3. Annual repair and maintenance in connection with plumbing and water supply at New Residential Campus for the year 2012-13
4. Annual repair and maintenance in connection with plumbing and water supply at VS, BC Roy, MS, RK, RP, Gokhale, AM, SN&IG, MT, RLB Halls for the year 2012-13
5. Annual repair and maintenance in connection with plumbing and water supply at MMM, Patel, Azad, Nehru, HJB, JCB, LLR Halls for the year 2012-13
6. Annual maintenance of main water pipelines from Anicut & Balarampur Pumphouse for the year 2012-13
7. Operation & maintenance of Iron Removal Filters for the year 2012-13
8. Cleaning & washing of water tanks at campus for the year 2012-13
9. Operation & maintenance of Balarampur Pumphouse for the year 2012-13
10. Construction of new rising main for Gas Godown Overhead tank.
11. Providing kitchen sink at H, H₁ and G-type quarters of Dandakaranya and Dolpark area.
12. Providing new flushing cistern at H, H₁ and G-type quarters at Dandakarayana area and H type of Dolpark area.
13. Water connection for newly constructed Kendriya Vidyalaya
14. Construction of two nos. mini deep tube well at Anicut Pumphouse

Table A-1
ADMISSION TO UNDERGRADUATE (B.TECH./B.ARCH./M.SC./DUAL DEGREE) COURSES IN THE SESSION 2012-2013

Sl. No.	Course	SANCTIONED STRENGTH					ADMISSION OFFERED					ACTUALLY REGISTERED				
		GN	OB	SC	ST	TOTAL	GN	OB	SC	ST	TOTAL	GN	OB	SC	ST	TOTAL

(A) B.TECH. 4-YEAR

1	Aerospace Engg	16	9	5	2	32	17	9	5	2	33*	17	8	5	2	32
2	Agril. & Food Engg.	17	9	5	3	34	16	10	5	3	34	16	9	5	3	33
3	Biotech. & Bioch. Engg.	14	7	4	2	27	14	6	4	2	26	13	5	4	2	24
4	Chemical Engg.	26	14	8	4	52	25	15	8	4	52	25	15	8	4	52
5	Civil Engg.	31	17	9	5	62	31	17	8	5	61	31	17	8	5	61
6	Computer Sc. & Engg.	28	15	8	4	55	28	15	8	4	55	28	15	8	4	55
7	Electrical Engg.	28	15	8	4	55	27	16	8	4	55	27	16	8	4	55
8	Electronics & ECE	31	17	9	5	62	31	18	9	5	63*	31	18	9	5	63
9	Industrial Engg.	15	8	4	2	29	15	8	4	2	29	15	8	4	2	29
10	Instrumentation Engg.	16	9	5	2	32	16	8	5	2	31	16	8	5	2	31
11	Manuf. Sc. & Engg.	15	8	4	2	29	14	7	4	2	27	14	7	4	2	27
12	Mechanical Engg.	34	18	10	5	67	33	18	11	5	67	33	17	11	5	66
13	Met. & Mat. Engg.	22	12	7	3	44	21	12	7	3	43	20	11	7	3	41
14	Mining Engg.	20	11	6	3	40	20	11	6	3	40	20	11	6	3	40
15	Ocean Engg. & N.A.	17	9	5	2	33	16	9	5	2	32	16	9	5	2	32

Total (A)	330	178	97	48	653	324	179	97	48	648	322	174	97	48	641
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Table A-1 (Continued)

Sl. No.	Course	SANCTIONED STRENGTH					ADMISSION OFFERED					ACTUALLY REGISTERED				
		GN	OB	SC	ST	TOTAL	GN	OB	SC	ST	TOTAL	GN	OB	SC	ST	TOTAL

(B) B.ARCH. 5-YEAR

1	Architecture	25	13	8	4	50	25	13	8	4	50	22	12	6	4	44
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Total (B)		25	13	8	4	50	25	13	8	4	50	22	12	6	4	44
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Sl. No.	Course	SANCTIONED STRENGTH					ADMISSION OFFERED					ACTUALLY REGISTERED				
		GN	OB	SC	ST	TOTAL	GN	OB	SC	ST	TOTAL	GN	OB	SC	ST	TOTAL

(C) M.Sc. INTEGRATED 5-YEAR

1	Applied Geology	18	10	5	3	36	18	10	5	3	36	16	6	4	3	29
2	Chemistry	17	9	5	3	34	16	10	5	3	34	12	7	3	3	25
3	Economics	22	12	7	3	44	22	12	7	3	44*	22	12	6	1	41
4	Maths. & Computing	24	13	7	4	48	24	13	7	4	48	23	13	6	4	46
5	Physics	18	10	5	3	36	18	10	5	4	37*	16	9	5	4	34
6	Expl Geophysics	17	9	5	3	34	17	9	5	3	34	17	6	4	3	30

Total (C)		116	63	34	19	232	115	64	34	20	233	106	53	28	18	205
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Table A-1(Continued)

Sl. No.	Course	SANCTIONED STRENGTH					ADMISSION OFFERED					ACTUALLY REGISTERED				
		GN	OB	SC	ST	TOTAL	GN	OB	SC	ST	TOTAL	GN	OB	SC	ST	TOTAL
(D) DUAL DEGREE 5-YEAR																
1	Aerospace Engg.	10	5	3	1	19	10	5	3	1	19	10	5	3	1	19
2	AG & F.E./Water Res. Dev. & Management	17	9	5	3	34	17	9	5	3	34	15	8	5	2	30
3	Biotech. & Biochem. Engg.	13	7	4	2	26	12	7	4	2	25	12	7	4	2	25
4	Chemical Engg.	14	7	4	2	27	13	8	4	2	27	13	8	4	2	27
5	Civil engg./Struct. Engg.	11	6	3	2	22	10	7	3	2	22	10	7	3	2	22
6	Computer Sc. & Engg.	20	11	6	3	40	19	12	6	3	40	19	12	6	3	40
7	Elect. Engg./Instru. Engg.	11	6	3	2	22	10	6	3	2	21	10	6	3	2	21
8	E&ECE / Auto. & Comp. vision	20	11	6	3	40	19	12	6	3	40	19	12	6	3	40
9	Industrial Engg. /IEM	12	5	4	1	22	12	5	4	1	22	12	5	4	1	22
10	Manuf. Sc. & Engg./IEM	7	4	2	1	14	7	4	2	1	14	7	4	2	1	14
11	(i) M.E./M.S.Engg. (ii) M.E./Thermal, Energy & Environ. Engg.	24	13	7	4	48	24	12	7	4	47	24	12	7	4	47
12	Met. & Mat. Engg./Met. Engg.	10	5	3	1	19	10	5	3	1	19	10	5	3	1	19
13	Mining Engg.	10	5	3	1	19	10	5	3	1	19	10	5	3	1	19
14	Mining Engg. / Safety Engg. & Disaster Mgt. in Mines	9	5	3	1	18	8	6	3	1	18	7	6	3	1	17
15	Ocean Engg. & Naval Arch.	11	5	4	2	22	10	5	4	2	21	9	5	4	2	20
16	QED&M	7	4	2	1	14	7	4	2	1	14	7	4	1	1	13
Total (D)		206	108	62	30	406	198	112	62	30	402	194	111	61	29	395
Total (A + B + C + D)		677	362	201	101	1341	662	368	201	102	1333	644	350	192	99	1285

* One supernumerary in each course

Table A-2

ADMISSION TO 2-YEAR M.SC. COURSES, 2012-2013

Sl. No.	Course	OFFERED					REGISTERED					NOT REGISTERED				
		GE	OB	SC	ST	TOTAL	GE	OB	SC	ST	TOTAL	GE	OB	SC	ST	TOTAL
1	Chemistry	23	12	07	2	44	22	10	7	1	40	1	2	--	1	04
2	Geophysics															
3	Geological Sciences	15	08	06	02	31	14	7	4	1	26	1	1	2	1	05
4	Mathematics	15	08	05	02	30	15	7	5	2	29	0	1	0	0	01
5	Physics	23	12	7	4	46	23	12	7	3	45	0	0	0	01	01
6	Statistics & Informatics															
TOTAL		76	40	25	10	151	74	36	23	7	140	2	4	2	3	11

Table A-3

DISCIPLINE-WISE BREAK-UP OF STUDENTS AWARDED M.C.M. SCHOLARSHIP 2012-2013
Rate of Scholarship : Rs.1000/- p.m. plus Free-tuitionship(Applicable for Genl. & OBC students only)

S.N.	Course	1 st yr.	2 nd yr.	3 rd yr.	4 th yr.	5 th yr.	Total
(A) B.Tech. 4-Year							
1	Aerospace Engg.	13	04	06	04	-	27
2	Agri. & Food Engg.	08	11	07	06	-	32
3	Biotech. & Bioch. Engg.	07	02	03	06	-	18
4	Civil Engg.	17	15	11	08	-	51
5	Chemical Engg.	12	10	13	08	-	43
6	Computer Sc. & Engg.	15	14	16	12	-	57
7	Electronics & ECE	23	22	24	11	-	80
8	Electrical Engg	17	19	13	16	-	65
9	Industrial Engg.	06	06	06	05	-	23
10	Instrumentation Engg.	12	11	04	07	-	34
11	Mechanical Engg.	17	22	20	19	-	78
12	Manuf. Sc. & Engg	05	02	05	05	-	17
13	Mining Engg.	11	05	02	08	-	26
14	Met. & Mat. Engg.	11	08	06	07	-	32
15	Ocean Engg. & N.A.	12	05	06	06	-	29
(B) B.Arch. 5-Year							
	Architecture	10	06	07	05	03	31
(C) M.Sc. Integrated 5-Year							
1	Industrial Chemistry	-	-	01	-	-	01
2	Expl. Geophysics	01	01	02	-	-	04
3	Applied Geology	02	01	-	-	01	04
4	Economics	07	10	03	08	05	33
5	Maths. & Computing	01	05	-	-	-	06
6	Physics	02	02	-	-	-	04

Contd... Table A-3

S.N.	Course	1 st yr.	2 nd yr.	3 rd yr.	4 th yr.	5 th yr.	Total
(D) M.Sc. 2-Year							
1	Chemistry	-	-	-	-	-	-
2	Geophysics	-	-	-	-	-	-
3	Geological Sciences	-	-	-	-	-	-
4	Mathematics	-	-	-	-	-	-
5	Physics	-	01	-	-	-	01
(E) Dual Degree 5-Year							
1	Aerospace Engg.	05	05	02	05	-	17
2	Ag. & F. E./ Water Res. Dev. & Manag.	07	05	04	03	-	19
3	Biotech. & Bioch. Engg.	07	03	05	06	-	21
4	Chemical Engg.	08	06	07	06	-	27
5	Civil Engg./Struct. Engg.	07	04	03	06	-	20
6	Computer Sc. & Engg./Comp. & Information Technology	08	14	12	01	-	35
7	Electrical Engg./Instrumentation Engg.	08	06	07	05	-	26
8	E & ECE/Automation & Comp. Vision	16	07	08	13	-	44
9	Industrial Engg./IEM.	08	01	05	07	-	21
10	Manuf. Sc.& Engg./IEM	04	01	02	06	-	13
11	M.E./M.S. Engg.	12	08	10	08	-	38
12	M.E./Thermal, Energy & Environ. Engg.	-	-	-	-	-	-
13	Met. & Mat. Engg./ Metallurgical Engg.	01	04	02	03	-	10
14	Mining Engineering	10	09	06	08	-	33
15	Mining Engg./Safety Engg. & Disaster Mgt in Mines	-	-	-	-	-	-
16	Ocean Engg. & N.A.	03	04	01	03	-	11
17	QEDM	02	04	-	-	-	06
Total:		315	263	229	221	09	1037

Table A-4

STUDENTS AWARDED ONLY FREE TUITIONSHIP 2012-2013

S.N.	Course	1 st yr.	2 nd yr.	3 rd yr.	4 th yr.	5 th yr.	Total
(A) B.Tech. 4-Year							
1	Aerospace Engg.	-	05	02	02	-	09
2	Agri. & Food Engg.	04	04	-	03	-	11
3	Biotech. & Bioch. Engg.	02	03	04	-	-	09
4	Chemical Engg.	02	03	-	-	-	05
5	Civil Engg.	09	05	08	01	-	23
6	Computer Sc. & Engg.	03	04	01	01	-	09
7	Electrical Engg.	01	01	05	02	-	09
8	Electronics & ECE	02	04	04	02	-	12
9	Energy Engg.	-	-	-	-	-	-
10	Industrial Engg.	04	05	03	-	-	12
11	Instrumentation Engg.	02	02	02	-	-	06
12	Manuf. Sc. & Engg.	01	05	01	-	-	07
13	Mechanical Engg.	05	06	07	02	-	20
14	Met. & Mat. Engg.	04	03	-	-	-	07
15	Mining Engg.	01	05	07	-	-	13
16	Ocean Engg. & N.A.	02	04	04	02	-	12
(B) B.Arch. 5-Year							
	Architecture	06	03	-	-	-	09
(C) M.Sc. Integrated 5-Year							
1	Applied Geology	01	-	-	-	-	01
2	Economics/HSS, MSC integrated)	03	-	-	-	-	03
3	Expl. Geophysics	-	-	-	01	-	01
4	Industrial Chemistry	-	-	01	-	-	01
5	Maths. & Computing	-	-	-	-	-	-
6	Physics	-	01	-	-	-	01

Condt... Table A-4

S.N.	Course	1 st yr.	2 nd yr.	3 rd yr.	4 th yr.	5 th yr.	Total
(D) M.Sc. 2-Year							
1	Chemistry	-	-	-	-	-	-
2	Geophysics	-	-	-	-	-	-
3	Geological Sciences	-	-	-	-	-	-
4	Mathematics	-	-	-	-	-	-
5	Physics	-	-	-	-	-	-
(E) Dual Degree 5-Year							
1	Aerospace Engg.	02	01	-	02	-	05
2	Ag. & F. E./ Water Res. Dev. & Manag.	02	01	01	-	-	04
3	Biotech. & Bioch. Engg.	02	01	-	02	-	05
4	Chemical Engg.	02	01	03	02	-	08
5	Civil Engg./Struct. Engg.	02	01	01	01	-	05
6	Computer Sc. & Engg./ Comp. & Information Technology	02	02	02	02	-	08
7	Electrical Engg./Instrumentation Engg.	02	01	01	-	-	04
8	E & ECE/Automation & Comp. Vision	01	01	02	01	-	05
9	Industrial Engg./IEM	01	05	-	01	-	07
10	Manuf. Sc.& Engg./IEM	02	01	-	01	-	04
11	M.E./M.S. Engg.	09	07	02	01	-	19
12	M.E./Thermal, Energy & Environ. Engg.						
13	Met. & Mat. Engg./ Metallurgical Engg.	02	03	01	-	-	06
14	Mining Engineering	04	02	03	-	-	09
15	Mining Engg./Safety Engg. & Disaster Mgt in Mines						
16	Ocean Engg. & N.A.	02	02	03	-	-	07
17	QEDM						
Total:		87	92	68	29	-	276

Table A-5**STUDENTS (SC & ST) AWARDED FINANCIAL ASSISTANCE 2012-2013**

Rate: Pocket Allowance Rs.250/- p.m. plus Free Messing

Sl.No.	Course	1 st yr.		2 nd yr.		3 rd yr.		4 th yr.		5 th yr.		Total
		SC	ST	SC	ST	SC	ST	SC	ST	SC	ST	
(A) B.Tech. 4-Year												
1	Aerospace Engg.											
2	Agri. & Food Engg.						1					1
3	Biotech. & Bioch. Engg.					1		2	1			4
4	Chemical Engg.					1						1
5	Civil Engg.						1				1	2
6	Computer Sc. & Engg.											
7	Electrical Engg.	1										1
8	Electronics & ECE											
9	Energy Engg.											
10	Industrial Engg.						1				1	2
11	Instrumentation Engg.											
12	Manuf. Sc. & Engg.				1							1
13	Mechanical Engg.		1				1	2				4
14	Met. & Mat. Engg.			1			1				1	3
15	Mining Engg.					1				1	1	3
16	Ocean Engg. & N.A.	1										1
(B) B.Arch. 5-Year												
	Architecture				1							1

Table A-5 (Contd.)

Sl.No.	Course	1 st yr.		2 nd yr.		3 rd yr.		4 th yr.		5 th yr.		Total
		SC	ST	SC	ST	SC	ST	SC	ST	SC	ST	

(E) Dual Degree 5-Year

9	Industrial Engg./IEM.					1	2			1		4
10	Manuf. Sc.& Engg./ IEM										1	1
11	M.E./M.S. Engg.						1					1
12	M.E./Thermal, Energy & Environ. Engg..									1		1
13	Met. & Mat. Engg./ Metallurgical Engg.											
14	Mining Engineering											
15	Mining Engg./Safety Engg. & Disaster Mgt in Mines									1		1
16	Ocean Engg. & N.A.						1					1
Total:		4	3	3	6	6	9	4	1	8	6	50

Table No. 6

MEDALS AND PRIZES : 2012-2013 : UNDER-GRADUATE

1. INSTITUTE GOLD MEDALS :

Sl. No.	Name of Medal/Prize	Name of the winner	Instt.Roll No.	CGPA
1.	PRESIDENT OF INDIA GOLD MEDAL	Utsav Banerjee	09EC1053	9.79
2.	DR. BIDHAN CHANDRA ROY MEMORIAL GOLD MEDAL	Srijan Kumar	09CS1015	9.22
3.	PRIME MINISTER OF INDIA GOLD MEDAL	Mayank Shrivastava	08CS3029	9.61
4.	DR. JNAN CHANDRA GHOSH MEMORIAL GOLD MEDAL	Abhishek Raj	08CH3009	8.82
5.	PROF. J. C. BOSE MEMORIAL GOLD MEDAL	Suvra Kanti Chakraborty	11MA40027	9.73

2. ENDOWMENT GOLD MEDAL:

Sl. No.	Name of Medal/Prize	Name of the winner	Instt. Roll No.	CGPA
1.	PROF. R. G. CHATTERJEE MEMORIAL GOLD MEDAL	Aditya G Date	08PH2004	9.19

3. SILVER MEDALS :

A. 4-YEAR B. TECH.(HONS.) COURSES :

Sl. No.	DEPARTMENTS	Name of the winner	Instt Roll No.	CGPA
1.	Aerospace Engineering	Deepali Gupta	09AE1005	8.67
2.	Agricultural & Food Engineering	Madhurima Kumar	09AG1008	8.78
3.	Biotechnology & Biochemical Engineering	Bhoomika Mathur	09BT1004	8.48
4.	Chemical Engineering	Rahul Prasanna Misra	09CH1044	9.54
5.	Electrical Engineering	Abhinav Gupta	09EE1051	9.12
6.	Instrumentation Engineering	Aneesh R	09IE1031	8.96
7.	Electronics & Electrical Communication Engg	Utsav Banerjee	09EC1053	9.79
8.	Mechanical Engineering	Tallavajhula Abhijeet	09ME1028	9.37
9.	Manufacturing Science & Engineering	K Sai Nithin Reddy	09MF1008	8.85
10.	Metallurgical & Materials Engineering	Anirban Gupta	09MT1040	9.21
11.	Mining Engineering	Debabrata	09MI1012	8.57

		Tripathy		
12	Ocean Engineering & Naval Architecture	P Pratheek Kumar	09NA1010	8.63

B 5-YEAR B. ARCH.(HONS.) COURSE :

Sl. No.	DEPARTMENTS	Name of the winner	Instt Roll No.	CGPA
1.	Architecture	Aaron David Mendonca	08AR1005	8.48

C. 5-YEAR DUAL DEGREE COURSES :

Sl. No.	DEPARTMENTS	Name of the winner	Instt Roll No.	CGPA
1.	Aerospace Engineering (AE1)	Praturi Divya Sri	08AE3016	9.17
2	Chemical Engineering(CH1)	Ankit Agrawal	08CH3020	9.29
3	Civil Engineering(CED)	Aditya Mahadev Prakash	08CE3114	8.38
4	Computer Science & Engineering (CS2)	Mayank Shrivastava	08CS3029	9.61
5	Electrical Engineering (EED)	Poolla Bala Kameshwar	08EE3201	9.33
6	Electronics & Electrical & Comm. Engineering(ECD)	Shruti Poddar	08EC3510	9.49
7	Industrial Engineering & Management(IM1)	Desai Dev Kamal	08IM3004	8.51
8	Mechanical Engineering (MED)	Balabhadruni Kamaraju	08ME3204	9.19
9	Manufacturing Sc.& Engg (MFI)	Geet Lahoti	08MF3004	9.25
10	Metallurgical & Materials Engineering(MT1)	Kirti Pandey	08MT3004	8.85
11	Mining Engineering (MI1)	Pankaj Priyadarshi Kar	08MI3006	8.38
12	Ocean Engineering & Naval Architecture(NA1)	Taskar Bhushan Uday	08NA3002	9.53

D. M. SC. (5-YEAR) COURSES :

Sl. No.	COURSES	Name of the winner	Instt Roll No.	CGPA
1.	Industrial Chemistry	Boda Nishitha	08CY2005	8.80
2.	Exploration Geophysics	Namita Pahwa	08EX2015	8.62
3.	Applied Geology	Dhanasetty Archana	08GG2019	8.43
4	Mathematics & Computing	Bipul Karnani	08MA2016	8.85
5	Physics	Aditya G Date	08PH2004	9.19
6	Statistics & Informatics	Bhojanapally	08SI2001	9.08

		Saketa Lakshmi		
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E. M. SC. (2-YEAR) COURSES

Sl. No.	DEPARTMENTS	Name of the winner	Instt Roll No.	CGPA
1.	Chemistry	Karabi Nath	11CY40011	9.71
2.	Geology	Preeti Singh	11GG40016	8.98
3.	Mathematics	Suvra Kanti Chakraborty	11MA40027	9.73
4.	Physics	Sayantani Bera	11PH40034	9.44

4. ENDOWMENT PRIZES - (UNDER GRADUATE)

Sl. No.	Name of Prize	Name of the winner	Instt Roll No.	CG PA	Amount Rs.
1.	Sarat Memorial Prize	Anusha Suresh	09CS1001	9.57	500.00
2.	Suhasini Devi Memorial Prize	Madhurima Kumar	09AG1008	8.78	500.00
3.	P. K Bhattacharya Memorial Prize	Namita Pahwa	08EX2015	8.62	500.00
4.	Sachinandan Basak Memorial Prize	Abhijeet Anand	11ME3EP16	6.72	500.00
5.	Amlan Sen Memorial Prize	Soudipta Chakraborty	09MF1002	8.72	1,000.00
6.	Swapan Kumar Saha Memorial Prize	Utsav Banerjee	09EC1053	9.79	1,000.00
7.	Medury Bhanumurthy Memorial Prize	Varier Darshan S	09IM1003	7.24	350.00
8.	H. N. Bose Memorial Prize	Aditya G Date	08PH2004	9.19	3,000.00
9.	Sharmila Bose Memorial Prize	Boda Nishitha	08CY2005	8.80	3,000.00
10.	Usha Martin Award	Ankit Jain	09MT1041	7.96	1,000.00
11.	Systems Society Award	Sourav Kundu	09EE1016	8.68	2500.00
12.	Prof.K.L.Chopra Award	Udita Mukherjee	11GG40029	8.59	1,000.00
13.	Charubala Devi Memorial Prize	Lakshya Jain	10ME10024	9.64	1000.00
14.	Gouri Basak Design Award	Yerra Lokeswari	09AR1030	7.74	1,000.00
15.	Prof. Prabodh Chandra Sanyal Award	Suvra Kanti Chakraborty	11MA40027	9.73	1,000.00

16.	B. L. Nagpal Memorial Prize	Saikat Dan	10CE10046	9.09	2,000.00
17.	Umesh Kumar Bhatia Sports Prize	Varier Darshan S	09IM1003	7.24	1000.00
18.	Pradeep Kumar Chakraborty Award	Kunwar Akash Singh	10MT10023	9.32	1,000.00
19.	G. B. Mitra Award	Aditya G Date	08PH2004	9.19	1,000.00
20.	Bhartiya Cutler Hammer Prize	K. Nagaraju	10EE10059	9.30	3,000.00
21.	R. M. Lalwani Prize	Lakshya Jain	10ME10024	9.64	1,000.00
22.	H. P. Bhadury Memorial Prize	Lakshya Jain	10ME10024	9.64	1,500.00

23.	John Von Neuman Award	Yelam Anil Kumar	10CS10056	9.58	2,500.00
24.	Prof. S. K. Nandi Memorial Prize	Kanjakha Pal	10CH10060	9.23	500.00
25.	Class Of 1970 Alumni (US) Association Prize	Sudipta Biswas	11EC30043	9.78	2,500.00
26.	Technology Alumni Association (Delhi Chapter) Award	Bhargavi Paranjape	12AE10006	9.96	1,500.00
27.	IIT Kharagpur Alumni (California Chapter) Award	Sudipta Biswas	11EC30043	9.78	3,000.00
28.	Ram Gopal Kabre Memorial Prize	Nayansi Jain	11AR10021	7.44	1,000.00
29.	K. Rama Rao Endowment Prize	Desam Gnana Prasuna Reddy	10AG10008	8.72	2,500.00
30.	Smt. Ava Sanyal Memorial Prize	Kunwar Akash Singh	10MT10023	9.32	2,500.00
31.	Prof. B.N. Avasthi Memorial Award For Sports	Abhishek Meena Chekuri Sruthi	08HS2026 08EE3117	6.70 7.96	2,500.00 2,500.00
32.	Prof. Sunil Kanti Sen Memorial Award	Anirud Thyagarajan	12CH30003	9.44	4,000.00
33.	Prof. Sudhir Ranjan Sengupta Memorial Prize	Kora Naga Kartheek	09CE3113	8.93	2,000.00
34.	Best B.Tech.Project Thesis Award By Mr. Mitrajit Mukhopadhyay	1 st Parthsarathi Pachori 2 nd Puppala Prathyusha 3 rd Roht Utmani	09CH3027 09CH3008 09CH1045	7.71 8.81 8.72	25,000.00 15,000.00 10,000.00

35	Keshab K Parhi Endowment Prize	Sankhadeep Pal	08EC3212	9.28	15,000.00
36	Nilanjan Ganguly Memorial Award ForE&E.C.E. Deptt	Swarnabha Chattaraj	09EC1002	9.60	10,000.00
37	Nilanjan Ganguly Memorial Award For Physics Deptt	Aditya G Date	08PH2004	9.19	10,000.00
38	Kedar Nath Singh Memorial Prize	Aditya G Date	08PH2004	9.19	6,400.00
39	Dwaraka Nath Singh Mem. I Prize	Balabhadruni Kamaraju	08ME3204	9.19	6,400.00
40	Jugal Kishore Singh Memorial Prize	Tallavajhula Abhijeet	09ME1028	9.37	6,400.00
41	Rajender Kumar Khanna Memorial Award	Abhinav Gupta	09EE1051	9.12	10,000.00
42	Ramneek Sodhi Memorial Award	Anirban Gupta	09MT1040	9.21	10,000.00
43	Sushil Kumar Chowdhury Memorial Award	Deepali Gupta	09AE1005	8.67	7,000.00
44	AshimRanjan Guha Memorial Award	Madhurima Kumar	09AG1008	8.78	7,000.00
45	TKT Srikrishnan Endowment Prize	Sagar Sarkar	09MF3015	8.19	20,000.00
46.	Prof. J.P.Ghose Memorial Award	Chandupatla Eshwar Chandra Gupta	10NA10007	8.82	10,000.00

5. J. C. GHOSH MEMORIAL PRIZE

1	Aerospace Engineering	Bhatt Mrugank Pranav	10AE10006	8.88	2,000.00
2	Agricultural & Food Engineering	Mallika Prasad	10AG30018	8.83	2,000.00
3	Biotechnology & Biochemical Engg	Vinay Patel	10BT10028	8.89	2,000.00
4.	Chemical Engineering	Kanjakha Pal	10CH10060	9.23	2,000.00
5.	Civil Engineering	Saikat Dan	10CE10046	9.09	2,000.00
6.	Computer Science & Engineering	Yelam Anil Kumar	10CS10056	9.58	2,000.00
7.	Electrical Engg	K.Nagaraju	10EE10059	9.30	2,000.00
8.	Instrumentation Engineering	Sharvashish Das	10IE10023	8.87	2,000.00
9	Industrial Engineering	Dhawal Thakkar	10IM10014	9.27	2,000.00

10.	Mechanical Engineering	Lakshya Jain	10ME10024	9.64	2,000.00
11.	Manufacturing Science & Engg	Som Sekhar Thatoi	10MF10025	9.07	2,000.00
12	Metallurgical & Materials Engg	Kunwar Akash Singh	10MT10023	9.32	2,000.00
12.	Mining Engineering	Saurav	10MI31016	8.86	2,000.00
14.	Architecture & Regional Planning	Tangudu Sweeya Panduranganadha Rao	10AR10044	9.27	2,000.00
15	Industrial Chemistry	Ahanjit Bhattacharya	09CY2001	9.56	2,000.00
16.	Applied Geology	Parinay Jain	09GG2010	8.90	2,000.00
17.	Exploration Geophysics	Tripti Kumari	09EX2018	8.54	2,000.00
18	Mathematics & Computing	Vesta Sai Anuroop	09MA2016	8.74	2,000.00
19	Physics	Sarthak Subhankar	09PH2028	8.82	2,000.00
20	Economics (HS)	Abhishek Jadon	09HS2010	9.13	2,000.00

6. **BEST PROJECT AWARD :**

A. **4-YEAR B. TECH.(HONS.) COURSES :**

Sl. No.	Department	Name of the winner	Instt Roll No.	CGP A	Amount Rs.
1.	Aerospace Engineering	Sandeep Kumar Jatav	09AE3023	8.41	1,000.00
2.	Agricultural & Food Engineering	Anirudh Akula	09AG1019	8.47	1,000.00
3	Biotechnology & Biochemical Engg	Neha Garg	09BT3008	8.52	1,000.00
4	Chemical Engineering	Abinash Dalei	09CH1038	8.65	1,000.00
5	Civil Engineering	Shayan Hati	09CE1002	8.37	1,000.00
6	Computer Science & Engineering	Abhishek Choudhary	09CS1049	9.25	1,000.00
7	Electrical Engineering	Dipanjan Das	09EE1048	9.07	1,000.00
9	Industrial Engineering	Jointly : 1.Ashutosh Nayak 2.Samani Neel Umesh	09IM3014 09IM3706	8.90 8.35	500.00 500.00
10	Electronics & Elect. Comm. Engineering	Swarnabha Chattaraj	09EC1002	9.60	1,000.00
12	Manufacturing Sc. & Engineering	Sagar Sarkar	09MF3015	8.19	1,000.00
13	Metallurgical & Mat. Engineering	Isha Kashyap	09MT3021	8.76	1,000.00
14	Mining Engineering	R.Ashwin Kumar	09MI3040	9.12	1,000.00
15	Ocean Engineering &	Jerin Geo James	09NA3002	6.77	1,000.00

	Naval Architecture				
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B. 5-YEAR B. ARCH. (HONS.) COURSE :

Sl. No.	Name of Deptt.	Name of the winner	Instt Roll No.	CGP A	Amount Rs.
1.	ARCHITECTURE & REGIONAL PLANNING	Sappa Divya	08AR1026	8.20	1,000.00

C. 5-YEAR DUAL DEGREE COURSES :

Sl. No.	Name of Deptt.	Name of the winner	Instt Roll No.	CG PA	Amount Rs.
1.	Aerospace Engineering (AE1)	Praturi Divya Shri	08AE3016	9.17	1,000.00
2.	Biotechnology & Biochemical Engineering (BT1)	Sandeep S S Girada	08BT3013	7.66	1,000.00
3.	Chemical Engineering (CH1)	Abhishek Raj	08CH3009	8.82	1,000.00
4.	Civil Engineering (CED)	Aditya Mahadev Prakash	08CE3114	8.38	1,000.00
5.	Computer Science & Engineering (CS2)	Arijit Mukherjee	08CS3009	8.73	1,000.00
6.	Electrical Engineering (EED)	Poolla Bala Kameshwar	08EE3201	9.33	1,000.00
7.	Electronics & Elect. Commu. Engineering(ECD)	Jointly : 1. Anit Kumar Sahu 2. Shruti Poddar	08EC3401 08EC3510	9.28 9.49	500.00 500.00
8.	Mechanical Engineering (ME1)	Chanakya Hridaya	08ME3103	8.79	1,000.00
9.	Mechanical Engineering (ME2)	Balabhadruni Kamaraju	08ME3204	9.19	1,000.00
10.	Mechanical Engineering (ME3)	Sambt Das	08ME3301	9.08	1,000.00
11.	Manufacturing Science & Engineering (MF1)	Geet Lahoti	08MF3004	9.25	1,000.00
12.	Metallurgical & Materials Engineering (MT1)	Manoj Kumar Gupta	08MT3017	8.46	1,000.00
13.	Mining Engineering (MI1)	Abhishek Jain	08MI3007	7.88	1,000.00
14.	Ocean Engineering & Naval Architecture (NA1)	Taskar Bhushan Uday	08NA3002	9.53	1,000.00

D. 5-YEAR M. SC. COURSES :

Sl. No.	Name of Deptt.	Name of the winner	Instt Roll No.	CGPA	Amount Rs.
1.	Industrial Chemistry	Boda Nishitha ,..	08CY2005	8.80	1,000.00
2.	Exploration Geophysics	Ankit Barik	08EX2008	8.51	1,000.00
3.	Applied Geology	Anamika	08GG2004	8.41	1,000.00

		Choudhary			
4	Economics	Apurva Jain	08HS2021	8.85	1,000.00
5	Mathematics & Computing	Anurag Bishnoi	08MA2006	7.95	1,000.00
6	Physics	Aditya G Date	08PH2004	9.19	1,000.00
7	Statistics & Informatics	B. Saketa Lakshmi	08SI2001	9.08	1,000.00

E. 2-YEAR M. SC. COURSES :

Sl. No.	Name of Deptt.	Name of the winner	Instt Roll No.	CGPA	Amount Rs.
1.	Chemistry	Karabi Nath	11CY40011	9.71	1,000.00
2.	Geology	Udita Mukherjee	11GG40029	8.59	1,000.00
3.	Mathematics	Suvra Kanti Chakraborty	11MA40027	9.73	1,000.00
4.	Physics	Jointly : 1.Aritra Banerjee 2.Sayantani Bera	11PH40044 11PH40034	8.81 9.44	500.00 500.00

Table A-7

**STUDENTS AWARDED SCHOLARSHIPS BY EXTERNAL AGENCIES
(2012-2013)**

Sl. No.	Awarding Organization	No. of Recipients
1.	INSPIRE Scholarship awarded by Department of Science & Technology, Govt. of India, New Delhi to the students of 5-Yr. Int. M.Sc.Course(Science stream only) (Fresh(1 st Year): 171 + Renewal : 427 (from 2 nd Yr, to 5 th Yr.)	598
2.	Rajarshee Shahu Maharaj Merit Scholarship, Director of Social Welfare, Maharashtra State, Pune.	05
3.	CSR Scholarship awarded by Shipping Corporation of India, Mumbai for SC/ST students of O.E. & Naval. Arch. Department (Fresh : 13 + Renewal: 30)	43
4.	Merit-cum-Means Scholarship from Education Director (Scholarship & Stipend Section) Govt. of West Bengal, Kolkata (for 2- Yr. M.Sc. students)	18
5.	Post Matric Scholarship to SC/ST students , Govt. of Assam	01
6.	Directorate of Technical Education, Chhattisgarh	01
7.	Steel Authority of India Ltd., Durgapur, Rourkela, Bhilai, Vishakhapatnam Steel Plant, Bokaro (RSP : 02 + VSP: 04)	06
8.	Aditya Birla Scholarship, Aaditya Birla Group, Aditya Birla Management Corporation, Mumbai (Fresh: 01 + Renewal: 04)	05
9.	New Central Sector Scholarship for Top Class Education for SC Students, Ministry of Social Justice & Empowerment, New Delhi (Renewal: 25)	25
10.	Jagadish Chandra Bose National Talent Search, Calcutta (JBNSTS) (Fresh: 17 + Renewal: 28	45
11	OPJEM Scholarship from Zindal Trust , New Delhi	04
12.	Indian Oil Corporation Ltd., Delhi	04
11.	BOEING Scholarship to the students of Aerospace Engg. Department from the ongoing Research Project "Boeing University Relations"(BUR) sponsored by Boeing Company, U.S.A	09
12.	CSR- Balmer Lawrie Scholarship under CSR Initiative of Balmer Lawrie & Co. Ltd. Kolkata For SC/ST /PC students.	14
13.	MCM Scholarship for Minorities Communities, Ministry of Minority Affairs, New Delhi	01
14.	KVPY Scholarship, IISc, Bangalore	07
TOTAL:		786

Table A-8

**STUDENTS ON ROLL (DEPARTMENTWISE) – UNDERGRADUATE
(B.TECH/B.ARCH./M.SC./DUAL DEGREE) COURSES AT THE BEGINNING OF
THE SESSION 2012 – 2013**

Sl. No.	Course	1 st yr.		2 nd yr.		3 rd yr.		4 th yr.		5 th yr.		Total
		M	F	M	F	M	F	M	F	M	F	
(A) B.Tech. 4-Year												
1	Aerospace Engg.	31	1	26	3	31	0	17	2	-	-	111
2	Agri. & Food Engg.	30	6	26	7	21	7	21	4	-	-	122
3	Biotech. & Bioch. Engg.	19	6	19	7	12	6	14	3	-	-	86
4	Chemical Engg.	46	9	45	10	48	9	36	3	-	-	206
5	Civil Engg.	58	5	56	3	51	6	42	1	-	-	222
6	Computer Sc. & Engg.	54	4	57	3	58	5	48	5	-	-	234
7	Electrical Engg.	79	9	89	8	94	9	72	8	-	-	368
8	Electronics & ECE	54	9	58	10	59	10	53	4	-	-	257
9	Industrial Engg.	28	1	28	3	26	2	23	0	-	-	111
11	Mechanical Engg.	91	4	95	5	90	7	83	8	-	-	383
12	Met. & Mat Engg.	34	8	33	6	39	4	32	2	-	-	158
13	Mining Engg.	39	2	37	0	38	0	26	0	-	-	142
14	Ocean Engg. & N.A.	28	4	32	1	28	1	21	1	-	-	116
TOTAL (A):		591	68	601	66	595	66	488	41	-	-	2516
(B) B.Arch. 5-Year												
	Architecture	39	7	35	7	32	12	27	8	19	4	190
TOTAL (B):		39	7	35	7	32	12	27	8	19	4	190
(C) M.Sc. Integrated 5-Year												
1	Chemistry	19	9	15	6	15	0	9	7	8	5	93
2	Geology	60	5	59	3	42	6	47	6	28	6	262
3	Humanities & Social Sc	42	3	29	9	21	10	17	5	17	1	154
4	Maths.	41	8	43	10	46	3	36	2	48	4	241
5	Physics	34	0	24	3	20	2	18	3	11	0	115
TOTAL (C):		196	25	170	31	144	21	127	23	112	16	865
(D) M.Sc. 2-Year												
1	Chemistry	31	9	35	7	-	-	-	-	-	-	82
2	GG	21	5	14	9	-	-	-	-	-	-	49
3	Mathematics	23	7	19	7	-	-	-	-	-	-	56
4	Physics	42	3	33	7	-	-	-	-	-	-	85
TOTAL (D):		117	24	101	30							272
(E) Dual Degree 5-Year												
1	Aerospace Engg.	20	2	18	2	18	0	18	1	13	1	93
2	Ag. & F. E..	32	3	27	4	22	7	20	5	14	1	135
3	Biotech. & Bioch. Engg.	18	9	15	7	18	4	20	4	13	2	110
4	Chemical Engg.	25	2	29	2	29	2	22	4	25	1	141
5	Civil Engg./Struct. Engg.19	19	3	19	1	19	3	20	4	13	3	104

6	Computer Sc. & Engg./ Comp. & Information Technology	40	2	44	3	41	3	37	1	30	2	203
7	Electrical Engg./ Instru. Engg.	18	3	23	1	25	4	27	3	20	4	128
8	E & ECE	32	9	37	7	35	10	38	7	31	2	208
9	Industrial Engg./IEM	33	5	29	3	30	1	27	0	31	2	161
10	Mechanical Engg.	59	3	67	2	70	1	69	3	35	2	311
11	Met. & Mat. Engg./ Metallurgical Engg.	20	1	19	1	15	2	15	2	15	2	92
12	Mining Engg.	36	1	37	0	32	0	30	0	20	0	156
13	Ocean Engg. & N.A.	20	1	24	1	17	0	21	1	13	0	98
Total (E):		372	44	388	34	371	37	364	35	273	22	1940
TOTAL (A+B+C+D+E)		1315	168	1295	168	1142	136	1006	107	404	42	5783

Table 9

STATEMENT OF RESULTS (UNDERGRADUATE) 2012-2013

S.No.	Course	1st yr.		2nd yr.		3rd yr.		4th yr.		5th yr.		
		P	I	P	I	P	I	P	I	P	I	
Total												
(A) B.Tech												
1	AEROSPACE ENGINEERING	26	4	17	12	15	8	13	6	0	0	101
2	AGRICULTURAL AND FOOD ENGINEERING	22	10	23	10	19	7	20	5	0	0	116
3	BIOTECHNOLOGY	20	2	19	7	13	1	15	2	0	0	79
4	CHEMICAL ENGINEERING	44	9	47	8	42	10	37	2	0	0	199
5	CIVIL ENGINEERING	48	6	44	15	44	8	39	4	0	0	208
6	COMPUTER SCIENCE & ENGINEERING	60	6	52	8	54	6	49	3	0	0	238
7	ELECTRICAL ENGINEERING	56	6	54	8	51	12	48	5	0	0	240
8	ELECTRONICS & ELECTRICAL COMMUNICATION ENGG.	64	4	63	5	56	5	52	5	0	0	254
9	INDUSTRIAL ENGINEERING & MANAGEMENT	25	3	22	8	25	1	20	3	0	0	107
10	INSTRUMENTATION ENGINEERING	29	3	30	5	32	6	26	1	0	0	132
11	MANUFACTURING ENGINEERING	23	2	19	6	24	1	21	1	0	0	97
12	MECHANICAL ENGINEERING	66	7	65	10	57	4	63	5	0	0	277
13	METALLURGICAL & MATERIALS ENGINEERING	33	4	31	8	29	4	31	3	0	0	143
14	MINING ENGINEERING	29	8	24	13	31	4	25	1	0	0	135
15	OCEAN ENGG AND NAVAL ARCHITECTURE	26	3	22	11	14	11	20	2	0	0	109
Total(A)		571	77	532	134	506	88	479	48	0	0	2435
(B) B.Arch												
1	ARCHITECTURE AND REGIONAL PLANNING	33	12	28	14	30	14	26	9	20	3	189
Total(B)		33	12	28	14	30	14	26	9	20	3	189
(C) M.Sc(2yr)												
1	CHEMISTRY	39	0	41	1	0	0	0	0	0	0	81
2	GEOLOGY & GEOPHYSICS	26	0	22	1	0	0	0	0	0	0	49
3	MATHEMATICS	26	3	26	0	0	0	0	0	0	0	55
4	PHYSICS & METEOROLOGY	43	2	37	3	0	0	0	0	0	0	85
Total(C)		134	5	126	5	0	0	0	0	0	0	270
(D) M.Sc(5yr)												
1	CHEMISTRY	20	6	20	1	14	1	14	2	13	0	91
2	EXPLORATION GEOPHYSICS	30	1	27	5	19	4	22	5	23	0	136
3	GEOLOGY & GEOPHYSICS	20	12	23	7	22	3	25	1	11	0	124
4	HUMANITIES & SOCIAL SCIENCES	38	7	33	5	28	3	22	0	18	0	154
5	MATHEMATICS	48	3	42	10	38	10	30	6	27	0	214
6	PHYSICS & METEOROLOGY	28	6	21	6	19	3	13	8	10	1	115
7	STATISTICS AND INFORMATICS	0	0	0	1	0	1	0	2	24	1	29
Total(D)		184	35	166	35	140	25	126	24	126	2	863

(E) Dual Degree												
1	AEROSPACE ENGINEERING	17	3	13	7	24	2	17	2	14	0	99
2	AGRICULTURAL AND FOOD ENGINEERING	22	11	20	11	24	7	22	3	15	0	135
3	BIOTECHNOLOGY	19	6	14	7	26	0	21	3	14	1	111
4	CHEMICAL ENGINEERING	25	4	26	5	33	3	24	2	22	4	148
5	CIVIL ENGINEERING	18	3	13	7	27	0	18	6	16	0	108
6	COMPUTER SCIENCE & ENGINEERING	44	1	38	9	41	6	31	7	27	5	209
7	ELECTRICAL ENGINEERING	24	0	18	6	31	0	20	9	22	1	131
8	ELECTRONICS & ELECTRICAL COMMUNICATION ENGG.	44	1	36	8	49	4	36	9	30	3	220
9	INDUSTRIAL ENGINEERING & MANAGEMENT	20	4	12	8	27	6	24	3	21	1	126
10	INSTRUMENTATION ENGINEERING	1	0	0	0	0	0	1	0	1	0	3
11	MANUFACTURING ENGINEERING	11	3	9	4	18	0	18	2	10	1	76
12	MECHANICAL ENGINEERING	50	4	48	8	56	8	45	8	31	6	264
13	METALLURGICAL & MATERIALS ENGINEERING	17	3	16	4	26	1	16	1	17	0	101
14	MINING ENGINEERING	27	9	27	9	30	5	29	1	20	0	157
15	OCEAN ENGG AND NAVAL ARCHITECTURE	16	2	18	7	17	4	16	6	12	1	99
16	QUALITY ENGINEERING DESIGN AND MANUFACTURING - INDUSTRIAL ELECTRONICS VERTICAL	6	0	4	2	0	0	0	0	0	0	12
17	QUALITY ENGINEERING DESIGN AND MANUFACTURING - MECHANICAL ENGINEERING VERTICAL	4	2	6	0	0	0	0	0	0	0	12
Total(E)		365	56	318	102	429	46	338	62	272	23	2011
Total(A+B+C+D+E)		1287	185	1170	290	1105	173	969	143	418	28	5768

TABLE – B-1 ADMISSION TO POSTGRADUATE COURSES IN 2012-2013

Deptt./ Centre	Specialisation	Sanct- ioned	Admit.	Reg- ular	SP	QIP	DF	GN	SC	ST	PD	OBC	M	F
AE	Aerospace Engineering	24	26	23	03	00	00	13	03	00	00	10	20	06
AG	Farm Machinery & Power (AG1)	19	16	16	00	00	00	07	03	01	00	05	15	01
	Land & Water Resources Engineering (AG2)	18	14	14	00	00	00	06	03	01	00	04	08	06
	Food Process Engineering (AG3)	30	30	30	00	00	00	12	05	02	00	11	24	06
	Agricultural Biotechnology (AG4)	20	18	18	00	00	00	07	03	02	00	06	04	14
	Aquacultural Engineering (AG5)	21	08	08	00	00	00	02	02	00	00	04	04	04
	Agricultural Systems & Management (AG6)	19	07	07	00	00	00	03	00	01	00	03	04	03
AT	Embedded Controls and Software	10	08	08	00	00	00	03	02	00	00	03	08	00
BT	Biotechnology and Biochemical Engineering	24	16	16	00	00	00	11	03	00	00	02	07	09
CH	Chemical Engineering	75	60	59	00	00	01	28	11	04	00	17	42	18
CE	Hydraulic & Water Resources Engineering (CE1)	20	08	08	00	00	00	01	02	01	00	04	04	04
	Transportation Engineering (CE2)	20	17	17	00	00	00	08	03	02	00	04	13	04
	Environmental Engineering and Management (CE3)	18	05	05	00	00	00	01	02	00	00	02	02	03
	Geotechnical Engineering (CE4)	18	14	14	00	00	00	06	03	01	00	04	12	02
	Structural Engineering (CE5)	19	19	17	02	00	00	10	03	01	00	05	14	05
CS	Computer Science & Engineering	37	38	32	02	00	04	21	07	01	00	09	30	08
CR	Cryogenics Engineering	24	11	11	00	00	00	05	03	00	00	03	09	02
CL	Earth System Science and Technology	31	12	12	00	00	00	12	00	00	00	04	08	04
EE	Machine Drives and Power Electronics (EE1)	18	15	15	00	00	00	07	02	01	00	05	14	01
	Control System Engineering (EE2)	18	16	15	00	00	01	09	03	01	00	03	15	01
	Power System Engineering (EE3)	18	17	16	01	00	00	08	03	01	00	05	13	04
	Instrumentation Signal Processing (EE4)	18	17	16	00	00	01	07	03	00	00	07	15	02
EC	Micro Electronics and VLSI Design (EC2)	29	30	28	02	00	00	17	04	02	00	07	24	06
	RF and Microwave Engineering (EC3)	28	18	16	00	01	01	11	03	01	00	03	13	05
	Telecommunication Systems Engineering (EC4)	28	31	27	00	01	03	19	05	01	00	06	26	05
	Visual Information and Embedded Systems Engineering (EC5)	28	22	21	00	00	01	13	02	00	00	07	15	07
ET	Media and Sound Engineering	15	07	07	00	00	00	05	01	00	00	01	06	01
GG	Exploration Geosciences (GG1)	24	14	14	00	00	00	07	00	01	00	06	08	06
IM	Industrial Engineering and Management	25	16	14	01	00	01	05	05	01	00	05	16	00
IT	Information Technology	25	18	14	01	01	02	08	03	00	00	07	14	04
MM	Medical Imaging and Informatics	00	06	06	00	00	00	03	00	00	00	03	05	01
MS	Materials Science and Engineering	29	24	21	00	00	03	15	04	01	00	04	16	08
MA	Computer Science and Data Processing	34	21	21	00	00	00	07	02	00	00	12	17	04
ME	Manufacturing Science and Engineering (ME1)	26	20	19	00	00	01	08	03	02	00	07	19	01
	Thermal Science and Engineering (ME2)	33	28	25	00	01	02	19	03	00	00	06	28	00
	Mechanical System Design (ME3)	44	39	32	01	01	05	19	09	01	00	10	37	02
MT	Metallurgical & Materials Engineering	54	39	37	00	00	02	26	06	01	00	06	31	08

Deptt./ Centre	Specialisation	Sanct- ioned	Admit.	Reg- ular	SP	QIP	DF	GN	SC	ST	PD	OBC	M	F
MI	Mining Engineering	24	13	13	00	00	00	05	03	02	00	03	13	00
NA	Ocean Engineering and Naval Architecture	20	19	09	08	00	02	13	01	00	00	05	18	01
PH	Solid State Technology	25	12	12	00	00	00	05	02	00	00	05	09	03
ID	Infrastructure Design and Management	31	12	12	00	00	00	08	02	00	00	02	11	01
RE	Reliability Engineering	20	10	04	00	00	06	06	00	01	00	03	09	01
RT	Rubber Technology	24	12	12	00	00	00	05	00	00	00	11	11	01
WM	Water Management	12	12	12	00	00	00	05	02	01	00	04	08	04
AR	City Planning (MCP)	42	34	32	01	01	00	16	05	02	00	11	12	22
MM	Medical Science and Technology	15	14	13	00	00	01	06	02	00	00	06	12	02
IP	Bachelor of Laws with Honours in Intellectual Property Law	80	46	00	46	00	00	40	02	00	00	04	32	14
BM	Business Administration	160	71	00	71	00	00	49	02	00	00	20	52	19
HS	Human Resources Management	30	18	00	18	00	00	14	01	00	00	03	11	05
MT	Steel Technology	00	00	00	00	00	00	00	00	00	00	00	00	00
BM	Master of Business Administration in the Executive MBA Programme (Kolkata Campus)	20	15	00	00	15	00	15	00	00	00	00	13	02
BM	Master of Business Administration in the Executive MBA Programme (Bhubaneswar Campus)	20	16	00	00	16	00	14	01	01	00	00	14	04
EC	Electronics and Communication Engineering (3 years)	20	15	00	00	15	00	12	00	00	00	03	10	05
EE	Electrical Engineering (3 years)	20	11	00	00	11	00	11	00	00	00	00	07	04
IT	Information and Communication Technology (3 years)	20	11	00	00	11	00	10	01	00	00	00	09	02
Total		1524	1066	798	157	74	37	603	143	38	00	290	811	255

TABLE B-2 - POSTGRADUATE STUDENTS ON ROLL (1st Year-2012-2013 & 2nd year - 2011-2012)

Department/ Centre/School	Specialisation	Code	Intake Capacity 2012	1st year		2nd year		Total	
				M	F	M	F	M	F
AE	Aerospace Engineering	AE	24	20	06	18	03	38	09
AG	Farm Machinery And Power	AG1	19	15	01	15	00	30	01
AG	Land and Water Resources Engineering	AG2	18	08	06	13	03	21	09
AG	Food Process Engineering	AG3	30	24	06	20	05	44	11
AG	Agricultural Biotechnology	AG4	20	04	14	12	05	16	19
AG	Aquacultural Engineering	AG5	21	04	04	06	01	10	05
AG	Agricultural Systems and Management	AG6	19	04	03	12	05	16	08
AR	City Planning	AR	42	12	22	19	15	31	37
AT	Embedded Controls and Software	AT1	10	08	00	07	00	15	00
BM	Master of Business Administration	BM	160	52	19	87	21	139	40
BM	Master of Business Administration in the Executive MBA Programme (3 Yrs.)	BM1	40	27	06	30	03	57	09
BT	Biotechnology and Biochemical Engineering	BT	24	07	09	13	09	20	18
CE	Hydraulic and Water Resources Engineering	CE1	20	04	04	12	01	16	05
CE	Transportation Engineering	CE2	20	13	04	17	00	30	04
CE	Environmental Engineering & Management	CE3	18	02	03	08	04	10	07
CE	Geotechnical Engineering	CE4	18	12	02	08	02	20	04
CE	Structural Engineering	CE5	19	14	05	16	04	30	09
CH	Chemical Engineering	CH	75	42	18	49	14	91	32
CL	Earth System Science and Technology	CL	31	08	04	09	02	17	06
CR	Cryogenic Engineering	CR	24	09	02	06	00	15	02
CS	Computer Science and Engineering	CS	37	30	08	31	08	61	16
EC	Fibre Optics and Lightwave Engineering	EC1	00	00	00	00	00	00	00
EC	Microelectronics & V L S I Design	EC2	29	24	06	21	07	45	13
EC	RF and Microwave Engineering	EC3	28	13	05	22	01	35	06
EC	Telecommunication Systems Engineering	EC4	28	26	05	27	05	53	10
EC	Visual Information and Embedded Systems Engg.	EC5	28	15	07	18	03	33	10

EC	Electronics & Communication Engineering (3 Yrs.)	EC8	20	10	05	23	03	33	08
EE	Machine Drives and Power Electronics	EE1	18	14	01	12	03	26	04
EE	Control System Engineering	EE2	18	15	01	12	02	27	03
EE	Power and Energy Systems	EE3	18	13	04	18	00	31	04
EE	Instrumentation Signal Processing	EE4	18	15	02	12	01	27	03
EE	Electrical Engineering (3 Yrs.)	EE8	20	07	04	11	04	18	08
ET	Media and Sound Engineering	ET	15	06	01	05	00	11	01
GG	Exploration Geosciences	GG1	24	08	06	03	03	11	09
HS	Human Resources Management	HS	30	11	05	12	07	23	14
ID	Infrastructure Design and Management	ID	31	11	01	17	06	28	07
IM	Industrial Engineering and Management	IM	25	16	00	16	01	32	01
IP	Bachelor of Laws with Honours in Intellectual Property Law (3 Yrs.)	IP	80	32	14	25	20	57	34
IT	Information Technology	IT	25	14	04	20	09	34	13
IT	Information & Communication Engineering (3 Yrs.)	IT8	20	09	02	23	04	32	06
MA	Computer Science and Data Processing	MA	34	17	04	21	01	38	05
ME	Manufacturing Science and Engineering	ME1	26	19	01	15	01	34	02
ME	Thermal Science and Engineering	ME2	33	28	00	32	00	60	00
ME	Mechanical Systems Design	ME3	44	37	02	38	01	75	03
MI	Mining Engineering	MI	24	13	00	05	00	18	00
MM	Medical Science And Technology	MM	15	12	02	12	01	24	03
MM	Medical Imaging and Informatics	MM1	00	05	01	01	00	06	01
MS	Materials Science and Engineering	MS	29	16	08	18	02	34	10
MT	Metallurgical and Materials Engineering	MT1	54	31	08	20	04	51	12
MT	Steel Technology	MT2	20	00	00	00	00	00	00
NA	Ocean Engineering and Naval Architecture	NA	20	18	01	10	01	28	02
PH	Solid State Technology	PH2	25	09	03	15	03	24	06
RE	Reliability Engineering	RE	20	09	01	14	01	23	02
RT	Rubber Technology	RT	24	11	01	12	05	23	06
WM	Water Management	WM	12	08	04	08	00	16	04
	Total		1544	811	255	926	204	1737	461

**TABLE- B -3 - STATEMENT OF RESULTS OF POSTGRADUATE EXAMINATION
(M.TECH/MCP/MMST/MBA) 2010-2011 BATCH OF STUDENTS**

Deptt./ Centre	Specialisation	Code	Registered	Successful	Incomplete
AE	Aerospace Engineering	AE	22	22	0
AG	Farm Machinery and Power	AG1	15	14	01
AG	Soil and Water Conservation Engineering	AG2	16	15	01
AG	Dairy and Food Engineering	AG3	27	23	04
AG	Applied Botany	AG4	18	18	0
AG	Water Resources Development & Management	AG5	01	01	01
AG	Aquacultural Engineering	AG6	07	07	0
AG	Agricultural Systems And Management	AG7	0	0	0
AG	Post Harvest Engineering	AG8	0	0	0
AR	City Planning	AR	33	33	0
BM	Business Administration	BM	84	84	0
BT	Biotechnology and Biochemical Engineering	BT	16	16	0
CE	Hydraulic and Water Resources Engineering	CE1	07	06	01
CE	Transportation Engineering	CE2	10	10	0
CE	Environmental Engineering and Management	CE3	06	05	01
CE	Geotechnical Engineering	CE4	11	10	01
CE	Structural Engineering	CE5	14	14	0
CH	Chemical Engineering	CH	61	60	01
CL	Earth System Science and Technology	CL	05	05	0
CR	Cryogenic Engineering	CR	06	05	01
CS	Computer Science and Engineering	CS	50	48	02
EC	Fibre Optics and Lightwave Engineering	EC1	08	08	0
EC	Microelectronics & V L S I Design	EC2	26	25	01
EC	RF and Microwave Engineering	EC3	24	23	01
EC	Telecommunication Systems Engineering	EC4	29	25	04
EC	Visual Information and Embedded Systems Engg.	EC5	22	22	0
EE	Machine Drives and Power Electronics	EE1	16	16	0
EE	Control System Engineering	EE2	18	17	01
EE	Power System Engineering	EE3	11	10	01
EE	Instrumentation	EE4	19	19	0
GG	Exploration Geosciences	GG1	10	09	01
HS	Human Resources Development & Management	HS	19	19	0
ID	Infrastructure Design and Management	ID	18	17	01
IM	Industrial Engineering and Management	IM	16	15	01
IP	Intellectual Property Rights	IP	29	28	01
IT	Information Technology	IT	20	20	0
MA	Computer Science and Data Processing	MA	17	17	0
ME	Manufacturing Science and Engineering	ME1	16	16	0
ME	Thermal Science and Engineering	ME2	26	24	02
ME	Mechanical Systems Design	ME3	41	41	0
ME	Mechanical Systems Dynamics and Control	ME4	0	0	0
MI	Mining Engineering	MI	04	04	0
MM	Medical Science and Technology	MM	11	11	0
MM	Medical Imaging and Image Analysis	MM1	0	0	0
MS	Materials Science and Engineering	MS	26	26	0
MT	Metallurgical and Materials Engineering	MT	22	21	01
NA	Ocean Engineering and Naval Architecture	NA	15	14	01
PH	Solid State Technology	PH2	13	13	0
RE	Reliability Engineering	RE	07	07	0
RT	Rubber Technology	RT	08	08	0
WM	Water Management	WM	05	05	0
	Total		905	876	30

TABLE: C-1
NUMBER OF RESEARCH SCHOLARS ENROLLED FOR THE PH.D. DEGREE DURING: 2012-2013
(01-07-2012 TO 30-06-2013)

Dept./ Centre/ School	Institute	Joint	Sponsored Scholar	Project/CSIR/ /UGC/QIP/ DBT/ICMR	Teaching/ Non-teaching	Total	General	SC	ST	OBC	Minority	Male	Female
AE	04	-	01	01	-	06	04	02	-	00	-	05	01
AG	08	02	04	19	-	33	22	02	02	07	-	25	08
AR	08	01	-	01	-	10	04	04	-	01	01	05	05
AT	08	-	03	19	-	30	21	03	01	05	-	18	12
BT	06	01	-	14	-	21	16	01	-	03	01	11	10
CY	10	07	-	31	-	48	33	04	-	07	04	31	17
CH	16	01	02	06	-	25	17	05	-	03	-	18	07
CE	09	01	02	09	-	21	14	03	-	04	-	17	04
CS	04	-	01	06	-	11	10	00	-	01	-	05	06
CR	02	-	01	01	-	04	03	00	-	01	-	03	01
ET	01	-	-	00	-	01	01	00	-	00	-	00	01
CL	00	-	-	02	-	02	01	00	-	00	01	01	01
EE	13	03	-	00	-	16	14	00	-	02	-	14	02
EC	27	-	-	03	-	30	24	00	01	03	02	25	05
GG	07	03	-	01	-	11	08	01	-	01	01	07	04
GS	02	-	03	00	-	05	05	00	-	00	-	04	01
HS	08	-	01	06	-	15	09	04	-	02	-	07	08
IM	04	-	-	00	-	04	03	00	-	01	-	04	00
ID	02	-	-	00	-	02	01	00	-	02	-	01	01
IP	00	-	-	02	02	04	03	00	-	01	-	03	01
MS	04	01	-	04	-	09	04	01	-	04	-	09	00
MA	05	08	-	04	-	17	08	02	-	04	03	14	03
ME	16	01	-	02	-	19	15	00	-	04	-	17	02
MT	10	-	02	03	-	15	09	02	01	02	01	13	02
MI	02	-	01	00	-	03	02	01	-	00	-	01	02
NA	03	-	01	00	-	04	02	01	-	00	01	04	00
PH	05	09	-	10	-	24	17	01	-	04	01	18	06
RE	01	-	01	00	-	02	01	00	-	00	01	02	00
RT	01	-	01	03	-	05	04	01	-	00	-	05	00
RJ	04	-	02	00	-	06	05	00	-	00	01	05	01
MM	02	-	01	07	-	10	06	02	-	02	-	06	04
IT	02	-	-	02	-	04	03	00	-	01	-	04	00
BM	00	-	02	03	-	05	03	00	-	02	-	02	03
WM	04	-	-	00	-	04	03	00	-	01	-	03	01
TS	01	-	-	01	-	02	01	00	-	00	01	01	01
TOTAL	199	38	29	160	02	428	296	40	05	68	19	308	120

TABLE: C-2**NUMBER OF MS STUDENTS ENROLLED DURING: 2012-2013 (01-07-2012 TO 30-06-2013)**

Department/Centre/School	Total	General	SC	ST	OBC	Minority	Male	Female
AT	10	09	01	-	-	-	06	04
CS	04	04	-	-	-	-	04	00
CL	01	01	-	-	-	-	00	01
EC	05	04	-	-	01	-	04	01
ET	02	02	-	-	-	-	02	00
EE	03	03	-	-	-	-	02	01
GS	02	02	-	-	-	-	02	00
IT	13	08	-	-	04	01	12	01
MT	`	03	01	-	-	-	03	01
ME	01	00	01	-	-	-	01	00
RJ	03	03	-	-	-	-	02	01
NA	01	01	-	-	-	-	01	00
BM	02	02	-	-	-	-	00	02
TOTAL	51	42	03	-	05	01	39	12

TABLE: C-2a**NUMBER OF POST DOCTORAL FELLOWS AS ON 30-06-2013**

Dept/Centre	Category	Number
BT	Individual Fellowship (DBT)	01
ME	Individual Fellowship (NBHM-DAE)	01
MA	Individual Fellowship (NBHM-DAE)	03
NA	Individual Fellowship (NBHM-DAE)	01
TOTAL		06

TABLE: C-3**UGC SCHOLARS ENROLLED DURING: 2012-2013 (01-07-2012 TO 30-06-2013)**

Dept/Centre/School	Total	General	SC	ST	OBC	Minority	Male	Female
AT	01	-	01	-	-	-	01	-
AG	01	01	-	-	-	-	-	01
CY	17	12	01	-	02	02	15	02
GG	01	-	-	-	01	-	-	01
HS	06	04	02	-	-	-	02	04
MS	01	01	-	-	-	-	01	-
MA	03	01	-	-	01	01	02	01
MM	01	-	01	-	-	-	01	-
RT	01	-	01	-	-	-	01	-
PH	04	03	-	-	01	-	03	01
BM	02	-	-	-	02	-	01	01
IP	01	-	-	-	01	-	01	-
TOTAL	39	22	06	-	08	03	28	11

TABLE: C-4

RESEARCH SCHOLARS ON ROLL AS ON 20-09-2013

Deptt./ Centre/ School	Institute	Joint	Sponsored Scholar	Project/CSIR/ /UGC/QIP/ DBT/ICMR	Teaching/ Non- teaching	Self-Fin.	Total	General	SC	ST	OBC	MINOR	Male	Female
AE	24	02	09	04	00	00	39	27	04	00	08	00	30	09
AG	43	07	15	74	01	00	140	102	10	04	22	02	91	49
AR	22	01	02	07	00	00	32	22	04	00	01	05	13	19
AT	33	00	05	50	00	00	88	70	05	01	11	01	63	25
BT	13	02	00	58	00	00	73	60	06	00	07	00	41	32
CY	20	17	01	134	00	00	172	132	13	00	19	08	126	46
CH	43	07	03	15	01	00	69	50	08	00	10	01	52	17
CE	50	04	09	22	00	00	85	63	10	02	09	01	68	17
CS	27	01	06	27	01	00	62	56	03	00	03	00	47	15
CR	11	00	00	01	00	00	12	10	01	00	01	00	09	03
ET	11	00	00	01	00	00	12	10	01	00	01	00	06	06
CL	07	03	03	14	00	00	27	17	03	00	06	01	22	05
EE	55	03	01	07	00	00	66	52	02	01	09	02	55	11
EC	74	01	13	24	01	00	113	96	05	01	08	03	98	15
GG	29	04	01	32	00	01	67	44	12	01	07	03	49	18
GS	16	00	06	05	00	01	28	22	05	00	01	00	23	05
HS	33	00	12	19	00	08	72	59	06	00	06	01	33	39
IM	21	00	10	04	01	00	36	28	01	01	05	01	34	02
ID	06	01	00	00	00	00	07	05	01	00	01	00	05	02
IP	05	00	00	03	02	00	10	09	00	00	01	00	06	04
MS	17	03	02	45	01	00	68	49	06	00	09	04	55	13
MA	32	30	00	13	00	01	76	51	10	00	12	03	57	19
ME	83	05	09	20	00	01	118	91	14	00	10	03	113	05
MT	30	00	23	15	00	01	69	48	11	02	07	01	57	12
MI	18	00	03	11	00	00	32	22	05	00	05	00	25	07
NA	11	00	01	06	00	00	18	13	02	00	02	01	16	02
PH	40	16	01	36	00	01	94	73	07	00	10	04	72	22
RE	06	00	02	05	00	00	13	10	01	00	00	02	09	04
RT	14	00	08	22	00	00	44	33	04	01	06	00	38	06
RJ	05	00	00	07	00	00	12	11	00	00	00	01	07	05
MM	13	00	12	37	00	01	63	51	06	01	05	00	40	23
IT	06	01	01	33	00	00	41	36	01	00	02	02	32	09
BM	20	00	17	12	01	07	57	47	02	00	06	02	43	14
WM	16	00	00	01	00	00	17	11	02	00	02	02	11	06
TS	03	00	00	01	00	00	04	02	00	00	01	01	04	00
TOTAL	857	108	175	765	09	22	1936	1482	171	15	213	55	1450	486

Receipts for the Year Ended 31st March'2013

(Amount-Rs)

Sl.No	Receipts	Current Year	Previous Year
		(2012-2013)	(2011-2012)
I.	Opening Balance (Bank Balances)		
	a) In Current Accounts	194759252	2335104
	b) In Savings Accounts	711995687	988176421
II.	Grants Received		
	Non-Recurring (Plan)	1590000000	2100000000
	Recurring (Non-Plan)	1736012000	2150000000
	Multi Speciality Hospital (Plan)	750000000	0
	Diamond Jubilee Special Grant (Plan)	700000000	0
III.	Income from Investment		
	c) Own Funds	176533032	142663711
IV.	Interest Received		
	a) On Bank Deposits	7134522	20220387
	b) Recoverable Advances	10455387	10629729
V.	Academic & General Receipts	438856220	482837632
VI.	Amount Borrowed/Loan refund received	12600000	109213600
VII.	Other Receipts(Refund/Reimbursement)	10720701021	8466673080
	TOTAL :	17049047121	14472749664

Payments for the Year Ended 31st March'2013

(Amount-Rs)

Sl.No	Payments	Current Year (2012-2013)	Previous Year (2011-2012)
I.	EXPENSES:		
	a) Establishment Expenses	1921979609	1927403064
	b) Administrative Expenses.	501447142	436797832
II.	Expenditure on Fixed Assets & Capital Work-in-Progress (Plan)	2520760636	2129928921
III.	Investments and deposits made :		
	Out of Own Funds & Others	10152024009	8215312296
IV.	Other Payments	1510477157	856552612
V.	Closing Balance		
	a) In Current Accounts	176074466	194759252
	b) In Savings Accounts	266284102	711995687
	TOTAL :	17049047121	14472749664