

**List of Members of the re-constituted Council of
Indian Institutes of Technology**

As on June, 2011

Name		Provision in the Act
Shri Kapil Sibal Hon'ble Minister (HRD)	Chairman of the Council of IITs	<i>Ex-officio</i> [Section 31(2) (a)]
Dr. Anil Kakodkar Chairman, BoG, IIT Bombay	Member	<i>Ex-officio</i> [Section 31(2) (b)]
Shri R.P. Agrawal Chairman, BoG, IIT Delhi	Member	<u>- do -</u>
Dr. R.P. Singh Chairman, BoG, IIT Guwahati	Member	<u>- do -</u>
Prof. M. Anandkrishnan Chairman, BoG, IIT Kanpur	Member	<u>- do -</u>
Dr. Shiv Nadar Chairman, BoG, IIT Kharagpur	Member	<u>- do -</u>
Mr. M. M. Sharma Chairman, BoG, IIT Madras	Member	<u>- do -</u>
Shri Analjit Singh Chairman, BoG, IIT Roorkee	Member	<u>- do -</u>
Prof. Devang V. Khakhar Director, IIT Bombay	Member	<i>Ex-officio</i> [Section 31(2) (c)]
Prof. Surendra Prasad Director, IIT Delhi	Member	<u>- do -</u>
Prof. Gautam Barua Director, IIT Guwahati	Member	<u>- do -</u>
Prof. S. G. Dhande Director, IIT Kanpur	Member	<u>- do -</u>
Prof. Damodar Acharya Director, IIT Kharagpur	Member	<u>- do -</u>
Prof. M. S. Ananth Director, IIT Madras	Member	<u>- do -</u>
Prof. H. K. Verma Director (officiating), IIT Roorkee	Member	<u>- do -</u>
Prof. Ved Prakash Chairman (actg.), University Grants Commission,	Member	<i>Ex-officio</i> [Section 31(2) (d)]
Prof. Samir K Brahmachari, Director General (DG), Council of Scientific and Industrial Research	Member	<i>Ex-officio</i> [Section 31(2) (e)]
Dr. K. Kasturirangan Chairman, Council of Indian Institute of Science Bangalore	Member	<i>Ex-officio</i> [Section 31(2) (f)]

Prof. P. Balaram Director, Indian Institute of Science, Bangalore	Member	<i>Ex-officio</i> [Section 31(2) (g)]
Dr. S.S. Mantha, Chairman, All India Council for Technical Education	Member	[Section 31(2) (i)]
Prof. C.N.R.Rao, Chairman Scientific Advisory Council to the Prime Minister	Member (term upto 05.09.2012)	[Section 31(2) (j)]
Prof. C.S. Seshadri Director, Chennai Mathematical Institute	- do -	- do -
Prof. Sabyasachi Bhattacharya Ex-Director, Tata Institute of Fundamental Research, Mumbai	- do -	- do -
Dr. Kota Harinarayan Chairman, Research Council of Central Scientific Instruments Organization, National Aerospace Laboratories, Bangalore	- do -	- do -
Shri Tarun Das Chief Mentor, Confederation of Indian Industry, Gurgaon	- do -	- do -
Smt. Vasanthi Stanley, MP, Rajya Sabha	Member (co-terminus)	[Section 31(2) (k)]
Shri Deepender Singh Hooda, MP, Lok Sabha	- do -	- do -
Shri Janardhana Swamy MP, Lok Sabha	- do -	- do -
Smt. Vibha Puri Das, Secretary, Deptt. of Higher Education	Representative of the Ministry of Human Resource Development	[Section 31(2) (h)]
Shri Sumit Bose Secretary, Department of Expenditure Ministry of Finance	Representative of the Ministry of Finance	- do -
Shri R. Chandrasekhar Secretary, Department of Information Technology	Representative of any other Central Government Ministry	- do -
Shri Ashok Thakur, Additional Secretary (HE), Ministry of Human Resource Development, Deptt. of Higher Education	Secretary, IIT Council	[Section 31(3)]

Board of Governors

	Name & Address	Position
1.	Dr. Shiv Nadar Chairman,BoG, IIT Kharagpur & HCL Technologies Ltd 1-10/11, Sector 3, Noida 201301	Chairman
2	Ms. Vibha Puri Das (from 05.08.2009) Secretary(HE), Government of India Ministry of Human Resource Development Department of Higher Education Shastri Bhawan, New Delhi -110115	Member
3	Prof. B. B. Bhattacharya Prof. of Economics A-44 Sarve Sanjhi Apts.. Plot No.8, Sector 9 Dwarka, New Delhi 110077	Member
4	Shri Sandipan Chakravorty Managing Director, Tata Steel Processing & Distribution Ltd. 43, Chowringhee Road, Kolkata 700071	Member
5	Prof. N. Balakrishnan Professor, Dept. of Aerospace Engineering & Associate Director Indian Institute of Science Bangalore - 560012	Member
6	Shri Tamal Dasgupta Managing Director West Bengal Electronics Industry Development Corporation Ltd.(Webel) Webel Bhavan, Block EP & GP, Sector V, Salt Lake, Kolkata - 700091	Member
7	Prof. D. Acharya Director IIT Kharagpur	Member
8	Prof. R. N. Datta Dept. of Architecture & Regional Planning IIT Kharagpur	Member
9	Prof. P. K. J. Mohapatra Dept. of Industrial Engineering & Management IIT Kharagpur	Member
10	Registrar IIT Kharagpur	Secretary

Finance Committee

	Name and Address	Position
1.	Dr. Shiv Nadar Chairman,BoG, IIT Kharagpur & HCL Technologies Ltd 1-10/11, Sector 3, Noida 201301	Chairman
2	Ms. Vibha Puri Das Secretary(HE), Government of India Ministry of Human Resource Development Department of Higher Education Shastri Bhawan, New Delhi -110115	Member
3	Shri Sanat Kumar Ray Financial Adviser & Additional Secretary Government of India Ministry of Human Resource Development Department of Higher Education Shastri Bhawan New Delhi -110115	Member
4	Shri Tamal Dasgupta Managing Director West Bengal Electronics Industry Development Corporation Ltd.(Webel) Webel Bhavan, Block EP & GP, Sector V, Salt Lake, Kolkata - 700091	Member
5	Prof. D. Acharya Director, IIT Kharagpur	Member
6	Prof. R.N. Datta Dept. of Architecture & Regional Planning IIT Kharagpur	Member
7	Registrar IIT Kharagpaur	Secretary

Building and Works Committee

1	Prof. D. Acharya Director, IIT Kharagpur	Chairman
2	Director (T) Government of India Ministry of Human Resource Development Department of Higher Education Shastri Bhawan New Delhi -110001	Member
3	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 - 721101	Member
4	Shri Dilip Banerjee Superintending Engineer South Western Circle Public Works Department (PWD) Saheed Mangal Pandey Sarani Paschim Medinipur - 721101	Member
5	Head Department of Civil Engineering IIT Kharagpur	Member
6	Head Department of Electrical Engineering IIT Kharagpur	Member
7	Head Dept. of Architecture & Regional Planning IIT Kharagpur	Member
8	Registrar IIT Kharagpur	Secretary

Administrative Heads

Director	Prof. Damodar Acharya		
Deputy Director	Prof. A.K. Majumdar		
Registrar	Dr. D. Gunasekaran (on leave) Dr. T.K. Ghosal (officiating)		
Deans			
Undergraduate Studies	Prof. S. K. Som		
Postgraduate Studies & Research Faculty	Prof. P. K. J. Mohapatra Prof. Amit Basak		
Planning & Coordination	Prof. B. K. Mathur		
Sponsored Research & Industrial Consultancy	Prof. P. P. Chakrabarti		
Students' Affair	Prof. Souvik Bhattacharyya		
Continuing Education	Prof. Ajay Chakraborty Prof. Somnath Sengupta	Upto From	30.06.2010 01.07.2010
Alumni Affairs & International Relations	Prof. Amit Patra		
Vinod Gupta School of Management	Prof. A. Tripathy		
Head of Departments			
Aerospace Engineering	Prof. A. K. Ghosh Prof. K. P. Sinha mahapatra	Upto From	31.08.2010 01.09.2010
Agricultural & Food Engineering	Prof. Rajendra Singh		
Architecture & Regional Planning	Prof. B. K. Sengupta		
Biotechnology	Prof. Amit K. Das		
Chemical Engineering	Prof. Amar Nath Samanta		
Chemistry	Prof. P. K. Chattaraj		
Civil Engineering	Prof. L.S. Ramachandra		
Computer Science & Engineering	Prof. Jayanta Mukhopadhyay		
Electrical Engineering	Prof. A. K. Sinha Prof. Jayanta Pal	Upto From	30.09.2010 01.10.2010
Electronics & Electrical Communication Engineering	Prof. C.K. Maiti		
Geology & Geophysics	Prof. Biswajit Mishra		
Humanities & Social Sciences	Prof. D. Suar Prof. K. B. L. Srivastava	Upto From	30.09.2010 01.10.2010
Industrial Engineering & Management	Prof. B. Mohanty		
Mathematics	Prof. A. R. Roy Prof. P. D. Srivastava	Upto From	30.09.2010 01.10.2010
Mechanical Engineering	Prof. A. K. Chattopadhyay Prof. Ranjan Bhattacharyya	Upto From	30.09.2010 01.10.2010
Metallurgical & Materials Engineering	Prof. S.K. Roy		
Mining Engineering	Prof. J. Bhattacharyya Prof. S. K. Das	Upto From	30.09.2010 01.10.2010

Ocean Engineering & Naval Architecture	Prof. N. R. Mandal Prof. O. P. Sha	Upto From	30.09.2010 01.10.2010
Physics & Meteorology	Prof. R. N. P. Choudhary Prof. B. K. Mathur Prof. S. K. Ray	Upto Upto From	May 2010 31.01.2011 01.02.2011

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		
Material Science	Prof. Basudam Adhikari		
Reliability Engineering	Prof. V. N. Achutha Naikan		
Rubber Technology	Prof. T. K. Chaki Prof. G. B. Nando	Upto From	30.09.2010 01.10.2010
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. S. Chakrabarti Prof. Debasish Datta	Upto From	30.06.2010 01.07.2010
School of Information Technology	Prof. Jayanta Mukhopadhyay		
School of Medical Science & Technology	Prof. Pranab Kumar Dutta		
Vinod Gupta School of Management	Prof. A. Tripathy		
Rajendra Mishra School of Engineering Entrepreneurship	Prof. D. Biswas		
Rajiv Gandhi School of Intellectual Property Law	Prof. Indrajit Dube		
Ranbir and Chitra Gupta School of Infrastructure Design and Management	Prof. K. S. Reddy		
School of Water Resources	Prof. S. N. Panda		

Chairmen & Vice-Chairmen

UG Admissions	Prof. D.K. Baidya	JEE-2011
Vice-Chairman, UG Admissions	Prof. G. G. Roy	JEE-2011
PG Admissions	Prof. S. K. Barai	GATE-2011
Vice-Chairman, PG Admissions	Prof. D. Deb	GATE-2011
JAM	Prof. Saibal Gupta	JAM-2011
Vice-Chairman, JAM	Prof. G. P. Raja Sekhar	JAM-2011
Central Library	Prof. S. Sahu	
Hall Management Committee	Prof. A. Goswami	
Chairman, CWISS	Prof. P. K. Das	

CRF (Materials Division)	Prof. Rahul Mitra
CRF (Life Science Division)	Prof. A. K. Ghosh
Rajbhasha Vibhag	Prof. U. C. Gupta
Nehru Museum of Science & Technology	Prof. D. Sen
Kalpana Chawla Space Technology Cell (KCSTC)	Prof. Somnath Sengupta

Professors-in-Charge

B C Roy Technology Hospital	Dr. Analava Mitra		
Examinations	Prof. P. D. Srivastava Prof. Biswajit Maiti	Upto	31.08.2010
		From	01.09.2010
Training & Placement	Prof. S.K. Srivastava		
General Time Table	Prof. D. K. Pratihari		
Convocation-2010	Prof. S. K. Som		
Institute Information Cell	Prof. B. K. Mathur		
President, Technology Students Gymkhana	Prof. Manish Bhattacharjee		
Refrigeration & Air Conditioning	Prof. Sukanta Dash		
Horticulture	Prof. C.K. Mukherjee		
Water Works	Prof. A. K. Gupta		
Civil Works (Construction and Maintenance)	Prof. N. Dhang		
Electrical Works	Prof. D. Das		
Telecommunication	Prof. S.S. Pathak Prof. Raja Datta	Upto	03.02.2011
		From	04.02.2011
Institute Guest Houses	Prof. B. K. Sengupta		
Intellectual Property Right & Industrial Relation	Prof. S. Tripathy		

General

Librarian	Dr. B. Sutradhar
Public Information Officer	Dr. Anathbandhu Patra
Head, B.C. Roy Technology Hospital	Dr. Seema Ray
Superintending Engineer (Civil)	Shri T. K. Mukherjee
Executive Engineer (Civil)	Shri Subrat Roy (<i>on EOL</i>) Shri S. K. Biswas
Executive Engineer (Electrical)	Shri Sabyasachi Ghosh Shri Mahesh Kumar Shri D.K. Chakraborty
Security Officer	Shri U. P. Singh

Deputy Registrars

Establishment Section	Shri Atul Prakash Trivedi
Finance & Accounts	Dr. Tapan Kumar Ghosal
Estate Office	Shri B. K. Basu Roychowdhury
Stores & Purchase	Shri Sandeep Chatterjee

List of Senate Members as on 31st March, 2011

Director - Prof. D. Acharya
Deputy Director - Prof. A. K. Majumdar

Department of Aerospace Engineering

Prof. A.K. Ghosh (under suspension)
Prof. P.K. Datta
Prof. G. Bandyopadhyay
Prof. N. Singh
Prof. K. P. Sinhamahapatra

Department of Agricultural & Food Engineering

Prof. K.P. Pandey
Prof. B.C. Mal (Lien up to 10.02.2015)
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. Raghuvanshi
Prof. S. N. Panda
Prof. T. K. Goswami
Prof. Nirupama Mallik
Prof. Madan Kumar Jha
Prof. Hifjur Raheman
Prof. S. Dutta Gupta

Department of Architecture & Regional Planning

Prof. R.N. Datta
Prof. B.K. Sengupta
Prof. U.K. Banerjee
Prof. A.N. Merchant
Prof. Jaydip Barman
Prof. S. Chattopadhyay

Department of Biotechnology

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

Centre for Educational Technology

Prof. A. K. Ray
Prof. B. Bhattacharya

Department of Chemistry

Prof. D. Mal
Prof. T.K. Sarkar
Prof. J.K. Roy
Prof. P.K. Chattaraj
Prof. S. Roy (Lien up to 28.06.2011)
Prof. T. Pathak
Prof. T. S. Pal
Prof. A. Basak
Prof. D. Ray
Prof. M. Bhattacharjee
Prof. S. K.Srivastava
Prof. Nilmoni Sarkar
Prof. P. Pramanik

Department of Civil Engineering

Prof. Dhrubajyoti Sen
Prof. S.K.Bhattacharyya.(Lien up to 2.8.2014)
Prof. K.S. Reddy
Prof. L.S. Ramachandra
Prof. S. Dey
Prof. D.K. Baidya
Prof. N. Dhang
Prof. B. B. Pandey
Prof. S. K. V. Barai
Prof. S. Majumder
Prof. V. R. Desai
Prof. S. P. Dasgupta

Department of Computer Science & Engineering

Prof. A. Pal
Prof. A.K. Majumdar
Prof. S. Ghose
Prof. P.P. Chakraborti, Dean (SRIC)
Prof. A. Basu
Prof. I. Sengupta
Prof. J. Mukhopadhyay
Prof. S.P. Pal
Prof. R. Mall
Prof. D. Sarkar
Prof. D. Roy Chowdhury
Prof. Pallab Dasgupta
Prof. Rajeev Kumar
Prof. Sudeshna Sarkar
Prof. Chittaranjan Mandal
Prof. Arobinda Gupta

Department of Chemical Engineering

Prof. D. Mukherjee
Prof. A.N.Samanta
Prof. S. Dasgupta
Prof. N. C. Pradhan
Prof. S. De
Prof. Gargi Das
Prof. Sudarsan Neogi

Cryogenic Engineering Centre

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

Department of Electrical Engineering

Prof. S.K. Das
Prof. A.K. Sinha
Prof. J. Pal
Prof. A. Patra
Prof. N.K. Kishore
Prof. A. Barua
Prof. Goshaidas Ray
Prof. S. Mukhopadhyay
Prof. S. Sen
Prof. P.K. Dutta
Prof. B.M. Mohan
Prof. Debapriya Das
Prof. Sabyasachi Sengupta, (Lien upto 9.6.2012)
Prof. T. K. Bhattacharya
Prof. Chandan Chakraborty
Prof. Srinivasu Maka

Department of Electronics & Electrical Communication Engineering

Prof. R. Garg
Prof. A. Chakraborty, (Lien up to 01.07.2015)
Prof. D. Dutta
Prof. Ajoy Kr. Roy, (Lien up to 28.2.2013)
Prof. S. Banerjee
Prof. C.K. Maiti
Prof. V.R.K. Ratnam, (Lien up to 04.02.2015)
Prof. P.K. Biswas
Prof. S. Sengupta
Prof. M. Chakraborty
Prof. Sant Sharan Pathak
Prof. Subrata Sanyal
Prof. D. Biswas
Prof. B. K. Sarkar
Prof. K. K. Bandyapadhyay

Department of Geology & Geophysics

Prof. S.K. Nath
Prof. B. Mishra
Prof. A.K. Gupta, (Lien upto 31.7.2015)
Prof. D. Sengupta
Prof. A. Bhattacharya
Prof. S. Tripathy, (Lien up to Feb. 2014)
Prof. Anindya Sarkar
Prof. Subhasish Das
Prof. M. K. Panigrahi
Prof. S. K. Bhowmik
Prof. Saibal Gupta
Prof. A. K. Bhattacharya

GS Sanyal School of Telecommunication

Prof. S. Chakraborti

Department of Humanities & Social Sciences

Prof. (Ms.) 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

Department of Industrial Engineering & Management

Prof. P.K.J. Mohapatra
Prof. R.N. Banerjee
Prof. S. Sahu
Prof. D. Acharya
Prof. B. Mohanty
Prof. P.K. Roy
Prof. M. K. Tiwari

Materials Science Centre

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

Department of 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. Somesh Kumar

Department of Mechanical Engineering

Prof. B. Maiti
Prof. A. Mukherjee
Prof. A. Chatterjee
Prof. R. Karmakar
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. Pratihar
Prof. S. Chakraborty
Prof. A. Dasgupta
Prof. A. Guha
Prof. S. K. Roy Chowdhury

Department of Metallurgical & Materials Engineering

Prof.M.Chakraborty,(Lien up to 19th May 2014)
Prof. R. N. Ghosh
Prof. S. K. Pabi
Prof. M.M. Godkhindi
Prof. K.K. Ray
Prof. N. Chakraborty
Prof. I. Manna, (Lien up to 28.02.2015)
Prof. Siddhartha Das
Prof. Sanat Kr. Roy
Prof. K. Das
Prof. Gour Gopal Roy
Prof. Rahul Mitra
Prof. P.K. Sen

Department of 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

Department of Ocean Engineering & Naval Architecture

Prof. S.C. Misra, (Lien up to 30.09.2013)
Prof. S.K. Satsangi
Prof. N.R. Mandal
Prof. D. Sen
Prof. D.P.Sha
Prof. Trilochan Sahoo

Centre for Ocean, Rivers, Atmosphere & Land Sciences

Prof. P. C. Pandey

Department of Physics & Meteorology

Prof. N. Chandra
Prof. B. K. Mathur
Prof. S. L. Sharma
Prof.A.Chandrasekar,(Lien up to 28.06.2011)
Prof. S. Veeturi, (Lien up to 30.11.2011)
Prof. S. K. Ray
Prof. A. Taraphder
Prof. K. Kumar
Prof. P. K. Raina, (Lien up to 31.07.2012)
Prof. Somnath Bharadwaj
Prof. Sayan Kar
Prof. Anushree Roy

Rajiv Gandhi School of Intellectual Property Law

Prof. I. Dube

Reliability Engineering Centre

Prof. V.N.A. Naikan
Prof. R. B. Mishra

Rubber Technology Centre

Prof. A. K. Bhowmick,(Lien up to 12.07.2014)
Prof. D. K. Tripathy,(Lien up to 30.09.2011)
Prof. G. B. Nando
Prof. D. Khastgir
Prof. T. K. Chaki

School of Medical Science & Technology

Prof. S. K. Guha

Vinod Gupta School of Management

Prof. A. Tripathy
Prof. G. Sinha
Prof. S. Srinivasan
Prof. K. K. Guin
Prof. P.S. Das
Prof. T. P. Bagchi
Prof. P. Mukherjee

Central Library

Dr. B. Sutradhar, Librarian

Students Representative

Mr. Celestine Joseph – Vice President
Mr. Nivesh Pandey – UG Representative
Mr. Pravin Valmiki – PG Representative
Mr. Anirban Sarkar – RS Representative

Secretary : Dr. T. K. Ghosal, Registrar (Officiating)

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/Soil and Water Conservation Engineering
- Dual Degree - Agricultural & Food Engineering/Dairy & Food Engineering
- Dual Degree - Agricultural & Food Engineering/Water Resources Development & Management
- 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. - Applied Botany
- M. Tech. - Aquacultural Engineering (Withdrawn due to less than 5 students admission)
- 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

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

Chemical Engineering

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

Ocean, Rivers, Atmosphere and Land Sciences

- M. Tech. - Earth System Science and Technology

Cryogenic Engineering

- M. Tech. - Cryogenic 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

Chemistry

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

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

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

Educational Technology

- M. Tech. - Media and Sound Engineering (Withdrawn due to less than 5 students admission)

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 - Industrial Engineering/ MBA/Engineering Entrepreneurship/ Financial Engineering
- M. Tech. - Industrial Engineering and Management

Rajiv Gandhi School of Intellectual Property Law

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

Information Technology

- M. Tech. - Information Technology

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

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

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)

Materials Science

- M. Tech. - Materials Science and Engineering.

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

Metallurgical and Materials Engineering

- Master of Steel Technology

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

Reliability Engineering

- M. Tech. - Reliability Engineering

Rubber Technology

- M. Tech. - Rubber Technology

Ranbir & Chitra Gupta School of Infrastructure Design and Management

- M. Tech. - Infrastructure Design and Management

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

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 2010-2011. 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 the last academic year we have introduced several new academic programmes. These include: 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 Advanced Technology Development Centre; M. Tech. Programme in Water Management in School of Water Resources. School of Information Technology has introduced an M.Tech. programme in Information and Communication Technology for teachers in AICTE approved colleges and Industry professionals. The Department of Metallurgical and Materials Engineering has started a 2-year M.Tech. programme in Steel technology. Centre for Oceans, Rivers, Atmosphere and Land Sciences will be launching a programme in the area of Marine Resource Development and Management; Vinod Gupta School of Management has started a Dual- degree postgraduate programme in Financial Engineering involving several Departments. It has also launched 3-Year Executive MBA (EMBA) Programme in Kolkata and Bhubaneswar.

The Institute is presently offering B.Tech. (Hons) programmes in fifteen different branches of engineering, a B.Arch. (Hons.) programme in Architecture, sixteen Dual Degree programmes, six Integrated M.Sc. programmes, four two-year Joint M.Sc.-Ph.D. programmes, fifty postgraduate degree programmes leading to Joint M.Tech./MCP-Ph.D., MBA, 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. In the recent undergraduate curricula revision, Bioscience and Environmental Science, as compulsory subjects, have been included considering their importance. This is offered to all undergraduate students in their third semester.

A noteworthy addition in the last academic year is the implementation of the ERP System. All academic issues including registration, enrollment, course allocation, examination results and students feedback are now available on-line through this system. A Doctoral Information System is also now in operation.

Convocation

Fifty-sixth Convocation of the Institute was held on July 17, 2010. Shri Kapil Sibal, Hon'ble Minister for Human Development and Chairman, IIT Council was the Chief Guest. In the Convocation, 150 Ph.D., 28 MS, 571 M.Tech. 24 MCP, 79 MBA, 190 Dual Degree, 08 MMST, 17 LL.B, 13 PGDST, 198 M.Sc, 375 B.Tech. (Hons) and 18 B.Arch. (Hons) degrees were conferred.

Shri Ayan Sengupta, Department of Electronics and Electrical Communication Engineering was the recipient of President of India Gold Medal for the best academic performance among the outgoing B. Tech.(Hons.) and B.Arch.(Hons.) students. Shri V. Gopikrishnan, Department of Architecture and Regional Planning 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 Mrigank Sharad, Department of Electronics and Electrical Communication 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 Shouvik Chatterjee, Department of Physics and Meteorology. Shrimati Nilatpala Ghoshal 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. Shri Anirban Bhattacharya, Department of Electronics and Electrical Communication Engineering was the recipient of The Director's Gold Medal for the best academic performance among the students completing M.Tech. and MCP courses.

In the fifty-sixth Convocation, the Senate and the Board of Governors of the Institute conferred the highest honour, Doctor of Science (Honoris Causa), on Dr. Srikumar Banerjee, Prof. K. L. Chopra,

Pandit Hariprasad Chaurasia, Prof. Goverdhan Mehta and Dr. Shiv Nadar. Dr. Banerjee was conferred for his outstanding contribution to many materials related areas, basic as well as application oriented. Prof. Chopra was conferred this recognition for outstanding contributions in the field of thin films, high temperature super conductors and amorphous materials. Pandit Chourasia has made outstanding effort to reach the audience worldwide and make them fall in love with Indian classical music with his enchanting flute. Prof. Mehta was conferred in recognition to his outstanding contribution to development of synthetic organic chemistry and his application in the synthesis of biologically active compounds. Dr. Nadar was conferred in recognition of being a doyen of Indian IT industry and one of its chief architect.

In the Convocation, to recognize the significant contributions of eminent individuals, alumni and well-wishers, the Senate and the Board of Governors of the Institute conferred Distinguished Alumnus Awards. The awards were conferred on Mr. Subrata Biswas, Chairman, DVC, Mr. Amit Chatterjee, General Manager for the visual studio team test business, Microsoft India Pvt. Ltd., Prof. Mihir Kanti Chaudhuri, Vice Chancellor, Tejpur University, Prof. Sujoy K Guha, School of Medical Science and Technology, IIT Kharagpur, Mr. Ranbir Singh Gupta, Chairman, SIGMA7 Design Group, New York, Mr. Uttam C Jain, Principal Partner of UCJ Architecture and Environment, Prof. Narendra Kumar, Homi Bhabha Distinguished Professor, Raman Research Institute, Mr. Malay Mukherjee, Chief Executive Officer, Essar Steel Limited, Mr. R. N. Mukhija, President (Operations) and member of the Board, Larsen & Toubro Ltd., Dr. K. Radhakrishnan, Chairman, ISRO, Professor Kailas C Sahu, Retired Professor in the IEM Department, Dr. Prabhakant Sinha, Co-Chairman and Co-Founder, ZS Associates, USA.

Research and Development Activities

Research and development activities go hand in hand with our pursuit of academic excellence. From its earliest days, IIT Kharagpur's research activities evolve around the cutting edge areas. Our Departments, Centres and R&D laboratories continue to carry out research and development in a number of unique areas. Institute level initiatives include the following: An advanced Tea Engineering Research Centre has been established in the Institute with financial support from Ministry of Commerce, Government of India that will facilitate research activities on mechanical aids for plantation, new machines for processing of tea, product diversification and finding new derivatives. A Centre for Railway Research has been established with the support of the Ministry of Railways, Government of India for advanced collaborative research in high speed and heavy haul railways technology. Two other major projects have also been received from the Government of India for Virtual Laboratories and Integrated Vehicle Health Management (IVHM) for Automotive Engine Applications.

I shall now dwell upon the research and development activities being carried out by our Departments, Centers and Schools. The R&D activities of Aerospace Engineering encompass different fields namely; Composite and Smart Structures, Structural Dynamics and Aeroelasticity Design, and MR-fluid damper. Agricultural and Food Engineering Department is pursuing research on GIS for command area and watershed management, neural network in hydrology, ballast management of agricultural tractors, biofiltration, bio-fuels, biosynthesis of phenolic fragrance, climate change analysis and applications to water and crop management. The major areas of current research and development in the Department of Architecture and Regional Planning are Urban Planning, Architectural Design, Building Science and Environmental Planning, Design Simulation and Intelligent Architecture, Building Automation and Management Systems, Energy Efficient Design, and Green Architecture.

The Department of Biotechnology is carrying out researches in Process development and optimization for the production of an anti-tumor biosurfactant, alkaline lipase production, biodiesel, biodydrogen, development of methods of o-antigens and its relation with pathogenecity in Gram negative bacteria, structural and functional studies of protein from *M. tuberculosis* and *S. aureus* aiming at drug and inhibitor design, bioreactor strategies for the enhanced production of probiotic endospores for Nutraceutical formulations and their clinical evaluation.

Research in the Department of Civil Engineering focuses on microbial fuel cells and their application for wastewater treatment and energy recovery, recycled construction materials, stability of plates and shells, biomechanics, reliability of bridge structures, low-cost housing, seismic analysis of dams. A sponsored research project on "Groundwater Modelling in Selected

Basins between Farakka and Ganga Sagar” funded by the Ministry of Environment and Forest, Government of India is also underway.

The frontier research programs in the Department of Chemical Engineering are oriented towards heterogeneous reactions with application to chemical process development with special emphasis on greener alternatives.

The Department of Chemistry has undertaken research on enzyme mediated synthesis and a substrate analog approach to determine the active site of enzymes and their inhibition approach to drug design. Active research is also underway in the areas of crystal engineering, electroanalytical and nano-chemistry.

The R&D activities of the Computer Science and Engineering Department span in areas such as VLSI design, verification, testing and CAD tools, artificial intelligence, speech and natural language processing, security blood glucose monitor based on laser induced photo acoustic spectroscopy is under development and cryptography, multimedia systems, telemedicine and medical informatics. The School of Information Technology is pursuing research in the areas of computer and communication networks and geographical information system.

Development of male and female contraceptives, artificial heart, micro-fluidic biochips / bio-MEMS for medical application, laser speckle imaging of blood-flow in microcirculation, development of statistical analyzer and disease pattern recognizer for oral pre-cancer and cancer and design of an intelligent diagnostic tool through the extraction of diagnostic rules for asthma are being carried out in the School of Medical Science and Technology.

The research activities in the Department of Electronics and Electrical Telecommunication Engineering centre on biomedical instrumentation, design and development of embedded system-on-chip solution for adaptive intelligent biomedical system, of a low cost Doppler Ultrasonography system and Ultrasound Imaging system. Also a non-invasive blood glucose monitor based on laser induced photo acoustic spectroscopy is under development.

Department of Electrical Engineering has undertaken research in areas spreading from milliwatts to tens of kilowatts, from conventional to non-conventional and from classical to modern. The major on-going activities involved machine drives and power electronics, magnetic levitation, superconducting magnetic energy storage, variable frequency AC-Drives, simulation of power electronic circuits and resonant converters.

The Centre for Continuing Education Technology has developed 23 courses (920 hours of video courses) as a part of NPTEL Phase-II which are available in the LAN for internal feedback. Pioneering research is being carried out in the Department of Industrial Engineering and Management involving 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.

In the Department of Mechanical Engineering, researches involving 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 vehicle system dynamics, design of vehicle simulators are being carried out.

The research activities of the Department of Geology and Geophysics centre around 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 and seismic hazard assessment and microzonation in the North-East India and metropolitan cities. 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 are some of the key research areas of the Department of Mining Engineering.

Research in Department of Mathematics focuses on bio-mechanics, chaos and bifurcation in nonlinear systems, inventory models, graph theory, integral equations, cryptography, queueing theory, statistical decision theory and statistical data analysis. Optoelectronics, gravitation and geometry, high energy physics, hydrodynamics, laser physics, nonlinear optics, photonics, magnetic semiconducting nanoparticles and thin films, magnetism, spintronics, materials engineering are the key areas of research of the Department of Physics and Meteorology.

The research and development program of the Department of Metallurgy and Materials Sciences 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. Materials Science Centre is engaged in a new field of welding thermoplastics, recycling waste polymers and direct fluorination of polymers. Apart from activities on structural ceramics, refractories and bio-ceramics, the Centre is 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.

The Department The Ocean Engineering and Naval Architecture is very actively involved in various research activities like wave effects on ships and offshore structures, hydro-elasticity of large flexible structures, marine structural analysis, marine design and production, structural reliability and wave effects on ships and offshore structures. Centre for Oceans, Rivers, Atmosphere and Land Sciences is actively participating in DST / MOES sponsored Severe Thunderstorms and Regional Modeling (STORM) Programme which is in operation along East / North East part of India. Rural Development Centre is developing technology for essential oil production, fish feed production from non-conventional biological sources, farm level technology for processing of agricultural products and organizing training and workshops on rural technology application.

Reliability Engineering Centre is developing a Virtual Laboratory on fault diagnosis of rotary systems. This laboratory will be useful for virtually creating certain faults in rotating systems and then diagnose the fault and its severity. Rubber Technology Centre is engaged in research areas encompassing 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 and electron beam modification of polymers.

The Rajiv Gandhi School of IP Law is engaged in research in areas like corporate legal affairs with special reference to corporate governance under the IICA, river basin management and development of law and policy framework with special reference to Ganga. The Vinod Gupta School of Management has recently launched Working Paper Series and has been 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.

A PC Based Gamma Ray Spectroscopy System for low level radiometric prospecting and assaying both in the laboratory and in-situ field of study and for ambient radioactivity measurements has been procured in the Department of Geology and Geophysics. 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 Department. Some of the new acquisitions in various Departments include: total organic carbon analyzer and atomic absorption spectrophotometer in the Department of Civil Engineering, a new PCR System in the Department of Biotechnology, a Microwave synthesis system and moisture and oxygen control Glove box in the Materials Science Centre, Active Pirani Transmitter and Baratron Absolute Capacitor Manometer in the Department of Mechanical Engineering, Tornado Embedded Board based on TMS320C6416 DSP with data acquisition in the GS Sanyal School of

Telecommunication. A state-of-the-art video systems laboratory has been set up in the Centre for Education Technology.

The development programme of the Institute Campus involving infrastructure and new facilities have been taken up in view of the increase in student population, faculty and staff strengths. The programme includes construction of new hostel buildings, extensions of existing students' hall of residence, classroom complex, residential flats for faculty and staff members etc.

Construction of additional block of Azad Hall of Residence and first phase of Lal Bahadur Shastri Hall of Residence have already been completed and been occupied by the students. The Nalanda classroom complex consisting of 8 blocks of rooms is on the verge of completion. Work on J. C. Ghosh Science Block and P. C. Roy Laboratory Block is going on in full swing. Construction of Students' Activity Centre and Undergraduate Laboratory Complex will be over by end of this month.

63 Nos. of A-Type Flats have already been handed over and occupied since last August. 18 Nos. of B-type flats have also been handed over and under process for allotment. Out of another lot of 63 B-type flats, 36 are expected to be completed by end of this month. Construction of the remaining 27 B-type flats is going on in full swing. The extension programme for Vikram Sarabhai Residential Complex is nearing completion and 2 blocks have been handed over and are occupied since last July 2011. Balance 3 blocks will be completed by end of this month. 124 room guest-house is presently under use. Apart from this, a VIP Guest House adjacent to the Technology Guest House is also been completely renovated with 6 rooms, kitchen, dining etc. Construction of collector well at river bed and pipe-laying by the side of NH6 is going on. Approximately 11 KM of road work is completed. Job on footpath and drain work is going on. Piling work is going on in full swing. 9 piling rigs had already been mobilized at site and 100 piles are completed.

Keeping in pace with increased strength of the students, the following measures have been taken up for augmentation of power supply system and revamping the distribution system : Electrification of the laboratories, hostels, classrooms, Gymkhana with the latest state of the art like green energy efficient lighting and occupancy sensors, Revamping of the roads with better illumination, Fixing of LED based lighting system in the new roads under construction, 250KVA DG Set installed to cater to the emergency load of Class Rooms, New Technology Guest House, Auditoriums, Bio-technology Department, CSE Department, Telecom Centre and other Administrative Offices, Major renovation works of Material Science Centre, MEMS and Micro Electronics Labs of E&ECE Department, EE Department Machine lab, Mining Engineering Department, OE&NA Department and MOCVD lab in CWISS.

The Institute provides information communication infrastructure to the faculty, students and staff members through two independent networks: Data Network and Telephone network. In view of the huge construction work that is underway and those planned for the future to accommodate the increased number of students and faculty and to provide adequate bandwidth to the newly constructed buildings, the Institute has taken up upgradation project to modernize the existing infrastructure and to increase the backbone network from 1 Gbps to 10 Gbps. The Institute in addition has also undertaken a visionary project of implementing a modern Quadruple Play Network in all areas of the campus, which will support data, audio and video distribution and also Wi-Fi connectivity. This will implement a state of the art "Quadruple Play" service integrating Data, Voice, Video and Wireless.

Health Care

Health Care remains a top priority in the activities of the Institute. Constant efforts are on to upgrade and improve the existing facilities at the B. C. Roy Hospital. Towards that end, a round the clock emergency service and a 24 hour pharmacy have been made available. Critical care ambulance support is provided round the clock in emergency situations. Regular special clinics are arranged on Medicine, Chest, Cardiology, Pediatrics, Skin, Psychiatry, Pathology, Orthopedics, Eye, ENT, Dental, Radiology, Public Health, etc. besides, compulsory health check up for all employees above the age of 45 and Medical Insurance for all including retired employees have been introduced.

The following equipments have been acquired and installed in the Hospital: Computerized Radiology Unit, Fully Automatic Biochemical analyzer, ICU Ventilator, Telemedicine Video Conference System, to name a few. Work is in progress to construct an operation theatre.

Preventive Health Care and Sanitation measures in the campus are functioning. Personal hygiene measures of all hall workers are also being monitored.

International Collaboration

The Institute believes that active collaboration in many of our endeavours with global partners contribute to progress. To that end, we have several collaborations in different areas of research. The Institute has signed a large number of MoUs with several Universities during the academic year 2010-2011 for the purpose of faculty and student exchange. These are: Dong-A University, Busan, Korea, University of Western Australia, University of Twente, Netherlands, Singapore Technologies Engineering Limited, Technical University of Braunschweig, Germany. Active research collaboration is going on with Friedrich-Schiller-University, Jena, Germany, Indian-Norwegian-Swedish collaboration project on solar energy for production of renewable hydrogen sponsored by Norwegian Foreign Ministry, University of Akron, USA, Student exchange program with University of South California (USA), University of Erlangen, Germany, Univ. Pretoria, South Africa, UK-India Education and Research Initiative (UKIERI) Project in collaboration with Univ. Southampton.

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, for the innovation of its faculty, for the excellence of its Ph.D programs, and for the amount of funding it receives to support its research initiatives. We are particularly noted for our openness to multidisciplinary research. 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.

During the year 2010-2011 the Institute received from the Government, private and international funding agencies/enterprises 183 research projects for a total value of Rs. 110 crore and 115 consultancy projects worth Rs. 11.70 crore aggregating a total of 298 projects for Rs.121.7 crore.

IIT Kharagpur is entrusted with the development of ASICs for the read out system for CBM experiment at the Facility for Antiproton and Ion Research (FAIR), Darmstadt, Germany, the new international accelerator facility and one of the largest research projects world-wide. IIT Kharagpur has a distinguished track record in the development of specialized softwares such as power management software, telemedicine software, communication empowerment software for physically challenged, software for medical measurements, tools for security and biometric authentication and ocean dynamics based software for storm surge measurements. An advanced research facility in reliability engineering with active participation of top government agencies including BARC, MEMS based components for RF application, development of functional groups for immobilization of functional proteins on MEMS based microsensor surface are examples of research in frontier areas. Our pioneering works on advanced chip design and CAD for VLSI and MEMS continue to attract researchers and funding from the best institutes and well-known companies of the world. Two mission projects for development of Virtual Labs and pedagogy and e-learning involving premier Institutes of the Nation are fully functional now. In the past year we have started setting up of a major research infrastructure for MOCVD and initiated development of MBE cluster tool based epitaxial nano-semiconductor infrastructure and process integration facility.

In the areas of Life Sciences, ongoing interdisciplinary research in non-invasive measurements, advanced image processing, implants, protein structure analysis and drug design, merit special mention. The Institute has sustained activities in artificial heart development program, male

contraceptive (RISUG), green technology, insect resistant cotton, enzymatic processes, Aloe Vera processing, and bio depolymerisation of low grade lignite .

The major research initiatives in nanotechnology and nano-materials include work on polymer nano-composites, nano-wires and semiconductors. The area of micro-fluidics and bio-nano-mems has developed new techniques for DNA hybridization, micro-scale cooling for electronic components and digital microfluidics and are examples of research at the cutting-edge. Recently IIT Kharagpur and ISRO are in advanced stages of planning to establish Centre of Excellence in four thrust areas, namely Communication and Signal Processing, MEMS and Microsensors, Cryogenics for Space Applications and Virtual Reality and 3-D modeling which will significantly contribute India's Space Technology requirements.

In the area of environment, the Institute has taken up a major initiative under the Ganga River Basin Management Plan funded by the Ministry of Environment and Forests to address issues related to environmental water quality, water resources management, ecology and bio-diversity as well as socio-economic policy, law and governance. Researchers at IIT Kharagpur are working to find a low-cost solution to the problem of arsenic contamination of groundwater.

In Earth Sciences, a major activity is undertaken for seismic hazard assessment, microzonation and evaluation of vulnerability, risk & socio-economic impacts for the city of Kolkata. IIT Kharagpur has won one of the eleven IBM International Centennial Grants awarded this year for supporting its smarter planet strategies to community service. The funding would go towards supporting student projects on developing a rainfall sensor network for predicting the flooding of Kolkata in real-time.

IIT Kharagpur has continued its long standing research commitment to the Energy Sector through sustained activities in biomass production, biofuels, fuel cells, lithium-ion batteries and energy materials, production of renewable hydrogen combined with CO₂ capture etc. Our newly developed P. K. Sinha Centre for Bioenergy is taking an integrated and collaborative approach to solve energy, climate change and economic challenges, collaborating with internationally renowned Bioenergy Centers such as University of California at Berkeley (UCB) and Energy Biosciences Institute (EBI), Purdue University and University of California at Davis. The development of a solar powered aircraft based on the support and collaboration of a global aerospace company by a team of our students underscores active participation of students in niche areas of research and development.

Students from various Departments of IIT Kharagpur worked together under faculty mentorship to develop an Autonomous Underwater Vehicle which had sophisticated control algorithms and intelligent systems to carryout tasks autonomously in water. The team and their vehicle won the national Student's Autonomous Underwater Vehicle (SAVe) competition in India and represented the country for the first time at the 14th Robosub competition of the Association of Unmanned Vehicle Systems International at San Diego, USA this July. Another multi-disciplinary students' team designed, fabricated and assembled a car to participate in the Formula 1 Student's competition at Silverstone in UK during July this year. The vehicle design was short listed for the Airbus Award and scored many points for its design.

A Centre for Railway Research has been established with the support of the Ministry of Railways, Government of India for advanced collaborative research in high speed and heavy haul railways technology. Two other major projects have also been received from the Government of India for Virtual Laboratories and Integrated Vehicle Health Management (IVHM) for Automotive Engine Applications.

Industry – academia partnership at IIT Khargpur is thriving with industries forming partnerships in joint research projects, acquiring technologies developed in the institute and seeking consultancy supports. Some of the major research initiatives in recent years include Steel Technology Center, major R&D Centers in Energy Sector in collaboration with DVC, Tea Engineering Research Center, Vodafone-Essar-IIT Kharagpur Centre of Excellence in Telecommunications, National Program in Marine Hydrodynamics, Centre of Excellence in Information Assurance, National facilities for EPMA, General Motors Collaborative Research Laboratory in Electronics Controls and Software (ECS) and a Regional Center for Rural Technology Action Group (RUTAG) are some of the recent such successful initiatives.

IIT Kharagpur has a long tradition of protecting inventions and has received numerous patents over the years. The Intellectual Property Rights and Industrial Relations (IPR & IR) Cell under SRIC is responsible for the licensing and the transfer of technologies developed by faculty members, students and other researchers at IIT Kharagpur to the commercial sector. The Entrepreneur Cell under SRIC supports a variety of incubation programmes funded by the Government.

STEP–IIT Kharagpur

Since the inception of Science and Technology Entrepreneurs' Park at IIT Kharagpur in December 1986, with financial support from DST New Delhi, it has strengthened itself as a support mechanism and infrastructure for IIT and local entrepreneurs. There are presently forty entrepreneurs incubated at STEP and growing. Besides providing physical incubation, STEP facilitates a variety of funding programme including innovation funding, TBI seed loan support, MSME seed grant support, technology commercialization support and collaborated co-entrepreneurship support from our Global Venture Lab. The high end technology business incubation product engineering lab is providing prototyping service to VLSI based entrepreneurs, where the entrepreneurs can access design tool simulation package and other measurement platforms.

The STEP entrepreneurial ecosystem complements the recently established academic centre of entrepreneurship, i.e. Rajendra Mishra School of Engineering Entrepreneurship. Our student entrepreneurs have consistently created innovative startups, which have been acclaimed worldwide, including our Global Venture Lab partners from University of California at Berkeley, Jyväskylä University, Finland and Berkeley Mobile International Challenge. The STEP team has won the prestigious Global Academic Cup, EBRF-2010 (Finland) for productizing low cost mobility solutions. Currently STEP is undergoing major transformation at its Gopali campus, where new incubation facilities are being created which will be integrated with the expanding IIT campus.

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.

The 4th India Software Engineering Conference (ISEC), 2011 was organized by the Department of Computer Science and Engineering. The Department of Aeronautical Engineering has organized the Fifth International Conference of Theoretical, Applied, Computational and Experimental Mechanics. 1st Indo-German Workshop on HydroRiceTech was organized by the Department of Agricultural and Food Engineering. Fifth International Conference on Information Systems Security was held last year in the Department of Electronics and Electrical Communications Engineering. Several other national and international conferences were also held during this period in various Departments, Centres and Schools. Some of these are : Bioinformatics in genomics and proteomics in the Department of Biotechnology, One Day National Symposium on Theoretical Sciences in the Department of Chemistry, COMPOSIT 2011 in the Department of Metallurgical and Materials Engineering, Samanjasya 2010: Conclave on Sustainability and CSR in Vinod Gupta School of Management, DST TIFAC Workshop on Patent Drafting in the Rajiv Gandhi School of Intellectual Property Law.

Continuing Education Programme

The Continuing Education Programme constitutes an important activity of the Institute. Over the years, it has diversified in terms of coverage of disciplines, duration of programmes, the level of the programmes and the types of industries served. The activities include 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. programs under the CEP which also promotes teaching-learning resource materials in the form of printed texts, CDs and computer aided instruction packages. During the last one year, with AICTE support, sixteen teachers from various engineering colleges have obtained their Doctoral degree and twenty-two teachers their Master's degree. Ten teachers have enrolled for the Ph.D. programme, while twenty-three teachers have taken advance admission to the Ph.D. programme.

Ninety-two short term courses, both on-campus as well as off-campus, have been conducted for professionals employed in industry and R&D organizations. Last year, 4,094 participants were awarded certificates on completion of the course works.

Under the CEP, three 3-year M.Tech. programmes in Electronics and Electrical Communication Engineering, Electrical Engineering and School of Information and Communication Technology at its Kolkata and Bhubaneswar Extension Centres, primarily for faculty members of AICTE-sponsored engineering colleges have been started from the last academic year.

Laurels and Distinctions

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.

Professor Indranil Manna of the Department of Metallurgical and Materials Engineering and Professor Amit Basak of the Department of Chemistry and presently Dean (Faculty) have been elected Fellow of the Indian National Science Academy (INSA). Professor Basak has also been elected Fellow of National Academy of Sciences and West Bengal Academy of Sciences. Professor Dipanwita Roy Chowdhury of the Department of Computer Science and Engineering and Professor Mans Kumar Roy of the Department of Mechanical Engineering have been elected as a Fellow of Indian National Academy of Engineering. Professor Anil K. Gupta of the Department of Geology and Geophysics and presently on lien as Director, Wadia Institute of Himalayan Geology, Dehradun, has been awarded the TWAS Prize in Earth Sciences for 2010. Dr. Sudip Misra of the School of Information Technology has been awarded the NASI-Young Scientist Platinum Jubilee Award in Physical Sciences for the year 2010, awarded by The National Academy of Sciences, India. Professor Rintu Banerjee of the Department of Agricultural and Food Engineering, has received the prestigious Louis Pasteur Award from the Association of Microbiologists of India.

The Institute also feels proud to announce the following awards received by faculty members : Professor Karabi Das of the Department of Metallurgical and Materials Engineering for the MRSI Medal, Dr. Sutapa Das of the Department of Architecture and Regional Planning for the Young Engineers Award in Architectural Engineering, Professor Sirshendu De of the Department of Chemical Engineering for the Herdillia Award for the year 2010 for Excellence in Basic Research in Chemical Engineering, from Indian Institution of Chemical Engineers, Dr. Rabibrata Mukherjee of the Department of Chemical Engineering for the Samsung GRO Research Award, Professor Tanmaya Pathak of Department of Chemistry for the "Excellence in Carbohydrate Research-2010" Award, Professor Avinash Kumar Sinha of Department of Electrical Engineering for IBM Open Collaborative Faculty Award, Dr. Tapas Laha of the Department of Metallurgical and Materials Engineering for the IEI Young Engineers Award.

The Department of Chemistry has been identified as one of the top Chemistry Departments in the academic sector throughout the country by a DST Expert Committee on the occasion of the International Year of Chemistry.

Alumni Affairs

Our alumni have played a significant role in facilitating increased interaction of IIT Kharagpur in India and abroad.

The 60th Foundation Day of the Institute was celebrated on 18th August 2010. Dr. D. Subba Rao, Governor, Reserve Bank of India graced the occasion. The 4th **Nina Saxena Excellence in Technology Award**, a first of its kind India-wide Technical Innovation Award instituted by IIT Kharagpur in 2006, was presented to Dr. Jagannath Nayak and his Team, Defence Research and Development Organization (DRDO), Research Centre Imarat, Vignyana Kancha (PO), Hyderabad – 500 069 by the Chief Guest Dr. D. Subba Rao, Governor, Reserve Bank of India. The New Year brought together the alumni of the Institute again for the eighth time to its alma mater in the form of 8th **Annual Alumni Meet 2011** held from 7th to 9th January 2011. The Meet was dedicated to those who graduated in the years 1961 and 1986. The Institute has launched a new "Institutional

Development Initiative". Through this initiative, the alumni will get connected with the Institute and amongst themselves. Its focus will be to harness Alumni Resources for the excellence in teaching, research and in creation of Infrastructure as well as industry collaborations.

Training and Placement

The Training and Placement Section of the Institute is actively engaged in forging synergistic relationships between the Institute and various industrial organizations and employers of technical and scientific manpower. During 2010–2011, 182 companies and organizations visited the campus for taking placement interviews. In addition, 15 companies preferred to have interviews through telephonic / video conference or called the students for interviews to their offices. This year the placement of undergraduate students has been 95%, while that of the postgraduate students has been 76%. In addition to Undergraduate and Postgraduate students, 22 Ph.D. and MS students were also placed this year. This is significantly higher compared to last year. Harnessing student power has been very fruitful and students effectively ensured that placement programmes were run continuously as per schedule during the placement process. A total of 124 companies have offered summer training to our students, and 55 of them provided financial assistance. Last year 148 students of the Institute have taken summer training abroad in many Institutes / organizations likes DAAD, EPFL, University of Warwick, University of Twente, University of Ottawa, University of Houston, University of Heidelberg, University of Alberta, University of Barcelona, University of Munich, Max Plank Institute, Finisar, ETH, Zurich.

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 46th inter-IIT Aquatic meet held at IIT Roorkee, our student team was declared overall champion in the swimming and runners-up in water polo. Mr Chirag Fialoke won the individual championship. In the inter-IIT sports meet, held at IIT Delhi, the IIT Kharagpur athletics team won gold medal.

Like every year, "Spring Festival", the inter-collegiate cultural festival, "Kshitij", the intercollegiate techno-management festival and "Shourya", the intercollegiate sports festival has been organized successfully with students participation from all over the country.

A large number of facilities have been and are being created. Construction of a new students' activity center is almost complete. In addition two new synthetic tennis courts have been constructed. Tata Steel has been involved in the development of the Tata Sports Complex, where a new pavilion building has been constructed and a high must lighting facility has been created by Tata Steel. In addition, one more high must is being constructed by the institute. This year as a part of the Diamond Jubilee celebration, IIT Kharagpur will be hosting inter-IIT aquatic meet and inter-IIT sports meet during the month of October and December, respectively. As a result the institute is creating additional facilities like new courts for basketball and volleyball and augmenting all the sports fields and swimming pool.

Department of Aerospace Engineering

Head

Prof. Amit Kumar Ghosh

Up to 31.08.2010

Prof. Kalyan Prasad Sinha Mahapatra

from 01.09.2010

Professors

Bandyopadhyay, Gautam

Ph.D.(IIT Kharagpur), Computational Aerodynamics Experimental Aerodynamics

Datta, Prosun Kumar

Ph.D.(Georgia Tech), Aerospace Structures

Ghosh, Amit Kumar

Ph.D.(IIT Madras), Aerodynamics & Propulsion

Singh, Navtej

Ph.D.(IIT Kharagpur), Aerodynamics

Sinha Mahapatra, Kalyan Prasad

Ph.D.(IIT Kharagpur), Computational Fluid Dynamics, Aeroacoustics, Large Eddy Simulation, Fluid-Structure Interaction

Associate Professors

Laha, Manas Kumar

Ph.D.(IIT Kharagpur), computational fluid dynamics

Maiti, Dipak K

Ph.D.(IIT Kharagpur), Aerospace Structures, Composite and Smart Structures, Structural Dynamics & Aeroelasticity, Design & Development of MR fluid damper & Landing Gear Dynamics, Structural Health Monitoring

Pradhan, Suresh Chandra

Ph.D.(IIT Kanpur), Aerospace structures, Nonlocal elasticity, FEM, FGM, Smart Structures, composite materials and nano-composites, Optimization

Rao, Tummala Venkateswara

Ph.D.(IISc Bangalore), Combustion and propulsion

Singh, Bhrigu Nath

Ph.D.(IIT Kanpur), Aerospace Structures, Smart Composite Structures, Uncertainty Quantification in Aircraft Analysis & Design, Multi-scale Modelling, FGM Plates and Shells, Adaptive Nonlinear FEM

Assistant Professors

Ghosh, Anup

Ph.D.(IIT Kharagpur), Aerospace Structures, Composite Structures, Micro Air Vehicle

Roy, Arnab

Ph.D.(IIT Kharagpur), Aerodynamics

Sinha, Manoranjan

Ph.D.(IIT Kanpur), Flight Dynamics Controls System Identification Neural Networks

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. Development of micro-aerial vehicles

Thrust Areas

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

New Acquisitions

1. Model-VFT2010: Vibration Fundamental Training Systems with Damper and Force Transducer.
2. Models: HST12, HST29 & HST45: Deflection of Curved Bars, Shear Centre Apparatus and Buckling of Struts along with interface digital display of FORCE, DEFLECTION and ANGLE and Experiment Software.
3. SUPER MICRO HPC (2+16) processors, or 72 cores, 2.4 GHz processors, 54x4GB DDR3 Reg ECC memory, 3900 GB HDD @3 GBps, Infiniband Cards & Switches

Doctoral and MS Degrees Awarded

1. A.B. Harichandan : Numerical Analysis of Low Reynolds Number Incompressible Flow past various Two-Dimensional Geometries(Ph.D.)
2. S. S. Phonix : Reissner Mixed Variational Theorem for the Analysis of Smart Laminated Composite Plates(Ph.D.)
3. Sateesh Bandaru : Vibration Control of Aircraft Nose Landing Gear with Torsional Magneto Rheological Fluid Based Damper(Ph.D.)
4. Prasanta Kumar Mahato : Static, Dynamic And Flutter Control of Laminated Composite Plates in Hygrothermal Environment Employing Active Fiber Composite(Ph.D.)

Member - Professional Bodies

1. Bandyopadhyay, Gautam, - Aeronautical Society of India
2. Datta, Prosun Kumar, *Senior Member* - Japan Soc. of Aeronautical and Space Sciences
3. Maiti, Dipak K, *Associate Member* - Institution of Engineers (India)
4. Maiti, Dipak K, *Member* - Aeronautical Society of India
5. Pradhan, Suresh Chandra, *Member* - IE(I)
6. Pradhan, Suresh Chandra, *Member* - Aeronautical Society of India
7. Pradhan, Suresh Chandra, *Member* - ISSS
8. Pradhan, Suresh Chandra, *Member* - Computational Mechanics India
9. Singh, Bhriugu Nath, *Life* - ISTE, India
10. Singh, Bhriugu Nath, *Life* - Associate Member, IE (I)
11. Sinha Mahapatra, Kalyan Prasad, *Life* - Wind Engineering Society of India
12. Sinha Mahapatra, Kalyan Prasad, *Fellow* - Institute of Engineers
13. Sinha Mahapatra, Kalyan Prasad, *Life* - Aeronautical Society of India
14. Sinha, Manoranjan, *Member* - AIAA

Member - Editorial Board

1. Bandyopadhyay, Gautam (2005) *Member* - Journal of Aerospace Sciences and Technologies India
2. Datta, Prosun Kumar (2010) *Member, Editorial Board* - Int J. of Structural Stability and Dynamics
3. Datta, Prosun Kumar (2011) *Member, Editorial Board* - InJ of Aeronautical and Space Sciences
4. Ghosh, Anup (2010) *Reviewer* - Mechatronics
5. Ghosh, Anup (2010) *Reviewer* - International Journal of Crashworthiness
6. Ghosh, Anup (2010) *Reviewer* - Aircraft Engineering and Aerospace Technology
7. Pradhan, Suresh Chandra (2010) *Member* - IJVSS
8. Pradhan, Suresh Chandra (2010) *Member* - IJETAETS
9. Sinha Mahapatra, Kalyan Prasad (2010) *Member, Editorial Board* - INTERNATIONAL JOURNAL OF FLUID DYNAMICS & AEROSPACE ENGINEERING
10. Sinha Mahapatra, Kalyan Prasad (2010) *Member* - Journal of Aerospace Engineering & Technology

Awards & Honours

1. Sinha, Manoranjan (2010) *Subject Award- Institution of Engineers*
2. Sinha, Manoranjan (2010) *Vikram Award for Systems*

Fellowships

1. Pradhan, Suresh Chandra (2010) *Australian Research Council Research Associate Adelaide University Australia*

Sponsored Research Projects

1. Aerodynamic Investigation of Smart Flying Wing MAV (Asian Office of Aerospace R&D (AOARD), Japan, Rs.19.60 Lakhs)
2. Aerodynamic design of traction rolling stock with speed potential of 250 km/h (CRR, Indian Railways, Rs.600.00 Lakhs)
3. Aerodynamic design of traction rolling stock with speed potential of 250 km/h (CRR, Indian Railways, Rs.600.00 Lakhs)
4. Analysis and Development of Conceptual Design Methodologies for Air Collection and Enrichment System of Air Breathing Propulsion (IIT " ISRO KCSTC, Rs.12.50 Lakhs)
5. 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)
6. Boeing University Relations, IIT Kharagpur - Campus Engagement Plan (The Boeing Company, USA, Rs.18.00 Lakhs)
7. Boeing University Relations, IIT Kharagpur- Campus Engagement Plan (Boeing Co., USA, Rs.32.40 Lakhs)
8. Damage Assessment of Aircraft Structures From Limited Vibration Data (AR&DB, New Delhi, Rs.8.45 Lakhs)
9. Dynamic Characteristics of thermally post-buckled composite panels embedded with SMA Fibers (DRDO, ER & IP New Delhi, Rs.8.55 Lakhs)
10. FIST Program, Department of Aerospace Engineering (FAE) (DST, New Delhi, Rs.105.00 Lakhs)
11. Inter Planetary (Applied to Mars) Satellite Orbit Determination in the Frame Work of IAU2000A/2006 (ISRO, Rs.12.19 Lakhs)
12. Large Eddy Simulation of AURA-type Flying Wing Configurations with Dragerons at Operating Speed Range (ADA, Bangalore, Rs.70.20 Lakhs)
13. Large-Eddy Simulation of Transonic and Supersonic Cavity Flow Fields (AR & DB, Rs.8.43 Lakhs)
14. Least square finite element analysis of adhesively bonded joint (AR &DB, Rs.4.45 Lakhs)
15. Nonlinear vibration study of smart composite plate with random system properties in random hygrothermal environments (ARDB, New Delhi, Rs.7.22 Lakhs)
16. Numerical and Experimental Investigation of Low Reynolds Number Flow Past Airfoils For Flying Wing MAV (AR & DB, Rs.0.00 Lakhs)
17. Numerical and Experimental Investigation of Low Reynolds Number Flow Past Airfoils for Flying Wing Micro Air Vehicle (Aeronautics Research & Development Board, Aerodynamics Panel, Ministry of Defence, Govt. Of India, Rs.8.95 Lakhs)
18. Reconfigurable Flight Vehicle (TIFAC, Rs.10.00 Lakhs)
19. Setting up of AR & DB Associate Centre for CFD at IIT Kharagpur (Aeronautical Research & Development Board, Rs.0.00 Lakhs)
20. Study of Flow Structure and Associated Accoustics in Weapon Bay Cavity using LES (ADA, Bangalore, Rs.8.16 Lakhs)
21. Unmanned Combat Air Vehicle Control Design (ADA, Rs.24.00 Lakhs)
22. Upgradation of the Associate Node for CFD at IIT Kharagpur (AR & DB, Rs.40.89 Lakhs)

Visits Abroad by Faculty Members

1. Ghosh, Anup - To present paper at ASIS2010 (Philadelphia, Pennsylvania, USA,) 7 days
2. Sinha Mahapatra, Kalyan Prasad - to attend International Symposium on Wind Effects on Building & Urban Environment, ISWE5 (Tokyo, Japan,) March 06 - 09, 2011

- Maiti, Dipak K - To attend & present paper in The Twelfth East Asia-Pacific Conference on Structural Engineering (Hong Kong Special Administrative Region, China,) 26-28 January 2011
- Sinha, Manoranjan - Presented papers in AIAA Astroynamics conference (Ontario, Toronto, Canada,) 2-5 August, 2010

Invited Lectures by Faculty Members

- An Improved Plate Theory for Analysis of Sandwich Laminates in Deterministic and Stochastic Environm *by* Singh, Bhrigu Nath (IIT Delhi)
- Damage Behaviour of Aerospace Structures *by* Datta, Prosun Kumar (Gyeongsang National University, Korea)
- Dynamic Stability Behaviour of Aerospace Structures *by* Datta, Prosun Kumar (Konkuk University, Seoul, Korea)
- Anisotropically Damaged Composite Panels under Harmonic Load *by* Datta, Prosun Kumar (Korea Advanced Institute of Science & Technology)
- Aeroelastic Behaviour of Aircraft Structural Elements *by* Datta, Prosun Kumar (Sikkim Manipal Institute of Technology)
- Uninhibited Air Vehicles - Aerodynamic Aspects *by* Sinha Mahapatra, Kalyan Prasad (ITR, Chandipur)
- Flow structure over drageron using LES *by* Sinha Mahapatra, Kalyan Prasad (ADA Bangalore)

Books Published

- K. P. Sinhamahapatra, D. K. Maiti, B. N. Singh and P. K. Datta: Proceedings ICTACEM-10 with ISBN No.979-93-80813-03-5 *published by* Cygnus Kolkata (2010)
- S C Pradhan: Composite Material *published by* Pearson (TO BE PUBLISHED) (2011)

Seminars, Conferences and Workshops Organised

- Fifth International Conference of Theoretical, Applied, Computational and Experimental Mechanics

Papers Published in Journals

- Micro Air Vehicle Path Planning in Fuzzy Quadtree Framework *By* Ghosh, S., Halder, A., Sinha, M. *Applied Soft Computing Journal* accepted (0)
- Active vibration control of composite plate using AFC actuator and PVDF sensor *By* Kerur, S. and Ghosh, A. *International Journal of Structural Stability and Dynamics* 11 (2011)
- Analysis of single walled carbon nanotube on Winkler foundation using DTM and nonlocal elasticity theory, *By* Pradhan, S. C. and Reddy G K, *COMPUTATIONAL MATERIAL SCIENCE*, 50 (3), 1052-1056 (2011)
- Analysis of thermo-elastic plates based on Reissner's mixed variational theorem *By* S S, Phoenix, B. N. Singh and S K. Satsangi *Composite Structures: An International Journal* 93, 590-598 (2011)
- Bending analysis of geometrically nonlinear laminated composite plates *By* P. Dash and B. N. Singh *Int. J. of Nonlinear Science and Numerical Simulations* 15(10), 3170-3181 (2010)
- Buckling analysis of single layered graphene sheet under biaxial compression using nonlocal elastic theory and DQ method, *By* Pradhan, S. C and Kumar A., *JOURNAL OF COMPUTATIONAL AND THEORETICAL NANOSCIENCE* (2011)
- CFR: A Finite Volume Approach for Computing Incompressible Viscous Flow *By* A.B. Harichandan and A. Roy *Journal of Applied Fluid Mechanics (accepted)* (2010)
- Dynamic buckling analysis of a composite stiffened cylindrical shell *By* Datta, P.K., Patel,S.N., Bisagni,C. *International J. Structural Engineering and Mechanics* Vol.37,pp.509-527 (2011)
- Dynamics of multilayered viscoelastic beams *By* Datta, P.K., Roy,H., Dutt,J.K. *Int. J. Structural Engineering and Mechanics* 33(4),pp.391-406 (2009)
- Effect of harmonic in-plane edge loading on dynamic stability of stiffened shell panels with cutouts *By* Datta, P.K., Patel,S.N., Sheikh,A.H. *Int.J. of Applied Mechanics* 2(4), pp.759-785 (2010)
- Effects of uncertain system properties on thermo-elastic stability of laminated composite plates under non-uniform temperature distribution *By* A. Lal and B. N. Singh *Int. J. of Applied Mechanics* 2(2), 1-22 (2010)
- Influence of various internal components on liquid slosh dynamics by finite element method *By* 4. Mitra S., Kumar A., Khoo B. C. and Sinhamahapatra K. P. *International Journal of Fluid Mechanics and Research* 37, 359-381 (2010)

13. Investigation of the Axisymmetric Microburst Flow Field By Das K. K., Sinhamahapatra K. P. and Ghosh A. K. *Journal of Wind and Engineering* 7, 1-15 (2010)
14. Nonlinear Free Vibration Analysis of Thermally Post-buckled Composite Spherical Shell Panel, By Panda, S. K., and Singh, B. N. *International Journal of Mechanics and Materials in Design* 6(2), pp. 175-188 (2010)
15. Novel Repair Scheme for the Edge Delaminated Composites, By Saji D and Pradhan S C., *JOURNAL OF AEROSPACE SCIENCES AND TECHNOLOGIES*, Vol 62 No 4 pp 248-2 (2010)
16. Numerical investigation of low Reynolds number flow past two and three circular cylinders using unstructured grid CFR scheme By Atal Bihari Harichandan, Arnab Roy *International Journal of Heat and Fluid Flow* 31, 154-171 (2010)
17. Numerical Simulation of Axisymmetric Cold Jets Using $k-\mu$ Turbulence Model By Upadhyay P. P., and Sinhamahapatra K. P. *Journal of the Institution of Engineers (India)* 92 (2011)
18. Path Planning for a UAV in Fuzzy Quad tree Framework By Ghosh, S., Halder, A., & Sinha, M *Journal of Aerospace Engineering* 91, Pt-AS-02 (2010)
19. Physical simulation of dry microburst using impinging jet model with swirl By Das K. K., Sinhamahapatra K. P. and Ghosh A. K. *International Journal of Engineering Science and Technology* x, 12 pages (2010)
20. Static response and free vibration analysis of FGM plates using higher order shear deformation theory By Talha Md and Singh, B. N. *J. of Applied Mathematical Modeling*, 34, 3991-4011 (2010)
21. Stochastic analysis of laminated composite plates on elastic foundation::the cases of post-buckling behaviour and nonlinear free vibrations By B. N. Singh and A Lal *Int. J. of Pressure Vessel and Piping* 87, 559-574 (2010)
22. Stochastic post buckling analysis of laminated composite cylindrical shell panel subjected to hygrothermomechanical loading By Achchhe Lal, B.N. Singh and Sushil Kale *Composite Structures* 93(4), 1187-1200 (2011)
23. Thermo-mechanical induced vibration characteristics of shear deformable functionally graded ceramic-metal plates using finite element method By Md. Talha and B. N. Singh *Proc. of IMECHE, Part C: J. of Mechanical Engineering Science* 225(1), 50-65 (2011)
24. Vibration analyses of nonlocal Graphene sheets with various boundary conditions using DQ method, By Pradhan, S. C. and Raj R., *JOURNAL OF COMPUTATIONAL AND THEORETICAL NANOSCIENCE*, (2011)
25. Vibration analysis of orthotropic graphene sheets using nonlocal theory and differential quadrature method, By Pradhan, S. C and Kumar A., *COMPOSITE STRUCTURES*, 93, pp 774-779 (2011)
26. Vibration Analysis of orthotropic graphene sheets embedded in Pasternak elastic medium using nonlocal elasticity theory and differential quadrature method, By Pradhan, S. C and Kumar A., *COMPUTATIONAL MATERIAL SCIENCE* 50 (1), pp 239-245 (2010)
27. Vibration of Sandwich Plates with Random Material Properties using Improved Higher-Order Zig-Zag Theory By Pandit M. K., Singh B. N and. Sheikh A. H *Mechanics of Advanced Materials and Structures* 17(7), 561-72 (2010)
28. Vibration of Skew Graphene Sheets Using Nonlocal Elasticity Plate Theory, By Pradhan, S. C., *JOURNAL OF AEROSPACE SCIENCES AND TECHNOLOGIES*, (2011)

Papers Presented in Conferences

1. "Hybrid joints for aircraft structural repairs", By Saji D and Pradhan S. C., *ICTACEM 2010*, IIT Kharagpur,, (2010)
2. Active control of geometrically nonlinear transient response of smart laminated composite plate integrated with AFC actuator and PVDF sensor., By Kerur, S. and Ghosh, A., *ASME, In International Conference on Smart Materials, Adaptive Structures and Intelligent Systems(SMASIS2010)*, Philadelphia, Pennsylvania, USA., (2010)
3. Active Flow Control Over Car, By Deepesh Kumar Singh and G. Bandyopadhyay, *International Conference on Mechanical and Aerospace Engineering CMAE 2011*, New Delhi, (2011)
4. Analysis of Multifield Composite Plates Based on Reissner Mixed Variational Theorem, By S. S. Pheonix, B. N. Singh and S. K. Satsangi, *ICTACEM 2010*, IIT Kharagpur, India, (2010)
5. Analysis Of Smart Laminated Composites Employing Piezo Embedded Super Element, By Dipak K. Maiti and P. K. Sinha, *Proceeding of The Twelfth East Asia-Pacific Conference on Structural Engineering and Construction (EASEC-12)*, Hong Kong Special Administrative Region,, (2011)
6. Atmega128 based autonomous UAV attitude stabilization, By Mandal, T. K., Shukla, H., Vimal, G.S Vimal, Sinha, M., *Institution of Engineers of India conference*, Jaipur, (2010)
7. Buckling analysis of finite element modelled functionally graded plate structures, By Mohammad Talha and B N Singh,, *ICTACEM*, IIT Kharagpur, India, pp. 568-570, (2010)

8. Development of a numerical code for 3D LES of thunderstorm downbursts, By Das K. K., Sinhamahapatra K. P., Ghosh A. K., *5th International Conference on Computational Wind Engineering, CWE2010*, North Carolina, USA, (2010)
9. Development of a numerical code to estimate the microburst wind profile near a prismatic building, By Das K.K, Ghosh A.K., Sinhamahapatra K.P, *5th International Symposium on Wind Effects on Buildings & Urban Environment*, Tokyo, Japan, (2011)
10. Dynamic neural units for an adaptive magnetic attitude control of a satellite, By Das, S., Sinha, M., and Misra, A., *AIAA Astrodynamics conference*, Toronto, Canada, (2010)
11. Flexural Analysis of Carbon Nanotube Based on Nonlocal Beam Theories Using DTM, By Vasu and Pradhan, S. C., *ICTACEM 2010*, IIT Kharagpur., (2010)
12. Flow past reflexed airfoil at low Reynolds numbers, By A.B. Harichandan and A. Roy, *12th AeSI Annual CFD Symposium*, IISc Bangalore, (2010)
13. Fluid Structure Interaction in Airfoils for Smart Flying Wing Micro Air Vehicles, By A.B. Harichandan, S.B. Kerur, A. Ghosh and A. Roy, *ICIUS 2010 Conference*, Bali, Indonesia, (2010)
14. Flutter Behaviour of Aircraft Structural Elements, By Datta,P.K, *First National Conference on Applied Mathematical Sciences*, Sikkim Manipal Institute of Technology, (2011)
15. Forced vibration analysis of a Carbon nanotube under periodic loading based on nonlocal elasticity theory, By Negi, R. and Pradhan, S. C., *ICTACEM 2010*, IIT Kharagpur, (2010)
16. Formation flying in an eccentric low earth orbit, By Das, S., Narayanan, T. Bidul, Sinha, M., Misra, A., *AIAA Astrodynamics conference*, Toronto, Canada, (2010)
17. Formation Flying in Small Eccentric Low Earth Orbits, By Bidul T. Narayanan and Sinha, M., *Institution of Engineers of India conference*, Jaipur, (2010)
18. Geometrically nonlinear transient response of active fiber composite smart plate., By Kerur, S. and Ghosh, A., *International Conference on Theoretical, Applied, Computational and Experimental Mechanics (ICTACEMâ€™2010)*, IIT Kharagpur, (2010)
19. Incompressible Flow past Three Circular Cylinders of Unequal Diameters Placed in Staggered Arrangements, By A.B. Harichandan and A. Roy, *5th ICTACEM Conference*, IIT Kharagpur, (2010)
20. Investigation of the Axisymmetric Dry Downburst Wind Profile on Different Surfaces, By Das K. K., Sinhamahapatra K. P., Ghosh A. K., *2nd American Association of Wind Engineers, AAWE*, USA, (2010)
21. Moving and stationary target interception with strap down seeker, By Singh, N and Sinha, M., *Institution of Engineers of India conference*, Jaipur, (2010)
22. Natural frequency of shear deformable functionally graded plate structures with random material properties, By Mohammad Talha and B N Singh,, *ICTACEM*, IIT Kharagpur, India, pp.575-577, (2010)
23. Nonlinear Bending Analysis of Shear Deformation Piezoelectric Laminated Composite Plates, By Padmanav Dash and B. N. Singh, *ICTACEM*, IIT Kharagpur, India, (2010)
24. Nonlinear finite element modelling for large amplitude vibration of functionally graded ceramic metal plates, By Mohammad Talha and B N Singh,, *VETOMAC-2010*, IIT Delhi, India, pp.231-241, (2010)
25. Nonlinear Free Flexural Vibration of Shear Deformable Functionally Graded Ceramic-Metal Plates in Thermal Environment, By Mohammad Talha and B N Singh,, *ASME 2010 International Mechanical Engineering Congress and Exposition*, Vancouver, British Columbia, Canada, (2010)
26. Nonlinear Response of laminated composite plates having random system propertiesâ€¦, By P. Dash, B. N. Singh and N. G. R. Iyengar (Invited), *Proceedings of International Conference on Composites for 21st Century*, IISc Bangalore, (2011)
27. Nonlinear Vibration Analysis of Shear Deformable Functionally Graded Ceramic-Metal Plates Using an Improved Higher Order Theory, By Mohammad Talha and B N Singh,, *ASME:Smart Materials, Adaptive Structures and Intelligent Systems*, Philadelphia USA, (2010)
28. Response of laminated sandwich plates using an improved higher order zigzag plate model, By Pandit M.K., A. H. Sheikh, B. N. Singh, *ICTACEM*, IIT Kharagpur, India, (2010)
29. Reynolds Study of Flow Induced Noise, By Deepesh Kumar Singh and G. Bandyopadhyay, *International Conference on Mechanical and Aerospace Engineering CMAE 2011*, New Delhi, (2011)
30. Simulation of Ground Profiles and Analysis of Aircraft Nose Landing Gear due to Ground Induced Excitation, By B. Sateesh and D. K. Maiti, *Proceeding of Fifth International conference on Theoretical, Applied, Computational and Experimental Mechanics (ICTACEM 2010)*, IIT Kharagpur, (2010)
31. Simulation of the dry microburst using ANSYS, By Das K.K, Ghosh A.K., Sinhamahapatra K.P, *ICTACEM 2010*, IIT Kharagpur, (2010)
32. Simulation of the dry microburst using impinging jet model, By Das K.K, Ghosh A.K., Sinhamahapatra K.P, *ICTACEM 2010*, IIT Kharagpur, (2010)
33. Simulation of thunderstorm downburst, By Das K.K, Ghosh A.K., Sinhamahapatra K. P., *17th Australasian Fluid Mechanical Congress*, Aukland, New Zealand, (2010)
34. Small Scale Effect and Vibration of Graphene Sheets using nonlocal elastic theory and Levy's method, By Kumar A. and Pradhan, S. C., *ICTACEM-10*, IIT Kharagpur, (2010)

35. Static and Dynamic Analysis of Functionally Graded Materials, By S. Vineel, P. K. Mahato and D. K. Maiti, *Proceeding of Fifth International conference on Theoretical, Applied, Computational and Experimental Mechanics (ICTACEM 2010)*, IIT Kharagpur, (2010)
36. Stochastic nonlinear free vibration analysis of functionally graded materials plate with square and circular cut-outs in thermal environment, By Achchhe Lal, Sandeep Kharade, B. N. Singh, *ICTACEM*, IIT Kharagpur, India, (2010)
37. Suboptimal Guidance and Control Design for a Missile with Onboard Strapdown Seeker, By Singh, N. & Sinha, M., *CMAE 2011*,, New Delhi, India, (2011)
38. Thermal post-buckled vibration analysis of laminated doubly curved panel using nonlinear FEM, By Panda, S. K., and Singh, B. N, *ICTACEM*, IIT Kharagpur, India, (2010)
39. Vibration analyses of nanoplate for six different boundary conditions: A differential quadrature approach, By Raj, R. and Pradhan, S. C., *ICTACEM-10*, IIT Kharagpur,, (2010)
40. Vibration analysis of carbon nanotube using nonlocal Timoshenko beam theory, By V Senthil Kumar and Pradhan, S. C., Prathap, G., *ICTACEM 2010*, IIT Kharagpur,, (2010)
41. Vibration control of geometrically nonlinear composite smart plate with piezoelectric actuator and piezoelectric sensor, By Kerur, S. and Ghosh, A, *International Conference on Vibration Engineering & Technology of Machinery*, IIT Delhi, (2010)
42. Vibration control of plane and space trusses, By Majumdar, D. K. Maiti and D. Maity, *Proceeding of Fifth International conference on Theoretical, Applied, Computational and Experimental Mechanics (ICTACEM 2010)*, IIT Kharagpur, (2010)

Department of Architecture & Regional Planning

Head

Prof. Biplab Kanti Sen Gupta

Professors

Banerjee, Uttam Kumar	<i>Ph.D.(IIT Kharagpur),</i>
Barman, Jaydip	<i>Ph.D.(IIT Kharagpur), Urban Design, Green Buildings and Eco Habitat, Tourism Planning and Management, Urban Waterfront Development, Ergonomics and Product Design</i>
Chattopadhyay, Subrata	<i>Ph.D.(IIT Kharagpur), Housing Industrial township Ancillary industry Eco-industrial estate</i>
Datta, Rabindranath	<i>Ph.D.(IIT Kharagpur), City Planning Urban and Regional Transportation Planning</i>
Merchant, Arif N	<i>Ph.D.(Cincinnati USA), Urban Design, City Planning</i>
Sen Gupta, Biplab Kanti	<i>MCP(IIT Kharagpur), Urban and Regional Planning, Architectural Design for Institutional Buildings</i>

Associate Professors

Basu, Sanghamitra	<i>Ph.D.(IIT Kharagpur), Tourism Planning in Historic Areas, Architectural & Urban Heritage, Architectural Design - Theory & Criticism, Neighbourhood & Community Planning, Traditional Architecture & Shape Grammar, GIS Application in Urban Planning</i>
George, Abraham	<i>Ph.D.(Calicut University), Architecture. Pedagogy. Media Communication. Green Architecture. Landscape. Housing. Preservation</i>
Sen, Joy	<i>Ph.D.(IIT Kharagpur), Community livability and regional planning, Architecture and Planning Heritage Studies</i>
Sen, Somnath	<i>Ph.D.(IIT Kharagpur), Environmental Planning and water sensitive urban planning</i>

Assistant Professors

Ahmed, Mokaddes Ali	<i>Ph.D.(IIT Kharagpur),</i>
Banerji, Haimanti	<i>Ph.D.(IIT Kharagpur), Barrier Free Architecture, Behavioral Architecture, Urban Design, Town Planning and Settlement Planning, Ergonomics and Product Design</i>
Chakraborty, Banhi	<i>Ph.D (IIT Kharagpur), Planning & Technology Transfer</i>
Das, Sutapa	<i>Ph.D. (National University of Singapore), Intelligent building</i>
Dutta, Joydeep	<i>MUP (Illinois), Graphic Design & Visual Communication, Decision Modelling for Retail Location</i>
Majumdar, Tapan Kumar	<i>MCP(IIT Kharagpur), Work environment in industries for industrial workers, Low cost Construction</i>
Mazumder, Tarak Nath	<i>Ph.D (IIT Kharagpur), Urban Planning</i>
Pandit, Debapratim	<i>Ph.D.(Univ. of Tokyo), Transportation Planning, Urban Services & Utilities, Urban Environmental Planning, GIS & RS</i>
Paul, Saikat Kumar	<i>MCP(IIT Kharagpur), Computer Application in Built Environment, GIS and Remote Sensing in Planning, Urban and Regional Planning, Architectural Design, Environmental Planning</i>

Faculty Appointments

George, Abraham	Associate Professor
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New Academic Programmes

M. Arch: Master of Architecture in Sustainable Built Environments is being taken up.

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

New Acquisitions

1. 10 licenses of DesignBuilder and EnergyPlus -- Building Energy simulation software -- from USAID ECO-III project
2. Large format scanner, Plotter, A3 Printer under Institute funding

Lectures by Visiting Experts

1. Hollow Core Concrete Building Blocks held on February 16, 2020 by ECHO Engineering (Ir. Arnold Van Acker Past-Chairman fib commission on Prefabrication, Belgium)
2. Care Retirement Community Design by Shekhar Bhushan (SB-Architecture, P.C., Inc, Denver Colorado)

Doctoral and MS Degrees Awarded

1. Maiti Maitreyi : Development Approach of a Metropolitan Fringe in Transition: Kolkata Metropolis(Ph.D)

Member - Professional Bodies

1. Banerji, Haimanti, *Member* - Council of Architecture
2. Banerji, Haimanti, *Associate Member* - Institute of Town Planners India
3. Barman, Jaydip, *Member* - Institute of Indian Interior Interior Designers (IIID)
4. Barman, Jaydip, *Member* - Indian Society of Lighting Engineers (ISLE)
5. Barman, Jaydip, *Life member* - Indian Society of Technical Education (ISTE)
6. Barman, Jaydip, *Registered member* - Council of Architecture, New Delhi
7. Basu, Sanghamitra, *Associate Member* - Institute of Town Planners, India
8. Basu, Sanghamitra, *Associate Member* - Indian Institute of Architects
9. Basu, Sanghamitra, *Regular* - Council of Architecture
10. Chakraborty, Banhi, *Associate member* - Institute of Town Planners India
11. Chattopadhyay, Subrata, *Member* - Council of Architecture
12. Chattopadhyay, Subrata, *Associate Member* - Institute of Town planners India
13. Das, Sutapa, *Observer* - Hong Kong Building Environmental Assessment Method (HK-BEAM), Hong Kong
14. Das, Sutapa, *Associate* - Institution of Facilities Management (IFM), Singapore
15. Das, Sutapa, *Life* - Indian Society for Technical Education (ISTE)
16. Das, Sutapa, *Life* - Council of Architecture, India
17. Datta, Rabindranath, *Member* - INSTITUTE OF TOWN PLANNERS INDIA

18. George, Abraham, *Life Member* - Indian Society of Technical Education - ISTE
19. George, Abraham, *Registered Architect* - Council of Architecture - CoA
20. George, Abraham, *Member* - Indian National trust for Art and Cultural Heritage
21. George, Abraham, *Member* - Fulbright Academy
22. George, Abraham, *Associate Member* - Indian Institute of Architects
23. George, Abraham, *Graduate Member* - Haggai Institute for Leadership Training
24. Majumdar, Tapan Kumar, *ASSOCIATE* - INDIAN INSTITUTE OF TOWN PLANNERS
25. Majumdar, Tapan Kumar, *LIFE MEMBER* - COUNCIL OF ARCHITECTURE
26. Majumdar, Tapan Kumar, *LIFE MEMBER* - INDIAN SOCIETY FOR TECHNICAL EDUCATION
27. Majumdar, Tapan Kumar, *ASSOCIATE* - THE INDIAN INSTITUTE OF ARCHITECTS
28. Mazumder, Tarak Nath, *Associate Member* - Institute of Town Planners, India
29. Mazumder, Tarak Nath, *Associate Member* - Council of Architecture
30. Pandit, Debapratim, *Member* - Council of Architecture
31. Paul, Saikat Kumar, *Regular* - Council of Architecture
32. Paul, Saikat Kumar, *Associate* - Institute of Town Planners India
33. Paul, Saikat Kumar, *Associate* - Indian Society of Remote Sensing
34. Sen Gupta, Biplab Kanti, *Registered* - Council of Architecture
35. Sen Gupta, Biplab Kanti, *Associate* - Indian Insitute of Architects
36. Sen, Somnath, *Fellow-FITP-84/35* - Institute of Town Planners INDIA
37. Sen, Somnath, *Associate-AR-8517* - Indian Institute of Architects
38. Sen, Somnath, *Regular* - Institute of Public Administration

Member - Editorial Board

1. Basu, Sanghamitra (2011) *Member , Editorial Board* - International Journal of the Built Environment and Asset Management (JBEAM)
2. Datta, Rabindranath (2010) *Member of Editorial Advisory Board* - SPANDREL
3. George, Abraham (2009) *Member of Editorial Board* - ICFAI Journal of Architecture
4. George, Abraham (2010) *Editorial Board member* - Journal of Emerging Trends in Educational Research And Policy Studies
5. George, Abraham (2010) *Reviewer. (3 papers reviewed)* - International Conference on Sustainable Buildings and Infrastructure-2010, Petronas University
6. Sen Gupta, Biplab Kanti (2007) *Member of the Editorial Board* - Spatio - Economic Development Record
7. Sen Gupta, Biplab Kanti (2007) *Member of the Editorial Board* - ABACUS
8. Sen Gupta, Biplab Kanti (2010) *Member of the Editorial Advisory Board* - SPARKLE - a Bi Annual Internationally referred Journal

Awards & Honours

1. Barman, Jaydip (2010) *Transparence 2010 National Architectural Design Competition -- supervised design project which received regional level Best Design award*
2. Das, Sutapa (2010) *Young Engineers Award in Architectural Engineering*

Sponsored Research Projects

1. A Book on Indian Cultural Heritage - based on Swami Vivekanandas life & works (The Indological Research Cell (IRC), The R K M Institute of Culture, Kolkata, Rs.0.00 Lakhs)
2. A sustainable framework of planning in India (The Energy Research Institute (TERI) New Delhi, Rs.0.00 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 Trend-generating Communication Model in Architecture (SRIC/IIT Kgp, Rs.3.00 Lakhs)
5. Development of Women Technology Park in Nayagram Paschim Medinipur (Department of Science and Technology, New Delhi, Rs.30.00 Lakhs)
6. 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)
7. Environmental Impact of Coal Mines Closer and Ecological Rehabilitation of Mining Area of India (Department of Science and Technology, New Delhi, Rs.0.00 Lakhs)
8. Ganga River Basin Management Plan (Department of Environment, Govt. of India, Rs.1600.00 Lakhs)

Consultancy Projects

1. Architectural Consultancy services for proposed concept plan of main building at park circus campus, Kolkata (The Aliah University, Kolkata - completed in 2010, Rs.5.00 Lakhs)
2. Architectural Design and Drawing of Chawk Bazar Market Complex (ADDC) (Chairperson Bankura Municipality, Rs.5.00 Lakhs)
3. Architectural Design for New Academic Complex at Bankura Unnayani Institute of Engineering (Bankura Unnayani Institute of Engineering, Rs.8.97 Lakhs)
4. Architectural Design for New Academic Complex at Bankura Unnayini Institute of Engineering (DNAC) (Bankura Unnayini Institute of Engineering, Rs.8.96 Lakhs)

5. City Development Plan, Haldia (HDA, Rs.22.20 Lakhs)
6. Comprehensive Architectural Services for SOEE at the STEP IIT Complex as well as Enterprenureship Park at Gopali (Executive Director STEP, IIT Kharagpur, Rs.8.00 Lakhs)
7. Comprehensive Development Plan for Bhubaneswar and Cuttack (Ministry of housing and urban development, govt. of Orissa, Rs.165.29 Lakhs)
8. Development Strategies for Coochbehar District (NREG, Coochbehar, Rs.10.00 Lakhs)
9. Interior design of Secretarial and Ministerial Complex at Naya Raipur (State Govt. of Chattisgarh, Rs.50.00 Lakhs)
10. Interior Design works and Project Management Services of Secretariat Building in Capitol Complex at Naya Raipur (Naya Raipur Development Authority, Rs.33.09 Lakhs)
11. Interior Design Works and Project Management Services of State Secretariat Building in Capital Complex at Naya Raipur, Chhattisgarh (Naya Raipur Development Authority, Rs.33.00 Lakhs)
12. Land Use and Development Control Plan, Asansol Sub-Division (ADDA, Rs.40.00 Lakhs)
13. Making of report on "Vulnerability of Cities" (The University of Tokyo, Global Center of Excellence for Sustainable Urban Regeneration., Rs.2.77 Lakhs)
14. Making of report on Vulnerability of Cities (GCOE Program CSuR The University of Tokyo, Rs.0.00 Lakhs)
15. Master Plan for for Aizawal Urban Area-2030 (Aizawal Development Authority, Mizoram, Rs.70.00 Lakhs)
16. Perspective Plan - Vision 2030 and Comprehensive Development Plan for BDA and CDA (Housing and Urban Development Department , Govt. of Orissa, Rs.165.00 Lakhs)
17. Perspective Plan for for MKDA region (Medinipur Kharagpur Development Authority(MKDA), Rs.18.08 Lakhs)
18. Perspective plan for MKDA (Midnapore Kharagpur Development Authority, Paschim Midnapore, Rs.0.00 Lakhs)
19. Perspective Plan for MKDA (Midnapore Kharagpur Development Authority, Rs.14.00 Lakhs)
20. Perspective Plan Vision-2030 and Comprehensive Development Plan for BDA and CDA (Housing and Urban Development Department, Govt. of Orissa, Rs.165.00 Lakhs)
21. Perspective Plan- Vision 2030 & Comprehensive Plan for Bhubaneswar & Cuttack Urban Complex (Orissa Housing & Urban Development Department, Rs.169.00 Lakhs)
22. Preparation of Aizawl Master Plan (Aizawl Development Authority, Rs.70.22 Lakhs)
23. Preparation of Aizawl Master Plan (Aizawl Development Authority, Rs.70.22 Lakhs)
24. Preparation of Aizawl Master Plan: Vision 2030 (PAMP) (Aizawl Development Authority, Rs.70.22 Lakhs)
25. Preparation of Architectural Plan for New Academic Complex at Bhasa South 24P West Bengal (Asutosh College Kolkata, Rs.80.00 Lakhs)
26. Preparation of City Development Plan (BDA, Rs.11.23 Lakhs)
27. Preparation of City Development Plan for Burdwan Planning Area (BDAP) (Burdwan Development Authority, Rs.11.23 Lakhs)
28. Preparation of Perspective Plan "Vision 2030 (ADA, Rs.70.22 Lakhs)
29. Preparation of Perspective Plan "Vision 2030 and Comprehensive Development Plans (BDA, Rs.169.00 Lakhs)
30. 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)
31. Preparation of zonal development plan for 14 planning zones in Bhubaneswar Development Plan Area (Bhubaneswar Development Authority, govt. of Orissa, Rs.391.00 Lakhs)
32. Preparation of Zonal Development Plans for 14 Planning Zones of Bhubaneswar Development Plan Area (BDA, Rs.391.60 Lakhs)
33. Preparation of Zonal Development Plans for 14 Planning Zones of Bhubaneswar Development Plan Area (PZDP) (Bhubaneswar Development Authority, Rs.391.63 Lakhs)
34. Preparation of Zonal Development Plan for 14 Planning Zones of Bhubaneswar Development Plan Area (PZDP) (Bhubaneswar Development Authority, Rs.391.63 Lakhs)
35. Traffic Impact Assessment for Relocation of Bus Terminal in Bardhaman Town (BDA, Rs.3.50 Lakhs)
36. Traffic Impact Assessment of PCPIR Complex in Nayachar, Haldia (PCR Chemicals, Rs.13.20 Lakhs)

Visits Abroad by Faculty Members

1. Sen Gupta, Biplab Kanti - To attend the International Conference of Urban Re-generation organized by John Hopkins University (Athens, Greece,) 19-23 June, 2010
2. George, Abraham - Paper presentation-Oral (Petronas University, Kua Lumpur,) June
3. Sen, Somnath - To attend 10th SCA Conference as invited speaker (Manilla ,Phillipines,) June 13-16, 2010
4. Basu, Sanghamitra - Conference and Visits (Los Angeles, Phoenix & San Francisco , USA,) 10 days
5. Chattopadhyay, Subrata - Invited to address postgraduate students and meet faculty (Newcastle upon Tyne,) 23-25 October 2010
6. Sen Gupta, Biplab Kanti - To attend ICURPT 2010 "International Conference on Urban, Regional Planning & Transportation (Paris,) 28-30 June, 2010
7. Sen, Joy - Seminar Presentation (The Institute of Non-Traditional Technology Tokyo Japan,) 1 hours

Invited Lectures by Faculty Members

1. Architecture and allied fields --- professional and management links by Barman, Jaydip (National Institute of Technology, Raipur)
2. Systematic Sustainable Architecture and the Need for Alternative Concepts by George, Abraham (MANIT, Bhopal)
3. Sustainable Architecture by George, Abraham (Petronas University, Malaysia)
4. Planning Strategies for Water Demand management, Nagpur by Sen, Somnath (Manilla, Phillipines)
5. Introduction to Environmental planning by Sen, Somnath (SPA Vijayawada)
6. Key speaker on Housing the urban poor and the issue of land-A critical analysis by Chattopadhyay, Subrata (Chandigarh)
7. New directions of postgraduate education by Chattopadhyay, Subrata (University of Newcastle upon Tyne, UK)
8. Policy Interventions & Management Guidelines for Historic Areas in India: Acts,Regulations,Toolkit by Basu, Sanghamitra (New Delhi)
9. Designing Symbols & Signs - Fundamental Principles by Basu, Sanghamitra (AICTE Winter School, IIT , Kharagpur)
10. Urban Development Management Scenario in India by Sen Gupta, Biplab Kanti (BIT Meshra)

11. Architectural Education Concept and Challenges by Sen Gupta, Biplab Kanti (Sir J.J. College of Architecture)
12. Social Reality and Media - UNESCO sponsored IUHU Course by Sen, Joy (The Institute of Culture (RMIC) Kolkata)
13. Science in India in the 20th Century by Sen, Joy (The Asiatic Society Kolkata)

Books Published

1. B.K. Sengupta, J. Sen and H. Banerji: Reading Material on Human Settlement published by Institute of Town Planners India (2010)
2. Dr. Abraham George and Dr. Susan Abraham: CONSTRUCTION PROJECT MANAGEMENT published by VIKAS PUBLICATIONS, NEW DELHI (2011)

Seminars, Conferences and Workshops Organised

1. Hollow Concrete Block: EcoBlocek

Short-Term Courses, Training Programmes and Workshops organised

1. Green Architecture and Carbon Free Living (December 18-24)

Papers Published in Journals

1. A comparative study of two different techniques for evaluating service quality: A case study of Howrah Railway Station, India By Sumana Gupta, R. N. Datta, *Asian Journal on Quality* Vol. 11 Issue: 3 (2010)
2. A methodology for existing bus route merging and frequency setting for bus rapid transit trunk corridor: case study, Kolkata (Under review) By Tuhin Subhra Maparu and Debapratim Pandit *Institute of Town Planners, India Journal (ISSN 0537-9679)* (2011)
3. A Methodology for Selection of Bus Rapid Transit Corridors: A Case Study of Kolkata By Tuhin Subhra Maparu and Debapratim Pandit *Institute of Town Planners, India Journal (ISSN 0537-9679)* 7 - 4, 21 - 36 (2010)
4. A psychological approach to universal design to public transportation mode By H. Banerji, J. Barman and B.K. Sengupta *ITPI Journal* 57- 66 (2007)
5. Barriers faced by people with impaired mobility in railway stations By H. Banerji, J. Barman and B.K. Sengupta *ITPI Journal* 59 - 66 (2007)
6. Behavioral Characteristics of Car parking Demand: A Case Study of Kolkata By T N Mazumder, S Chakraborti *ITPI Journal* Vol. 7 No. 4 pp 1-12 (2010)
7. Challenges in Imparting City Planning Knowledge By R. N. Datta *SPANDREL* Vol 1, Issue 1, (2010)
8. Doctoral Thesis Section - An approach towards delineating psycho stimulating Environment for Physically Disabled People with Impaired Mobility (PDIM) - A case study of Indian Railway Stations. By H. Banerji *Disability and Society* (2010)
9. Generic Method of Grading Building Defects Using FMECA to Improve Maintainability Decisions By Das, S. & Chew, M.Y.L. *Journal of Performance of Constructed Facilities* accepted (2011)
10. Integrated Strategy for Reduction of Earthquake Hazards By H. Banerji and B.K. Sengupta *accepted in Monsoon-2010 (Vol.5, No.2) issue of ABACUS* (2011)
11. Integrated Strategy for Reduction of Earthquake Hazards By Prof. H. Banerji, Prof. B.K. Sengupta *ABACAS* Vol-5, No.-2, Pg-43 (2011)
12. Levels of imbalances in an urban agglomeration: case of KUA as part of six districts By Keya Chakraborty and Joy Sen *Nagartok* Vol XLII/3 pp 39-48 (2011)
13. Multi-criteria decision analysis in building maintainability using analytical hierarchy process By Das, S., Chew, M.Y.L. & Poh, K.L. *Construction Management and Economics* 28 (10), 1043 - 10 (2010)
14. Overview of variations in revenue expenditure for HDI sectors - case of Kolkata By Keya Chakraborty and Joy Sen *Local Government quarterly* Vol LXXX n4 pp 23-27 (2011)
15. Planning for Sustainable Pedestrian Infrastructure with upcoming MRTS --- An Appraisal of Walkability Conditions in Lucknow By Dr. Jaydip Barman and Chintan Daftardar *Institute of Town Planners, India Journal* Vol.7 no.3 pp.64-76 (2010)
16. Positioning HDI indicators in Metropolitan development - case of KMA By Keya Chakraborty and Joy Sen *Architecture Time Space and People* Vol 10 / 11 pp 32-36 (2011)
17. Re-establishing the role of socio psychological factors towards development of a holistic barrier free environment for the users with impaired mobility By H. Banerji, J. Barman and B.K. Sengupta *Abacus* 31 - 38 (2007)
18. Residential Location Choice: A Study of Household Preferences for the City of Nagpur By T N Mazumder, A Patil, A Das *ITPI Journal* Vol. 7 No. 3 pp 1-19 (2010)
19. Riverside restoration city planners viewpoint case of Mutha riverfront, Pune, India By Prof S.Sen and Shradha barve *International Journal of Sustainable Development and Planning* (2011)
20. The Role of Organized Sectors in Providing Incremental Housing for All By H. Banerji and B.K. Sengupta *Spatio Economic Development Record* 5 - 16 (2011)
21. The Role of Organized Sectors in Providing Incremental Housing for All By Prof. H. Banerji, Prof. B.K. Sengupta *Spatio Economic Development Record* 5-16 (2011)
22. Utility of Scientific Parables in understanding the inter-relationship of Cosmology and Human Evolution By Joy Sen *Bulletin of RMIC Kolkata* January 2011 (2011)

Papers Presented in Conferences

1. A GIS-Based Multi- Criterion Analysis and Spatial Decision Support System for Planning Recreational and Cultural Facilities for a Society in Transformation, *By* Sanghamitra Basu, *Spaces and Flows: An International Conference on Urban and ExtraUrban Studies*, University of California, Los Angeles, (2010)
2. A Patient centric approach to the design of Multi- specialty hospital, *By* H. Banerji and B.K. Sengupta, *Seminar on Emerging trend in planning of multi- specialty hospitals*, New Delhi, (2009)
3. A SPATIAL ASPECTS OF BUILT-ENVIRONMENT AND HDI: A STUDY OF CORRELATIONS- CASE OF KOLKATA URBAN AGGLOMERATION, *By* Joy Sen and Keya Chakraborty, *4th INTERNATIONAL CONFERENCE*, Penang Malaysia, (2010)
4. Accepted paper: A methodology for bus transit system reform & redesign: Case study Kolkata, India, *By* Debapratim Pandit & Tuhin Subhro Maparu, *12th International Computers in Urban Planning and Management Conference, 2011*, Lake Louise, Canada, (2011)
5. Addressing psychological barriers towards creation of practical responsive environment for persons with impaired mobility: Case study of Indian railway stations, *By* H. Banerji, J. Barman and B.K. Sengupta, *1st National Conference for promotion of Barrier Free Environment for Disabled Persons*, New Delhi, (2006)
6. Analysis of construction related defects for mechanical-electrical building systems, *By* Das, S. & Chew, M.Y.L., *Techsta 2010 8th International Conference*, Prague, Czech Republic, (2010)
7. Applicability of co-evolutionary linkages to LCA framework, *By* Joy Sen, *EcoBalance 2010*, Tokyo Japan, (2010)
8. Barriers to accessible transportation and access in urban India: a case study of Kolkata, *By* L. Sen and H. Banerji, *TRANSED, 10th International Conference on Mobility and Transport for elderly and disabled people*, Hamamatsu, Japan, (2004)
9. Best utilization of peri-urban areas: Analyzing development potential for appropriate uses in urban fringes, *By* H. Banerji, J. Barman, *56th National Town & Country Planning Conference*, Kolkata, (2007)
10. Computer application in early phase of design of intelligent buildings, *By* Das, S. & Chaudhuri, A., *BITECH2011: International Building & Infrastructure Technology Conference*, Penang, Malaysia, (2011)
11. Disaster mitigation strategies through land use planning and zoning in an urban context, *By* H. Banerji and B.K. Sengupta, *2nd India Disaster Management Congress*, New Delhi, (2009)
12. Housing the urban poor and the issue of land-A critical analysis, *By* Chattopadhyay, S., Sen, R., *59th National Town and Country Planners Congress*, Chandigarh, (2011)
13. Identification of parameters that define a healthy living environment for urban poor: A case study of slums in Kolkata and suburbs, *By* H. Banerji, *58th National Town & Country Planning Conference*, Nagpur, (2010)
14. Inclusive Planning for Urban Development - Issues and Challenges, *By* B.K. Sengupta and H. Banerji, *Workshop on Inclusive Planning for Urban Development challenges to the Planning Professionals*, Kolkata, (2010)
15. Inclusive Planning for Urban Development- Issues and Challenges, *By* Prof. B.K. Sengupta, Prof. H. Banerji, *Workshop on Inclusive Planning for Urban Development Challenges to the Planning Professionals*, Kolkata, (2010)
16. Land as Resource for Urban Development, *By* B.K. Sengupta and H. Banerji, *Institute of Town Planners, India*, Kolkata, (2011)
17. Land as Resource for Urban Development, *By* Prof. B.K. Sengupta, Prof. H. Banerji, *Institute of Town Planners*, Kolkata, Panchkhula, (2011)
18. Management of Electronic Waste in Developing Countries- A Case study of India, *By* A Das, T N Mazumder, *International Conference on Urbanism and Green Architecture*, NIT Hamirpur, (2010)
19. Managing and Using Urban Open Spaces- A Participatory Approach, *By* H. Banerji and B.K. Sengupta, *Healthy City Conference*, Pune, (2011)
20. Managing and Using Urban Open Spaces- A Participatory Approach, *By* Prof. H. Banerji, Prof. B.K. Sengupta, *Healthy City Conference*, Pune, (2011)
21. Proposed Health care facility planning in India- an integrated four tier approach, *By* B.K. Sengupta and H. Banerji, *Healthy City Conference*, Pune, (2011)
22. Proposed Health Care Facility Planning in India- An Integrated Four Tier Approach, *By* Prof. B.K. Sengupta, Prof. H. Banerji, *Healthy City Conference*, Pune, (2011)
23. Regional Development through Perspective Plan for Bhubaneswar-Cuttack Urban Complex (BCUC): Vision-2030, *By* Prof. B.K. Sengupta, Ms. Gitali Mandal, *ICURPT 2010- International Conference on Urban, Regional Planning and Transportation*, Paris, (2010)
24. Role of Architects towards seismically safe building, *By* B.K. Sengupta and H. Banerji, *National Seminar under CEP Programme organized by Indian Institute of Architects*, (2005)
25. Role of image-building in creating a healthy city- A case study of Singapore, *By* Das, S., *Healthy Cities International Conference*, Pune, India, (2011)
26. Scientific Methodology for Preparation of Land Use Development Control Plan- Analysis of Current Planning Process, *By* B.K. Sengupta and H. Banerji, *Seminar on adoption of scientific methodology for LUDCP*, Haldia, (2011)
27. Scientific Methodology for Preparation of Land Use Development Control Plan- Analysis of Current Planning Process, *By* Prof. B.K. Sengupta, Prof. H. Banerji, *Adaption of Scientific Methodology for LUDCP*, Haldia, (2011)
28. Social Accountability Network promotes Good Governance, *By* Prof. B.K. Sengupta, *Urban Re-generation and City Branding: Is Memory an Asset or an Obstacle?*, Athens, (2010)
29. Systematic Sustainable Architecture and the Need for Alternative Concepts, *By* Dr. Abraham George and Dr. Susan Abraham, *International Conference- Green City- Design, Planning and Management*, MANIT, Bhopal, (2011)
30. The Urban Housing Market- Revisiting Urban Metropolitan Scenario, *By* S Chattopadhyay, T N Mazumder, *International Association for Housing Science Congress*, Santander, Spain, (2010)
31. The urban housing market-Revisiting Indian metropolitan scenario, *By* Chattopadhyay, S., Mazumder, T.N., Patil, A., *37th IAHS world congress on housing science*, Santander, Spain, (2010)
32. Urban Legislation for availing land to the poor- a study of present scenario and assessment of future challenges, *By* B.K. Sengupta and H. Banerji, *Symposium on West Bengal Urban Strategy*, Kolkata, (2010)
33. Urban Legislation for Availing Land to the Poor- A Study of Present Scenario and Assessment of Future Challenges, *By* Prof. B.K. Sengupta, Prof. H. Banerji, *Symposium on West Bengal Urban Strategy*, Kolkata, (2010)

Department of Biotechnology

Head

Prof. Amit Kumar Das

Professors

Das, Amit Kumar	<i>Ph.D.(Calcutta Univ)</i> , Structural Biology and Protein Chemistry, Crystallographic study of M.tuberculosis and S. aureus proteins, Structural Bioinformatics
Das, Debabrata	<i>Ph.D.(IIT Delhi)</i> , Biohydrogen production processes, CO2 sequestration for algae cultivation, Microbial fuel cell
Dey, Satyahari	<i>Ph.D.(IIT Kharagpur)</i> , Bio-prospecting genes & molecules. Molecular profiling Antarctic flora. Nutraceutical development
Ghosh, Ananta Kumar	<i>Ph.D.(Calcutta Univ)</i> , Molecular Virology, Recombinant DNA Technology, Hybridoma Technology
Kundu, Subhas Chandra	<i>Ph.D.(BHU, Varanasi)</i> , Cell based tissue engineering and regenerative medicine, Silk biomaterials
Maiti, Tapas Kumar	<i>Ph.D.(Kalyani Univ)</i> , plant lectins and lectin derived peptides in cancer therapy, Mushroom derived glucan as immunomodulator, Tissue engineering, Biomicrofluidics and biochip development

Associate Professors

Ghosh, Sudip Kumar	<i>Ph.D.(Kalyani Univ)</i> , Molecular and cellular parasitology and nanobiotechnology
Sen, Ramkrishna	<i>Ph.D.(IIT Madras)</i> , Algal Biofuels and Bio-CCS, Biorefinery, Bioprocess Development Modeling & Optimization, Marine Biotechnology, Biochemical Engineering, Enzyme and Biofuels Technology, Bioenergy, Probiotics and Nutraceuticals, Environmental Biotechnology

Assistant Professors

Bahadur, Ranjit Prasad	<i>Ph.D.(Jadavpur Univ)</i> , Bioinformatics and Computational Biology
Ghosh, Anindya Sundar	<i>Ph.D.(Calcutta Univ)</i> , Microbial genetics and Antimicrobial chemotherapy
Maiti, Mrinal Kumar	<i>Ph.D.(Calcutta Univ)</i> , Plant Molecular Biology, Transgenic Plants, Metabolic Engineering, Plant Biotechnology
Sar, Pinaki	<i>Ph.D.(BHU, Varanasi)</i> , Microbiology of arsenic contaminated groundwater, Microbial diversity and bioremediation, Metagenomics and environmental biotechnology

Faculty Promotions

Prof. Tapas K. Maiti	Professor
Prof. Ramkrishna Sen	Associate 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*. 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 cytopovirus 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. 1.10 kVA online UPS, Numeric Power system
2. PCR System, ABI9700, Applied Biosystem
3. Mini Bead beater, Unigenetics
4. Gel electrophoretic apparatus (Vertical), GE HealthCare
5. Ligation bath, Eppendorf, Germany
6. Cold Chamber GE Healthcare
7. Peristaltic Pump, GE HealthCare
8. Snap Protein Detection kit, Millipore, USA
9. Miniprep cell extraction system, Biorad, USA
10. Refrigerated Incubator, Amerex Instrument, USA
11. Refrigerated table top Centrifuge, Eppendorf, Germany
12. GM counter, Lab logic system, USA
13. Thermocycler Eppendorf, Germany
14. Trinocular Phase contrast research microscope, Nikon, Japan
15. Ventilated Animal Cage system, Citizen industries Ahmedabad

International Collaborations

Prof. S. C. Kundu has four collaborative research projects: (i) Project on Biosynthetic silk hydrogel extracellular matrix analogues for mammalian cell support and drug delivery, Laura Poole-Warren Graduate School of Biomedical Engineering University of New South Wales, Australia, Penny Martens, Graduate School of Biomedical Engineering, University of New South Wales, Australia by Indo-Australia Biotechnology Fund DBT, New Delhi in the year 2007 (three years) (ii) Project on Indo-US Joint Center: silk protein matrix for cell based tissue engineering Professor Robert L. Sah Department of Bioengineering, MC 0412 University of California, San Diego, Professor David L. Kaplan, Department of Biomedical Engineering, Tufts University, 4 Colby Street, Medford, Massachusetts-02155, USA, Dr. Alexey Terskikh, Burnham Institute for Medical Research, 10901, N. Torrey Pines Rd La Jolla, CA 92037, USA by Indo-US Sci & Tech Forum, New Delhi in 2007 (two and a half years) (iii) Project on Extracellular fibrillar biopolymers- natural silk fibers, silk protein scaffolds and roteoglyan fibril, Professor Alvin Andreevna Vazina, Institute of theoretical and experimental biophysics, Russian academy of sciences, Pushchino, Moscow region, Russia, Nadezhda Fedorovna Lanina by Indo Russia. DST in 2009 (two years) (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: Utslo 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. A peep inside the umbilical cord: Molecular Characterization and Clinical scale expansion of Whartons Jelly-derived Mesenchymal Stem Cells *by* Dr. Malancha Ta (Sr. Principal Scientist, Diabetes Group, Stempeutics Research Pvt. Ltd., 9th Floor, Manipal Hospital, Bangalore, India)
2. Renewable energy research at CSMCRI with focus on sustainability *by* Dr. Pushpito Kumar Ghosh (Director, Central Salts and Marine Chemicals Research Institute (CSIR), Bhavnagar, Gujarat)
3. Cap Binding Complex (CBC), a RNA processing factor establish histone modification to regulate gene expression *by* Dr. Azad Hossain (Ph.D, Tracy Johnson Lab, Division of Biological Sciences, University of California San Diego, USA)
4. Passport Across The Blood-Brain Barrier: The GBS Way *by* Dr. Anirban Banerjee (Postdoctoral Researcher, Centre for Microbial Sciences, San Diego State University, 5500 Campanic Dr. San Diego, CA 92182, USA)
5. Modifications of transfer RNA and their role in Expanding the genetic code *by* Dr. Debabrata Mondal (Postdoctoral Associate, Massachusetts Institute of Technology, Dept. of Biology, Cambridge, USA-02142)
6. A complex regulatory network of transcription factors critical for ocular development and diseases *by* Dr. Moulinath Acharya (Ph.D., Dept. of Medical Genetics, 8-32 Medical Sciences Building, Univeristy of Alberta, Edmonton, Canada, T6G2H7)
7. Lipoprotein associated Phospholipure A2 In human health and its structural Insights *by* Dr. Uttam Kumar Samanta (Assistant Professor, School of Biotechnology, KIIT University, Bhubaneswar)
8. Prospects of natural polymers in tissue engineering and regenerative medicine *by* Dr. Rui L Reis (Director, 3Bs (Biomaterials, Biodegradables and Biomimetics) University of Minho, Portugal)
9. Microfluidics and applications in chemistry, biology and bioengineering *by* Dr. Xunli Zhang (Bioengineering Group, School of Engineering, University of Southampton, Southampton S017 1BJ, United Kingdom)
10. Small Molecule Modulators of Epigenetic Modifications: To probe Eukaryotic Gene Expression and Target *by* Prof. Tapas K Kundu (Professor, Transcription and Disease Laboratory, Molecular Biology and Genetics Unit, Jawaharlal Nehru Centre, For Advanced Scientific Research, Jakkur, P.O., Bangalore 560 064, India)
11. Improving photobiological hydrogen production by a synthetic biology approach *by* Dr. Thorsten Heidorn (Fotomal, Dept. of Photochemistry and Molecular, The Angstrom Laboratories, Uppsala University, Sweden)
12. Engineered Sendai virus in liver gene therapy: From basics to preclinical applications Reciprocal Magnlation of AKT & MAP Kinase dictates Sendai virus *by* Prof. D P Sarkar (FNASc, FASc, FNA, J C Bose National fellow (ST), Bhatnagar awardee- 1998, Dept. of Biochemistry, Delhi University South campus)
13. How insects combat infection? *by* Prof. J Nagaraju (Staff Scientist & Group Leader, Laboratory of Molecular Genetics, Centre for DNA Fingerprinting & Diagnostics, Hyderabad- 500 001, India)
14. Development of extracellular matrix-based substrates for human pluripotent stem cell propogation *by* Dr. Raj R Rao (Qimonda Assistant Professor, Chemical and Life Sc. Engg., School of Engg., Human and Mol. Genetics, School of Medicine, Virginia Commonwealth University, USA)
15. FTIR and its application for secondary protein and microbial identification *by* Dr. Shreeram Oak (National Manager, Brukeroptics, Bangalore)
16. Biotechnological control of plant diseases *by* Prof. Jose Ramon Botella Mesa (University of Queensland)
17. (i) Development of a novel method for free drug analysis *by* Dr. Rangan Mallik (Senior Scientist, Allergan, Irvine, CA 92614, USA)
18. Understanding and regulation of p65 (RelA), the NF-kB Subunit to regulate tumorigenic response *by* Dr. Sunil Kumar Manna (Staff Scientist, Head, Lab of Immunology, Centre for DNA Fingerprinting & Diagnostics, Lab Block, Tuljaguda (Opp. Mj Market), Nampally, Hyderabad)
19. Biopesticide production from plant cell cultivation *by* Dr. Ashok Kumar Srivastava (Professor, Dept. of Biochemical Engg. & Biotechnology, IIT Delhi, Hauz Khas, New Delhi 110016)
20. A definition of LC/MS in Proteomics *by* Dr. Mark A (McDowall Waters, Manchester UK)
21. Metabolic Syndrome: Challenges and Therapeutic strategies *by* Dr. Susil Mahata (Dept. of Midicine, University of California, San Diego, USA)

Doctoral and MS Degrees Awarded

1. Mrinmay Chakrabarti : Molecular analysis of Antheraea mylitta cytoplasmic polyhedrosis virus genome segments 1,3,8 and 11(Ph.D.)
2. Tamal Das : Stress Responsive Dynamics of Mammalian cells in Microconfinement(Ph.D.)
3. Biswapriya Biswas Misra : Prospecting of phenylpropanoids and terpenoids in East Indian Sandalwood (Santalum album L.)(Ph.D.)
4. Suvankar Ghorai : Molecular Characterization of genome segement 2 encoding RNA dependent RNA polymerase of Antheraea mylitta cytoplasmic polyhedrosis virus(Ph.D.)

5. Biman Behari Mandal : Non-Mulberry Silk Fibroin Protein As Potential Natural biomaterial for Cell Based Tissue Engineering(Ph.D)
6. Sanjay K Mallick : Immunodulatory heteroglucan from edible mushroom *Astraeus hygrometricus* and its efficacy in cancer therapy(Ph.D.)
7. Soumen Mukherjee : Lipopeptide biosurfactants from marine *Bacillus megaterium* : Purification, characterization and evaluation of unconventional raw materials as potent substrates(Ph.D.)
8. C. Sivapathasekaran : Biprocess development and optimization for the enhanced production and recovery of marine lipopeptide biosurfactants(Ph.D.)
9. Sangeeta Choudhary : Uranium and other heavy metal resistance and accumulation in a *Pseudomonas aeruginosa* strain: Potential in Bioremediation(Ph.D.)
10. Banani Chattopadhyaya : Cloning and characterization of two desaturase genes for their potential applications in modifying seed fatty acid profile of *Sesamum indicum*(Ph.D.)

Member - Professional Bodies

1. Das, Amit Kumar, *Life* - National Crystallographic Society
2. Das, Debabrata, *Life member* - Association of Food Scientists & Technologists (India) (AFST)
3. Das, Debabrata, *Life member* - Indian Society for Technical Education (ISTE)
4. Das, Debabrata, *Regular Member* - International Association of Hydrogen Energy (IAHE)
5. Das, Debabrata, *Life member* - Indian Institute of Chemical Engineers (IICChE)
6. Das, Debabrata, *Life member* - The Institution of Engineers (India) (IE)
7. Dey, Satyahari, *Member, Executive Committee* - Assian Federation of Biotechnology
8. Ghosh, Ananta Kumar, *Regular* - Biotechnology Society of India
9. Ghosh, Anindya Sundar, *Regular* - American Society for Microbiology
10. Ghosh, Anindya Sundar, *Associate* - Horticultural Society of India
11. Ghosh, Sudip Kumar, *Life Member* - Indian Science News Association
12. Ghosh, Sudip Kumar, *Life Member* - Society of Biological Chemists, India
13. Kundu, Subhas Chandra, *Life Member* - All India Cell Biology Society
14. Kundu, Subhas Chandra, *Member* - Tissue Engineering and Regenerative Medicine, International Society
15. Maiti, Mrinal Kumar, *Life Member* - Society for Plant Biochemistry & Biotechnology, IARI, New Delhi
16. Maiti, Mrinal Kumar, *Member for the year 2010* - International Association of Plant Biotechnology
17. Maiti, Mrinal Kumar, *Life Member* - Plant Physiology Forum, Kolkata
18. Maiti, Mrinal Kumar, *Life Member* - Institute of Science, Education and Culture (ISEC) Kolkata
19. Sar, Pinaki, *Regular* - American society for microbiology
20. Sar, Pinaki, *Regular* - European federation of biotechnology
21. Sen, Ramkrishna, *Founding member* - Global Biorenewables Research Society (www.gbrsociety.org)
22. Sen, Ramkrishna, *Life member* - Indian Institute of Chemical Engineers (IICChE)

Member - Editorial Board

1. Bahadur, Ranjit Prasad (2010) *Editorial board member* - Journal of Computational Biology and Bioinformatics Research
2. Das, Debabrata (2010) *Member of the Editorial board* - International Journal of Hydrogen Energy
3. Das, Debabrata (2010) *Member of the Editorial board* - Indian Journal of Biotechnology
4. Das, Debabrata (2010) *Member of the Editorial board* - Biotechnology for Biofuels
5. Ghosh, Anindya Sundar (2011) *Board Member* - International Journal of BioSciences and Technology IJBST
6. Kundu, Subhas Chandra (2010) *Editorial Board Member* - Biomaterials, Impact factor 6.646
7. Kundu, Subhas Chandra (2011) *Board Member* - World Journal of Stem Cells
8. Kundu, Subhas Chandra (2011) *Editorial Board Member* - Biomaterials and Biodevices
9. Sen, Ramkrishna (2010) *Member* - International Journal of Biosciences and Technology (ISSN: 0974-3987)

Awards & Honours

1. Bahadur, Ranjit Prasad (2010) *INSA young Scientist Award*
2. Ghosh, Anindya Sundar (2009) *IUMS-SGM Fellowship Award from International Union of Microbiological Societies*

3. Das, Debabrata (2010) *Received third prize in the Poster competition of International Conference on Bioenergy from Wastes: Green chemistry intervention held at NEERI, Nagpur, November 2010*

Fellowships

1. Bahadur, Ranjit Prasad (2011) *DAAD research fellowship*
2. Bahadur, Ranjit Prasad (2010) *INSA young Scientist Award*

Sponsored Research Projects

1. 1. Analysis of macromolecular interactions in ribosome: implication to its self assembly
Sponsor:Submitted (DST (submitted), Rs.16.00 Lakhs)
2. 2. Identification and characterisation of *Phaseolus vulgaris* microRNAs differentially expressed in biotic and abiotic stress conditions by deep sequen (DBT (submitted), Rs.60.00 Lakhs)
3. A Dissection of macromolecular interactions in cellular assemblies (ISIRD, Rs.5.00 Lakhs)
4. Assessment of microbial diversity and community structure and their role in arsenic transformation and mobilization in arsenic contaminated groundwater (Department of Biotechnology, Rs.29.15 Lakhs)
5. Baseline survey of microbial community structure present in uranium mine area of UCIL, Jaduguda (Department of Atomic Energy, Rs.53.90 Lakhs)
6. BioCO₂: An integrated multidisciplinary project using solar energy for production of renewable hydrogen combined with CO₂ capture, to address global w (Norwegian Foreign Ministry, Rs.302.00 Lakhs)
7. Biofuel production in a biorefinery concept (PBC) (P K Sinha Center for Bioenergy - IIT Kharagpur, Rs.3.00 Lakhs)
8. Biofuels from marine microalgae (BMM) (CSIR (under NMITLI program), Rs.59.30 Lakhs)
9. Bioinformatics SUB-DIC (DBT, New Delhi, Rs.12.50 Lakhs)
10. Bioprocess development and bioreactor strategies for the probiotic endospores for the lab scale manufacture of nutraceuticals (CSIR, Rs.16.00 Lakhs)
11. Bioprocess development and optimization for the enhanced production of biosurfactants of marine origin for healthcare and commercial applications (DBT, Rs.36.16 Lakhs)
12. Bioprospecting of antarctic flora: screening of novel genes and healthcare molecules (Ministry of Erath Sciences, Rs.105.96 Lakhs)
13. Bioprospecting of genes and allele mining for abiotic stress tolerance (NAIP-ICAR/ Govt. of India, Rs.116.32 Lakhs)
14. Biosynthetic silk hydrogel extracellular matrix analogues for mammalian cell support and drug delivery (DBT, New Delhi, Rs.45.42 Lakhs)
15. Biotechnology based value addition of neem and jatropha leaves, oilcakes and oil (NOVOD, Rs.11.00 Lakhs)
16. 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)
17. Characterization of silk protein sericin from Indian tropical tasar silkworms (DST, New Delhi, Rs.23.18 Lakhs)
18. Continuous hydrogen production in a photo bioreactor using spent medium of dark fermentation process (DRDO, Government of India, Rs.21.72 Lakhs)
19. Continuous process for enzymatic biofuel production - Grant for exchange visit and project formulation (DST (India)-CNPq (Brazil), Rs.1.50 Lakhs)
20. Crystal structure determination of hypothetical secretory proteins from *Mycobacterium tuberculosis* (DBT, GOI, Rs.26.01 Lakhs)
21. Deciphering the structure and function of SuhB analogue protein from *S. aureus* (DST, GOI, Rs.33.98 Lakhs)
22. Design and Development of Microbial Fuel Cells (BRNS, Government of India, Rs.13.17 Lakhs)
23. Development and characterization of ecofriendly jute geo-composites (JMDC, Rs.67.00 Lakhs)
24. Development of novel nano-composite osteogenic matrices for cell based tissue engineering (DRDO, Rs.21.60 Lakhs)
25. Development of silk proteins based biomaterials (DBT, New Delhi, Rs.52.00 Lakhs)
26. Development of water-repellant and durable jute geotextiles (JMDC, Rs.170.00 Lakhs)
27. Droplet-Based screening of amyloidB-peptide aggregation-DBT (DBT, Rs.43.44 Lakhs)
28. Effects of auxiliary membrane components on biofilm formation in *Escherichia coli* (CSIR, Rs.24.76 Lakhs)
29. Enhanced production and purification of a marine lipopeptide.....breast cancer therapy (BCT) (MoES, Rs.100.36 Lakhs)

30. Establishment and Characterization of cell lines from tasar silkworm, *Antheraea. mylitta*. (Department of Biotechnology, Govt. of India, Rs.25.58 Lakhs)
31. Evaluation of major active principles of anti-diabetic homoeopathic medicines from *Cephalandra indica* at ultra-high dilutions in experimental animals (AYUSH, Rs.16.00 Lakhs)
32. Evaluation of Potential applications in Drug Delivery of some novel pH responsive biocompatible and biodegradable hydrophobically modified polymers (DST, Rs.35.00 Lakhs)
33. Exchange Travel visits program on biofuel and healthcare biotech between University of California, Berkeley and IIT Kharagpur (IUSSTF, Rs.29.00 Lakhs)
34. 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)
35. Exploring Immunomodulatory potential of mushroom glucan/proteoglycan as Biological response modifier in cancer therapy (DST, Rs.24.49 Lakhs)
36. Extraction, characterization and optimized production of biopigment from *Amaranthus tricolor* (DBT, Rs.24.41 Lakhs)
37. Functional characterization of soluble penicillin-binding protein 6 of *E. coli* (Department of Science and Technology, Govt. of India, Rs.22.86 Lakhs)
38. Genetic Engineering of Lignin Biosynthetic Pathway in Sorghum (Nagarjuna Fertilizers and Chemicals Limited, India, Rs.37.00 Lakhs)
39. High rate algal biomass production for food, feed, biochemicals and biofuels (DBT, Rs.66.56 Lakhs)
40. Highthroughput Glycomics with Lectin microarray (DBT, Rs.38.46 Lakhs)
41. Identification and characterization of molecular tools in order to generate improved jute cultivars (Council of Scientific and Industrial Research, Rs.16.76 Lakhs)
42. Indian origin silk based biomimetic scaffolds for engineering of load-bearing tissue (Department of Biotechnology, New Delhi, Rs.54.45 Lakhs)
43. Indo-US Joint Center: silk protein matrix for cell based tissue engineering (Indo-US Sci &Tech Forum, New Delhi, Rs.50.33 Lakhs)
44. Maximization of Gaseous Energy Recovery by Simultaneous Biohydrogen Production and Biomethanation (DBT, Government of India, Rs.21.55 Lakhs)
45. Metabolic engineering of fatty acid biosynthesis to develop nutritionally improved Brassica seed oil (DBT/ Govt. of India, Rs.41.93 Lakhs)
46. Metabolic engineering of gibberellins signal transduction pathway for increasing the yield potential of indigenous aromatic rice cultivar (DST/ Govt. of India, Rs.26.35 Lakhs)
47. Microorganism based bioremediation of heavy metals and radionuclides containing wastes: understanding the mechanisms and process development (Council of Scientific and Industrial Research, Rs.13.46 Lakhs)
48. Molecular analysis of genome segment 6 of *Antheraea mylitta* cypovirus (Council of Scientific and Industrial Research, Rs.14.00 Lakhs)
49. Molecular approach for monitoring drug resistant malaria parasite in the malaria endemic zone in West bengal (DST, Rs.6.36 Lakhs)
50. Molecular characterization of DacD (a putative DD-carboxypeptidase) of *Escherichia coli* (DBT, Rs.20.86 Lakhs)
51. Molecular tools for exploitation of heterosis, yield and oil quality in sesame (NAIP-ICAR/ Govt. of India, Rs.395.51 Lakhs)
52. North Eastern origin silk protein based matrices and nano/microparticles for biomedical applications (Department of Biotechnology, New Delhi, Rs.118.35 Lakhs)
53. Novel anticancer peptides from typtic digest abrus agglutinin (CSIR, Rs.19.00 Lakhs)
54. P K Sinha Center for Bioenergy (PKS) (IIT Foundation (Dr. Prabha Kant Sinha), Rs.400.00 Lakhs)
55. Potential use of biosurfactants for medical applications (PBM) (DST (under Indo-Portugal Collaboration Program), Rs.4.14 Lakhs)
56. Production of pure variety disease-free potato seeds through in-vitro culture technique (SRIC, IIT-KGP, Rs.54.20 Lakhs)
57. Prospecting novel molecules in sandalwood (DBT, Rs.67.00 Lakhs)
58. Reducing accumulation of toxic metals or metalloids in rice grains by RNAi-mediated gene silencing approach (DBT/Govt. of India, Rs.29.81 Lakhs)
59. 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)
60. Search for local isolates of oleaginous micro-organism as potential source of biodiesel production (ISIRD, SRIC, IIT-KGP, Rs.4.96 Lakhs)
61. Selection aided molecular marker system for improvement of tasar silkworm *Antheraea mylitta* drury (Central Silk Board, Rs.12.00 Lakhs)
62. Silk Protein/Blend Matrices in Tissue Engineering & Biotechnological Applications (Department of Science & Technology, Rs.41.43 Lakhs)
63. Skincare gel development (DSIR-TePP, Rs.5.00 Lakhs)

64. Study of extracellular fibrillar biopolymers, natural silk fibers, silk protein scaffolds and proteoglycan fibril of both mucus and extracellular matr (DST, New Delhi, Rs.15.25 Lakhs)
65. Synthesis of functional groups for immobilization of functional proteins on MEMS based micro-sensor surface (DST, Rs.1.56 Lakhs)
66. Targeted gene integration in rice and cotton (NAIP-ICAR/ Govt. of India, Rs.83.27 Lakhs)
67. Technology Mission Mode Project on "Hydrogen Production through Biological Routes" (MNRE, Govt. of India, Rs.287.00 Lakhs)
68. Transport Phenomena across cell membranes with Microfluidic Lab-on-Chip Systems (UKIERI, Rs.50000.00 Lakhs)

Consultancy Projects

1. Biocatalyst based continuous production of biodiesel (PfP Technology LLC., Houston, Texas, USA, Rs.10.88 Lakhs)
2. Establishment of Biotechnology Park Kharagpur: Concept paper (WBIDC, Rs.27.00 Lakhs)
3. Validation trial for bioethanol production (VTBP) (DSS Corp., Kolkata, Rs.0.25 Lakhs)

Patents (filed / granted)

1. A biofuel additive for diesel engines
2. An antihyperglycemic EPS from a spore-forming probiotic bacterium, *B. coagulans* RK02, and its preparation method thereof
3. bio-prospecting genes & molecules
4. Biomass rich in santalol
5. Conjugation of folic acid on magnetic nanoparticles decorated with carboxymethylated chitosan for targeted delivery of anticancer drug (Filed, Ref:)
6. Design of magnetic Nickel Nanoparticles for purification of His-tagged proteins
7. Design of superparamagnetic Nickel Nanoparticles for purification of His-tagged proteins
8. Dual Growth Factor Loaded Wound pH Responsive Artificial Skin Graft
9. Durability enhancement of lignocellulosic fibers by vegetable oil treatment
10. Microbial transformation of lignocellulosic fibers using eco-friendly reagents for strength and durability enhancement
11. Natural resins and the use thereof for the production of jute fiber reinforced composites
12. Polyclonal antibody against santalol
13. Probiotic spore based novel drug delivery system
14. Single step surface modification of highly stable magnetic nanoparticles for purification of His-Tagged protein

Visits Abroad by Faculty Members

1. Ghosh, Anindya Sundar - As an awardee of IUMS-SGM Fellowship-2009 (Indiana University, Bloomington, USA,) 45 days -May 16th to June 30th 2010
2. Das, Debabrata - Invited lecture and Chairman of a Technical session of 2010 Asian BioHydrogen Conference (Feng Chia University, Taichung, Taiwan,) November 14-21, 2010
3. Kundu, Subhas Chandra - New INDIGO (Europe India) project discussion and Lecture (Vienna Ludwig Boltzmann Institut,) May 09-11, 2010
4. Sen, Ramkrishna - To present two technical papers in the World Congress on Oils and Fats and 28th ISF congress (Sydney, Australia,) September 27 - 30
5. Sen, Ramkrishna - To attend the second meeting of the founding members of Global Biorenewables Research Society (Sao Paulo, Brazil,) Last week of the month of August
6. Sen, Ramkrishna - To visit the lab of my collaborator to formulate a proposal under the DST-CNPq Indo-Brazil program (Rio de Janeiro, Brazil,) June 29 to July 15
7. Sen, Ramkrishna - To attend the launching meeting and workshop of the Global Biorenewables Research Society (Lisbon, Portugal,) May
8. Sen, Ramkrishna - To study the making, functioning and funding of the BioEnergy Centers (USA (Chicago, Purdue, UC Davis and UC Berkeley),) Feb., 21 - March 02
9. Sen, Ramkrishna - To present a technical paper and chair a session in WORLDCOMP-2008 (Las Vegas, Nevada, USA,) July 14 - 17
10. Das, Amit Kumar - Exchange program (EMBL, Hamburg, Germany,) 14.05.2009-04.06.2009

11. Kundu, Subhas Chandra - Project work on Cartilage Tissue Engineering (University of California, San Diego,) May 16 to June 13, 2010
12. Kundu, Subhas Chandra - Research work on silk protein sericin (Virginia Commonwealth University, USA,) June 25-27, 2011
13. Kundu, Subhas Chandra - Research work on molecular biology of silk (Department of Biomedical Engineering, Tufts University, Boston, USA,) June 14 to June 24, 2010
14. Kundu, Subhas Chandra - Discussion Meeting (Department of Biomedical Engineering, Oregon Health University,,) June 25- July 12, 2010
15. Kundu, Subhas Chandra - To present invited lecture (Seoul,, South Korea,) August 31, 2010
16. Kundu, Subhas Chandra - Monitoring M.Tech project student (RWTH, Aachen, Germany,) May 09-12, 2010
17. Kundu, Subhas Chandra - To organize Symposium TERMIS AP, chairperson and keynote presentation (Sydney, Australia,) September 15-17, 2010
18. Kundu, Subhas Chandra - For collaborative research work on small angle XRD of silk fibers (Russian Academy of Sciences, Pushchina, Moscow Region,) December 16-26, 2010
19. Das, Debabrata - Ongoing collaborative project research work (Uppsala University,) June 26 - July 4, 2010
20. Sen, Ramkrishna - To give an invited talk in an international conference (ICER-10) (University of Mauritius, Mauritius,) September 16 - 18, 2010
21. Ghosh, Sudip Kumar - Attending Conference (Woodshole marine biology laboratory, MA, USA,) 6 days
22. Maiti, Tapas Kumar - Discussion on collaborative UKERI project (Southampton University,) 4.6.2010 to 10.6.2010
23. Das, Debabrata - Invited talk and possibility of collaborative research work (Florence University, Italy,) July 4-6, 2010
24. Das, Debabrata - Invited talks and possibilities of collaborative research work (Pusan University and Korean Institute of Energy Research, South Korea,) July 11-18, 2010
25. Kundu, Subhas Chandra - New INDIGO (Europe India) project discussion and Lecture (University Hospital, Erlangen, Germany,) May 11-12, 2010

Invited Lectures by Faculty Members

1. Biological Sequence Analysis *by* Ghosh, Anindya Sundar (Vidyasagar University)
2. BIOREMEDIATION: CLEANING UP WITH MICROORGANISMS *by* Sar, Pinaki (Department of Civil Engineering, IIT Kharagpur)
3. MOLECULAR TOOLS FOR ANALYSING THE DIVERSITY, STRUCTURE AND DYNAMICS OF MICROBIAL COMMUNITIES *by* Sar, Pinaki (Vidya Sagar University, Department of Microbiology)
4. Molecular phylogeney *by* Sar, Pinaki (Department of Biotechnology, IIT Kharagpur)
5. Advanced biohydrogen technology *by* Das, Debabrata (Feng Chia University, Taichung, Taiwan)
6. Advances of Biological Hydrogen production Processes: Present state of art *by* Das, Debabrata (Rajasthan University, Jaipur)
7. Improvement of biohydrogen production process by two stage process *by* Das, Debabrata (Florence University, Italy)
8. Fermentation Technology *by* Das, Debabrata (Vidyasagar University, Medinapur)
9. Biohydrogen production processes: a road map *by* Das, Debabrata (NEERI, Nagpur)
10. Biohydrogen production processes: present state of art *by* Das, Debabrata (NIT, Durgapur)
11. Recent advances on Fermentation technology *by* Das, Debabrata (Jadavpur University, Kolkata)
12. Biohydrogen production processes: present state of art *by* Das, Debabrata (CGCRI, Kolkata)
13. Orthopedic tissue engineering: facts and future *by* Maiti, Tapas Kumar (Bhubaneswar)
14. Structural analysis of proteins: a case study *by* Das, Amit Kumar (Kottayam, Kerala)
15. Deciphering catalytic mechanism and substrate binding from crystal structure of GAPDH *by* Das, Amit Kumar (Aurangabad)
16. Deciphering the mechanism of GAPDH from its crystal structures *by* Das, Amit Kumar (IIT Bombay)
17. Crystal structure of GAPDH *by* Das, Amit Kumar (IISc Bangalore)
18. Molecular phylogeny *by* Sar, Pinaki (Vidya Sagar University, Department of Microbiology)
19. EST Database *by* Ghosh, Sudip Kumar (Department of Biotechnology, IIT KGP)
20. Flow Cytometry and its Application *by* Ghosh, Sudip Kumar (CRF, IIT Kharagpur)
21. Gene Regulation and EST *by* Ghosh, Sudip Kumar (Department of Microbiology, Vidyasagar University)
22. Encystation biology of Entamoeba *by* Ghosh, Sudip Kumar (NIT Rourkella)
23. Silk proteins as biomaterials for tissue engineering and regenerative medicine *by* Kundu, Subhas Chandra (Sree Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum)

24. Silk Proteins: Biodegradable Biomaterials for Tissue Engineering and Delivery of Bioactive Molecules *by* Kundu, Subhas Chandra (4th Indo-Australian Conference on Biomaterials, Tissue Engineering and Drug Delivery Systems.)
25. Silk fibroin PVA Hydrogels for Biomedical Applications *by* Kundu, Subhas Chandra (Tissue Engineering & Regenerative Medicine International Society 2010 Asia Pacific meeting)
26. Natural Biomaterials *by* Kundu, Subhas Chandra (Moscow State University, Biology Department)
27. Silk as natural biomaterials for health care technology *by* Kundu, Subhas Chandra (Biomedical Engineering, Oregon Health and Science University, Portland, USA)
28. Silk matrices for cell based tissue engineering *by* Kundu, Subhas Chandra (University of Hospital of Erlangen Krankenhaus, Erlangen, Germany)
29. Natural Biomaterials for tissue engineering and drug delivery *by* Kundu, Subhas Chandra (International Symposium on development of food and medicinal materials using Agro-materials, Seoul, Korea)
30. Sequence alignment *by* Das, Amit Kumar (Vidyasagar University)
31. MALDI-ToF: Instrumentation and application *by* Das, Amit Kumar (Microbiology Department, Vidyasagar University)
32. Protein Crystallography: Methods and interpretation *by* Das, Amit Kumar (Biotechnology Department, Vidyasagar University)
33. MALDI-ToF: Instrumentation and application *by* Das, Amit Kumar (CRF, IIT Kharagpur)
34. Protein Crystallography: Methods and interpretation *by* Das, Amit Kumar (CRF, IIT Kharagpur)
35. Structural perspective of macromolecular interactions. *by* Bahadur, Ranjit Prasad (Visva Bharati University)
36. What makes the specificity of protein-protein interaction? *by* Bahadur, Ranjit Prasad (National Academy of Sciences, Allahabad)
37. Understanding the specificity of protein-protein interaction: The atomic Structure of protein-protein *by* Bahadur, Ranjit Prasad (INSA, New Delhi)
38. Waste vegetable oils as renewable feedstock for biodiesel production. *by* Sen, Ramkrishna (NEERI (CSIR), Nagpur)
39. Microbial lipopeptides - the versatile biomolecules *by* Sen, Ramkrishna (Jadavpur University, Kolkata)
40. Commercial application potentials of a biopolymer *by* Sen, Ramkrishna (Kottayam, Kerala)
41. Microbial Enhanced Oil Recovery *by* Sen, Ramkrishna (IIT Kharagpur)

Books Published

1. Ramkrishna Sen (Editor): Biosurfactants *published by* Springer, USA (2010)

Seminars, Conferences and Workshops Organised

1. Bioinformatics in genomics and proteomics

Papers Published in Journals

1. A (1 \rightarrow 6)- β -glucan from a somatic hybrid of *Pleurotus florida* and *Volvariella volvacea*: isolation, characterization, and study of immunoenhancing properties *By* Debsankar Das, Subhas Mondal, Sadhan K. Roy, Debabrata Maiti, Bibhas Bhunia, Tapas K. Maiti, Samir R. Sikdar, Syed S. Islam *Carbohydrate Research* 345(7): 974-978 (2010)
2. A heteropolysaccharide from aqueous extract of an edible mushroom, *Pleurotus ostreatus* cultivar: structural and biological studies *By* Kankan K. Maity, Sukesh Patra, Biswajit Dey, Sanjoy K. Bhunia, Soumitra Mandal, Debsankar Das, Dibyendu K. Majumdar, Swatilekha Maiti, Tapas K. Maiti and Syed S. Islam *Carbohydrate Research* 346 (2) 1: 366-372 (2011)
3. A Novel Graphene Oxide-Para Amino Benzoic Acid Nanosheet as Effective Drug Delivery System to Treat Drug Resistant Bacteria *By* Ghosh D, Chandra S, Chakraborty A, Ghosh SK, and Pramanik P *International Journal of Pharmaceutical Sciences and Drug Research* 2:127-133 (2010)
4. Activation of RAW 264.7 cells by *Astragalus hygrometricus* derived Heteroglucan through MAP kinase pathway *By* S K. Mallick, S.Maiti, S. K. Bhutia, T. K. Maiti *Cell Biology International* doi:10.1042/CBI20100 (2010)
5. Alkaline peroxide assisted wet air oxidation pretreatment approach to enhance enzymatic convertibility of rice husk. *By* Banerjee, S. Sen, R. Mudliar, S. et al. *Biotechnology Progress* In press (2011)
6. Amelioration Studies on Optimization of Low Molecular Weight Chitosan Nanoparticle Preparation, characterization With Potassium Per Sulphate and Silver Nitrate Combined Action With Aid of Drug Delivery

- to Tetracycline Resistant Bacteria By Ghosh D, Pramanik A, Sikdar N, Ghosh SK, and Pramanik P *International Journal of Pharmaceutical Sciences and Drug Research* 2(4): 247-253 (2010)
7. An oligopeptide transporter of Mycobacterium tuberculosis regulates cytokine release and apoptosis of infected macrophages. By A. Dasgupta, K. Sureka, D. Mitra, B. Saha, S. Sanyal, A. K. Das, P. Chakrabarti, M. Jackson, B. Gicquel, M. Kundu, J. Basu. *PLoS One*. 5, e12225 (2010)
 8. Antitumor properties of a Heteroglucan isolated from *Astraeus hygrometricus* on Daltons Lymphoma bearing mouse By S.K. Mallick, S.Maiti, S. K. Bhutia, & T. K. Maiti *Food and Chemical Toxicology* 48(8-9):2115-21 (2010)
 9. Association of SNP in a novel DREB2-like gene SiDREB2 with stress tolerance in foxtail millet (*Setaria italica* L.). By Lata C, Bhutty S, Bahadur RP, Majee M & Prasad M. *J. Exp. Botany* PMID: 21414959 (0)
 10. Biocatalytic production of biodiesel from cottonseed oil: Standardization of process parameters and comparison of fuel characteristics. By Chattopadhyaya S, Karemore A, Das S, Deysarkar A, Sen R. *Applied Energy* 88: 1251-1256 (2011)
 11. Biohydrogen Production Technology: the present scenario By Debabrata Das *Akshay Urja* 3: 18-21 (2010)
 12. Biosurfactant production and growth kinetics of bacteria in a designer marine medium: Improved physicochemical properties. By Sivapathasekaran C, Mukherjee S & Sen R. *Biotechnology Journal*. 5:1060-1068. (2010)
 13. Caprine (Goat) collagen: A potential biomaterial for skin tissue engineering By I. Banerjee, D Mishra, T.K.Maiti. *Journal of Biomaterials Science: Polymer Edition* Accepted (2010)
 14. Characterization and emulsifying property of a carbohydrate polymer produced by *Bacillus pumilus* UW-02 isolated from waste water irrigated agricultural soil. By Roy Chowdhury, S., Basak, R., Sen, R. et al. *Int. J. Biol. Macromol.* In press (2011)
 15. Chemical analysis of an immunoenhancing water-soluble polysaccharide of an edible mushroom, *Pleurotus florida* blue variant. By Biswajit Dey, Sanjoy K. Bhunia, Kankan K. Maity, Sukesh Patra, Soumitra Mandal, Swatilekha Maiti, Tapas K. Maiti, Samir R. Sikdar, Syed S. Islam *Carbohydrate Research* 345(18) 2736-2741. (2010)
 16. Cloning and characterization of cDNAs encoding for long-chain saturated acyl-ACP thioesterases from the developing seeds of *Brassica juncea* By Saheli Sinha-Jha, Jyoti K. Jha, Banani Chattopadhyaya, Asitava Basu, Soumitra K. Sen and Mrinal K. Maiti, *Plant Physiology and Biochemistry* 48:476-480 (2010)
 17. Cloning, overexpression, purification, crystallization and preliminary X-ray diffraction analysis of an inositol monophosphatase family protein (SAS2203) from *Staphylococcus aureus* MSSA476. By S. Bhattacharyya, D. Dutta, A K Ghosh, A. K. Das. *Acta Cryst F* in press (2011)
 18. Comparative analyses of different surfactants on matrix assisted laser desorption/ionization mass spectrometry peptide analysis By Mandal SM, Dey S, Mandal M, Mario-Neto S, Franco OL *European Journal of Mass spectrometry* 16, 1-8 (2010)
 19. Comparative lipid profiling of two endophytic fungal isolates Colletotrichum sp. and Alternaria sp. having potential utilities as biodiesel feedstock By Prabuddha Dey, Joydeep Banerjee and Mrinal K. Maiti *Bioresource Technology* In Press (2011)
 20. Crystal structure of FabG4 from *Mycobacterium tuberculosis* reveals the importance of C-terminal residues in ketoreductase activity. By D. Dutta, S. Bhattacharyya, S. Mukherjee, B. Saha, A. K. Das *J Struct Biol*. 174, 147-155 (2011)
 21. Crystal structure of glyceraldehyde-3-phosphate dehydrogenase 1 from methicillin-resistant *Staphylococcus aureus* MRSA252 provides novel insights into substrate binding and catalytic mechanism. By S. Mukherjee, D. Dutta, B. Saha, A. K. Das. *J Mol Biol*. 401, 949-968 (2010)
 22. Culture -dependent and -independent molecular analysis of bacterial community within uranium ore By Ekramul Islam and Pinaki Sar *Journal of Basic Microbiology* 51 (in press) (2011)
 23. Design, synthesis and inhibition activity of novel cyclic peptides against protein tyrosine phosphatase A from *Mycobacterium tuberculosis*. By K. Chandra, D. Dutta, A. K. Das, A. Basak. *Bioorg Med Chem*. 18, 8365-8373 (2010)
 24. Design, synthesis and reactivity of C2-symmetric azobenzene-based amino acid-bis(propargyl sulfones). By D. Mitra, D. R. Banerjee, A. K. Das, A. Basak. *Bioorg Med Chem Lett*. 20, 6831-6835 (2010)
 25. Development of a transgenic hairy root system in jute (*Corchorus capsularis* L.) with gusA reporter gene through *Agrobacterium rhizogenes* mediated co-transformation By Tirthartha Chattopadhyay, Sheuli Roy, Adinpunya Mitra and Mrinal K. Maiti *Plant Cell Reports* 30:485-493 (2011)
 26. Development of suitable photobioreactors for CO₂ sequestration addressing global warming using green algae and cyanobacteria By Kumar K, Nag Dasgupta C, Nayak B, Lindblad P, and Das D. *Bioresource Technology* 102 (2011)
 27. DGGE based microbial community analysis of subsurface undisturbed sediments from arsenic-affected Gotra area, West Bengal By Dhiraj Paul, Sufia K Zazy, Pinaki Sar and Tarak Nath Pal *Indian Journal of Geosciences* 64: 173-178 (2010)

28. Differences in active-site microarchitecture explain the dissimilar behaviors of PBP5 and 6 in *Escherichia coli* By Chiranjit Chowdhury and Anindya S. Ghosh *JOURNAL OF MOLECULAR GRAPHICS AND MODELLING* 29 650â€“656 (2011)
29. Electrospinning: A fascinating fiber fabrication technique By Bhardwaj N and Kundu SC *Biotechnology Advances* 28:321-347 (2010)
30. Engineered silk fibroin protein 3-D matrices for in vitro tumor model. By 2. Talukdar S., Mandal M., Hutmacher D. W., Russell P., Soekmadji C., Kundu SC. *Biomaterials* 32, 2149-2159 (2011)
31. Expression, purification, crystallization and preliminary X-ray diffraction studies of phosphoglycerate kinase from methicillin resistant *Staphylococcus aureus* MRSA252. By A. Roychowdhury, S. Mukherjee, A. K. Das. *Acta Cryst F* in press (2011)
32. First Synthesis and Antiprotozoal Activities of Divinyl Sulfone-modified Carbohydrates By Pal T, Dey T, Chakraborty A, Dey D, Ghosh SK, Pathak T *Bioorganic & Medicinal Chemistry Letters* 20, 3777-3780 (2010)
33. Folate receptor targeted, carboxymethyl chitosan functionalized iron oxide nanoparticles: a novel ultradispersed nanoconjugates for bimodal imaging By Dipsikha Bhattacharya, Manasmita Das, Debashis Mishra, Indranil Banerjee, Sumanta K. Sahu, Tapas K. Maiti and Panchanan Pramanik *Nanoscale* DOI: 10.1039/C0NR008 (2011)
34. Folate-Decorated Succinylchitosan Nanoparticles Conjugated with Doxorubicin for Targeted Drug Delivery By Sahu SK, Maiti S, MaitiTK, Ghosh SK and Pramanik P *Macromol Biosci.* 11(2):285-95 (2011)
35. Hydrogen Production Using *Rhodobacter sphaeroides* (O.U. 001) In A Flat Panel Rocking Photobioreactor By Gilbert JJ, Ray S, and Das D. *International Journal of Hydrogen Energy* 36 (2011)
36. Hydrophobically Modified Carboxymethyl Chitosan Nanoparticles Targeted Delivery of Paclitaxel By Sahu SK, Maiti S, MaitiTK, Ghosh SK and Pramanik P *J Drug Targeting* 19: 104-13 (2011)
37. Identification and characterization of uranium accumulation potential of a uranium mine isolated *Pseudomonas* strain By Sangeeta Choudhary and Pinaki Sar *World Journal of Microbiology and Biotechnology* In press (2011)
38. Immunostimulatory properties of a polysaccharide isolated from *Astraeus hygrometricus* By S K. Mallick, S.Maiti ,S. K. Bhutia, & T. K. Maiti *Journal of Medicinal Food* 13(3):665-72 (2010)
39. Implications of surface nanoroughness and RGD sequences on cytoskeleton organization, growth, function of primary rat bone marrow cells By 7. Mandal BB, Das, S, Choudhury, K, Kundu SC *Tissue Engineering Part A* 16 (7):2391-403 (2010)
40. Improvement of biohydrogen production by *Enterobacter cloacae* IIT-BT 08 under regulated pH By Khanna N, Kotay SM, Gilbert JJ, and Das D. *Journal of Biotechnology* 152 (2011)
41. Investigation of the Catalytic Efficiency of a New Mesoporous Catalyst SnO₂/WO₃ towards Oleic Acid Esterification By Sarkar, A., Ghosh, S. K., Pramanik, P *Journal of Molecular Catalysis A: Chemical* 327, 73-79 (2010)
42. Marine bacterium derived lipopeptides: Characterization & cytotoxic activity against cancer cell lines. By Sivapathasekaran C, Das, P., Mukherjee S., Saravanakumar J., Mondal, M. & Sen R. *Journal of Peptide Research and Therapeutics* 16: 215â€“222. (2010)
43. Matrix Assisted Laser Desorption Ionization-Time of Flight mass spectral analysis of extracellular lipopeptides from a marine bacterium. By Sivapathasekaran R, Mukherjee S. and Sen R. *Journal of Peptide Research and Therapeutics* 16: 79â€“85. (2010)
44. Microbial fuel cell: a promising green energy production technology from wastewater By Debabrata Das *Akshay Urja* 3:35-37 (2010)
45. Molecular analysis of bacterial communities in uranium ores and surrounding soils from Banduhurang open cast uranium mine, India: a comparative study By Ekramul Islam, Paltu K Dhal, Sufia K Kazy, and Pinaki Sar *Journal of Environmental Science and Health, Part A* 46: 271-280 (2011)
46. Molecular characterization and in vitro analyses of a sporogenous bacterium with potential probiotic properties. By Sen R Pal D Kodali VP Das S and Ghosh, SK *Probiotics & Antimicrobial Proteins* 2:152â€“161. (2010)
47. Molecular characterization of genome segment 2 encoding RNA dependent RNA polymerase of *Antheraea mylitta* cytoplasmic polyhedrosis virus. By Ghorai, S., Chakrabarti, M., Roy, S., Chavali V. R. M., Bagchi, A., and Ghosh A. K. *Virology* 404, 21-31 (2010)
48. Molecular characterization of genome segments 1 and 3 encoding two capsid proteins of *Antheraea mylitta* cytoplasmic polyhedrosis virus. By Chakrabarti, M., Ghorai, S., Mani, S.K.K. and Ghosh A.K. *Virology Journal* 7, 181-192 (2010)
49. Molecular cloning and characterization of a novel membrane associated NAC family gene, SiNAC from foxtail millet [*Setaria italica* (L.) P. Beauv.] By Puranik S, Bahadur RP, Srivastava PS & Prasad M. *Molecular Biotechnology* PMID: 21312005 (0)
50. Multi-objective process optimization and integration for the sequential and increased production of biomass, lipase and endospores of a probiotic bacterium. By Das, S., Kharkwal, S., Pandey, SK and Sen, R. *Biochemical Engg. Journal* 50: 77â€“81. (2010)

51. Nanodomain stabilization dynamics in plasma membranes of biological cells By Tamal Das, Tapas K. Maiti, and Suman Chakraborty *Physical Review E* 83, 021909 (2011)
52. Non-mulberry silk sericin/poly (vinyl alcohol) hydrogel matrices for potential biotechnological applications. By Mandal B B, Ghosh B, Kundu SC. *International Journal of Biological Molecules* Accepted (2011)
53. Optimization of a marine medium for augmented biosurfactant production. By Sivapathasekaran R, Mukherjee S. and Sen R. *Int. J. Chemical Reactor Engg.* 8 (Art A92):1-10. (2010)
54. Osteogenesis of human stem cells in silk biomaterial for regenerative therapy. By Kundu B. and Kundu SC *Progress in Polymer Science* 35:116-27. (2010)
55. Performance of electron acceptor in catholyte of a two-chambered microbial fuel cell using anion exchange membrane By Pandit S, Sengupta A, Kale S, Das D. *Bioresource Technology* 102 (2011)
56. Phenylpropanoid profiling in the elicited sandalwood culture By P POTHALA, D DUTTA MAJUMDAR AND S DEY *Journal of Medicinal and Aromatic Plant Sciences* 32 (4) 432-436 (2010)
57. Production of extracellular polysaccharide by *B. megaterium* RB-05 using jute as substrate. By Roy Chowdhury, S. Basak, R. Sen, R. et al. *Bioresource Technology* In press (2011)
58. Purification and structural characterization of a novel antibacterial peptide from *Bellamyia bengalensis*: Activity against ampicillin and chloramphenicol resistant *Staphylococcus epidermidis*. By 1. Samiran S. Gauri, Santi M. Mandal, Bikas R. Pati and Satyahari Dey . *Peptides* 32, 691-69. (2011)
59. Purification, crystallization and preliminary X-ray analysis of apo glyceraldehyde-3-phosphate dehydrogenase 1 (GAP1) from methicillin-resistant *Staphylococcus aureus* (MRSA252). By S. Mukherjee, B. Saha, D. Dutta, A. K. Das. *Acta Cryst F* 66, 506-508 (2010)
60. Recent trends on the development of photobiological processes and photobioreactors for the improvement of hydrogen production By Dasgupta CN, Gilbert JJ, Lindblad P, Heidorn T, Borgvang SA, Skjanes K and Das D, *International Journal of Hydrogen Energy* 35 (2011)
61. Scaffold fabrication techniques for potential tissue engineering applications. By Subia B, Kundu J, and Kundu SC *Tissue Engineering eds.* 978-953-307-079-7 (2010)
62. Shoot induction and regeneration using internodal transverse thin cell layer culture in *Sesamum indicum* L. By Banani Chattopadhyaya, Joydeep Banerjee, Asitava Basu, Soumitra K. Sen and Mrinal K. Maiti *Plant Biotechnology Reports* 4:173-178 (2010)
63. Silk fibroin protein and chitosan polyelectrolyte complex porous scaffolds for tissue engineering applications By Bhardwaj N and Kundu SC. *Carbohydrate Polymers* doi: 10.1016/j.carbp (2011)
64. Silk fibroin/sodium carboxymethylcellulose blended films for biotechnological applications. By Kundu, J, R. Mahapatra and Kundu SC *Journal of Biomaterials Science: Polymer Edition* 22, 519-539 22, 519-539 (2011)
65. Single-step concomitant concentration, purification and characterization of two families of lipopeptides of marine origin. By Sivapathasekaran R, Bhattacharya, B and Sen R. *Bioprocess & Biosystems Engg.* 34:339-346. (2011)
66. Structural characterization of an immunoenhancing heteroglycan isolated from an aqueous extract of an edible mushroom, *Lentinus squarrosulus* (Mont.) Singer By Sanjoy Kumar Bhunia, Biswajit Deya, Kankan K. Maitya, Sukesh Patra, Soumitra Mandala, Swatilekha Maitib, Tapas K. Maitib, Samir R. Sikdarc and Syed S. Islam *Carbohydrate Research* 345(17):2542-2549 (2010)
67. Structural characterization of an immunoenhancing heteropolysaccharide isolated from hot water extract of the fresh leaves of *Catharanthus rosea* By Sukesh Patra, Kankan K. Maity, Sanjoy K. Bhunia, Biswajit Dey, Debsankar Das, Soumitra Mondal, Bibhas Bhunia, Tapas K. Maiti, Syed. S. Islam *Carbohydrate Research* 81(3):584-591 (2010)
68. The anti-retroviral lectin cyanovirin-N targets well-known and novel targets on the surface of *Entamoeba histolytica* trophozoites By Carpentieri A, Ratnar D, Ghosh SK, Banerjee S, Buskin G, Cui J, et al *Eukaryotic Cell* 9 (11):1661-8 (2010)
69. The fractal self-assembly of the silk protein sericin. By Khire T, Kundu J, Kundu SC, and Yadavalli V. *Soft Matter* 6:2066-2071. 6:2066-2071. (2010)
70. The Jacob2 lectin of the *Entamoeba histolytica* cyst wall binds chitin and is polymorphic By Ghosh SK, Vanden K, Chatterjee A, Dey T, Haque R, Robbins PW, Samuelson J *PLoS Neg. Diseases*, 4, e750. doi:10.1371 (2010)
71. The potential of celecoxib-loaded hydroxyapatite-chitosan nanocomposite for the treatment of colon cancer By 3. P. Venkatesan, N. Puvvada, R. Dash, B. N. P. Kumar, D. Sarkar, B. Azab, A Pathak, S. C. Kundu, P B Fisher, M Mandal *Biomaterials* 32, 3794-380659 (2011)
72. Transgenically expressed rice germin-like protein1 in tobacco causes hyper-accumulation of H₂O₂ and reinforcement of the cell wall components By Joydeep Banerjee, Natasha Das, Prabuddha Dey and Mrinal K. Maiti *Biochemical and Biophysical Research Communications* 402:637-643 (2010)
73. Tumor escape mechanisms and its therapeutic implication in combination tumor therapy By S. K. Bhutia, S. K. Mallick, T. K Maiti *Cell Biology International* 34(5):553-563 (2010)

74. Uranium biomineralization by a metal resistant *Pseudomonas aeruginosa* strain isolated from contaminated mine waste By Sangeeta Choudhary and Pinaki Sar *Journal of Hazardous Materials* 186: 336-343 (2011)
75. Wound pH responsive sustained release of therapeutics from poly(NIPAAm-co-AAc) hydrogel By I. Banerjee, D Mishra, T.K.Maiti *Journal of Biomaterials Science: Polymer Edition* Accepted (2010)

Papers Presented in Conferences

1. Advanced Bio-hydrogen Technology, By Debabrata Das, *The 2010 Asian Bio-Hydrogen Symposium and APEC Advanced Bio-Hydrogen Technology Conference*, Feng Chia University, Taichung, Taiwan, (2010)
2. Advances of Biological Hydrogen production Processes: Present state of art, By Debabrata Das, *International Conference on Renewable Energy, ICRE-2011*, Jaipur, (2011)
3. Amelioration of biohydrogen production by homologous over expression of FeFe hydrogenase in *Enterobacter cloacae* IIT-BT 08, By Namita Khanna, Chitralekha Nag Dasgupta and Debabrata Das, *Hydrogenase 2010*, Uppsala University, (2010)
4. Biohydrogen production processes: a road map, By Debabrata Das, *International Conference on Bioenergy from Wastes: Green chemistry interventions*, NEERI, Nagpur, (2010)
5. Biohydrogen production processes: present state of art, By Debabrata Das, *International Symposium on Energy Materials: Opportunities and Challenges*, CGCRI, Kolkata, (2011)
6. Biohydrogen production processes: present state of art, By Debabrata Das, *National conference on Biotechnology and the Environment (NCBE 2010)*, NIT Durgapur, (2010)
7. Biomaterial database, By Subia B, Mukherjee S, Kundu SC, *First close user group meeting of East-India*, University of North Bengal, Siliguri, (2010)
8. Bioremediation of hazardous PAH and concomitant production of bioemulsifier., By Sen, Ramkrishna, *International Conference of Environmental Research (ICER - 2010)*, Mauritius, (2010)
9. Commercial application potentials of a biopolymer from a probiotic bacterium, By Sen, Ramkrishna, *International Congress on Natural Polymers (ICNP 2010)*, Kottayam, Kerala, (2010)
10. Crystal structure determination of Phosphoglycerate Kinase from Methicillin resistant *S.aureus* (MRSA252), By A. Roychowdhury, S. Mukherjee, A. K. Das., *MTMS-2011(Indo-US Symposium/Workshop)*, Indian Institute of Technology Bombay, (2011)
11. Deciphering catalytic mechanism and substrate binding from crystal structure of GAPDH, By Amit Kumar Das, *Guha Research Conference 2010*, Aurangabad, (2010)
12. Deciphering the mechanism of GAPDH from its crystal structures, By Amit Kumar Das, *MTMS-2011(Indo-US Symposium/Workshop)*, Indian Institute of Technology Bombay, (2011)
13. Encystation Biology of Entamoeba, By Sudip K. Ghosh, *International Conference on Frontiers in Biological Science*, NIT, Rourkella, (2010)
14. Exploring molecular diversity and bioremediation potentials of indigenous microorganisms in petroleum hydrocarbon contaminated sludge, By Ranjit Das, Pinaki Sar and Sufia K Kazy, *51st Annual Conference of Association of Microbiologists of India (AMI 2010)*, BIT Meshra, Ranchi, (2010)
15. Expression and characterization of Chitinase in Encysting Entamoeba histolytica, By Sudip K. Ghosh and Tuli Dey, *Molecular Parasitology Meeting*, Woodshole, Massachusetts, USA, (2010)
16. Feasibility studies on the fermentative hydrogen production from cheese whey by recombinant *Enterobacter cloacae* IIT- BT 08, By Namita Khanna, Chitralekha Nag Dasgupta and Debabrata Das, *International Conference on Bioenergy from wastes: Green chemistry intervention*, NEERI, Nagpur, (2010)
17. Improvement of power generation of two chambered microbial fuel cell using anion exchange membrane, By Soumya Pandit and Debabrata Das, *International Conference on Renewable Energy 2011*, Rajasthan University, Jaipur, (2011)
18. Isolation and characterization of mercury resistant bacteria with high uranium uptake capability from Jaduguda underground uranium mine, India, By Ekramul Islam and Pinaki Sar., *International Conference on Frontiers in Biological Sciences InCoFIBS*, National Institute of Technology, Rourke, (2010)
19. Metagenomic analysis of structure and diversity of microbial communities in arsenic contaminated ground water samples, By Dhiraj Paul, Ekramul Islam, Sufia K Kazy and Pinaki Sar, *Microbes in waste water and waste water treatment, bioremediation and energy production*, BITS Pilani, Goa, (2011)
20. Microbial carbon capture cell using cyanobacteria for simultaneous power generation, carbon dioxide sequestration and wastewater treatment, By Soumya Pandit, Bikram Nayak and Debabrata Das, *International Conference on Bioenergy from wastes: Green chemistry intervention*, NEERI, Nagpur, (2010)
21. Microbial diversity and community structure within Jaduguda uranium mines: Culture independent molecular approach, By Paltu Kumar Dhal, Sufia K Kazy and Pinaki Sar, *51st Annual Conference of Association of Microbiologists of India (AMI 2010)*, BIT Meshra, Ranchi, (2010)

22. Molecular identification and characterization of a naphthalene degrading bacterium isolated from oil sludge, By Akashdeep Singh Oberoi, Ranjit Das, Pinaki Sar and Sufia K Kazy, *51st Annual Conference of Association of Microbiologists of India (AMI 2010)*, BIT Meshra, Ranchi, (2010)
23. PBP1b deletion inhibits biofilm formation in Escherichia coli, By Akash Kumar and Anindya Sundar Ghosh, *Biotechnology for Better Tomorrow (BTBT-2011)*, BAMU, Osmanabad, Maharashtra, (2011)
24. Potentiality of hydrogen production by Chlorella sorokiniana, By Kanhaiya Kumar and Debabrata Das, *International Conference on Renewable Energy 2011*, Rajasthan University, Jaipur, (2011)
25. Role of gap-junction in osteoblast compaction and pro-functionality: Potential in cell based bone tissue engineering application, By Mishra D, Banerjee I, Maiti TK, *Stem Cells: Hopes, Fears and reality*, Berlin, (2010)
26. Silk fibroin protein based 3D in vitro tumor model for evaluation of anticancer activity, By Talukdar S, Mandal M, Kundu SC, *ICSCC*, Pune, India, (2010)
27. Silk fibroin-PVA hydrogel for biomedical applications, By Joydip Kundu, Penny J Martens, Laura A Poole-Warren, S. C. Kundu, *TERMIS-AP*, Sydney, (2010)
28. Silk protein: natural biomaterials for tissue engineering and drug delivery, By S. C. Kundu, *International symposium on Development of food and medicinal materials using Agro-materials*, Seoul, Korea, (2010)
29. Silk Proteins as Biomaterial for Tissue Engineering and Regenerative Medicine, By Bhardwaj N, Nayak S, Kundu SC., *New visions for biomaterials and regenerative medicine*, Sree Chitra Medical Institute, Kerala, (2011)
30. Silk proteins: biodegradable biomaterials for tissue engineering and delivery of bioactive molecules, By S. C. Kundu, *Inso-Australia Conf. Biomaterial, Tissue Engineering and drug delivery system*, Sardar Patel University, Gujrat, india, (2011)
31. Structural analysis of proteins: a case study, By Amit Kumar Das, *International Conference on Natural Polymers*, Kottayam, Kerala, (2010)
32. The fractal self-assembly of silk protein sericin for biomaterial development, By Khire T, Kundu J, Kundu SC, Yadavalli VK, *AICHE*, Salt Lake city, UT, USA, (2010)
33. Transgenic hairy roots of jute: Old roots in new routes, By Tirthartha Chattopadhyay, Sheuli Roy, Adinpunya Mitra and Mrinal K. Maiti, *National Symposium on "Recent advances in plant tissue culture and biotechnological researches in India & xxxii annual meet of plant tissue culture association (India)"*, M.N.Inst.of Appl. Sci.,Bikaner,Rajasthan, (2011)
34. Waste vegetable oils as renewable feedstock for biodiesel production., By Sen, Ramkrishna, *International Conference on Bioenergy from wastes*, NEERI (CSIR), Nagpur, (2010)
35. Wound pH responsive sustained release of growth factor from poly(NIPAAm-co-AAc) hydrogel:A novel clue for induced skin regeneration, By I.Banerjee, D. Mishra and T.K.Maiti., *TERMIS-EU*, Ireland, (2010)

Department of Civil Engineering

Head

Prof. Lingadahally Ramachandra

Professors

Baidya, Dilip Kumar	<i>Ph.D.(IISc Bangalore)</i> , Pile foundations Soil Dynamics Reliability in Geotechnical Engg
Bandyopadhyay, Janendra Nath	<i>Ph.D.(IIT Kharagpur)</i> , Structural Engineering
Barai, Sudhir Kumar	<i>Ph.D.(IISc Bangalore)</i> , Soft Computing Applications, Structural Health Monitoring, Recycled Construction Materials, Fracture in Concrete
Bhattacharyya, Sriman Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Structural Health Monitoring, STRUCTURAL ENGINEERING, Fluid-structure Interactions, Restoration of Structures
Das Gupta, Shambhu Pada	<i>Ph.D.(IIT Kanpur)</i> , Geotechnical Engineering
Desai, Venkappayya R	<i>Ph.D.(Clemson Univ)</i> , Green infrastructure
Dey, Subhasish	<i>Ph.D.(IIT Kharagpur)</i> , Applied Hydrodynamics, Turbulence, Fluvial Hydraulics
Dhang, Nirjhar	<i>Ph.D.(IIT Kharagpur)</i> , Concrete, Dynamics and Control of Railway Bridges, Biomechanics
Ghosh, Deba Prasad	<i>Ph.D.(IIT Kharagpur)</i> , Geotechnical Engineering
Pandey, B B	,
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

Associate Professors

Bhattacharya, Baidurya	<i>Ph.D. (Johns Hopkins Univ)</i> , Computational materials science, Risk and reliability analysis of infrastructure systems
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
Gupta, Ashok Kumar	<i>Ph.D.(IIT Bombay)</i> , Environmental Engineering
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
Reddy, M Amaranatha	<i>Ph.D.(IIT Kharagpur)</i> , Transportation Engineering
Roy, Debasis	<i>Ph.D.(Univ.of Brit Col)</i> , Geotechnical Earthquake Engineering, Ground Improvement, Insitu testing of Geomaterials
Sen Gupta, Aniruddha	<i>Ph.D.(Univ of Illinois)</i> , Geotechnical Earthquake Engineering, Landslide Hazard Mitigation, Mechanics of Materials

Assistant Professors

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, Constitutive modelling, Finite Element Method
Deb, Kousik	<i>Ph.D.(IIT, Kanpur)</i> , Slope Stability, Soil-Structure Interaction, Ground Improvement, Geosynthetic-Reinforced Earth, Numerical Modeling, Soil Arching, Foundation/Embankment on Soft Soil, Geotechnical Earthquake Engineering, Dynamic Response of Pavement, Optimization in Geotechnical Engineering, Pavement-Vehicle Interaction, Lumped Parameter Modeling, Pile Foundation

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
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> , 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
Shaw, Amit	<i>Ph.D.(IISc Bangalore)</i> ,

Faculty Appointments

Dr. Amit Shaw	Assistant Professor
Dr. Sudeshna Mitra	Assistant Professor
Dr. Nilanjan Mitra	Assistant Professor

Faculty Re-employment (Upto 65 years age)

Prof. B. B. Pandey	Professor
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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. Total organic carbon analyzer
2. Atomic absorption spectrophotometer
3. Seismic piezocone
4. Insitu testing vehicle
5. MASW system for shear wave velocity profiling
6. Resonant column for small strain dynamic testing system for soil
7. Digital direct shear apparatus for soil testing

International Collaborations

Scientific collaboration between Duke University, NC, USA (Profesor 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)

Lectures by Visiting Experts

1. Sediment scour by Dr. Oscar Link (Universidad de Concepcion, Chile)
2. Sediment transport by Dr. Francisco Ballio (Politecnico di Milano, Italy)

Doctoral and MS Degrees Awarded

1. Umesh Chandra Sahoo : Perfromation evaluation of low volume roads(Ph.D)
2. Shailendra Kumar : Behaviour fracture parameters for crack propagation in concrete(Ph.D)
3. Rajendra Kumar Harsoor : Influence of notch on the response of mild steel beams subjected to low velocity impact(Ph.D)
4. Bappaditya Manna : Dynamic response of pile foundations - Experimental and analytical study(Ph.D)
5. Pabitra Ranjan Maiti : Sloshing response and dynamic behaviour of structural element in liquid filled container(Ph.D)
6. Kapileswar Mishra : Effect of exceptional flow conditions on river diversion barrages and performance improvement using depressed secondary aprons(Ph.D)
7. Intha Srinivasa Reddy : Rutting characteristics of bituminous mixes(Ph.D)
8. Sarat Kumar Panda : Static and dynamic instability analysis of plates and cylindrical shell panels(Ph.D)
9. Debabrata Giri : Dynamic behaviour of nailed soil slopes(Ph.D)
10. Kishor Chandra Panda : Behaviour of reinforced concrete T-beams strengthened in shear with glass fibre reinforced polymer(Ph.D)
11. Biswajit Acharya : Static and dynamic analysis of some coupled problems in stone columned soil with particle movement(Ph.D)
12. Malay Kanti Ghosh : Downstream local scour and sediment flushing characteristics of river diversion barrages(Ph.D)
13. Namita Nanda : Nonlinear dynamic analysis of laminated composite shells(Ph.D)
14. Pradyumna S : Free vibration buckling dynamic instability of laminated composite and functionally graded shells(Ph.D)

Member - Professional Bodies

1. Baidya, Dilip Kumar, *Life* - Indian society for Rock Mechanics and Tunneling Technology
2. Baidya, Dilip Kumar, *Regular* - Member, Int Soc for Soil Mechanics and Geotechnical Engineering
3. Baidya, Dilip Kumar, *Life* - Member, Indian Geotechnical Society
4. Barai, Sudhir Kumar, *Member* - Technical Committee-Soft Computing, System Machine Cybernetics Society, IEEE
5. Bhattacharya, Baidurya, *Member* - American Society of Civil Engineers
6. Bhattacharya, Baidurya, *Special Invitee* - National Disaster Management Authority, Steering Committee on Geophysical Hazard and Working Committee of Experts on Vulnerability Analysis and Risk Assessment
7. Bhattacharya, Baidurya, *Member* - International Association for Structural Safety and Reliability (IASSAR), Subcommittee on Structural Reliability and Optimization (SC3)
8. Deb, Kousik, *Member* - International Society for Soil Mechanics and Foundation Engineering
9. Deb, Kousik, *Life Member* - Indian Geotechnical Society
10. Dhar, Anirban, *Member* - International Association for Hydro-Environment Engineering and Research (IAHR)

11. Dhar, Anirban, *Life Member* - Indian Society for Hydraulics (ISH)
12. Dhar, Anirban, *Life Member* - Indian Association of Hydrologists
13. Dhar, Anirban, *Life Member* - The Indian Science Congress Association (ISCA)
14. Dhar, Anirban, *Member* - International Association of Hydrological Sciences (IAHS)
15. Ghangrekar, Makarand Madhao, *Member* - International Water Association
16. Ghangrekar, Makarand Madhao, *Life Member* - Indian Association for Environmental Management
17. Ghangrekar, Makarand Madhao, *Life Member* - Institution of Engineers (India)
18. Ghangrekar, Makarand Madhao, *Life Member* - Indian Society for Technical Education
19. Ghosh, Deba Prasad, *Individual Member (M-2804)* - Indian Geotechnical Society, New Delhi - 110019
20. Goel, Sudha, *Member* - IEL Committee of Kharagpur Chapter for Environmental Section.
21. Goel, Sudha, *REGULAR* - MEMBER, INSTITUTION OF ENGINEERS (INDIA)
22. Goel, Sudha, *REGULAR* - MEMBER, AMERICAN WATER WORKS ASSOCIATION
23. Maity, Rajib, *Life Member* - The Indian Science Congress Association (ISCA)
24. Maity, Rajib, *Life Member* - Indian Society for Hydraulics (ISH)
25. Maity, Rajib, *Member* - American Geophysical Union (AGU)
26. Maity, Rajib, *Member* - International Association of Hydrological Sciences (IAHS)
27. Mitra, Nilanjan, *Associate* - American Concrete Institute
28. Pal, Anjali, *Life Member* - Chemical Research Society of India
29. Pal, Anjali, *Life Member* - Indian Society for Surface Science and Technology
30. Reddy, Kusam Sudhakar, *Member* - NRRDA Executive Council
31. Reddy, Kusam Sudhakar, *Member* - Indian Roads Congress Committee on Asset Management
32. Roy, Debasis, *Member* - Canadian Geotechnical Society
33. Roy, Debasis, *Life Member* - India Geotechnical Society
34. Roy, Debasis, *Regular* - Bureau of Indian Standards, Committee 39-10
35. Sen Gupta, Aniruddha, *Member* - Chi Epsilon - Civil Engineering Honor Society
36. Sen Gupta, Aniruddha, *Associate Member* - American Society of Civil Engineers
37. Sen Gupta, Aniruddha, *Member* - Sigma Xi - The Scientific Research Society
38. Sen, Dhruvajyoti, *Regular* - International Association of Hydraulic Research
39. Sen, Dhruvajyoti, *Regular* - Indian Society of Hydraulics
40. Verma, Shubha, *Member* - American Geophysical Union
41. Verma, Shubha, *Member* - Indian Aerosol Science and Technology Association

Member - Editorial Board

1. Baidya, Dilip Kumar (2010) *Reviewer* - JI of Geotechnical and Geoenvironmental Engineering, ASCE
2. Baidya, Dilip Kumar (2010) *Reviewer* - Int JI of Soil Dynamics and Earthquake Engineering
3. Barai, Sudhir Kumar (2007) *Member* - International Journal of Multimedia and Ubiquitous Engineering
4. Barai, Sudhir Kumar (2009) *Member* - Journal of Information Technology in Construction ITCon
5. Bhattacharya, Baidurya (0) *Editorial Board Member* - International Journal of Engineering Under Uncertainty: Hazards, Assessment and Mitigation
6. Bhattacharya, Baidurya (2010) *Associate Editor* - Journal of Bridge Engineering
7. Desai, Venkappayya R (2009) *Reviewer* - Jnl of Irrigation and Drainage
8. Desai, Venkappayya R (2009) *Reviewer* - Jnl of Hydro-Environment
9. Desai, Venkappayya R (2009) *Reviewer* - Jnl of Water Resource Management
10. Desai, Venkappayya R (2009) *Reviewer* - International Journal
11. Desai, Venkappayya R (2009) *Associate Editor* - IST Transactions of Environmental Systems-Theory and Applications (ESTA)
12. Desai, Venkappayya R (2009) *Reviewer* - International Journal of Earth Sciences and Engineering
13. Desai, Venkappayya R (2009) *Associate Editor* - IST Transactions of Renewable and Sustainable Energy (RSE)
14. Desai, Venkappayya R (2009) *Reviewer* - Water Science and Engineering
15. Dey, Subhasish (2010) *Associate Editor* - Journal of Hydraulic Engineering
16. Dey, Subhasish (2010) *Member of Editorial Board* - International Review of Civil Engineering
17. Dey, Subhasish (2010) *Associate Editor* - Sedimentology
18. Dey, Subhasish (2010) *Member of Editorial Board* - Flow Measurement and Instrumentation
19. Dey, Subhasish (2010) *Associate Editor* - Journal of Hydro-Environment Research
20. Dey, Subhasish (2010) *Member of Editorial Board* - Engineering Applications of Computational Fluid Mechanics
21. Dey, Subhasish (2010) *Associate Editor* - Acta Geophysica
22. Dey, Subhasish (2010) *Associate Editor* - International Journal of Sediment Research
23. Dey, Subhasish (2010) *Associate Editor* - KSCE Journal of Civil Engineering
24. Dey, Subhasish (2010) *Associate Editor* - Journal of Numerical Mathematics and Stochastics
25. Ghangrekar, Makarand Madhao (2009) *Editorial Board member* - International Journal of Wastewater Treatment and Green Chemistry (IJWTGC)
26. Ghangrekar, Makarand Madhao (2009) *Associate Editor* - Renewable and Sustainable Energy (RSE)
27. Ghangrekar, Makarand Madhao (2009) *Editorial Advisory Board Member* - Chemical Bulletin, Romania, series of Chemical and Environmental Engineering
28. Maity, Rajib (2009) *Associate Editor* - Journal of Civil, Environmental, and Architectural Engineering
29. Pal, Anjali (2008) *Co-Edotor* - Research Journal of Chemistry and Environment
30. Pal, Anjali (2007) *Editorial Advisory Board* - Recent Patents on Nanotechnology
31. Roy, Debasis (2010) *Associate Editor* - IST Transaction of Civil Engineering and Construction Management
32. Roy, Debasis (2010) *Associate Editor* - Geomechanics and Engineering
33. Sen, Dhruvajyoti (2006) *Associate Editor* - Australian Journal of Water Resources

Awards & Honours

1. Bhattacharya, Baidurya (0) *Adjunct Faculty, Dept of Civil and Environmental Engineering, Newark, DE 19716, USA*
2. Deb, Kousik (2010) *DAAD Fellowship "2010 for research stay at RWTH, Aachen, Germany*
3. Maity, Rajib (2011) *IEI Young Engineers Award*
4. Ghangrekar, Makarand Madhao (2010) *Marie Curie Fellowship by EU*
5. Goel, Sudha (2010) *Prof. RC Singh Prize*

Fellowships

1. Desai, Venkappayya R (2011) *Indian Faculty secondment for Asian Institute of Technology, Bangkok, Thailand*
2. Ghangrekar, Makarand Madhao (2010) *Marie Curie Fellowship by EU*
3. Maity, Rajib (2010) *DAAD fellowship for IIT faculty*

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.17.00 Lakhs)
4. Advanced Research Laboratory on Safety and Uncertainty Analyses of Infrastructure Systems (BARC, Mumbai, Rs.150.00 Lakhs)
5. Arresting delamination propagation of sandwich composite panels with initial face/core debond subjected to inplane compression load (SRIC-ISIRD, Rs.5.00 Lakhs)
6. Assessment of hydroclimatic teleconnection for basin-scale, real-time streamflow and its use in real-time streamflow forecasting (Science and Engineering Research Council (SERC), Department of Science and Technology (DST), Govt. o, Rs.4.20 Lakhs)
7. Assessment of Microbial Diversity and Community Structure of Arsenic (Department of Biotechnology New Delhi, Rs.29.15 Lakhs)
8. Bridge scour estimation, measurement and protection and use of various time systems like TDR, TTS and SA (RDSO, Rs.152.00 Lakhs)
9. Characterization of Ballistic Performance of Ceramic-Metal Composite Armour against Armour Piercing (AP) Projectile " Numerical Modelling and Experi (SRIC, Rs.5.00 Lakhs)
10. 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)
11. Damage assessment of aircraft structures from limited vibration data (ARDB, GOI, Rs.8.45 Lakhs)
12. Determination of leishmanicidal potential of metal nanoparticles and their conjugates (Calcutta University, Rs.2.00 Lakhs)
13. Developing a Suitable Methodology for Identifying Accident Prone Sites in the Presence of Limited Data (ISIRD, IIT Kharagpur, Rs.5.00 Lakhs)
14. Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-Learning (MHRD, Rs.8.00 Lakhs)
15. Development of a video course on "Groundwater Hydrology"™ (National Programme on Technology Enhanced Learning (NPTEL), Ministry of Human Resource Development, Rs.0.00 Lakhs)
16. Development of a video course on "Numerical methods for Civil Engineering"™ (National Programme on Technology Enhanced Learning (NPTEL), Rs.2.50 Lakhs)
17. Development of a video course on "Probability methods for Civil Engineering"™ (National Programme on Technology Enhanced Learning (NPTEL), Ministry of Human Resources & Developmen, Rs.5.00 Lakhs)
18. Development of a video course on Transportation Economics (National Programme on Technology Enhanced Learning (NPTEL), MHRD, Govt. of India, Rs.0.00 Lakhs)
19. Development of Design Methodology for Chemically Treated Bamboo Reinforced Concrete members for Low Cost Housing (BMTPC, GOI, Rs.16.80 Lakhs)
20. Development of durable water repellent jute geotextile (Jute Manufacturers Development Council, Rs.168.72 Lakhs)
21. Development of Guidelines for Use of Different Types of Bus in India- Phase I (HUBNER, Germany, Rs.0.00 Lakhs)
22. Development of Public Transport for Dammam Urban Area in Saudi Arabia (Gulf Engineering House, Rs.0.00 Lakhs)
23. Development of Public Transport for Zajan Territory in Saudi Arabia (Gulf Engineering House, Rs.0.00 Lakhs)
24. Effects of Fines on Behavior of Geosynthetic-Reinforced Sands (Indian Institute of Technology Kharagpur, Rs.5.00 Lakhs)
25. ELECTROCOAGULATION IN CONTINUOUS-FLOW SYSTEMS FOR REMOVAL OF DRINKING WATER CONTAMINANTS (DST-WTI, Rs.35.90 Lakhs)
26. Exploratory investigation on Development of Damage Mechanics based Methodologies for Lifting of Aeroengine Components (DMRL, Rs.10.00 Lakhs)
27. 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)
28. First order seismic microzonation of Kolkata area (Ministry of Earth Sciences, Government of India, Rs.62.10 Lakhs)
29. Improving mechanical performance and delamination resistance in sandwich composite panels (Department of Science and Technology (DST/SERC), India, Rs.25.00 Lakhs)
30. Joint Network center on Highway and Airport Pavement Engineering (IUSSTF, New Delhi, Rs.55.00 Lakhs)
31. 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)
32. Multi-scale modeling of defects and interfacial phenomena in CNT-based nanocomposites (DST, Rs.21.00 Lakhs)

33. 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)
34. 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, GOI, Rs.0.00 Lakhs)
35. 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)
36. 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)
37. 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)
38. Preparation of "Ganga River Basin Management Plan" (National River Conservation Directorate, Ministry of Environment and Forest, INDIA, Rs.0.00 Lakhs)
39. Production of bioenergy during wastewater treatment (Ministry of Environment and Forest, New Delhi, Rs.14.72 Lakhs)
40. Recycled Aggregate based concrete (RAC) (UGC, Rs.8.96 Lakhs)
41. River basin stream flow simulation using remote sensing data (Space Application Centre (SAC), Indian Space Research Organization (ISRO), Rs.16.50 Lakhs)
42. Seismic Evaluation of Aged Concrete Gravity Dams (ISRDI, IIT Kharagpur, Rs.3.00 Lakhs)
43. 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)
44. Seismic hazard assessment, microzonation, and evaluation of vulnerability, risk and socio-economic impacts for the city of Kolkata (Ministry of Earth Sciences, Government of India, Rs.432.71 Lakhs)
45. Smarter Water Resource Management, Disaster Mitigation & Diabetic Retinopathy (WDD) (IBM, Rs.0.00 Lakhs)
46. Smarter water resources management, Disaster Mitigation & Diabetic Retinopathy (WDD) (IBM India Private Limited, Rs.0.00 Lakhs)
47. 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)
48. Swaralipi: a system for scripting Tagore's™ musical notes and transcoding (SNLTR, Govt. of West Bengal, Rs.9.00 Lakhs)
49. 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)
50. 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)
51. Underwater Ballistic Response of Marine Grade Sandwich Composite Panels (Naval Research Board, INDIA, Rs.0.00 Lakhs)
52. Underwater non-contact explosive response of marine grade sandwich composite panels (Naval Research Board (NRB/DRDO), India, Rs.72.00 Lakhs)
53. Underwater non-contact explosive response of marine grade sandwich composite panels (EMS) (NRB/DRDO, Rs.72.48 Lakhs)

Consultancy Projects

1. Assessment of undrained extensional behavior of Padma Bridge Soils -1 (BPBS) (DCL-FCL, Dhaka, Bangladesh, Rs.0.00 Lakhs)
2. Assessment of undrained extensional behavior of Padma Bridge Soils -2 (PDBR) (M/s M. Ahmed & Associates, Ltd., Dhaka, Bangladesh, Rs.0.00 Lakhs)
3. Calibration of fifth wheel bump integrator- ARUR (ARUR, Rs.0.50 Lakhs)
4. Calibration of fifth wheel bump integrator- ARUR (HCC Ltd, Safdarganj, UP, Rs.0.50 Lakhs)
5. City Development Plan for Haldia (Haldia Development Authority, Rs.22.47 Lakhs)
6. Collection and characterization of environmental quality of water, wastewater, air and soil (Various Govt. and Private Agencies, Rs.1.00 Lakhs)
7. Design Scheme for Launching of PSC Girder (ITD Cementation India Limited, Rs.1.00 Lakhs)
8. Development of reliability based criteria for containment design (BARC, Rs.10.00 Lakhs)
9. Development of suitable probability density functions for characterization of wave speed measurements in concrete (CMERI, Rs.2.00 Lakhs)
10. Establishment of Indian Institute of Corporate Affairs (Ministry of Corporate Affairs, N. Delhi, Rs.160.70 Lakhs)
11. Evaluation of modified bitumen and bitumen emulsions (Shell India Markets Pvt Ltd, Rs.1.00 Lakhs)
12. Evaluation of normal, modified and bituminous emulsion (Various govt and private agencies, Rs.3.08 Lakhs)
13. Evaluation of railway ballast, road aggregates and other pavement materials for different agencies (Govt and Private agencies, Rs.1.25 Lakhs)
14. Evaluation & Modification of Tank Foundations at JSL (BOC India Ltd, Rs.3.80 Lakhs)
15. Evaluation of different subgrade soils using JG soil modifier (Jindal Steel, Rs.6.72 Lakhs)
16. Evaluation of different subgrade soils using JG soil modifier, (M/s Jindal steel and Power, Raigarh, Rs.6.72 Lakhs)
17. Evaluation of GSB materials for World bank projects in the state of Orissa (Orissa, Rs.4.00 Lakhs)
18. Evaluation of modified bitumen and bitumen emulsions (Miscellaneous Agencies, Rs.1.00 Lakhs)
19. Evaluation of normal, modified and bituminous emulsion (Miscellaneous Agencies, Rs.3.08 Lakhs)
20. Evaluation of railway ballast, road aggregates and other pavement materials for different agencies (Miscellaneous Agencies, Rs.1.25 Lakhs)
21. Expert opinion on the rectification of defects in PSC Girder Bridge No. 557 across river Kuakhai near Cuttack. (Expert_SPA (JV), Rs.4.41 Lakhs)
22. Expert's™ Opinion on open channel ultrasonic flow meter. (City & Industrial Development Corporation (CIDCO) of Maharashtra Ltd., Mumbai, Rs.0.96 Lakhs)
23. Fly-ash impoundment dike rehabilitation and design (Aarti Steel, Rs.4.50 Lakhs)
24. Ganga River Basin Management (Env. Quality) (Ministry of Environment and Forest, Rs.30.00 Lakhs)
25. Checking design and drawing of UASB type sewage treatment plant (CDST) (Apporv Air Control, Jaipur, Rs.3.25 Lakhs)
26. MASW data acquisition and analysis, Sankosh hydroelectric project, Kerabari, Bhutan (BPC India, Rs.1.88 Lakhs)

27. Mix Design for the work- Improvement of Rajbandh Area on NH-2 in the state of W.B (NHAJ Durgapur, Rs.2.50 Lakhs)
28. 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)
29. Mix Design for the work-improvement of Rajbandh area on NH-2 in the state of W.B. (MDNH) (National Highway Authority of India, Rs.2.00 Lakhs)
30. Model Study for CW System Equipment Package for Vallur Thermal Power Project (3X500 MW) (WPIL Limited, Kolkata, Rs.15.00 Lakhs)
31. NPTEL Phase II, Video Course development on "Advanced Foundation Engineering" (Ministry of Human Resource Development (MHRD), Govt. of India, Rs.2.50 Lakhs)
32. Optimized properties of galvanized steel (Tata Steel, Rs.6.00 Lakhs)
33. Performance Evaluation studies on improvement of south saraswati (both upper and lower portion) from Off-take at Nasibpur to its outfall (Superintending Engineer, Western Circle, Irrigation and Waterways Directorate, Kolkata 700 087, Rs.16.54 Lakhs)
34. Performance evaluation studies on improvement of south Saraswati at nasibpur to its outfall at Sankr (Irrigation and Waterways Directorate, Government of West Bengal, Rs.16.54 Lakhs)
35. Performance evaluation study in respect of work "Kapaleswari-Keliaghai-Baghai drainage basin scheme" (PHASE-I, 2010-2011) (Flood Management Programme, Govt. of INDIA and Govt. of West Bengal, Rs.0.00 Lakhs)
36. Performance Evaluation Study on Flood Control Scheme for "Kapaleswari-Keliaghai-Baghai" Drainage Basin for Phase-I, 2010-2011 (Govt. of West Bengal, Rs.9.70 Lakhs)
37. Planning and design of transportation facilities for info park in Kochi (Cannon Design International Pvt. Ltd., Rs.2.20 Lakhs)
38. 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)
39. Preparation of Aizawl Master Plan (PAMP) (Aizawl Development Authority, Rs.70.22 Lakhs)
40. Preparation of city development plan for Burdwan planning area (BDAP) (BDA, Burdwan, Rs.11.23 Lakhs)
41. Preparation of DPR for MCL coal Transportation roads of IB valley Project (Mahanadi Coalfields Limited, Sambalpur, Rs.27.12 Lakhs)
42. Preparation of DPR for Repair/renovation of SH 8 (Executive Engineer, Burdwan, Rs.9.50 Lakhs)
43. Preparation of DPR for Repair/renovation of SH 8 (PWD West Bengal, Rs.9.50 Lakhs)
44. 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)
45. Preparation of Mater Plan on Water Supply Distribution Network (for Domestic and Industrial)covering Haldia Municipal Area (Haldia Development Authority, Rs.29.78 Lakhs)
46. Preparation of Perspective Plan- Vision 2030 and Comprehensive Development Plan areas of Bhubaneswar and Cuttack development Authority (PADB) (Housing and Urban Development Department, Government of Orissa, Bhubaneswar, Rs.165.29 Lakhs)
47. Preparation of Zonal Developmental Plan for 14 Planning Zones of Bhubaneswar Development Plan Area (Bhubaneswar Development Authority, Rs.391.63 Lakhs)
48. Preparation of DPR for MCL coal Transportation roads of IB valley Project (Mahanadi Coalfields Limited, Sambalpur, Rs.27.12 Lakhs)
49. Proof checking of design basis report of the prefab roof for printing plant (ABP Pvt. Ltd., Kolkata, Rs.1.10 Lakhs)
50. Proof checking of design documents of truss girders across river Damodar. (STUP Consultants Ltd., Rs.3.30 Lakhs)
51. Quality Investigation of materials (Various Govt. Agencies, Rs.5.50 Lakhs)
52. Rectification of defects in PSC girder of Bridge No. 557 across river Kuakhai near Cuttack (Expert_SPA(JV), Bhubaneswar, Rs.4.41 Lakhs)
53. Review and scrutiny of seismic designs for earth structures (Sardar Sarovar Narmada Nigam Limited, Gandhinagar, Rs.3.60 Lakhs)
54. Seismic design of Salaya - Bhogat pipeline: Liquefaction susceptibility and permanent ground deformation (Larsen and Toubro - Gulf, Rs.6.22 Lakhs)
55. Seismic studies on Bhagyam field wellpad connecting pipelines (Larsen and Toubro - Gulf, Rs.3.50 Lakhs)
56. Stabilization of Farakka pond and hydraulic jump at Farakka navigation channel (Inland Water Authority of India, Rs.11.30 Lakhs)
57. Structural Evaluation of LIC Buidling at Cuttack (LIC Cuttack, Rs.8.00 Lakhs)
58. Technical advice for pile load test and evaluation of pile load capacity (Ramsarup Lohh Udyog Ltd, Rs.1.44 Lakhs)
59. Vetting design of elevated canal structure (Scott Wilson Pvt. Ltd., Rs.25.00 Lakhs)
60. Vetting the design of DNMC canal and associated hydraulic structures (Scott Wilson India Private Limited (SWIPL), Rs.26.50 Lakhs)

Technology Transferred

1. Sp Engineering - Transfer of Technology for In-vehicle Falling Weight Deflectometer : Rs. 0.00 Lakh
2. M/s Geotran D-17, Industrial Estate, Roorkee-247667 - Vehicle Mounted Falling Weight Deflectometer : Rs. 8.00 Lakh

Patents (filed / granted)

1. Microbial transformation of lignocellulosic fibers using eco friendly reagents for strength and durability enhancement

Visits Abroad by Faculty Members

1. Bhattacharya, Baidurya - Invited Lecture (University of Ljubljana, Slovenia,) 2 days
2. Mitra, Sudeshna - To establish research collaboration on transport safety related research (California Polytechnic State University, Pomona, USA,) 28/6/2010 to 10/7/2011

3. Barai, Sudhir Kumar - To present paper during CECAR 5 and ASEC 2010, To deliver lectures at UNSW and ADFA (Sydney, Australia,) 8-12 August 2010
4. Reddy, M Amaranatha - Joint Network centre project on Highway and Airport Pavement Engineering (Worcester Polytechnic Institute, Worcester, USA and The University of Texas at El Paso, USA,) 25 days
5. Bhattacharya, Baidurya - Conference (Zakopane, Poland,) 3 days
6. Ghangrekar, Makarand Madhao - Visiting Scientist (Ben Gurion University, Israel,) February 2010 to March 2010, May 2010 to July 2010
7. Pal, Anjali - Scientific Collaboration (Duke University, NC, USA,) June-July, 2010
8. Dey, Subhasish - Visiting Professor (Department of Civil Engineering, National Chung Hsing University, Taiwan,) 12 - 19 May 2010
9. Dey, Subhasish - Visiting Professor (Hydrotech Research Institute, National Taiwan University, Taiwan,) 8 - 12 May 2010
10. Gupta, Ashok Kumar - Paper Presented in Indo-French Seminar on Indoor Air Quality: Monitoring, Prediction Assessment (de Nantes, France,) May 31-June 3, 2010
11. Desai, Venkappayya R - To present a Technical paper & to chair a Technical Session (Univ. of Mauritius, Reunion, Mauritius,) 16-18 Sep., 2010
12. Dhar, Anirban - 3rd International Congress of Environmental Research (Mauritius,) Sept. 16-18, 2010
13. Dhar, Anirban - 3rd International Conference on Water and Flood Management (Dhaka, Bangladesh,) Jan 7-10, 2011
14. Deb, Kousik - Research Stay in DAAD Fellowship (RWTH Aachen University, Germany,) May - July, 2010
15. Dey, Subhasish - Visiting Scientist (Laboratoire Central des Ponts et Chaussées, France,) 4 - 17 July 2010
16. Dey, Subhasish - Key note Speaker (Wiecejce, Poland,) 12 - 19 September 2010
17. Goel, Sudha - IPWE-2011 conference (Singapore,) 1 Jan to 7 Jan, 2011
18. Barai, Sudhir Kumar - To deliver invited lecture @ 2nd Indo-German Frontiers of Engineering Symposium, Potsdam, Germany (Germany,) June 24-27, 2010
19. Maity, Rajib - Academic Collaboration (RWTH Aachen, Germany,) May 17, 2010 to July 13, 2010
20. Sen Gupta, Aniruddha - To present paper & reporter of a session (San Diego, California,) May 24-29, 2010

Invited Lectures by Faculty Members

1. Disinfection in water and wastewater treatment: a review *by* Goel, Sudha (NEERI, Nagpur)
2. Response of turbulence in submerged wall jets to abrupt changes from smooth to rough beds *by* Dey, Subhasish (Hydrotech Research Institute, National Taiwan University, Taiwan)
3. Wall-wake flows downstream of a sphere placed on a plane rough bed *by* Dey, Subhasish (Department of Civil Engineering, National Chung Hsing University, Taiwan)
4. Near-bed turbulence characteristics at an entrainment threshold of sediment beds *by* Dey, Subhasish (Laboratoire Central des Ponts et Chaussées, France)
5. Energy efficient wastewater management *by* Ghangrekar, Makarand Madhao (IIT Kharagpur)
6. Atomistic modeling of fracture *by* Bhattacharya, Baidurya (University of Ljubljana, Slovenia)
7. Atomistic modeling of fracture *by* Bhattacharya, Baidurya (Institute of Mathematical Sciences, Chennai)
8. Bioenergy Recovery from waste and wastewater reuse *by* Ghangrekar, Makarand Madhao (Dr. B.A.M. University, Aurangabad)
9. Drought mitigation thru a blend of traditional and modern technologies *by* Desai, Venkappayya R (Natl. Acad. of Agri. Sci. (NAAS), New Delhi)
10. Guidelines for Earth Filling, Foundation Design and Construction in Different Soil Conditions *by* Sen Gupta, Aniruddha (Bharat Petroleum, Kolkata)
11. Green infrastructure- an overview and case studies *by* Desai, Venkappayya R (IIT Kharagpur)
12. Preliminary attempts for modelling erosion/sedimentation/floods in Kosi River *by* Desai, Venkappayya R (National Institute of Technology, Rourkela, OR)
13. Basic geotechnical engineering *by* Roy, Debasis (Indian Oil Management Academy, Haldia, WB)
14. Basic geotechnical engineering *by* Roy, Debasis (Indian Oil Management Academy, Haldia, WB)
15. Seismic hazard assessment, Site response during earthquakes and Foundation design for earthquakes *by* Roy, Debasis (IIT Gandhinagar)
16. Sustainability considerations in geotechnical and geoenvironmental engineering *by* Roy, Debasis (IIT Kharagpur)
17. Novel Resin Bound MnO₂ Nanocomposite for the Degradation of Crystal Violet Dye in Aqueous Medium *by* Pal, Anjali (Anchorage, Alaska, USA)
18. Dye Wastewater Treatment by Adsorbilization and Advanced Oxidation Processes *by* Pal, Anjali (Raipur, Chhattisgarh)
19. Dye Wastewater Treatment *by* Pal, Anjali (Manipur University, Manipur)
20. Capacity Building for Earthquake Preparedness *by* Maity, Damodar (Kolkata organized by Indian Chamber of Commerce)
21. Finite Element Modeling of Reinforced Concrete Bridges *by* Maity, Damodar (IIT Guwahati)
22. Structural Design using STAAD PRO Software *by* Maity, Damodar (Indian Oil Management Academy Haldia Township, Midnapore (E))
23. Sustainable Development for Road Infrastructure *by* Reddy, M Amaranatha (GMRIT Rajam)

Books Published

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

Seminars, Conferences and Workshops Organised

1. Second Annual Meeting for Advanced Facility for Research in Reliability Engineering

Short-Term Courses, Training Programmes and Workshops organised

1. Geotechnical Aspects of Earthquake Engineering (March 9 - 11)
2. Green Infrastructure (26.12.2010 to 2.1.2011)
3. Indo-US workshop on Highway & Airport Pavement Engineering: Challenges and Opportunities (30-31 July 2010)
4. Numerical Modelling of Concrete Soil Interaction for engineers of MWH Global (2 days)
5. Short Term Training Course on Road Safety Audit (Scheduled on 25 to 28 th April, 2011, but postponed)
6. Solid and Hazardous Waste Management (12 to 19 Nov 2010)

Papers Published in Journals

1. Low Cost Device for Evaluating Rutting Characteristics of Bituminous Mixes – By Reddy I S and M.Amaranatha Reddy *Journal of Indian Highways* March 2011 (2011)
2. 1. Effect of waste plastic as modifier on thermal stability and degradation kinetics of bitumen/waste plastics blend By M. Naskar, T.K. Chaki, K.S. Reddy *Thermochimica Acta* 509, pp 128–131 (2010)
3. 2. Effect of recycled EVA as modifier on the various properties of Bituminous Binder for road application By Moumita Naskar, Tapan Kumar Chaki and K Sudhakar Reddy *Advanced Materials Research* Vol. 214, pp 339-343 (2011)
4. A Mathematical Model to Study the Soil Arching Effect in Stone Column-Supported Embankment Resting on Soft Soil By Kousik Deb *Applied Mathematical Modelling* 34(12), 3871 – 388 (2010)
5. A new framework to preserve Tagore songs By Misra, C., Bhattacharya, B. and Basu, A *World Digital Libraries* 3(1):3-72 (2010)
6. A Novel Procedure for Determination of Hydrodynamic Pressure along Upstream Face of Dams due to Earthquakes By Indrani Gogoi and Damodar Maity *Journal of Computers and Structures* 88 (9-10), 539–548 (2010)
7. An Artificial Neural Network Approach for Prediction of Dynamic Pile-Soil-Pile Interaction under Vertical Motion By Das, S. K., Manna, B., and Baidya, D. K. *Geotechnical Special Publication No. 199* 1422 – 1431 (2010)
8. An assessment of IS code provisions for the design of low rise steel moment frames through incremental dynamic analysis By Patra, P. and Bhattacharya, B. *Bulletin of Earthquake Engineering* 9(2):581- (2011)
9. An Investigation on Warm and Half Warm Bituminous Mixes (under review) By Vijay Kakade., Debadatta Das., Reddy M A and Pandey B *Indian Roads Congress* (0)
10. Analysis of buried pipelines subjected to reverse fault motion By Shantanu Joshi, Amit Prashant, Arghya Deb and Sudhir K. Jain *Soil Dynamics and Earthquake Engineering* Accepted (2011)
11. Analysis of Extensible Geosynthetics and Stone Column-Reinforced Soil By Kousik Deb, P.K. Basudhar and S. Chandra *Ground Improvement* 163(4), 231 – 236 (2010)
12. Attribution of aerosol radiative forcing over India during the winter monsoon to emissions from source categories and geographical regions By S. Verma, C. Venkataraman, O. Boucher *Atmospheric Environment* D10-01114 (2011)
13. Behaviour of recycled aggregate concrete under drop weight impact load By Chakradhara Rao, M, Bhattacharyya S K and Barai S V *Construction and Building Materials* 69-80 (2010)
14. Buckling of rectangular plates with various boundary conditions loaded by non-uniform inplane loads. By Sarat Kumar Panda and L.S. Ramachandra *International Journal of Mechanical Sciences* 52, 819-828 (2010)
15. Cationic Surfactant Adsorption on Silica gel and its application for wastewater treatment By S. Koner, Anjali Pal, A. Adak *Desalination and Water Treatment* 22, 1-8 (2010)
16. Coupled 1D–Quasi-2D Flood Inundation Model with Unstructured Grids By Kuiry, S. N., Sen, D., and Bates, P. *Journal of Hydraulic Engineering* Vol. 136, pp 493-506 (2010)
17. Determining the double-K fracture parameters for three-point bending notched concrete beams using weight function By Kumar S and Barai S V *Fatigue & Fracture of Engineering Materials & Structures* 645–660 (2010)
18. Development of Rutting Criteria for Bituminous Mixes using Wheel Tracking Device (Accepted) By Reddy I S., Reddy M A and Pandey BB *Highway Research Bulletin* (0)
19. Double-averaging turbulence characteristics in flows over a gravel-bed By Sarkar S and Dey S *Journal of Hydraulic Research* 48, pp. 801-809 (2010)
20. Dynamic Analysis of Nailed Soil Slopes By A. Sengupta & Debabrata Giri *Ground Improvement* (2011)
21. Dynamic Behavior of Small Scale Model of Nailed Steep Slopes By D. Giri & A. Sengupta *Intl J. of Geomechanics & Geoengineering* (2010)
22. Dynamic Pavement-Vehicle Interaction of Rigid Pavement Resting on Two-Parameter Soil Medium By V. A. Sawant, Kousik Deb and V. A. Patil *Geotechnical Special Publication: Paving Materials and Pavement Analysis, (GSP 203)* 209 – 214 (2010)
23. Dynamic Response of Elevated Liquid Storage Elastic Tanks with Baffle By Damodar Maity, C. Naveen Raj and Indrani Gogoi *International Journal of civil Engineering and technology* 1(1), 31-51 (2010)
24. Dynamic Response of Pile Foundations under Coupled Vibration By Manna, B., and Baidya, D. K. *Indian Geotechnical Journal* 40, pp. 233 – 318 (2010)
25. Effect and design of an underminer structure on flow distribution and local bed topography By Tammela S, Marttila H, Dey S and Klove B *Journal of Hydraulic Research* 48, pp. 188-196 (2010)
26. Effect of chemically modified Vulcan XC-72R on the performance of air-breathing cathode in a single chamber Microbial Fuel Cell By Duteanu, N., Erable, B., Senthil Kumar, S.M., Ghangrekar, M.M., and Scott, K. *Bioresource Technology* 101, 5250-5255 (2010)
27. Effect of electrode combinations, pH and current density on arsenic removal from drinking water using electrocoagulation By AL Dolo, and S Goel *Institution of Engineers (India) Journal - Environmental Engineering* 90 (2010)
28. Effect of Nonlinearity in Granular Layer on Critical Pavement Responses of Low Volume Roads By UC Sahoo and K Sudhakar Reddy *International Journal of Pavement Research and Technology* Vol.3, No.6 (2010)
29. Effect of quality and quantity on Rutting Characteristics of Bituminous Mixes (under review) By Kakade V B and Reddy M *Journal of Material in Civil Engineering* (0)
30. Effect of sulfate concentration in the wastewater on microbial fuel cell performance By Ghangrekar M.M., Sirigirisetty S.R. Murthy, Manaswini Behera, Narcis Duteanu *Environmental Engineering and Management Journal* 9, 1227-1234 (2010)

31. Effect of Vehicle-Pavement Interaction on Dynamic Response of Rigid Pavements By V. A. Sawant, V. A. Patil and Kousik Deb *Geomechanics and Geoengineering: an International Journal* 6(1), 31-39 (2011)
32. Effects of Fines on Compaction Characteristics of Poorly Graded Sands By Kousik Deb, V. A. Sawant and A. S. Kiran *International Journal of Geotechnical Engineering* 4(2), 299-304 (2010)
33. Enhanced Coagulation for turbidity and Total Organic Carbon (TOC) removal from River Kansawati water By S. Narayan and S. Goel *JESE* (2011)
34. Estimation of Permanent Deformations of Tehri Dam Due to 7.0 and 8.5 Magnitude Earthquakes By A. Sengupta *Sadhana* 35(3), 373-392 (2010)
35. Failure modes for FRP wrapped cylindrical concrete columns By Ramkrishna Dandapat, Arghya Deb and S. K. Bhattacharyya *Journal of Reinforced Plastics and Composites* Accepted (2011)
36. Flow-altering countermeasures against scour at bridge piers: a review By Tafarjnoruz A, Gaudio R and Dey S *Journal of Hydraulic Research* 48, pp. 441-452 (2010)
37. Fully rough submerged plane wall-jets By Dey S, Nath T K and Bose S K *Journal of Hydro-Environment Research* 4, pp. 301-316 (2010)
38. Identification of unknown groundwater pollution sources using classical optimization with linked simulation By B. Datta, D. Chakrabarty, and A. Dhar *Journal of Hydro-environment Research* 5(1), 25-36 (2011)
39. Influence of Field Recycled Coarse Aggregate on Properties of Concrete By Chakradhara Rao M, Bhattacharyya S K, and Barai S V *Journal of Materials and Structures* 205-220 (2011)
40. Iterative Analysis of Concrete Gravity Dam-Nonlinear Foundation Interaction By A. Burman, Damodar Maity, and S. Sreedeeep *International Journal of Engineering, Science and Technology* 2(4), 85-99 (2010)
41. Landslide Investigation and Mitigation in the Eastern Himalayan Region By A. Sengupta, S. Gupta & K. Anbarasu *IRC* 71-2, 133-142 (2010)
42. Microbial Fuel Cells - An Option For Wastewater Treatment By Duteanu N.M., Ghangrekar M.M., Erable B., Scott K. *Environmental Engineering and Management Journal* 9, 1069-1087 (2010)
43. Molecular dynamics simulations of carbon nanotube-based oscillators having topological defects By Prasad, MVD and Bhattacharya, B. *International Journal of Nanoscience* 10(1):1-5 (2011)
44. Monoclinic CuO nanoflowers on resin support: Recycleable catalyst to obtain perylene compound By M. Basu, A. K. Sinha, M. Pradhan, S. Sarkar, Anjali Pal, T. Pal *Chemical Communication* 46, 8785 - 8787 (2010)
45. Nonlinear Dynamic Behavior of Pile Foundations in Horizontal Vibration By Manna, B., and Baidya, D. K. *Geotechnical Special Publications No. 201 Part 1*, pp. 50-55 (2010)
46. Nonlinear Dynamic Response of Pile Foundations under Vertical Vibration By Manna, B., and Baidya, D. K. *Soil Dynamics and Earthquake Engineering* Vol. 30, No. 6, pp. (2010)
47. Nonlinear Dynamic Response of Piles under Horizontal Excitation, By Manna, B., and Baidya, D. K. *Journal of Geotechnical and Geoenvironmental Engineering* 136(12), 1600-1609 (2010)
48. Nonuniversality of von Kármán's k in fluvial streams By Gaudio R, Miglio R and Dey S *Journal of Hydraulic Research* 48, pp. 658-663 (2010)
49. Optimum design of stone column-improved soft soil using multiobjective optimization technique By K. Deb and A. Dhar *Computers and Geotechnics* 38(1), 50-57 (2011)
50. Optimum Design of Stone Column-Improved Soft Soil Using Multiobjective Optimization Technique By Kousik Deb and Anirban Dhar *Computers and Geotechnics* 38(1), 50-57 (2011)
51. Performance comparison of up-flow microbial fuel cells fabricated using proton exchange membrane and earthen cylinder. By Partha S. Jana, Manaswini Behera, M.M. Ghangrekar *International Journal of hydrogen energy* 35, 5681-5686 (2010)
52. Phases in the Zn-coated Fe Analyzed through an Evolutionary Meta-model and Multi-objective Genetic Algorithms By Rajak, P., Tewary, U., Das, S., Bhattacharya, B. and Chakraborti, N. *Computational Materials Science* in press (2011)
53. Postbuckling analysis of cross-ply laminated cylindrical shell panels under parabolic mechanical edge loading By Sarat Kumar Panda and L.S. Ramachandra *Thin-Walled Structures* 48,660-667 (2010)
54. Potential of Support Vector Regression for Prediction of Monthly Streamflow using Endogenous Property By Rajib Maity, Parag P Bhagwat and Ashish Bhatnagar *Hydrological Processes* 24(7) (2010)
55. Prediction of the dynamic soil-pile interaction under coupled vibration using artificial neural network approach By Das, S. K., Manna, B., and Baidya, D. K. *Geotechnical Special Publications* Accepted (2011)
56. Probabilistic model for failure initiation of reinforced concrete interior beam-column connections subjected to seismic loading By Mitra, N., Mitra, S. and Lowes, L. N. *Engineering Structures* 33, 154-162 (2011)
57. Probabilistic model for failure initiation of reinforced concrete interior beam-column connections subjected to seismic loading By Mitra, N., Mitra, S. and Lowes, L. *Engineering Structures* 33,154-162 (2011)
58. Rice mill wastewater treatment in microbial fuel cells fabricated using proton exchange membrane and earthen pot at different pH By Manaswini Behera, Partha S Jana, Tanaji T More, M M Ghangrekar *Bioelectrochemistry* 79, 228-233 (2010)
59. Sediment transport on arbitrary slopes: A simplified model By Chen X, Ma J and Dey S *Journal of Hydraulic Engineering (ASCE)* 136, pp. 311-317 (2010)
60. Shear behaviour of RC T-beams with U-bonded glass fibre reinforced plastic sheet By Panda K C, and Bhattacharyya S K and Barai S V *Indian Concrete Journal* 61-71 (2010)
61. Shear Enhancement of RC T-beams Strengthened with GFRP Sheet in Shear Zone: Experimental Study By Panda, K C, Bhattacharyya S K and Barai S V *International Journal of Earth Sciences and Engineering* 177-185 (2010)
62. Site-Specific Microzonation Study in Kolkata Metropolitan City, India by 2-D Modeling of SH and P-SV Waves, By F. Vaccari, M. Y. Walling, W. K. Mohanty, A Sengupta and G. F. Panza *Int J. of Pure & Applied Geophysics* 168, 479-493 (2011)
63. Strain Localization in Geomaterials in Nature, Laboratory Tests and Numerical Analyses By A. Sengupta *Current Science* 98(9), 1195-1201 (2010)
64. Streamflow Prediction using Multi-Site Rainfall Obtained from Hydroclimatic Teleconnection By Kashid, S. S., Ghosh, S., and Rajib Maity *Journal of Hydrology* 395(1-2), 23-38, (2011)
65. Submerged wall-jets subjected to injection and suction from the wall By Dey S, Nath T K and Bose S K *Journal of Fluid Mechanics* 653, pp. 57-97 (2010)
66. Temporal scales for live-bed scour at abutments By Ballio F, Radice A and Dey S *Journal of Hydraulic Engineering (ASCE)* 136, pp. 395-402 (2010)
67. Terminal Condition for Thin Surfaced Low Volume Roads By UC Sahoo and K Sudhakar Reddy *International Journal of Pavement Engineering and Asphalt Technology* 11 (1), pp.47-59 (2010)

68. Turbulence characteristics in flows subjected to boundary injection and suction By Dey S and Nath T K *Journal of Engineering Mechanics (ASCE)* 136, pp. 877-888 (2010)
69. Ultimate strength analysis of ship hull girder under random material and geometric properties By Vhanmane, S. and Bhattacharya, B *Journal of Offshore Mechanics and Arctic Engineering* in press (2011)
70. Universal probability distributions of turbulence in open channel flows By Bose S K and Dey S *Journal of Hydraulic Research* 48, pp. 388-394 (2010)
71. Utilization of silica gel waste for adsorption of cationic surfactant and adsolubilization of organics from textile wastewater: A case study By S. Koner, Anjali Pal, A. Adak *Desalination* In press (2011)
72. Winter time Black Carbon Aerosols in East India: Sources and Radiative Effects By S. Verma, S.K. Pani, S.N. Bhanja *Atmospheric Environment* submitted (2011)

Papers Presented in Conferences

1. A simple continuous higher order Hellinger-Reissner type element for the analysis of magneto-electro-elastic plates featuring continuous interlaminar stresses, By S J Hossain and Subhamoy Sen, *CST2010: The Tenth International Conference on Computational Structures Technology*, Valencia, Spain, (2010)
2. Application of Radial Basis Neural Network on Damage Assessment of Structures, By V. Vallabhaneni and Damodar Maity, *The Twelfth East Asia-Pacific Conference on Structural Engineering and Construction (EASEC-12)*, City University of Hong Kong, (2011)
3. Artificial immune systems for structural optimization, By Botu, S and Barai S V, *International conference on Theoretical, Applied, Computational and Experimental mechanics (ICTACEM 2010)*, IIT Kharagpur, India, (2010)
4. Behavior of Nailed Steep Slopes in Laboratory Shake Table Tests, By A. Sengupta & Debabrata Giri, *5th Intl Conf on Recent Advances in Geotech. Earthquake Engg & Soil Dynamics and Symp. In Honor of Prof. I.M. Idriss*, San Diego, California, (2010)
5. Biomass fuel: Airing Issues of Health Risk, By A K Gupta, M.S. Indu and S. Ayoob, *Indo-French Seminar on Indoor Air Quality: Monitoring, Prediction Assessment and Cleaning*, Ecole des Mines de Nantes, France, (2010)
6. Development of partial safety factors for the design of partially prestressed rectangular sections in biaxial flexure, By Chatterjee, A., Agrawal, G., Mondal, A. and Bhattacharya, B, *4th Conference on Nuclear Reactor Technology*, Mumbai, (2011)
7. Dynamic Response of Rigid Pavement Subjected to Moving Load "A Parametric Study", By V. A. Patil, V. A. Sawant, Kousik Deb and K B Ladhane, *International Conference Innovative World of Structural Engineering (ICIWSE-2010)*, urangabad, Maharashtra, India, (2010)
8. Effect of Operating Temperature on Performance of Microbial Fuel Cell, By M. Behera, S.S.R. Murthy, and M.M. Ghangrekar, *Microbes in Wastewater and Waste Treatment, IWA conference*, Goa, (2011)
9. Effect of Surcharge on Soil Arching Effect in Stone Column-Supported Embankments, By Kousik Deb, *National Conference on Recent Advances in Ground Improvement*, CBRI Roorkee, India, (2011)
10. Electricity generation and wastewater treatment in a low cost up-flow microbial fuel cell fabricated with earthen cylinder, By Manaswini Behera, Partha Jana, M.M. Ghangrekar, *International Symposium on Bioenergy*, Kharagpur, (2010)
11. Electricity generation from synthetic wastewater and real sewage in an up-flow dual chambered microbial fuel cell, By Manaswini Behera, P.S. Jana, M.M. Ghangrekar, *3rd International conference of Environmental Research, University of Mauritius*, Mauritius, (2010)
12. Entrainment Threshold of Loose Boundary Streams (Keynote), By Subhasish Dey, *XXX International School of Hydraulics*, Wiece, Poland, (2010)
13. Factors affecting the Electrocoagulation of drinking water for the removal of turbidity, By Sr Malini Adapureddy and Sudha Goel, *IV World Aqua Conference*, New Delhi, (2010)
14. Fuzzy uncertainty based design of groundwater quality monitoring networks, By A. Dhar and R. S. Patil, *3rd International Congress of Environmental Research*, Reduit, Mauritius, (2010)
15. High Performance Bituminous Binder Modified with various Waste Plastics, By Moumita Naskar, T. K. Chaki and K. S. Reddy, *APSR 2011*, Indian Institute of Technology, Kharag, (2011)
16. Influence of recycled aggregate on mechanical properties of concrete, By Chakradhara Rao, M, Bhattacharyya, S K, and Barai S V, *The 5th Civil Engg. Conf. in the Asian Region and Australasian Structural Engineering Conference*, Sydney, Australia, (2010)
17. Influence of transverse steel on the performance of RC T-beams strengthened in shear with GFRP strips, By Panda, K. C., Bhattacharyya, S. K., and Barai, S. V., *5th International Conferences on FRP Composites in Civil Engineering (CICE 2010)*, Tsinghua University, Beijing, China, (2010)
18. Influence 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., *3rd Asian conference on ecstasy in concrete (ACECON 2010)*, IIT Madras, Chennai, India, (2010)
19. Low Energy Asphalt Mixes, By Vijay B. Kakade, Kranti Sagar, Reddy M A and Pandey B B, *International Seminar on Reducing Carbon Foot print in Road Construction*, New Delhi, (2011)
20. Marine Grade Sandwith composite panels with shear keys, By N. Mitra, *16th. International Conference on Composite Structures*, Porto, Portugal, (2011)
21. MEASURING BIODEGRADABILITY OF THE DIFFERENT ORGANIC FRACTIONS IN MUNICIPAL SOLID WASTE, By P. Kandakatla and Goel S, *IPWE-2011*, Singapore, (2011)
22. Microstructure of recycled aggregate concrete, By Chakradhara Rao, M, Bhattacharyya, S K, and Barai S V, *The 7th Structural Engineering Convention*, SERC, Madras, India, (2010)
23. Need for Performance Test in the Current Bituminous mix design procedure in India, By Srinivasa Reddy I Amaranatha Reddy M, *International Conference on Developments in Road Transportation*, NIT Rourkela, (2010)
24. Neuro models for prediction of ultimate flexural deformation capacity of reinforced concrete columns, By Sreeram, S. and Barai, S V, *International conference on Theoretical, Applied, Computational and Experimental mechanics (ICTACEM 2010)*, IIT Kharagpur, India, (2010)
25. Nonlinear Response of Pile Foundations under Horizontal Excitation Acting at Different Location of Pile Cap-Loading System, By Manna, B., and Baidya, D. K, *3rd Indian Young Geotechnical Engineers Conference (3IYGEC)*, New Delhi, India, (2011)
26. Nonlinear Soil-Pile Interaction under Vertical and Coupled Motion, By Manna, B., and Baidya, D. K., *5th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics*, San Diego, California, USA, (2010)

27. Numerical study of reinforced concrete T-beams strengthened in shear with GFRP sheet, By Panda, K. C., Bhattacharyya, S. K., and Barai, S. V., *5th International conference on Theoretical, Applied, Computational and Experimental mechanics (ICTACEM 2010)*, IIT Kharagpur, India, (2010)
28. Optimal Estimation of Design Parameters for Stone Column Improved Soft Soil, By Kousik Deb and Anirban Dhar, *Indian Geotechnical Conference 2010 @ Geotrendz*, Mumbai, India, (2010)
29. Optimal Properties of Zn-coated Fe combining Molecular Dynamics, Evolutionary Meta-model and Multi-objective Genetic Algorithms, By Bhattacharya, B., Rajak, P., Tewary, U., Das, S. and Chakraborti, N., *XVIII Conference Computer Methods in Materials Technology*, Zakopane, Poland, (2011)
30. Performance of Nailed Slopes under Cyclic Loading Condition, By D. Giri & A. Sengupta, *Indian Geotechnical Conference 2010 GEOTrendz*, Mumbai, (2010)
31. Prediction of the Separation Length at Soil-Pile Interface under Vertical Vibration using Artificial Neural Network Approach, By Das, S. K., Manna, B., and Baidya, D. K., *14th Asian Regional Conference on Soil Mechanics and Geotechnical Engineering*, Hong Kong, China, (2011)
32. Probabilistic prediction of streamflow using the information of Outgoing Longwave Radiation through Plackett copula, By Rajib Maity and kironmala Chanda, *International conference on Sustainable Water Resources Management and Climate Change Adaptation*, NIT Durgapur, (2011)
33. Quantity and quality aspects for regional groundwater aquifer of Hirakud command area, India, By A. Dhar, N. Bishi and S. Verma, *3rd International Conference on Water and Flood Management*, Dhaka, Bangladesh, (2011)
34. Rational Design Criteria for Sustainable Rural Roads, By UC Sahoo and K Sudhakar Reddy, *PIARC International Seminar on Sustainable Maintenance of Rural Roads*, Hyderabad, (2010)
35. Recycled aggregate concrete: A sustainable built environment, By Chakradhara Rao, M, Bhattacharyya, S K, and Barai S V, *International Conference on Sustainable Built Environment (ICSBE-2010)*, Kandy, Sri Lanka, (2010)
36. Recycled aggregates: A Sustainable Construction Materials, By Chakradhara Rao, M, Bhattacharyya, S K, and Barai S V, *National Conference on Sustainable Development of Urban Infrastructure*, VNIT Nagapur, India, (2010)
37. Relief Well Drainage Proposal for a More Reliable Municipal Water Supply, By Chatterjee, S. And Desai, V. R., *Conference on Infrastructure, Sustainable Transport and Urban Planning (CiSTUP@CiSTUP 2010)*, Indian Institute of Science, Bangalore, (2010)
38. Residual shear strength of non plastic soils from energy approach, By Singh, R. and Roy, D., *5th Int Conf. on Earthquake Geotech, Eng.*, Santiago, Chile, (2011)
39. Rice Mill Wastewater Treatment Using Microbial Fuel Cell, By Manaswini Behera, T.T. More, Partha S. Jana, M.M. Ghangrekar, *IWA World Water Congress, Montreal*, Canada, (2010)
40. Seismic hazard of Gujarat @ a simple deterministic view, By Roy, D. and Mandal, A., *Int. Conf. on Post disaster Construction*, Gandhinagar, Gujarat, India, (2011)
41. Shear reinforcing effect of glass fibre reinforced polymer sheet attached to side of reinforced concrete T-beams, By Panda, K. C., Bhattacharyya, S. K., and Barai, S. V., *International conference on innovative world of structural engineering (ICIWSE 2010)*, Govt. College of Engg, Aurangabad, India, (2010)
42. Silver Doped TiO₂ Catalyzed UV Photodegradation of Malachite Green Dye, By S. Saha, Anjali Pal, *APSRC - TSRP - 2010*, Lonavala, (2010)
43. Static and dynamic response of large diameter pile on soft rock, By Singh, R. and Roy, D., *Int. Conf. on Computer Methods and Advances in GEMECHANICS*, Melbourne, Australia, (2011)
44. Structural health monitoring of truss structures using virtual distortion method, By Amin, J J, Bhattacharyya, S K, and Barai S V, *International conference on Theoretical, Applied, Computational and Experimental mechanics (ICTACEM 2010)*, IIT Kharagpur, India, (2010)
45. Sustainability of National Highway System in India: Lessons Learnt, By Mitra, S, *International Conference on Sustainable Built Environment*, Kandy, Sri Lanka, (2010)
46. Understanding Driver Behavior using Macroscopic Traffic Data, By Mitra. S, Satyanarayana, Y, *Conference on Infrastructure, sustainable transportation and urban planning*, IISC, Bangalore, (2010)
47. Use of Infinite Elements in the Dynamic Analysis of Rigid Pavement Resting on Two Parameter Soil Medium, By V. A. Patil, V. A. Sawant and Kousik Deb, *Indian Geotechnical Conference 2010 @ Geotrendz*, Mumbai, India, (2010)
48. Wastewater treatment and electricity generation in novel up-flow microbial fuel cell under different organic loading rates., By Jana P.S., Manaswini Behera, Ghangrekar M.M., *International Conference on Emerging Trends in Energy and Environment [ICETEE]*, Chennai, (2010)
49. Water Conservation @ Quantitative and Qualitative Considerations, By Desai, V. R., *3rd International Congress on Environmental Research (ICER-10)*, Univ. of Mauritius, Reduit, Mauritius, (2010)

Department of Chemical Engineering

Head

Prof. Amar Nath Samanta

Professors

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
Mukherjee, Dibyendu	<i>Ph.D.(IIT Kharagpur)</i> , Multi Phase Flow Column Flotation Modeling & Simulation
Neogi, Sudarsan	<i>Ph.D.(Ohio Univ.,USA)</i> , Advanced Materials Processin Plasma Enhanced Chemical Vapor Deposition Surface engineering
Pradhan, Narayan Chandra	<i>Ph.D.(UDCT Bombay)</i> , Heterogeneous Catalysis, Chemical Process Development, Petrochemical Technology, Petroleum Refining, Separations Technology
Saha, Ranajit Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Combustion Engineering, Fuels&New Energy Conversion Processes, Fluidization Engineering
Samanta, Amar Nath	<i>Ph.D.(IIT Kharagpur)</i> , Process Dynamics & Control, Nonlinear Process Control, Process Modeling & Simulation

Associate Professors

Basu, Jayanta Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Reaction Engineering, Adsorption and Separation Science, Water Treatment
Chakraborty, Sudipto	<i>Ph.D.(IIT Kharagpur)</i> , Process Modelling and Simulation, CFD & Heat Transfer
Ganguly, Saibal	<i>Ph.D.(IIT Kanpur)</i> , Refinery,Petrochemicals,Polymer,Coal, RealTime Simulation,Control,Optimization
Kar, Debdulal	<i>Ph.D.(IIT Kharagpur)</i> , Mineral Processing, Fluidization Engineering, Biogas Development
Kundu, Gautam	<i>Ph.D.(IIT Kharagpur)</i> , Multiphase Operation, Mineral Beneficiation, Rheology of Suspension
Meikap, Bhim Charan	<i>Ph.D.(IIT Kharagpur)</i> , Pollution Control, Coal Beneficiation, CO2 Capturing, Fluidization
Neogi, Swati	<i>Ph. D.(Ohio University)</i> , Polymer Application Research, Composite manufacturing technology, Materials development, Fiber optics Cable design, Polymer fracture analysis/durability stu, Flame retardant materials development
Patwardhan, Anand Vinayak	<i>Ph.D.(UDCT Mumbai)</i> , Green Technology, Mass Transfer Operations, Heterogeneous Reactions, Microchannel Reactors

Assistant Professors

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
G, Harikrishnan	<i>Ph.D.(IIT Bombay)</i> , foams, polymer nanocomposites, polymers from bio-renewable resources, rheology, coatings
Ganguly, Somenath	<i>Ph.D.(Univ. of Kansas, USA)</i> , Flow in thin channel and porous media, Hydrogel, Improved recovery of hydrocarbon
Jana, Amiya Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Nonlinear Control
Mukherjee, Rabibrata	<i>Ph.D.(IIT Kanpur)</i> , Polymer Thin Film Instability, Soft Lithography, Nano Patterning, Structural Super Hydrophobicity
Ray, Subhabrata	<i>M.Tech.(IIT Kharagpur)</i> , Petroleum Refining, Process Control
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

Faculty Appointments

Jayanta Chakraborty

Assistant Professor

Faculty Promotions

Sudarsan Neogi

Professor

Debdulal Kar

Associate 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.

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

New Acquisitions

1. 15 KVA Online UPS
2. Osmotic Dehydration Cell
3. Set-up for continuous spinning of hollow fibre membranes
4. Keithley make digital source meter with accessories
5. 10 KVA Online UPS
6. Slurry Transportation Set-up
7. CCD Camera for Goniometer from RameHart Instruments
8. Eppendorf Centrifuge

International Collaborations

Project title: Flux enhancement using external electric field during micellar enhanced ultrafiltration; Sponsor: The Shastri Indo-Canadian Institute; Collaborators: Prof. Subir Bhattacharjee, Department of Mechanical Engineering, The University of Alberta, Canada and Prof.S.De (ChE, IITKgp); Details: This collaborative project highlights removal of naphthenic acid from water using micellar enhanced ultrafiltration and consequent flux enhancement. The result shows that about 98% removal of flux is possible using optimum dose of SDS micelles. About 12-15% flux enhancement is achieved using external electric field.

Project title: Quantification and reduction of fouling by change in hydrodynamics and membrane surface modifications; Sponsor: Indo-Tunisia project under DST; Collaborators: Prof. M. Dhabhi, Director, Research Institute on water Technologies (CERTe), Tunisia & Prof. S.De (ChE,

IITKgp) Details: This project deals with reduction of fouling of the membrane during ultrafiltration of metal ion containing, dye containing effluent and the relevant modeling as well. In this project, a physicochemical model is developed for polyelectrolyte enhanced ultrafiltration.

Title: Understanding the dynamics of polymer blends and nanocomposites in ultra thin systems. Colaborators: Prof Alamgir Karim, Goodyear Chair Professor, Dept of Polymer Engineering, University of Akron and Prof. R. Mukherjee (ChE, IITKgp); Sponsor: Indo US Centre of Excellence on Fabronics thru its project at IIT Kharagpur (funded by IUSTTF, Indo US Science and Technology Forum) and U Akron (Faculty Exchange). Nature of collaboration: Student and faculty exchange

A course on Fundamentals of BioEnergy in the chemical engineering curriculum jointly taught by Prof. Saikat Chakraborty (ChE, IITKgp) and Prof. Norman Miller (UC Berkeley) in the department.

Lectures by Visiting Experts

1. Unity and Diversity: Identity in Chemical Engineering *by* Prof. K.S. Gandhi (Indian Institute of Science, Bangalore)
2. Polymer Nanocomposites *by* Prof. Ramanan Krishnamoorti (University of Houston)
3. Polymer nanocomposites *by* Prof. Anil Bhowmik (IIT Patna)
4. Low Temperature Conversion of Bio-Mass to Ultra-Clean Gasoline *by* Mitrajit Mukherjee (Exelus Inc)
5. Climate Change: Observations, Projections, and a look at Antarctica *by* Prof. Norman Miller (University of California, Berkeley)
6. Tuning the properties of polymeric material using carbon nanotubes: achievements and perspectives *by* Dr. S. Bose (Katholieke Universiteit Leuven (KUL), Belgium)
7. Novel strategies to control the packing of block copolymer micelles in selective solvents *by* Dr. Sayeed Abbas (Dow Chemicals)
8. Liquid Thermo Physical Properties *by* Dr. Sabyasachi Sen (Invensys Process Systems, California)
9. A slice of Process Engineering (with real life examples) *by* Mr. Patho Ghoshal (KBR Houston)

Doctoral and MS Degrees Awarded

1. C. Prabhavathy : Membrane separation of tannery process effluents and investigation on flux enhancement(PhD)
2. Avijit Maiti : Removal of arsenic from water using raw and treated laterite as adsorbent(PhD)
3. Sumana Ghosh : Liquid-Liquid Flow through Pipe and Pipe Fittings- Experimentation and CFD Analysis(PhD)
4. Raghu Raja Pandiyan K : Development of Resin Transfer Moulding Technology for Composite Structures using Process Simulation(PhD)
5. Barun Kumar Thakur : Casting, Characterisation and optimisation of hemodialysis membrane(M.S.)
6. Debojyoti Goswami : Surfactant enhanced lipase catalyzed oil hydrolysis(PhD)

Member - Professional Bodies

1. Basu, Jayanta Kumar, *Life Member* - Indian Institute of Chemical Engineers
2. Chakrabarty, Saikat, *Associate* - Indian Institute of Chemical Engineers
3. Chakraborty, Sudipto, *Life Member* - IE(I)
4. Chakraborty, Sudipto, *Life Member* - IChE
5. Chakraborty, Sudipto, *Life Member* - IIM
6. Das, Gargi, *Life member* - Indian Institute of Chemical Engineers
7. De, Sirshendu, *Life Member* - The Indian Society of Theoretical and Applied Mechanics
8. Ganguly, Somenath, *Life Member* - Indian Institute of Chemical Engineers
9. Ganguly, Somenath, *Member* - American Institute of Chemical Engineers
10. Jana, Amiya Kumar, *Life Member* - Indian Society for Technical Education (ISTE)
11. Jana, Amiya Kumar, *Life Member* - Indian Institute of Chemical Engineers (IChE)
12. Kundu, Gautam, *Life Member* - Indian Society of Theoretical and Applied Mechanics
13. Kundu, Gautam, *Member* - Indian Institute of Chemical Engineers
14. Kundu, Gautam, *Life Member* - Indian Institute of Mineral Engineers
15. Meikap, Bhim Charan, *Member* - Canadian Institute of Chemical Engineering
16. Meikap, Bhim Charan, *Member* - Institution of Chemical Engineers (IChemE), UK
17. Meikap, Bhim Charan, *Member* - The South African Institute of Chemical Engineers(SAChE)
18. Meikap, Bhim Charan, *Member* - International Water Association (IWA), UK
19. Meikap, Bhim Charan, *Member* - American Institute of Chemical Engineers (AICHE)
20. Mukherjee, Dibyendu, *Regular* - Indian Institute of Chemical Engineers
21. Mukherjee, Dibyendu, *Life* - Indian Institute of Mineral Engineers
22. Mukherjee, Rabibrata, *Life Member* - Indian Ceramic Society
23. Neogi, Sudarsan, *Member* - Indian Institute of Chemical Engineers
24. Pradhan, Narayan Chandra, *Life Member* - Indian Institute of Chemical Engineers
25. Sarkar, Debasis, *Associated Member* - The Institution of Engineers (India)
26. Sarkar, Debasis, *Associate Member* - Indian Institute of Chemical Engineers
27. Sengupta, Sonali, *Life-member* - Indian Institute of Chemical Engineers

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

Awards & Honours

1. De, Sirshendu (2010) *Best reviewer for 2010 from Desalination, Elsevier*
2. De, Sirshendu (2010) *Dr. A. V. Rama Rao Foundations' award, for supervising best PhD thesis of Dr. Chandan Das from Indian Institution of Chemical Engineers*
3. De, Sirshendu (2010) *Herdillia Award, for the year 2010 for Excellence in Basic Research in Chemical Engineering, from Indian Institution of Chemical Engineers*
4. Meikap, Bhim Charan (2010) *J. W. Nelson Best Researchers Award of UKZN*
5. Mukherjee, Rabibrata (2010) *Samsung GRO REsearch Award 2010*

Fellowships

1. Kundu, Gautam (2010) *DAAD*

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. Antimicrobial Coating on Plasma Treated substrates for biomedical application (DRDO, Rs.20.00 Lakhs)
4. Development of low cost household filter for arsenic and other pollutant-free drinking water using modified laterite (DST, Rs.22.00 Lakhs)
5. Biogas Development (Ministry of Non-Renewable Energy, Rs.8.00 Lakhs)
6. Design, analysis and control of internally heat integrated distillation columns (DST, New Delhi, Rs.0.00 Lakhs)
7. Design, Modeling and Control of a High Pressure Pilot Scale HIX Reactive Distillation (DAE, BARC, Rs.0.00 Lakhs)
8. Development of experimental setup and study on upgradation of high ash Indian coal (DES) (Tata Steel, Jamshedpur, Rs.20.00 Lakhs)
9. Development of low cost household filter for arsenic and other pollutant free drinking water using modified laterite (Department of Science and Technology, Rs.20.40 Lakhs)
10. Droplet based microfluidics for electronics cooling (Intel Corporation, Rs.20.15 Lakhs)
11. Droplet based screening of Amyloid β -peptide aggregation (DBT, Rs.43.44 Lakhs)
12. Enzymatic Hydrolysis and Chemical Fermentation of Cellulose for Bioethanol Production (IIT Foundation, Rs.5.00 Lakhs)
13. Estimation of Lifetime and Lifecycle Cost of FRP Pipes Manufactured Using Various Technologies for Offshore and Onshore Applications (ONGC, Rs.30.00 Lakhs)
14. Fabrication and Durability Studies of Structured Superhydrophobic Surfaces (GRO Program, Samsung, Korea, Rs.63.30 Lakhs)
15. Flux enhancement using external electric field during micellar enhanced ultrafiltration (Shastri Indo-canada Institute, Rs.6.00 Lakhs)
16. Foam-gel formation in thin layer with flow complexities affecting the placement (DST, Rs.35.00 Lakhs)
17. Indo-Canada joint PDA on Nanoscale process for clean coal and bioinspired water & GHG efficient energy technologies (DST, Rs.8.00 Lakhs)
18. Indo-US Centre on Fabrication (Indo-US Science and Technology Forum, Rs.495.00 Lakhs)
19. Instability and Pattern Formation in Thin Polymer Bilayers (DST Nano Mission, Rs.52.20 Lakhs)
20. Modeling, Analysis and Control of Reactive Distillation Columns (CSIR, New Delhi, Rs.0.00 Lakhs)
21. Optimization of batch crystallization processes under uncertainty (ISIRD Grant of SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
22. PK Sinha Center Project (IIT Foundation, Rs.94.50 Lakhs)
23. 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)
24. Quantification and reduction of fouling by change in hydrodynamics and membrane surface modifications (DST, Rs.11.00 Lakhs)
25. Rapid DNA hybridization in microfluidic channels (DBT, Rs.42.00 Lakhs)
26. Steel Technology Centre (TCB) (Ministry of Steel & DST, New Delhi, Rs.2025.00 Lakhs)
27. Tuneable Meso Patterning of Polymer Bilayer Thin Films with Electric Field (ISIRD Grant of SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
28. Upgradation of Coal Fines in a Column Flotation Cell (CSIR, New Delhi, Rs.3.71 Lakhs)
29. Water lubricated transport of high viscous oils - Experimentation and theory (DST, Rs.19.00 Lakhs)

Consultancy Projects

1. Composite Development Center (RDSO, Rs.7.50 Lakhs)

2. Consultancy services for implementation of APC in DCU and HCU (NRL Ltd, Rs.7.72 Lakhs)
3. Design and development of a mathematical model for ultra fast cooling of steel strips (DDMM) (Tata Steel, Jamshedpur, Rs.0.00 Lakhs)
4. Design verification and critical analysis of bag filters installed at sponge iron plant in Orissa (CABF) (Orissa State PCB, Rs.0.00 Lakhs)
5. Development of gas sweetening technology for removal of CO₂ from natural gas (Engineers India Limited, Rs.30.00 Lakhs)
6. Development of Long Fiber Thermoplastic Composites (IIT Kharagpur, Rs.3.00 Lakhs)
7. Development of mixing model for alloy dissolution in steel ladles (MMAD) (Tata Steel, Jamshedpur, Rs.0.00 Lakhs)
8. Development of Natural fiber SMC (Continental Structural Plastics, Troy, MI, Rs.32.00 Lakhs)
9. Feasibility Study on Calcium Reduction in Ground and Blowdown Water of Thermal Power Stations Using Zeolite to be Synthesized from Lignite Fly Ash (Neyveli Lignite Corporation Limited, Rs.19.00 Lakhs)
10. Modelling of Chocolate behavior during tempering and cooling process (CBTP) (Cadbury India Ltd, Thane, Rs.4.00 Lakhs)
11. Modelling of thermite based closed cycle thermal system (CCTS) (HEMRL (DRDO), Pune, Rs.9.00 Lakhs)
12. Optimization, characterization and casting of haemodialysis membranes (Acropetal Pvt. Ltd, Rs.21.00 Lakhs)
13. Process Simulation and Material Balance of Uran Plant (Oil and Natural Gas Commission, Rs.6.47 Lakhs)
14. 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)
15. Study and Modeling of Gas Processing Plant at Uran (ONGC, Rs.6.70 Lakhs)
16. Surface energy Modification of SMC substrates using RF Plasma (CSP Plastics, TROY, MICHIGAN, USA, Rs.4.00 Lakhs)
17. Survey of Biogas Plants in West-Bengal (West-Bengal Renewable Energy Agency, Rs.2.50 Lakhs)
18. Testing & prototype manufacturing of composite products. (Various Organizations, Rs.5.00 Lakhs)
19. Training Programme on Pultrusion Technology with Introduction to other Fabrication Method. (Zoom Developers, Rs.0.60 Lakhs)

Patents (filed / granted)

1. A Novel Set up for Spinning Polymeric Hollow Fiber Membrane
2. Harikrishnan G, Macosko CW, Lindsay CI, Singh, SN. Clay $\alpha\omega$ Isocyanate nano dispersions and polyurethane nanocomposite produced there with
3. Harikrishnan G, Patro TU, Khakhar DV. Clays as cell openers in polyurethane foams
4. Harikrishnan G, Patro TU, Khakhar DV. Reticulated vitreous carbon with controlled pore size and enhanced electrical conductivity from open cell polyurethane foam precursors containing montmorillonite based clays

Visits Abroad by Faculty Members

1. Mukherjee, Rabibrata - Meetings in connection with Indo US centre of Excellence in Research on Fabricionics (University of California, Irvine and Northwestern University, USA,) June 26 - July 10
2. Meikap, Bhim Charan - Collaborative Research Meeting (University of Malaya, Kuala Lumpur, Malaysia,) June 12-18, 2010
3. Meikap, Bhim Charan - To Chair a Technical Session on Transport Processes and Novel Separation Technologies 13th APCChE (Taipei, Taiwan,) 5-8, October, 2010
4. Kundu, Gautam - Guest professor and worked on investigation of a novel micro bubble column reactor. (Technical University of Dresden, Germany,) May $\alpha\omega$ July, 2010
5. Mukherjee, Rabibrata - Meeting in connection with Indo US collaborative project (University of Akron Ohio, Northwestern University and University of Illinois, Chicago, USA,) 2 weeks
6. Meikap, Bhim Charan - to accept the position of Professor , School of Chemical Engineering. (University of Kwazulu-Natal, Durban, South Africa,) June 2009 to December 2010
7. De, Sirshendu - To Chair a session on Transport Processes and Novel separation Technologies (13th Asia Pacific Confederation of Chemical Engineers, Taipei, Taiwan,) 5-8 October, 2010
8. De, Sirshendu - Visiting Professor (Department of Mechanical Engineering, University of Alberta, Canada,) June 2 to July 18, 2010
9. Mukherjee, Rabibrata - Attend and deliver invited talk at DPG Spring Meeting (Dresden, Germany,) March 13 -18 2011
10. Meikap, Bhim Charan - To Chair and participate in a Conference (ETH Technical University of Zurich, Switzerland,) September 11-15, 2011

Invited Lectures by Faculty Members

1. Instability and Patterning of Thin Polymer Films *by* Mukherjee, Rabibrata (Dept of Polymer Engineering, University of Akron)
2. Research trends in membrane separation laboratory at IIT Kharagpur *by* De, Sirshendu (Seimens IT Solutions and Services, Bangalore)
3. Modeling of pore blocking during cross flow membrane filtration *by* De, Sirshendu (Department of Mechanical Engineering, University of Alberta, Canada)
4. How to write a reasonable PhD thesis *by* De, Sirshendu (Special Guest lecture in HSS course $\alpha\omega$ English for technical writings $\alpha\omega$, IIT Kharagpur,)
5. Extraction and clarification of stevioside using membrane separation processes *by* De, Sirshendu (13th Asia Pacific Confederation of Chemical Engineers, Taiwan)
6. Industrial waste water treatment: Use of membrane based processes *by* De, Sirshendu (AICTE short term course on Solids and Hazardous Waste Management)
7. Modeling approaches of Membrane Based Separation Processes *by* De, Sirshendu (Herdillia award lecture in CHEMCON 2010, Annamalaiagar, Tamilnadu)
8. Membrane research at IIT Kharagpur *by* De, Sirshendu (Indo-Canadian workshop at Kolkata)

9. Influence of Pattern Height on Dewetting of Polymer Thin Films on a Patterned Substrate *by* Mukherjee, Rabibrata (Dresden, Germany)
10. Spontaneous Dewetting of Ultra Thin Films *by* Mukherjee, Rabibrata (Kolkata, at National Seminar on Modelling of Natural Phenomena)
11. Thin Polymer Film Instability Dewetting and Pattern Formation *by* Mukherjee, Rabibrata (Kolkata, Indo Canadian Workshop (IIT Kgp - U Alberta))
12. Template Guided Self Organization *by* Mukherjee, Rabibrata (Aurangabad, Indo US Workshop on Fabrication 2011)
13. Soft Fabrication: Soft Lithography and Beyond *by* Mukherjee, Rabibrata (Aurangabad, Indo US Student Workshop on Fabrication 2011)
14. Micro, Meso and Nano Patterning of Soft Surfaces *by* Mukherjee, Rabibrata (IIT Guwahati, QIP Course on Recent Advancement of Intelligent Materials and its Applications)
15. Fabrication and Application of Meso Patterned Polymer Films *by* Mukherjee, Rabibrata (Aurangabad, Jawaharlal Nehru Engineering College)
16. Glimpses of Activity on Soft Patterning Relevant to Plasmonic and Nanostructured Solar Cells *by* Mukherjee, Rabibrata (Delhi University, DST brainstorming Meeting on Plasmonic & Nanostructured Solar Cells)
17. Air Pollution Control by wet scrubbing Techniques *by* Meikap, Bhim Charan (Manosuthu University of Technology, Umlazi, Durban, South Africa)
18. Ejector induced downflow bubble column – A novel contactor for gas-liquid system *by* Kundu, Gautam (TU Dresden , Germany)
19. Column flotation cell – A novel application of slurry bubble column *by* Kundu, Gautam (Technical University of Braunschweig , Germany)
20. The March of Chemical Engineering into the 21st century *by* Das, Gargi (Thrissur)
21. Fundamentals of Multiphase flow *by* Das, Gargi (Thrissur)

Books Published

1. Sirshendu De: Novel Separation Processes *published by* NPTEL, MHRD (2010)

Papers Published in Journals

1. Reticulated vitreous carbon from polyurethane foam clay composites *By* Harikrishnan G, Patro TU, Khakhar DV *Carbon* 45, 531-535 (2007)
2. Study Of Gas Holdup and Pressure Characteristics in a Column Flotation Cell Using Coal *By* S.. Shukla, G. Kundu, and D. Mukherjee *Minerals Engineering* Vol. 23, pp 636-642 (2010)
3. Development of Manufacturing Technology for Cab Front using Resin Transfer Moulding *By* Raghuraj Pandiya, Gautam Kundu , Swati Neogi and Jiten Patel *Journal of Composite Materials* March 10, 2010, doi: (2010)
4. Gas Newtonian and gas non Newtonian slug flow in vertical pipe: Part – I Gas Holdup characteristics *By* Subrata kumar Majumder, Sandip ghosh, Arun kumar Mitra and Gautam Kundu *International Journal of Chemical Reactor Engineering* Vol.8, pp – 1-25 (2010)
5. Studies on Upflow Bubble Column with Glass Beads Internals *By* R. N. Mohapatro, S. Pradeep, S. C. Shukla, and G. Kundu *Journal of The Institution of Engineers (India) Chemical* Vol 90, pp 33-36 (2010)
6. Abhijit Maiti, Vaibhav Agarwal, Sirshendu De, Jayanta K. Basu, Removal of As(V) using iron oxide impregnated carbon prepared from Tamarind hull *By* A. Maiti, V Agarwala, S. De J. K. Basu *Journal of Environmental Science and Health, Part A* 45(5), 1207 – 1216 (2010)
7. A criterion to avoid starvation zones for convection-diffusion-reaction problem inside a porous biological pellet under oscillatory flow *By* J. Prakash, G. P. Rajasekhar, S. De *International Journal of Engineering Science* 48 , 693-707 (2010)
8. A fouling model for steady state cross flow membrane filtration considering sequential intermediate pore blocking and cake formation *By* S. Mondal and S. De *Separation & Purification Technology* 75 , 222-228 (2010)
9. A generalized model for clarification of fruit juice during ultrafiltration under total recycle and batch mode *By* S. Mondal, A. Cassano, V. Tasselli, S. De *Journal of Membrane Science* 366 , 295-303 (2011)
10. A kinetic approach to the esterification of maleic anhydride with methanol on H-Y zeolite *By* Shivareddy Induri, Sonali Sengupta, Jayanta K. Basu *J. Ind. Eng. Chem* 16, 467-73 (2010)
11. A New Intensified Heat Integration in Distillation Column *By* Mane, A. and Jana, A. K. *Industrial & Engineering Chemistry Research* 49, 9534-9541 (2010)
12. A simple transient method for measurement of thermal conductivity of rigid polyurethane foams *By* Harikrishnan G, Macosko CW, Choi JH, Bischoff JC, Singh SN *J. Cell. Plast* 44, 481-491 (2008)
13. A two dimensional model of the transient and steady state characteristics of a wicked heat pipe with experiments *By* P.R. Mistry, F. M. Thakkar, S. De, S. DasGupta *Experimental Heat Transfer* 23, 333-348 (2010)
14. Ammonia Sensing by HCl Doped Poly(m-aminophenol)-silver Nanocomposite *By* Pradip Kar, Narayan C. Pradhan and Basudam Adhikari *Journal of Materials Science* 46(9), 2905-2913 (2011)
15. An appraisal of liquid-liquid slug flow in different pipe orientations *By* T. K. Mandal, G. Das, P.K. Das *International Journal of Multiphase Flow*, 36, 661-671 (2010)
16. CFD modeling of water flow through sudden contraction and expansion in a horizontal pipe *By* 3. V. V. R. Kaushik, S. Ghosh, G. Das, P. K. Das *Chemical Engineering Education* 45(1), Winter, 30-36 (2011)
17. Chemical treated laterite as fluoride adsorbent for aqueous system and kinetic modeling *By* A. Maiti, J. K. Basu and S. De *Desalination* 265, 28-36 (2011)
18. Clay nanoplatelet induced morphological evolutions during polymeric foaming (in press) *By* Harikrishnan G, Patro TU, Unni AR and Khakhar DV *Soft Matter* DOI:10.1039/C1SM0567 (2011)
19. COD reduction of petrochemical industry wastewater using Fentons oxidation *By* Prabir Ghosh, A. N. Samanta and Subhabrata Ray *The Canadian Journal of Chemical Engineering* 88, 1021-1026 (2010)
20. Color Diminution and COD Reduction in Treatment of Colored Effluent by Electrocoagulation *By* A.K. Golder, H. Kumar, A.N. Samanta and S. Ray *Int. J. Environ. Eng.* 2(1/2/3) (2010)

21. Convection, diffusion and reaction inside a spherical porous pellet in presence of oscillatory flow By J. Prakash, G. P. Rajasekhar, S. De *European Journal of Mechanics B/Fluids* 29, 483-493 (2010)
22. Convection-diffusion-reaction inside a porous sphere under oscillatory flow including external mass transfer By J. Prakash, S. De and G. P. Rajasekhar *Fluid Dynamics Research*, 43, 015508 (2011)
23. Coupled concentration polarization and pore flow modeling of nanofiltration of an industrial textile effluent By P. Banerjee and S. De *Separation and Purification Technology* 73, 355-362 (2010)
24. Development of a treated laterite for arsenic adsorption: Effects of treatment parameters By A. Maiti, J. K. Basu and S. De *Industrial Engineering Chemistry Research* 49 (10) 4873-4886 (2010)
25. Development of Soft Sensor to Identify Flow Regimes in Horizontal Pipe Using Digital Signal Processing Technique By K. Muvvala, V. Kumar, B.C. Meikap and S. Chakraborty *Industrial & Engineering Chemistry Research* 49 (6), 3001-3010 (2010)
26. Displacement of Cr(III) Cr^{3+} partially hydrolyzed polyacrylamide gelling solution in a fracture in porous media By Somenath Ganguly *Transport in Porous Media* 84, 201-218 (2010)
27. Dynamic Simulation of Mixing-limited Symmetric and Asymmetric Patterns in Homogeneous Autocatalytic Reactors By Anwesha Chaudhury and Saikat Chakraborty *Industrial & Engineering Chemistry Research* 49 (21), 10517-10523 (2010)
28. Dynamics of mixing-limited pattern formation in non-isothermal homogeneous autocatalytic reactors: a low-dimensional computational analysis By Anwesha Chaudhury and Saikat Chakraborty *Industrial & Engineering Chemistry Research* DOI: 10.1021/ie10186 (2011)
29. Economic challenges in high-ash Indian coal preparation By S. Mohanta, S. Chakraborty and B. C. Meikap *International Journal of Coal Preparation and Utilization* Vol 30 pp 295-309 (2010)
30. Effect of monomer temperature on foaming and properties of flexible polyurethane foams, By Hari Krishnan G and Khakhar DV *J. App. Polym. Sci.* 105, 3439-3443 (2007)
31. Effect on Structure, Processability, and Conductivity of Poly(m-aminophenol) of the Initial Acidity/Basicity of the Polymerization Medium By Pradip Kar, Narayan C. Pradhan and Basudam Adhikari *Journal of Macromolecular Science B: Physics* 49(4), 669-679 (2010)
32. Effective bacterial inactivation using low temperature radio frequency plasma By Sureshkumar A, Sankar R, Mandal M, Neogi S. *International Journal of Pharmaceutics* 396(1-2):17-22 (2010)
33. Electric field enhanced gel controlled cross-flow ultrafiltration under turbulent flow conditions By B. Sarkar and S. De *Separation and Purification Technology* 74, 73-82 (2010)
34. Electroosmotic flow of power-law fluids at high zeta potentials By N. Vasu and S. De *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 368, 44-52 (2010)
35. Electroviscous effects in purely pressure driven flow and stationary plane analysis in electroosmotic flow of power-law fluids in a slit microchannel By N. Vasu and S. De *International Journal of Engineering Science* 48, 1641-1658 (2010)
36. Enhancement of Rheological Behavior of Indian High Ash Coal-Water suspension by using Microwave Pre-Treatment By B. K. Sahoo, S. De, M. Carsky and B.C. Meikap *Industrial & Engineering Chemistry Research* 49 (6), 3015-3021 (2010)
37. Epoxidation of Jatropha (*Jatropha curcas*) Oil by Peroxyacids By Vaibhav V. Goud, Srikanta Dinda, Anand V. Patwardhan and Narayan C. Pradhan *Asia-Pacific Journal of Chemical Engineering* 5(2), 346-354 (2010)
38. Experimental Validation of a Two Dimensional Model of the Transient and Steady State Characteristics of a Wicked Heat Pipe By R. Mistry, F. Thakkar, S. De, S. DasGupta *Experimental Heat Transfer* 23, 333-348 (2010)
39. Flux decline during cross flow membrane filtration of electrolytic solution in presence of charged nano-colloids: A simple electrokinetic model By S. De and S. Bhattacharjee *Journal of Colloid & Interface Science* 353, 530-536. (2011)
40. Flux enhancement during ultrafiltration of depectinized mosambi (*Citrus sinensis* (L.) Osbeck) juice By P. Rai, G. C. Majumdar, S. DasGupta and S. De *Journal of Food Process Engineering* 33 (3), 554-567 (2010)
41. Formation and characterization of polyurethane Cr^{3+} vermiculite nanocomposite foams By Patro TU, Hari Krishnan G, Misra A, Khakhar DV *Polym. Engg. Sci.* 48, 1778-1784 (2008)
42. Heat Pump Assisted Reactive Distillation: Wide Boiling Mixture By Jana, A. K. and Mane, A. *AIChE Journal* DOI10.1002/aic.12518 (2011)
43. Identification and prediction of air core diameter in a hydrocyclone by a Novel Online Sensor based on Digital Signal Processing Technique By V. Krishna, R. Sri Priya, V. Kumar, S. Chakraborty, B. C. Meikap *Chemical Engineering and Processing: Process Intensification* 49(2), 165-176 (2010)
44. Identification of Stable Operating Ranges of a Counter-Current Multi-Stage Fluidized Bed Reactor with Downcomer By C.R. Mohanty, B. Rajmohan, B.C. Meikap *Chemical Engineering and Processing: Process Intensification* 49, 104-112 (2010)
45. Improvement of performance efficiency of a hydrocyclone with design modification by suppressing air core By R. Sri Priya R, S. Nikkam, S. Chakraborty and B. C. Meikap *Korean Journal of Chemical Engineering* Vol 28, pp. 225-231 (2011)
46. Induced Doping by Sodium Ion in Poly(m-aminophenol) Through the Functional Groups By Pradip Kar, Narayan C. Pradhan and Basudam Adhikari *Synthetic Metals* 160, 1524-1529 (2010)
47. Iron ore grindability improvement by microwave pre-treatment By P. Kumar, B.K. Sahoo, S. De, D. D. Kar, S. Chakraborty and B. C. Meikap, *Journal of Industrial and Engineering Chemistry* Vol 16, pp 805-812 (2010)
48. Kinetic studies on hydrolysis of urea in a semi-batch reactor at atmospheric pressure for safe use of ammonia in a power plant for flue gas conditioning By 14. K. Mahalik, J. N. Sahu, A. V. Patwardhan and B. C. Meikap *Journal of Hazardous Materials* 175, 629-637 (2010)
49. Kinetics of Reactive Absorption of Carbon Dioxide with Solutions of 1,6-Hexamethylene-diamine in Polar Protic Solvents By Srikanta Dinda, Anand V. Patwardhan, Narayan C. Pradhan and Vaibhav V. Goud *Separation and Purification Technology* 75(1), 1-7 (2010)
50. Mixing Effects in Cellulase-mediated Hydrolysis of Cellulose for Bio-ethanol Production By Saikat Chakraborty, Aniket, Ashwin Gaikwad *Industrial & Engineering Chemistry Research* 49 (21), 10818-10825 (2010)
51. Modeling and Transport Parameters during Nanofiltration of Degreasing Effluent from a Tannery By C. Prabhavathy and S. De *Asia Pacific Journal of Chemical Engineering*, 6, 101-109 (2011)
52. Modeling of crystal morphology distributions. Towards crystals with preferred asymmetry By Jayanta Chakraborty, Meenesh R. Singh, Doraiswami Ramkrishna, Christian Borchert and Kai Sundmacher *Chemical Engineering Science* 65, 5676-5682. (2010)
53. Modeling of extraction of dyes and their mixtures from aqueous solution using emulsion liquid membrane By A. K. Agrawal, C. Das and S. De *Journal of Membrane Science* 360, 190-201 (2010)
54. Modeling of Flux Enhancement in Presence of Concentration Polarization by Pressure Pulsation during Laminar Cross Flow Ultrafiltration By K. Kumar and S. De *Membrane Water Technology: An International Journal*, 1 (4), 253-272 (2010)
55. Modeling the dynamics of reactive foaming and film thinning in polyurethane foams By Hari Krishnan G and Khakhar DV *AIChE J* 56, 522-530 (2010)

56. Modeling the operation of a three-stage fluidized bed reactor for removing CO₂ from flue gases By C.R. Mohanty, B.C. Meikap *Journal of Hazardous Materials* 187(1-3), 113-121 (2011)
57. Modification of Epoxidized Canola Oil for Lubricant Formulations By Rubeena Mungroo, Narayan C. Pradhan, Ajay K. Dalai and Vaibhav V. Goud *Asia-Pacific Journal of Chemical Engineering* 6(1), 14-22 (2011)
58. Nanodispersions of Carbon nanofiber for polyurethane foaming By Harikrishnan G, Singh SN, Kiesel E, Macosko CW *Polymer* 51, 3349-3353 (2010)
59. Neuro-Estimator based GMC Control of a Batch Reactive Distillation By Jithin Prakash, K. J., Dipesh Patil, and Jana, A. K. *ISA Transactions* 10.1016/j.isatra.201 (2011)
60. Nonlinear Control of a Batch Reactive Rectifier By Patra, A., Dave, D. M. and Jana, A. K. *Industrial & Engineering Chemistry Research* DOI10.1021/ie101315b (2011)
61. Optimisation of oxidative desulphurisation of thiophene using Cu/Titanium silicate-1 by box-behnken design By N. Jose, S. Sengupta and J.K.Basu *Fuel* 90, 226-232 (2011)
62. Optimization for production of ammonia from urea in a semi-batch reactor for safe feedstock in power plants: Experimental and statistical studies By J. N. Sahu, A.V. Patwardhan, B.C. Meikap *CLEAN - Soil, Air, Water* 38 (5-6), 533-542 (2010)
63. Optimization for the Chemical Synthesis of Conducting Poly (m-aminophenol) in HCl using Ammonium Persulfate By *High Performance Polymers* 22, 428-441 (2010)
64. Optimization of ammonia production from urea in continuous process using ASPEN Plus and computational fluid dynamics study of the reactor used for hydrolysis process, By J. N. Sahu, B. C. Meikap *Journal of Industrial and Engineering Chemistry* 101(6) 1974-1982 (2010)
65. Optimization of production conditions for activated carbons from Tamarind wood by zinc chloride using response surface methodology By J. N. Sahu, Joiti K. Acharya, B. C. Meikap *Bioresource Technology* 101,1974-1982 (2010)
66. Oxidation kinetics of degradation of 1,4-dioxane in aqueous solution by H₂O₂/Fe(II) system By Prabir Ghosh, A N Samanta, S Ray *Journal of Environmental Science and Health, Part A* 45, 395-399 (2010)
67. Performance characteristics of pilot plant dense media hydrocyclone for beneficiation of coal and 3-D CFD simulation By Parate Dinesh Suresh, V. Kumar, R. Sriprya, S. Chakraborty and B.C. Meikap *Chemical Engineering Science* Vol 65 pp 4661-467 (2010)
68. Performance Investigation of a Variable Speed Vapor Recompression Reactive Batch Rectifier By Johri, K., Babu, G. U. B., and Jana, A. K. *AIChE Journal* DOI10.1002/aic.12546 (2011)
69. Polyurethane foam - clay nanocomposites: Nano-clays as cell openers By Harikrishnan G, Patro TU, Khakhar DV *Ind. Engg. Chem. Res.* 45, 7126-7134 (2006)
70. Population balance modeling of environment dependent breakage: role of granular viscosity, density and compaction. Model formulation and similarity analysis By Jayanta Chakraborty and Doraiswami Ramkrishna *Industrial and Engineering Chemistry Research* Accepted (0)
71. Prediction of permeate flux for turbulent flow in cross flow electric field assisted ultrafiltration By B. Sarkar and S. De *Journal of Membrane Science* 369, 77-87 (2011)
72. Pressure drop analysis for liquid-liquid downflow through vertical pipe By S. Ghosh, G. Das, P. K. Das *Trans ASME, Journal of Fluid Engineering* 133, 011202 (2011)
73. Probing nano-dispersions of clays for reactive foaming By Harikrishnan G, Lindsay CI, Arunagirinathan MA, Macosko CW *ACS Applied Materials & Interfaces* 1, 1913-1918 (2009)
74. Production of Cellulosic Fuels: a review By Saikat Chakraborty and Ashwin Gaikwad *Proceedings of National Academy of Sciences India* 81 A (2011)
75. Quantification of transient flux decline during membrane separation of tanning effluent from tannery By C. Das, S. DasGupta, Y. T. Hung and S. De *International Journal of Environmental Engineering* 2 (1/2/3), 31 - 42 (2010)
76. Reduction of COD and removal of Zn²⁺ from rayon industry wastewater by combined electro-Fenton treatment and chemical precipitation By Prabir Ghosh, Amar Nath Samanta, Subhabrata Ray *Desalination* 266, 213-217 (2011)
77. Removal of arsenic from synthetic and natural groundwater using acid activated laterite By Abhijit Maiti, Jayanta Kumar Basu and Sirshendu De *Env. Progress and Sustainable Energy(AICHeE)* online published (2010)
78. Removal of As(V) using iron oxide impregnated carbon prepared from tamarind hull By A. Maiti, V. Agarwal, J. K. Basu and S. De *Journal of Environmental Science and Health, Part A*, 45, 1203-1212 (2010)
79. Removal of hexavalent chromium by electrochemical reduction-precipitation: investigation of process performance and reaction stoichiometry By A.K. Golder, A.K. Chanda, A.N. Samanta and S. Ray *Separation and Purification Technology* 76, 345-350 (2011)
80. Rheological characteristics of coal-water slurry using microwave pretreatment A statistical approach By B.K. Sahoo, S. De, M. Carsky, B.C. Meikap *Journal of Industrial and Engineering Chemistry*, 17, 62-70 (2011)
81. Simulation of core annular downflow through CFD- A comprehensive study By S. Ghosh, G. Das, P.K.Das *Chemical Engineering and Processing* 49(11), 1222-1228 (2010)
82. Stability and Dewetting of Metal Nanoparticle Filled Thin Polymer Films: Control of Instability Length Scale and Dynamics By Rabinrata Mukherjee, S Das, A Das, S K. Sharma, Arup K. Raychaudhuri and Ashutosh Sharma *ACS Nano* 4, 3709 (2010)
83. Statistical modeling and optimization of hydrolysis of urea to generate ammonia for flue gas conditioning By S. K. K. Mahalik, J. N. Sahu, A. V. Patwardhan and B. C. Meikap *Journal of Hazardous Materials* 182, 603-610 (2010)
84. Studies on low viscous oil-water flow through return bends By M. Sharma, P. Ravi, S. Ghosh, G. Das, P. K. Das *Experimental Thermal and Fluid Science* 35,3, 455-469 (2011)
85. Study of gas holdup and pressure characteristics in a column flotation cell using coal By Satish Shukla, Gautam Kundu and Dibyendu Mukherjee *Minerals Engineering* 23, 636 - 642 (2010)
86. Surface modification of argon/oxygen plasma treated vulcanized ethylene propylene diene polymethylene surfaces for improved adhesion with natural rubber By Ganesh C. Basak, Abhijit Bandyopadhyay, Sudarsan Neogi and Anil K. Bhowmik *Applied Surface Science* 257(7), 2891-2904 (2010)
87. The influence of phase inversion on mass transfer during liquid-liquid flows through milli-channels By P. Mondal, S. Ghosh, G. Das, S. Ray *Chemical Engineering and Processing* 49(10), 1051-1067 (2010)
88. Treatment of dyeing effluent from tannery using membrane separation processes By C. Das, S. DasGupta and S. De *Int. J. Environ. Waste Management* 5(3-4), 354-367 (2010)
89. Treatment of iron ore slime for value By Ankush Pal, Amar N. Samanta, Subhabrata Ray *Hydrometallurgy* 105 (2010)
90. Use of fracture as a planar source of flow to determine the effect of stagnant zone on the dilution of a front By Somenath Ganguly *Journal of Porous Media* 14 (2011)

91. Vapour liquid equilibria of carbon dioxide in dilute and concentrated aqueous solutions of piperazine at low to high pressure By 38. Sukanta Kumar Dash, Arunkumar Samanta, Amar Nath Samanta, Syamalendu S. Bandyopadhyay *Fluid Phase Equilibria* 300, 145-154 (2011)

Papers Presented in Conferences

1. Dynamic Simulation of Mixing-Limited Symmetric and Asymmetric Patterns in Homogeneous Autocatalytic Reactors, By Anwesha Chaudhury and Saikat Chakraborty, *21st International Symposium on Chemical Reaction Engineering*, Philadelphia, USA, (2010)
2. Effect of particle shape on settling characteristics, By Ashish Goenka, Kamalendu Bhunia, Satish Chandra Shukla and Gautam Kundu, *XI International Seminar on Mineral Processing Technology 2010*, National Metallurgical Laboratory, Tata, (2010)
3. Enzymatic Hydrolysis of Cellulosic Biomass and Fermentation for Bioethanol Production, By Ashwin Gaikwad, Aniket and Saikat Chakraborty, *International Conference on Microbes in Waste treatment, Enzyme Production and Energy Production 2*, Goa, India, (2011)
4. Extraction and clarification of stevioside using membrane separation processes, By C. Rai and S. De, *13th Asia Pacific Confederation of Chemical Engineers*, Taipei, Taiwan, (2010)
5. Mixing Effects in Cellulase-Mediated Hydrolysis of Cellulose for Bio-Ethanol Production, By Saikat Chakraborty and Aniket, *21st International Symposium on Chemical Reaction Engineering*, Philadelphia, USA, (2010)
6. Morphological measurements of faceted crystals using image analysis, By 2. Meenesh Singh, Jayanta Chakraborty and Doraiswami Ramkrishna, *AIChE Annual Meeting*, Salt Lake City, (2010)
7. Performance Characterization and Prediction of Air Core in a Hydrocyclone, By R. Sripriya, V. Krishna, S. Chakraborty, B. C. Meikap, *The 13 Th. Asia Pacific Confederation of Chemical Engineering Congress, APChE-2010*, Taipei, Taiwan, ROC, (2010)
8. Population Balance Modeling of Faceted Asymmetric Crystals, By 3. Jayanta Chakraborty, Meenesh Singh, Doraiswami Ramkrishna, *ISCRE 21*, Philadelphia, (2010)
9. Population Balance Modeling of morphology distribution of asymmetric crystals, By 1. Meenesh Singh, Jayanta Chakraborty and Doraiswami Ramkrishna, *AIChE Annual Meeting*, Salt Lake City, (2010)
10. Processing of Stevia Extract using Membrane Separation Technology, By Chayya, G. C. Majumdar, S. De, *National Symposium on Emerging Innovative Technologies for Assurance of Quality and Safety in Processed Foods*, IIT Kharagpur, (2011)
11. Production of Value-added Chemicals from Low Cost Raw Material: Production of Benzene and Xylenes by Disproportionation of Toluene, By Lakshmana Rao Jeeru, Narayan C. Pradhan and Gautam Kundu, *Indian Chemical Engineering Congress (CHEMCON-2010)*, Annamalainagar, Tamil Nadu, (2010)
12. Reactions of Benzyl Chloride with H₂S-rich Ethanolamine Under Phase Transfer Catalysis: Optimization of Product Selectivity by RSM, By Sujit Sen, Narayan C. Pradhan and Anand V. Patwardhan, *Indian Chemical Engineering Congress (CHEMCON-2010)*, Annamalainagar, Tamil Nadu, (2010)
13. Role of ultrafiltration for clarification of stevioside using membrane separation processes, By C. Rai and S. De, *CHEMCON-2010*, Annamalainagar, TamilNadu, (2010)
14. Scaling Down Methodology for Cab Front Prototype Manufacturing using Resin Transfer Moulding Process, By Raghu Raja Pandiyani K., Gautam Kundu, Swati Neogi, *10th-annual SPE Automotive Composites Conference & Exhibition (ACCE)*, MI 48084 USA, (2010)
15. Steam Reforming of Ethanol Over Alumina Supported Nano-nickel/Silica Catalyst, By Banali Bej, Narayan C. Pradhan and Swati Neogi, *Indian Chemical Engineering Congress (CHEMCON-2010)*, Annamalainagar, Tamil Nadu, (2010)
16. Study of liquid phase mixing characteristics in flotation column, By Satish Chandra Shukla, Kamalendu Bhunia, Dibyendu Mukherjee and Gautam Kundu, *XI International Seminar on Mineral Processing Technoly 2010*, National Metallurgical Laboratory, Tata, (2010)
17. Study of pressure characteristics in a column flotation cell using coal, By Satish Shukla, Gautam Kundu and Dibyendu Mukherjee, *CHISA 2010 & ECCE7*, Prague, (2010)

Department of Chemistry

Head

Prof. Pratim Kumar Chattaraj

Professors

Basak, Amit	<i>Ph.D.(Cal),D.Phil.(Oxon)</i> , Bioorganic/Medicinal Chemistry
Bhattacharjee, Manish	<i>Ph.D.(NEHU)</i> , Catalysis
Chattaraj, Pratim Kumar	<i>Ph.D.(IIT Bombay)</i> , Density functional theory, Chemical reactivity, ab initio calculations, Quantum chaos, Aromaticity in metal clusters
Mal, Dipak Ranjan	<i>Ph.D.(Missouri)</i> , Total synthesis of bioactive natural products heterocyclic chemistry dearomatization annulation
Pal, Tarasankar	<i>Ph.D.(Burdwan Univ.)</i> , <i>D.Sc.(Visva Bharati Uni)</i> , Inorganic Chemistry
Pathak, Tanmaya	<i>Ph.D.(Uppsala Sweden)</i> , Carbohydrates. Nucleosides. Heterocycles. Carbocycles. Back-bone modified dinucleosides.
Pramanik, P	<i>Ph.D.(IIT Kharagpur)</i> , Nano Materials, Material Chemistry, Advanced Ceramic, Optical Materials, Catalyst, Mesoporous Material
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.
Ray, Jayanta Kumar	<i>Ph.D.(Calcutta Univ)</i> , Intramolecular Heck Reactions
Roy, Sujit	<i>Ph.D.(IIT Kanpur)</i> , Organometallic Chemistry, Homogeneous Catalysis
Sarkar, Nilmoni	<i>Ph.D.(Jadavpur Univ)</i> , Characterization of Ionic Liquid containing Microemulsion, Photoinduced electron transfer in RTIL and RTIL containing confined media.
Sarkar, Tarun Kumar	<i>Ph.D.(Calcutta Univ)</i> , Synthetic Organic and Organometallic Chemistry
Srivastava, Suneel Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Nanomaterials and polymer composites

Associate 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
Biradha, Kumar	<i>Ph.D.(Hyderabad)</i> , Gas sorption studies, Supramolecular Chemistry, Crystal Engineering, Polymorphism, Coordination Polymers, Structural Chemistry, solid state reactions
Dasgupta, Swagata	<i>Ph.D.(RPI New York)</i> , Protein ligand binding Protein aggregation studies
Dey, Joykrishna	<i>Ph.D.(Kanpur)</i> , 1. Molecular Self-assembly 2. Colloidal Drug Delivery Systems 3. Polymer-Surfactant Intera
Hajra, Saumen	<i>Ph.D.(Pune Univ)</i> , Catalytic Asymmetric Reactions, Organocatalysis, Total Synthesis of Biologically Active Compounds
Maiti, Mrinal Mohan	<i>Ph.D.(IIT Kharagpur)</i> ,
Raj, C Retna	<i>Ph.D.(M.K Univ Madurai)</i> , Optical and electrochemical sensors, Electrocatalysis and fuel cell, Inorganic functional nanomaterials
Taraphder, Srabani	<i>Ph.D.(IISc Bangalore)</i> , Theoretical Physical Chemistry

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> , Polymer Chemistry, Colloid and Surface Chemistry

Halder, Mintu	<i>Ph.D.(IACS Kolkata)</i> , Experimental Physical Chemistry, Biophysics, Photophysics of Nano-materials, Spectroscopy
Mahanty (Pathak), Amita	<i>Ph.D.(IIT Kharagpur)</i> , Synthesis and Characterization of Inorganic Nanomaterials
Mani, Ganesan	, Anion Receptors, Organometallic Chemistry
Nag, Ahindra	<i>Ph.D.(Jadavpur Univ)</i> , Five papers published
Nanda, Samik	<i>Ph.D.(IICT-Hyderabad)</i> , Asymmetric synthesis, Biocatalysis
Rajakumar Ananthakrishnan	<i>Ph.D.(M.K.Univ., Madurai)</i> , Analytical & Environmental Chemistry, Preparation of Photocatalysts from Inorganic Complex/Materials
Singh, N D Pradeep	<i>Ph.D.(Madras Univ.)</i> , controlled release of agrochemicals by sunlight, Synthesis of fluorescent photoremovable protecting groups, Synthesis and applications of Photoacid generators

Faculty Appointments

A Ayyappan Assistant Professor

Faculty Retirement

Maiti, Mrinal Mohan Associate Professor

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. Epigenetics of steroid hormone signalling: Human disease and drug discovery by Dr. S.S.Mandal (University of Texas)

2. Systematic Evaluation of Kinetic Energy for Pair Density *by* Prof. Debajit Chakraborty (McMaster University, Canada)
3. Magnetism : Molecules to Materials *by* Dr. Anirban Misra (NBU)
4. Gold Nanoparticles for Biomedical Application *by* Dr. Nripen Chanda (Univ. of Missouri-Columbia)
5. Design and Synthesis of isopeptide and potential incubator for glutamyl hydrolase *by* Dr. Debatosh Majumdar (Emory winship institute of Georgia)
6. Development of Novel and Efficient Strategies for the Total Synthesis of Bioactive Natural Products *by* Dr. Chandan Kr. Jana (Univ. of Basel)
7. Metal-Coordinated Radical: Inorganic and Bioinorganic Perspective *by* Prof. R.N. Mukherjee (IIT Kanpur)
8. Development of Solid-State Lithium-Air Battery *by* Dr. Jitendra Kumar (Univ. of Dayton, Dayton, Ohio)
9. Potential Resonance in Ultracold Chemical Reactions *by* Dr. Subhas Ghosal (Univ. of Connecticut)
10. Palladium-Catalyzed Cross-couplings in Organic Synthesis: 2010 Nobel Prize in Chemistry *by* Prof. S. Kotha (IIT Kanpur)
11. Explorations into metal-mediated transformations: Bioinorganic & catalysis aspects *by* Dr. Debabrata Maiti (MIT)
12. Vibrational energy flow within dimeric hemoglobin and the role of interfacial water molecule *by* Dr. Ramachandran Gunasekaran (University of Nevada, USA)
13. Development of novel method for free drug analysis *by* Dr. Ragam Mallik (Allergan Inc. CA)
14. Chiral polymers and their applications *by* Dr. Dibyendu S Bag (DMSRDE, Kanpur)
15. Supported Co-Salen catalyst for ring opening reactions of epoxides *by* Dr. Krishnan Venkataasubbaiah (GIT, USA)
16. Expanding the highly reactive actinide chemistry: Organometallic and low valent complex *by* Dr. Balamurugan (University of McMaster, Canada)

Doctoral and MS Degrees Awarded

1. Rathin Jana : Synthesis of Heterocyclic and Carbocyclic Compounds by Palladium and Copper Catalyzed Reaction(Ph.D.)
2. Milan Bera : Carbon-carbon and carbon-heteroatom bond activation via silver(I) catalysis: Synthetic and Mechanistic studies(Ph.D.)
3. Manasmita Das : Design, Synthesis and Biofunctionalization of Magnetic Iron Oxide Nanoparticles for Cancer Specific targeting, Imaging and Therapy(Ph.D)
4. Debarati Mitra : Synthesis and Reactivity of Azobenzene, Amino acid and Propargyl sulfone Hybrids and asymmetric cyclopropanation(Ph.D)
5. Mrinal Sarkar : Studies on multinuclear complexes of 3d transition metal ions supported by multidentate ligands(Ph.D)
6. Saroj Ranjan De : Total synthesis of euplectin, an indenochromone natural product and Studies on the synthesis of pyranonaphthoquinones(Ph.D.)
7. Rajput Lalitkumar Dilipsing : Crystal Engineering With Molecules Containing Multiple Secondary Amide Functionalities Via Halogen-Halogen Interactions, Hydrogen Bonds(Ph.D)
8. Patil Dipak Bhagwan : Production of Value-added Products from Plant and Animal Waste(Ph.D)
9. Arpita Sarkar : Syntheses of mesoporous materials through soft template assisted routes(Ph.D.)

Member - Professional Bodies

1. Bandyopadhyay, Sanjoy, *Life Member* - Chemical Research Society of India
2. Chattaraj, Pratim Kumar, *Member* - Key Opinion Leaders Panel, Nature Collections (Chemical Sciences, Nature Publishing Group), Macmillan Scientific Communications, UK
3. Chattaraj, Pratim Kumar, *Member* - Nomination Council for the Russnano Prize, 2011
4. Dasgupta, Swagata, *Life Member* - Chemical Research Society of India
5. Dasgupta, Swagata, *Member 2010* - National Screening Committee for Fulbright-Nehru Doctoral and Professional Research Fellowships
6. Dey, Joykrishna, *Life Member* - Chemical Research Society of India
7. Dey, Joykrishna, *Life Member* - Indian Society for Radiation and Photochemical Sciences
8. Dey, Joykrishna, *Life Member* - Society for Polymer Science, India
9. Dhara, Dibakar, *Life Member* - Society of Polymer Science, India
10. Mahanty (Pathak), Amita, *Member* - Asian Nanoscience and Nanotechnology Association (ANNA) and Academy of Nanoscience and Nanotechnology (ANN)
11. Raj, C Retna, *Life Member* - Chemical Research Society of India
12. Raj, C Retna, *Life Member* - Indian Society of Electroanalytical Chemistry
13. Sarkar, Nilmoni, *Life member* - Chemical Research Society of India
14. Sarkar, Nilmoni, *Life member* - Indian Association for the Cultivation of Science
15. Sarkar, Tarun Kumar, *Life member* - CRSI
16. Srivastava, Suneel Kumar, - Life Member: Materials Research Society of India
17. Srivastava, Suneel Kumar, - Life member : Society for Polymer Science, India
18. Taraphder, Srabani, *Life Member* - Chemical Research Society of India
19. Taraphder, Srabani, *Regular Associate* - International Centre for Theoretical Physics, Trieste, Italy

Member - Editorial Board

1. Bandyopadhyay, Sanjoy (0) *Editorial Board member* - Mediterranean Journal of Chemistry
2. Bandyopadhyay, Sanjoy (0) *Editorial Board member* - Philisophic Nature
3. Biradha, Kumar (2010) *Editor* - Crystal Engineering Book Series
4. Biradha, Kumar (2010) *EBM* - Crystal Growth & Design Network
5. Biradha, Kumar (2010) *Co-editor* - Acta Crystallographica, section E
6. Biradha, Kumar (2007) *Editorial advisory board member* - The Open Inorganic Chemistry Journal
7. Biradha, Kumar (2008) *Editorial Board Member* - New Journal of Chemistry
8. Biradha, Kumar (2008) *Advisory Board member* - The Open Inorganic Chemistry Journal
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. Mal, Dipak Ranjan (2009) *member* - Organic Chemistry International
15. Rajakumar Ananthakrishnan (2010) *Associate Editor* - Environmental Chemistry Letters
16. Rajakumar Ananthakrishnan (2011) *Member of Editorial Advisory Board* - International Journal of Environmental Sciences
17. Rajakumar Ananthakrishnan (2011) *Associate Editor* - International Journal of Analytical Chemistry Research
18. Srivastava, Suneel Kumar (0) *Editorial Advisory Board Member* - Recent Patents on Nanotechnology
19. Srivastava, Suneel Kumar (2009) *Associate Editor* - Nanoscience and Nanotechnology Letters
20. Srivastava, Suneel Kumar (2010) *Editor* - Journal of Nano Energy and Power Research

Awards & Honours

1. Singh, N D Pradeep (2009) *Associate of the Indian Academy of Sciences*
2. Nanda, Samik (2010) *Associate of the Indian Academy of Sciences*
3. Pathak, Tanmaya (2010) *Excellence in Carbohydrate Research-2010* awarded by the Association of Carbohydrate Chemists and Technologists, India
4. Ray, Debashis (2008) *Bronze medal of Chemical Research Society of India (Not recorded earlier in my Home Page).*

Fellowships

1. Basak, Amit (2010) *Leverhulme Visiting Professor*
2. Taraphder, Srabani (2010) *Indo-US Science & Technology Forum Fellowship*

Sponsored Research Projects

1. A Value Chain on Aloe Vera Processing (ICAR, NAIP, Rs.385.00 Lakhs)
2. Application of high resolution NMR spectroscopy in complex chemical and biochemical systems (DST, Rs.205.00 Lakhs)
3. Artificial Protein cleaving agents (CSIR, Rs.16.00 Lakhs)
4. Assessment of biological activity and toxicity: An in silico investigation based on the combined quantum mechanics and molecular dynamics study (C.S.I.R., New Delhi, Rs.12.00 Lakhs)
5. Asymmetric Syntheses of ¹³C-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. Carbon nanotube supported electrocatalyst for fuel cells and metal air battery applications (DRDO, Rs.34.96 Lakhs)
8. Characterization of Ionic Liquid containing microheterogeneous media and investigation of ultrafast processes in these confined media (CSIR, Rs.19.67 Lakhs)
9. Characterization of micelles, Reverse Micelles in Room Temperature Ionic Liquids (RTILs) using Dynamic light scattering, fluorescence spectroscopy (DST, Rs.38.00 Lakhs)
10. Computational studies of gold catalyzed cycloaddition reactions (ISIRD, 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 anion recognition short peptide motifs: an approach towards designing model scaffolds for binding (DBT (Co-PI), Rs.3.20 Lakhs)
14. Design of Organic-Inorganic Hybrid Materials and Exploration of their Gas Adsorption and Desorption Properties (DST, Rs.49.00 Lakhs)
15. Design of Organic-Inorganic Hybrid Materials with Porous and/or Chiral Properties (DST, Rs.18.72 Lakhs)
16. Design, Synthesis and Characterization of Lipophilic Polyelectrolyte Gels (Department of Science and Technology, New Delhi, Rs.20.40 Lakhs)
17. Development and characterization of semiconducting nanotubes/nanorods for thermoelectric applications (DST, Rs.17.90 Lakhs)
18. Development of nanostructured transducer for amperometric and microgravimetric applications (DST, Rs.34.34 Lakhs)
19. Development of Silicon Carbide supported Graphene-Polymer Nanocomposites for EMI Shielding Applications (DRDO, Rs.47.79 Lakhs)
20. Droplet based screening of amyloid beta peptide aggregation (DBT, Rs.49.50 Lakhs)
21. Early transition metal catalyzed aqueous polymerization (DST, Rs.24.00 Lakhs)
22. Electrophoresis of Polyethylene Glycol Copolymers (IIT Kharagpur, Rs.3.00 Lakhs)

23. Epoxy reinforced inorganic material filled organic polymer composites in tribological applications (DRDO, Rs.24.56 Lakhs)
24. Evaluation of Potential Applications in Drug Delivery of Some Novel pH-Responsive, Biocompatible, and Biodegradable Hydrophobically Modified Polymers (DST, Rs.35.00 Lakhs)
25. Fatty Acid Biosynthesis Inhibitors (DBT, Rs.70.00 Lakhs)
26. Garratt Braverman Rearrangement (DST, Rs.37.00 Lakhs)
27. Gold catalyzed organic transformations: Applications to the synthesis of bioactive natural products (DST, Rs.29.16 Lakhs)
28. Hydroxymethylated cycloalkenones privileged small molecular chiral templates for asymmetric synthesis of bio-active natural products (DST, Rs.35.00 Lakhs)
29. Hydroxynitrile lyase biocatalysis: production of active pharmaceutical intermediates by substrate engineering (DBT, New-Delhi, Rs.20.00 Lakhs)
30. HYPOMAP new materials for hydrogen powered mobile applications (DST, Indo-Eu, New Delhi, Rs. 47.12 Lakhs: IIT KGP Share, Rs.47.12 Lakhs)
31. Identification of potential biomarkers for the diagnosis of endometriosis: a proteomics approach (DST, Rs.25.20 Lakhs)
32. Interaction of dietary polyphenols and their copper complexes with human serum albumin. (DST (PI), Rs.29.00 Lakhs)
33. Investigations on development and properties of poly-olefinic elastomer nanocomposites (CSIR, Rs.13.50 Lakhs)
34. New Functional group photolithography methods to pattern self assembled monolayers (SAMs) (DST, Rs.17.00 Lakhs)
35. New photoremovable protecting groups for self assembled monolayers (SAMs) (ISIRD, SRIC, Rs.5.00 Lakhs)
36. Olefin polymerization by organolanthanide catalysts (CSIR, New Delhi, Rs.15.70 Lakhs)
37. Organocatalytic and Enantioselective 1,2-Halofunctionalization of Alkenes (Department of Science & Technology (DST), New Delhi, Rs.23.90 Lakhs)
38. Physico-Chemical Properties of Ayurvedic Metal-Based Drug: A Case Study on Rasasindur (DST, Rs.0.00 Lakhs)
39. Pi-pi interactions in cyclization reactions (DST, Rs.21.00 Lakhs)
40. Role of water in predicting the protein folding-unfolding pathways: Computer simulation studies (Department of Science and Technology, Rs.26.65 Lakhs)
41. Sesqui and Di Terpenoids by Palladacycles (DST, Rs.25.00 Lakhs)
42. Studies on copper complexes of green tea polyphenols and their effects on the activities of ribonuclease A and angiogenin (CSIR (PI), Rs.9.00 Lakhs)
43. Studies on Palladium Catalysed Heck Reactions (CSIR, Rs.15.00 Lakhs)
44. Studies on Protein-Metal Colloid Interactions by Raman Spectroscopy (DST (Co-PI), Rs.20.96 Lakhs)
45. Synthesis and optical properties of metal nanoparticles in aqueous and non-aqueous reverse micelles and investigation of solvent relaxation in reverse (BRNS, Rs.20.70 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. Synthesis, Structure and Reactivity of Bimetallic Complexes Using Metalloligands (CSIR, Rs.9.45 Lakhs)
49. Total synthesis of chlorocyclinones PPAR antagonists of natural origin (CSIR, Rs.18.00 Lakhs)

Consultancy Projects

1. Asymmetric Synthesis of Novel Heterocarbocycles (TCG Life Sciences: Chembiotek, Saltlake, Kolkata, Rs.6.61 Lakhs)
2. Development of an R&D centre at Kolkata (Damodar Valley Corporation, Rs.0.00 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 viscera
3. Ultra-sensitive simultaneous electrochemical determination of arsenic, mercury and copper

Visits Abroad by Faculty Members

1. Sarkar, Nilmoni - To attend Indo-japan Joint Symposium (Kobe University, Japan,) 25th-28th September
2. Biradha, Kumar - Indo-Russian workshop on Structure and properties of organic and organometallic crystals: From fundamentals (Novosibirsk, Russia,) September 27-30
3. Biradha, Kumar - Editorial Board Meeting of New Journal of Chemistry & R. Sc. Editors symposium (Brussels, Belgium,) Feb 06-08
4. Srivastava, Suneel Kumar - Research (Walther-Meissner-Institut der Bayerischen Akademie der Wissenschaften, Technische Universität München, Germany,) 04.05.09 to 31.06.09
5. Dasgupta, Swagata - Oral presentation at the Gordon Research Conference on Biomolecular Interactions and Methods (Gordon Research Conference, Galveston TX,) January 17-22, 2010
6. Taraphder, Srabani - Research as IUSSTF Fellow (University of Utah, Salt Lake City, USA,) Aug. 2009-June 2010
7. Ray, Jayanta Kumar - Invited speaker and Chairman of a session (Italy(Florence) and UAE (Dubai),) 4-days at each place
8. Nag, Ahindra - Invited Chairman of International conference on recent trends on Biosciences (Bangkok, Thailand,) 18-23 October, 2010
9. Biradha, Kumar - Chairing AsCA 2010 (Busan, Korea,) 30th October to 3rd November
10. Biradha, Kumar - First China-India-Singapore Trilateral Symposium on Crystal Engineering (National University of Singapore, Singapore,) July 31st to 2nd August

Invited Lectures by Faculty Members

1. Lateral lithiation for naphthols and carbazoles *by* Mal, Dipak Ranjan (Burdwan University)
2. A rapid entry to C-prenylcarbazoles: Total synthesis of clausevatine D *by* Mal, Dipak Ranjan (Indian Chemical Society, Kolkata)
3. Synthesis, Characterization, Structure and Catalytic Properties of Cationic Ruthenium(II) Complexes *by* Bhattacharjee, Manish (Tripura University)
4. Biocatalytic enantioselective scaffolding of hydroxymethylated cycloalkenones, diversity oriented *sy by* Nanda, Samik (IICT, Hyderabad)
5. Lactams as antibiotics *by* Ray, Jayanta Kumar (3rd ICDD Conference Dubai)
6. Thiol Mediated Tandem Michael-Aldol Reaction: A General Method for the Synthesis of Fused Cyclopente *by* Ray, Jayanta Kumar (9th International Symposium on Carbanion Chemistry Florence, Italy)
7. Recent Advances in Pure and Applied Chemistry *by* Chattaraj, Pratim Kumar (Dr B R Ambedkar Center for Biomedical Research, University of Delhi)
8. National Conference on Nonlinear Systems and Dynamics 2011 *by* Chattaraj, Pratim Kumar (Centre for Nonlinear Dynamics, School of Physics, Bharathidasan University, Tiruchirappalli)
9. Member, NOC and Speaker, National Seminar on Condensed Matter Physics *by* Chattaraj, Pratim Kumar (Department of Physics, Assam University, Silchar)
10. CCP6 workshop on Quantum Trajectories *by* Chattaraj, Pratim Kumar (Bangor University, Wales, UK)
11. AIP/ACOFI 2010 Congress *by* Chattaraj, Pratim Kumar (Melbourne, Australia)
12. Colloquium *by* Chattaraj, Pratim Kumar (Swinburne University, Melbourne, Australia)
13. Delivered a series of lectures (UGC Sponsored) on Quantum Chemistry *by* Chattaraj, Pratim Kumar (Gauhati University)
14. Member, NOC and Invited Speaker, TCS 2010 *by* Chattaraj, Pratim Kumar (IIT Kanpur)
15. Invited Speaker, Conference on Current Trends in Condensed Matter Physics *by* Chattaraj, Pratim Kumar (NISER, Bhubaneswar)
16. Chairman, Technical Session, International Conference on Advances in Polymer Science and Rubber Tech *by* Chattaraj, Pratim Kumar (IIT Kharagpur)
17. Basics of molecular simulations *by* Bandyopadhyay, Sanjoy (Department of Mathematics, Indian Institute of Technology, Kharagpur, India)
18. Hydration of bio-molecules *by* Bandyopadhyay, Sanjoy (S. N. Bose National Centre for Basic Sciences, Kolkata, India)
19. Some recent understandings on bio-molecular hydration *by* Bandyopadhyay, Sanjoy (University of Kalyani, Kalyani, India)
20. Ultrafast to slow dynamics in RTIL and RTIL containing confined Media *by* Sarkar, Nilmoni (Kobe, Japan)
21. Chemical Dynamics in Ionic Liquid containing Confined Media *by* Sarkar, Nilmoni (Jadavpur university)
22. Pyrrole Based Synthetic Receptors for Anions *by* Mani, Ganesan (IISc Bangalore)
23. An Overview of Our Research on Modified Carbohydrates and Nucleosides *by* Pathak, Tanmaya (H. P. University, Shimla)
24. Biologically Relevant Synthetic Nucleosides. *by* Pathak, Tanmaya (Department of Chemistry and Chemical Technology of Vidyasagar University)
25. Molecules to Medicines *by* Pathak, Tanmaya (Belur Vidyamandir)
26. Analytical Challenges in Environmental Chemistry *by* Rajakumar Ananthakrishnan (ANJA College, Sivakasi (Research Centre in Chemistry Under M. K. University))
27. Advanced Analytical Techniques for Chemical Analysis *by* Rajakumar Ananthakrishnan (V.V.V. College for Women, Virudhunagar)
28. Advanced Functional Materials for Green and Sustainable Energy Future *by* Raj, C Retna (National Symposium on Nanostructured Materials, Madurai)
29. Nanoarchitected Electrochemical Sensing Platform for Environmental and Clinical Applications *by* Raj, C Retna (Cochin, International symposium on analytical chemistry)
30. Thermoreversible Gelation of Organic Solvents and Biocompatible Oils in the Presence of Amino Acid B *by* Dey, Joykrishna (IIT, Guwahati)
31. Hydrogen Bonding (HB) Versus Hydrophilic-Lipophilic Balance (HLB): Physical Gelation of Organic Solv *by* Dey, Joykrishna (Trivandrum)
32. Multinuclear Complexes of 3d Transition Metal Ions: Role of Bridging and Nucleating Groups *by* Ray, Debashis (Prof. E.S. Jayadevappa 60th Birthday Commemorative Lecture of Karnataka University, Dharwad, Karnataka.)
33. Interference and Template Effects in Crystal Engineering *by* Biradha, Kumar (IISc Bangalore)
34. Chaired a Micro Symposium (MS-12) on "Crystal Growth and Engineering" for AsCA-2010 *by* Biradha, Kumar (Busan, Korea)
35. Crystal Engineering with Acid, Amide and Pyridine Containing Molecules *by* Biradha, Kumar (National University of Singapore, Singapore)
36. A novel method for preparation of graphene and study of its mechanism of its reduction *by* Pramanik, P (Alaska, USA)
37. Nanobiotechnology-Some aspects *by* Pramanik, P (North Dakota University, USA)
38. Soft chemistry for nanomaterials and its application *by* Pramanik, P (University of Technology MARA, Kuala Lumpur, Malaysia)
39. Application of Multifunctional Designed Nanoparticles *by* Pramanik, P (University of Kalyani)
40. Nanomaterials through soft chemistry *by* Pramanik, P (IISER, Pune)
41. Nanomaterials *by* Pramanik, P (Scottish church college, Kolkata)
42. Nanomaterials and its application *by* Pramanik, P (Maharajahs post graduate college, Vizianagaram, Andhra Pradesh)
43. Interactions of Biomacromolecules with Naturally Occurring Polyphenols: Prospects for Inhibitor Design *by* Dasgupta, Swagata (Gordon Research Conference, Galveston, TX, USA.)
44. synthetic studies towards small ring macrolides *by* Nanda, Samik (Visvabharati, Santiniketan, 9th CRSI kolkata chapter)

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108. Orthogonally multifunctionalized magnetofluorescent nanoparticles as a novel platform for cancer theragnostics By M. Das, D. Mishra, D. Bandyopadhyay, S. Datir, P. Dhak, S. Jain, T. K. Maiti, A. Basak and P. Pramanik *Bioconjugate Chemistry* Accepted (2011)
109. Palladium-catalyzed one-pot Suzuki coupling followed by arylpalladium addition to aldehyde: a convenient route to fluoren-9-one derivatives By Sunanda Paul, Shubhankar Samanta, Jayanta K. Ray *Tetrahedron Letters* 51,5604 (2010)
110. Perennial Review: Update 2 of Chem. Rev By P. K. Chattaraj, S. Giri and S. Duley *Chem. Rev.* 111, PR43 (2011)
111. Photodegradation of Organic Dyes in the Presence of [Fe(III)-salen]Cl Complex and H₂O₂ Under Visible Light Irradiation By Sarfuddin Gazi, Rajakumar Ananthakrishnan, N.D. Pradeep Singh *Journal of Hazardous Materials* 183, 894-901 (2010)
112. Physico-chemical studies and optimization of gallic acid By A.Nag and D. B. Patil *Annals of Microbiol* 10,132-136 (2011)
113. Preparation and Characterization of Blends derived from Waste Polypropylene and Crumb Rubber Powder By A.Nag J. Jose G.B.Nando and C.Nah *Advanced Materials Research* 123, 1251-1254 (2010)
114. Preparation and characterization of exfoliated layered double hydroxide/silicone rubber nanocomposites By B. Pradhan, S.K. Srivastava, A. Rajakumar and A. Saxena *Journal of Applied Polymer Science* 119, 343-351 (2011)
115. Preparation of Nanocrystalline BaTiO₃ Powders, Fibers, and Thin Films From the Same Precursor Solution By Rabindra N. Das and P. Pramanik *J. Am. Ceram. Soc* 93 [7] 1869-1873 (2010)
116. Processing and Characterization of Recycled and Acrylonitrile Butadiene Rubber Blends By A.Nag J. Jose and G.B.Nando *J Polymer Environant* 19, 201-275 (2011)
117. Production of PUFA Concentrates from Poultry and Fish By A.Nag and D. B. Patil *J. Am Oil Chem Soc.* 88,593-598 (2011)
118. Pseudohalide supported mononuclear trans-NiII complexes of cationic and neutral dinitrogen heterocycles By M. Sarkar, S. Paul, K. Roy, S. Roychaudhuri, A. Sarkar, A. K. Ghosh and D. Ray *Inorganica Chimica Acta* 363, 3041-3047 (2010)
119. Rapid room temperature synthesis of electrocatalytically active Au nanostructures By Ashok Kumar Das and C. R. Raj *Journal of Colloid and Interface Science* 353, 506 (2011)
120. Reaction Medium pH Dependent Existence of MnII Bound [ON] Donor Zwitterionic Chelating Ligand and Self-Assembly of Hydroxido-Bridged MnII₄ Cluster By M. Sarkar, V Bertolasi and D. Ray *European Journal of Inorganic Chemistry* 2530-2536 (2010)
121. Reinforcement of ball shaped MoS₂ nanoparticles in epoxy resin By Suneel Kumar Srivastava, Ashish Kumar Sahoo, Kartick Bindumadhavan, Saraswathi Kesavapillai Manu, Bijan Bihari Nayak, Koushik Biswas, Arvind Kumar Saxena and Rajendra Singh *J. Nanoscience and Nanotechnology* 10, 8171-79 (2010)
122. Room temperature synthesis of highly hemocompatible hydroxyapatite, study of their physical properties and spectroscopic correlation of particle size By Nagaprasad Puvvada, Pravas Kumar Panigrahi and Amita Pathak *Nanoscale* 2 2631-2638 (2010)
123. S. Senapati, S.K. Srivastava, S.B. Singh and K. Biswas, Capping Agent Assisted and Ag-Catalyzed Growth of Ni Nanoflowers, By *Crystal Growth and Design* 10, 4068-75 (2010)
124. Secondary structure specific entropy change of a partially unfolded protein molecule By S. K. Sinha, S. Chakraborty and S. Bandyopadhyay *Langmuir* 26 9911-9916 (2010)
125. Selective synthesis, characterization, and photoluminescence study of YPO₄:Eu³⁺ nanorods and nanoparticles By S. Ray , A. Banerjee, P. Pramanik *Materials Research Bulletin* 45 (2010) 870-877 (2010)
126. Selectivity in Garratt-Braverman Cyclization: An Experimental and Computational Study By Maji, Manasi Mallick, Dibyendu Mondal, Sayantan Anoop, Anakuthil Bag, Subhendu Sekhar Basak, Amit Jemmis, Eluvathingal D. *Organic Letters* 13, 888 (2011)
127. Simple Facile Route for the Preparation of Graphite Oxide and Graphene By B. Kartick and S. K. Srivastava *J. Nanoscience and Nanotechnology*, (2011)
128. Single step surface modification of highly stable magnetic nanoparticles for purification of His-tag proteins By Sumanta Kumar Sahu, Arindam Chakraborty, Dipsikha Bhattacharya, Sudip K. Ghosh and Panchanan Pramanik *J Nanopart Res* In Press (2011)
129. Site-selective synthesis of in-situ Ni filled multi-walled carbon nanotubes using Ni(salen) as catalyst source By Joydip Sengupta, Avijit Jana, N D Pradeep Singh and Chacko Jacob *NANOTECHNOLOGY* (2010)
130. Solvent and rotational relaxation of Coumarin-153 in a micellar solution of a room-temperature ionic liquid, 1-butyl-3-methylimidazolium octyl sulfate, in ethylammonium nitrate By V.G. Rao, C. Ghatak, R. Pramanik, S. Sarkar, N. Sarkar *Chem. Phys. Letters* 499, 89 (2010)
131. Sonochemical synthesis and application of rhodium-graphene nanocomposite By Sourov Chandra and Sourav Bag and Radhaballav Bhar and Panchanan Pramanik *J Nanopart Res* (2011)
132. Spontaneous Formation of pH-Sensitive, Stable Vesicles in Aqueous Solution of N-[4-n-Octyloxybenzoyl]-L-histidine By T. Patra, S. Ghosh and J. Dey *Soft Matter* 6, 3669-3679 (2010)
133. Structural phase transition in lanthanum gallate as studied by Raman and X-ray diffraction measurements By 3. Prasanta Dhak, S. Bhattacharya, P. Pramanik, S. N. Achary, A.K. Tyagi and A. Roy *Physica Status Solidi B* DOI 10.1002/pssb.201 (2011)
134. Studies on the sensing behaviour of nanocrystalline CuGa₂O₄ towards hydrogen, liquefied petroleum gas and ammonia By Soumya Kanti Biswas, Arpita Sarkar, Amita Pathak, Panchanan Pramanik *Talanta* 81 (2010) 1607-161 (2010)
135. Syntheses and structure of heterobimetallic helical polymeric Mo M(II) (M = Mn, Co, Zn, Cd or Ni) complexes using a flexidentate metallogand By D. Deb and M. Bhattacharjee *Inorg. Chim. Acta.* In Press (2011)

136. Synthesis and optical properties of Sb₂Se₃ nanorods, By Jyotirnanjan Ota and Suneel Kumar Srivastava, *Optical Materials* 32,1488-1492 (2010)
137. Synthesis and Ribonuclease A Inhibition Activity of Resorcinol and Phloroglucinol Derivatives of Catechin and Epicatechin: Importance of Hydroxyl Groups. By Dutta, S., Basak A. and Dasgupta, S. *Bioorg. Med. Chem.* 18, 6538-6546. (2010)
138. Synthesis and structural characterization of Pd(II) complexes containing 2,6-bis[(dimethylamino)methyl]-4-methylphenolate ligand By Ghorai, D. Mani, G. *Inorg. Chim. Acta.* In press (2011)
139. Synthesis of biosurfactants from natural resources and its antioxidant properties By A. Nag D. Patil A. D. Leonardis . *Food chemistry* 32,45-72 (2010)
140. Synthesis of Phenanthrene and alkyl Phenanthrenes by Pd(0) catalyzed pericyclic reaction By Rathin Jana, Anup Biswas, Shubhankar Samanta and Jayanta. K. Ray* *Synthesis* 2092 (2010)
141. Synthesis of Silver Nanoparticle Inside the Nonaqueous Ethylene Glycol Reverse Micelle and a Comparative Study to Show the Effect of the Nanoparticle on the Reverse Micellar Aggregates through Solvation Dynamics and Rotational Relaxation Measurements By P. Setua, R. Pramanik, S. Sarkar, C. Ghatak, S. K. Das, and N. Sarkar *J. Phys. Chem. B*, 114, 7557 (2010)
142. Synthesis of substituted benzimidazo[2,1-a]isoquinolines and its condensed analogues using Pd(0)-catalyzed cyclization/Ca²⁺H activation By Sukla Nandi, Shubhankar Samanta, Susovan Jana, Jayanta K. Ray * *Tetrahedron Letters* 51,5294 (2010)
143. Synthesis of ventinone A and structural ambiguity of ventinone B By Ray, S. Mal, D. *J. Indian Chem. Soc* 87, 833-836. (2010)
144. Synthesis, and structure of a 3D porous network containing aromatic 1D chains of Li6 rings: Experimental and computational studies By D. Deb, S. Giri, P. K. Chattaraj and M. Bhattacharjee *J. Phys. Chem. A* 114, 10871 (2010)
145. Synthesis, characterization, and in vitro biological evaluation of highly stable diversely functionalized superparamagnetic iron oxide nanoparticles By Dipsikha Bhattacharya, Sumanta K. Sahu, Indranil Banerjee, Manasmita Das, Debashish Mishra, Tapas K. Maiti, Panchanan Pramanik *J Nanopart Res* (2011)
146. Synthesis, functionalization and bioimaging applications of highly fluorescent carbon nanoparticles By Sourov Chandra, Pradip Das, Sourav Bag, Dipranjan Laha and Panchanan Pramanik *Nanoscale* (2011)
147. Synthesis, structure and impedance spectroscopy study of Ba_{0.8}Bi_{2.133}Nb_{1.6}Ta_{0.4}O₉ ferroelectric ceramics By Prasanta Dhak, D. Dhak, M Das and P. Pramanik *J. Mater Science: Materials in Electronics* DOI: 10.1007/s10854- (2011)
148. Synthesis, structure, electrochemical behaviour of Ru(II) and Pt(II) π -carbene complexes of NCN π -pincer 1,3 π -bis(2-pyridylmethyl)-1H Benzimidazolium chloride By S. Dasadhikari, G. Roymahapatra, T. Samanta, F. Loiseau, D. Jouvenot, S. Giri, P. K. Chattaraj, J. Dinda *New J. Chem.* 34, 1974 (2010)
149. The effect of membrane fluidity on FRET parameters: an energy transfer study inside small unilamellar vesicle By C. Ghatak, V.G. Rao, R. Pramanik, S. Sarkar, N. Sarkar *Phys. Chem. Chem. Phys.*, 13, 3711 (2011)
150. The potential of celecoxib-loaded hydroxyapatite-chitosan nanocomposite for the treatment of colon cancer By P. Venkatesan, Nagaprasad Puvvada, Rupesh Dash, B.N. Prashanth Kumar, Devanand Sarkar, Belal Azab, Amita Pathak, Subhas C. Kundu, Paul B. Fisher, Mahitosh Mandal *Biomaterials* 32 3794-3806 (2011)
151. Thiol mediated tandem Michael-aldol reaction: A convenient method for the synthesis of fused cyclopentenones By Shubhankar Samanta, Nasima Yasmin, Debasish Kundu and Jayanta K. Ray* *Tetrahedron Letters* 51,4132 (2010)
152. Toxicity of halogen, sulfur and chlorinated aromatic compounds:A quantitative structure toxicity relationship (QSTR) based study By A. Gupta, A. Chakraborty, S. Giri, V. Subramanian, P. K. Chattaraj *Int. J. Chemoinformatics Chem. Eng.* 1, 61 (2011)
153. Trapping of noble gases (He-Kr) by the aromatic H₃⁺ and Li₃⁺ species: A conceptual DFT approach By A. Chakraborty, S. Giri, P. K. Chattaraj *New J. Chem.* 34, 1936 (2010)
154. Water-Induced Physical Gelation of Organic Solvents by N-(n-Alkyl-carbamoyl)-L-alanine Amphiphiles By A. Pal, and J. Dey *Langmuir* 27, 3401-3408 (2011)

Papers Presented in Conferences

1. A Non-classical Route of Photo-Fenton Process Aided by Fe(III)-Salen Complex for the treatment of Rhodamine B dye under Visible Light, By Sarifuddin Gazi and Rajakumar Ananthkrishnan, *Frontiers in Chemical Sciences (FICS - 2010)*, Indian Institute of Technology, Guwahati, (2010)
2. Advanced Functional Materials for Green and Sustainable Energy Future, By C.R.Raj, *National Symposium on Nanostructured Materials*, Madurai, (2011)
3. Amino Acid Based Low-Molecular-Weight Amphiphilic Gelators for Organic Solvents: Microscopic and Spectroscopic Characterization., By A. Pal, and J. Dey, *Indo-US Conference/ Workshop on Self-Assembled Fibrillar Gels*, Trivandrum, (2011)
4. An Overview of Our Research on Modified Carbohydrates and Nucleosides., By T. Pathak, *Silver Jubilee, XXV Carbohydrate Conference*, H. P. University, Shimla, (2010)
5. Antioxidant compounds, By A.Nag and D. B. Patil, *International Conference on Biosciences*, Bangkok,Thailand, (2010)
6. Application of Advanced Oxidation Process (AOP) for the Remediation of Toxic Pollutants and Detection of Reactive Intermediates, By S. Gazi and A. Rajakumar, *Second Research Scholar Day 2010*, Indian Institute of Technology Kharagpur, (2010)
7. Biologically Relevant Synthetic Nucleosides., By T. Pathak, *One Day National Symposium on Frontiers in Chemical Science*, Vidyasagar University, (2011)
8. Computational Homogeneous Catalysis, By Anoop, *Theoretical Chemistry Symposium 2011*, IIT Kanpur, (2011)
9. Enhanced mechanical and thermal properties of Mg-Al layered double hydroxide/silicone rubber nanocomposites, By Bratati Pradhan and Suneel Kumar Srivastava, *INTERNATIONAL CONFERENCE ON ADVANCES IN POLYMER SCIENCE AND RUBBER TECHNOLOGY (APSRT 2011)*, Indian Institute of Technology, Kharagpu, (2011)
10. Furofurans and Furoprans from Carbohydrates, By C. Manna. T. Pathak, *13th CRSI National Symposium in Chemistry*, NISER Bhubaneswar, (2011)
11. Highly Selective and Sensitive Detection of Hg(II): Optical and Electrochemical Approaches, By Raj Kumar Bera, B. K. Jena and C. Retna Raj, *13th CRSI National Symposium in Chemistry*, NISER Bhubaneswar, (2011)
12. Molecules to Medicines., By T. Pathak, *Chemistry in Our Lives*, Belur Vidyamandir, (2011)
13. Nanoarchitected Electrochemical Sensing Platform for Environmental and Clinical Applications, By , *International symposium on analytical chemistry*, Cochin, (2010)
14. Stearate Anions Intercalated Layered Double Hydroxides/Polyurethane Nanocomposites: Mechanical, Thermal and Adhesive Properties, By Moumita Kotal and Suneel Kumar Srivastava, *INTERNATIONAL CONFERENCE ON ADVANCES IN POLYMER SCIENCE AND RUBBER TECHNOLOGY (APSRT 2011)*, Indian Institute of Technology, Kharagpu, (2011)

15. Vinyl sulfone-modified Tetrahydrofurans and Tetrahydropyrans: A New Class of Michael Acceptors, By D. Dey. P. Talukdar. T. Pathak, *National Symposium on Organic Chemistry-IV: Modern Trends and Perspectives*, Department of Chem. Jadavpur University, (2011)

Cryogenic Engineering Centre

Head

Prof. Vutukuru Vasudeva Rao

Professors

Bandyopadhyay, Syamalendu Sekhar	<i>Ph.D.(IIT Kharagpur)</i> , Separation processes, Natural gas processing, Carbon dioxide capture and sequestration, Air breathing propulsion
Chowdhury, Kanchan	<i>Ph.D.(IIT Kharagpur)</i> , Simulation of Helium Plants, Cryogenic Air Separation, Safety in Oxygen-enriched Systems, Conventional Refrigeration
Dey, Tapas Kumar	<i>Ph.D.(Delhi Univ)</i> , Nanofluids and its applications, Polymer Nanocomposites, Electronic Packaging Materials, Nanostructured Thermoelectrics
Rao, Vutukuru Vasudeva	<i>Ph.D.(IIT Madras)</i> , Applied Superconductivity, Vacuum Technology, Cryo Physics
Sarangi, Sunil Kumar	<i>Ph.D.(Stony Brook)</i> ,

Assistant Professors

Adyam, Venimadhav	<i>Ph.D.(IISc. Bangalore)</i> , Multiferroics Spintronics Thermoelectrics Nanomaterials and Thin film batteries
Ghosh, Indranil	<i>Ph.D.(IIT, Kharagpur)</i> , Compact Heat Exchangers, Heat Transfer in Porous Media, Sorption Cooling
Ghosh, Parthasarathi	<i>Ph.D.(IIT Kharagpur)</i> , Low Temperature Processes and equipment, Cryogenic turboexpander and expansion devices, Helium Refrigeration and liquefaction systems, Cryogenic storage and transfer lines thermodynamics fluid mechanics and heat transfer
Nandi, Tapas Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Matrix heat exchanger, Cryogenic hydrostatic bearing
Sandilya, Pavitra	<i>Ph.D.(IIT Kanpur)</i> , Gas hydrates, Cryogenic transport Phenomena-based processes, CO2 capture and sequestration

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. Soumen Kar : Analytical and Computational Evaluation of Various Parameters Involved in the Design of SC Cables (CICC) Type USed for Fusion Grade Magnets(MS)

Member - Professional Bodies

1. Bandyopadhyay, Syamalendu Sekhar, *Life Member* - Indian Institute of Chemical Engineers
2. Dey, Tapas Kumar, *Regular (Life Member)* - Materials Research Society of India
3. Dey, Tapas Kumar, *Regular (Life Member)* - Indian Cryogenic Council
4. Dey, Tapas Kumar, *Fellow (Life member)* - Thermophysical Society of India
5. Ghosh, Parthasarathi, *Regular* - American Society of Mechanical Engineers
6. Ghosh, Parthasarathi, *Regular* - Plasma Science Society of India, Ahmedabad
7. Ghosh, Parthasarathi, *Regular* - Indian Cryogenic Council
8. Nandi, Tapas Kumar, *Life Member* - Indian Society for Technical Education (ISTE)
9. Nandi, Tapas Kumar, *Life Member* - Indian Cryogenics Council
10. Rao, Vutukuru Vasudeva, *Life* - Indian Vacuum Society
11. Rao, Vutukuru Vasudeva, *Life* - Indian Cryogenics Council

Member - Editorial Board

1. Bandyopadhyay, Syamalendu Sekhar (2009) *Member, Editorial Board* - Indian Chemical Engineer (ICE)

Awards & Honours

1. Bandyopadhyay, Syamalendu Sekhar (0) *None*

Fellowships

1. Bandyopadhyay, Syamalendu Sekhar (0) *None*

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 (ISRO, Rs.15.00 Lakhs)
3. Analysis & Development of Conceptual Design Methodologies for Air Collection and Enrichment System of Air Breathing Propulsion-Phase II (ISRO, Rs.15.00 Lakhs)
4. Analytical and Computational Evaluation of Various Parameters involved in the Design of SC cables (CIC type) to be used for fusion grade magnets (IPR Gujarat NFP, Rs.48.70 Lakhs)
5. Deleopment of thermophysical measurement system for liquids and investigations on the thermal conductivity and pool boiling nanofluids (Department of Science & Technology, Rs.28.60 Lakhs)
6. Design, Fabrication and Testing of Miniature Heat Exchangers and Heat Sinks (CSIR, New Delhi, Rs.10.61 Lakhs)
7. Development of perforated plate matrix heat exchangers for cryogenic applications (Department of Science and Technology, West Bengal, Rs.5.22 Lakhs)
8. Experimental Studies on High Porosity Open Cell Metallic Foam Heat Transfer (CSIR, New Delhi, Rs.13.26 Lakhs)
9. Fabrication of oxide multiferroic thin films by RF Magnetron Sputtering: Investigation of magnetodielectric and magnetoferroelectric properties (DST, Rs.17.00 Lakhs)
10. 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)
11. Investigation on polymer nanocomposite for electronic packaging applications (CSIR, New Delhi, Rs.10.76 Lakhs)
12. Refurbishing a DC/RF Sputtering and development of Ferromagnetic/semiconductor hybrid structures for spintronics (SRIC (Completed), Rs.4.60 Lakhs)
13. Steady state and dynamic simulation of kW class helium refrigerator/liquefier for superconducting magnets used for fusion machines (BRFS-IPR Gandhinagar, Rs.46.00 Lakhs)
14. Studies on gas bearings for cryogenic turboexpander (ISIRD. SRIC IIT Kharagpur, Rs.4.00 Lakhs)
15. Studies on novel Heusler alloys for the development of environmentally friendly thermoelectric materials (DST, Rs.34.00 Lakhs)
16. Synthesis and multiferroic properties of AFe₁₂O₁₉ (A= Ba, Sr) nanoparticles reinforced polymer nanocomposites for space applications (CSIR, Rs.18.00 Lakhs)
17. Virtual Lab for Multiphase Flow (MHRD, New Delhi, Rs.46.70 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 Limiter (, Rs.20.00 Lakhs)
4. Development of Advanced Vacuum Technology (Crompton Greaves Ltd., Mumbai, Rs.10.00 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)

Patents (filed / granted)

1. An Improved Sorption Cooler and Process for Producing Continuous Sorption Cooling in a Single Adsorbent Tube/Bed with Pulsating Gas Flow

Visits Abroad by Faculty Members

1. Ghosh, Parthasarathi - To attend ICEC 23 (Wroclaw, Poland,) July 19-21, 2010
2. Chowdhury, Kanchan - To Attend ICEC 23 (Wroclaw, Poland,) July 19-21, 2010
3. Ghosh, Indranil - To attend Third International Conference on Porous Media & its Applications in Science, Engineering (Montecatini, ITALY,) June 19-26
4. Bandyopadhyay, Syamalendu Sekhar - To deliver invited lecture (Talloires, France,) 10-14 July, 2010
5. Bandyopadhyay, Syamalendu Sekhar - To present paper at DA-2010 (Eindhoven, The Netherlands,) 11-16 September 2010
6. Dey, Tapas Kumar - To deliver Key Note Address in 9th ATPC-2010 (Beijing,China,) October 19th-22nd, 2010

Invited Lectures by Faculty Members

1. Gas hydrates - Aspects and Prospects by Sandilya, Pavitra (Jadavpur University)
2. Absorption of Carbon Dioxide into Piperazine Activated Aqueous N-Methyldiethanolamine by Bandyopadhyay, Syamalendu Sekhar (Talloires, France)
3. Thermal and Rheological Properties of Nanoscale Colloidal Solutions (Nanofluids) by Dey, Tapas Kumar (Beijing,China)
4. Thermal and Rheological Investigations on Nanofluids by Dey, Tapas Kumar (University of Hyderabad)
5. Enhanced Heat Conduction of Nanofluids & its Appl in Thermal Management of Modern Electronic Devices by Dey, Tapas Kumar (University of Rajasthan, Jaipur)
6. Designed Multiferroics by Adyam, Venimadhav (DMRL, Hyderabad)
7. Trends in Oxide Electronics by Adyam, Venimadhav (IISc Bangalore)
8. Design and Analysis of Large-scale Helium Liquefiers/Refrigerators: Issues with Modeling and Simulat by Ghosh, Parthasarathi (National Symposium of Cryogenics 23 NIT Rourkela)

Short-Term Courses, Training Programmes and Workshops organised

1. Cryogenic Air Separation and Oxygen Safety-2011 (February 16-22, 2011)
2. Vacuum Technology and Process Application (22nd Oct. - 2nd Nov., 2010)

Papers Published in Journals

1. Application of parallel heat exchangers in helium refrigerators for mitigating effects of pulsed load from fusion devices By Dutta, R., Ghosh, P. and Chowdhury, K. *Fusion Engineering and Design* In Press (2011)
2. Comparison of different turbulence models in predicting the temperature separation in a Ranque-Hilsch vortex tube By Dutta, T., Sinhamahapatra, K.P., and Bandyopadhyay, S.S., *International Journal of Refrigeration* 783-792 (2010)
3. Dielectric properties of percolative Pr_{1-x}CaxMnO₃/polyvinylidene fluoride nanocomposites under various processing conditions By K.Devi Chandrasekhar, A. K. Das, and A. Venimadhav, *AIP Conference Proceedings* (2009)
4. Effect of aggregation on the viscosity of copper oxide-gear oil nanofluids By Madhusree Kole and T. K. Dey *International Journal of Thermal Sciences* Accepted in Press (2011)
5. Effective thermal conductivity and coefficient of linear thermal expansion of high- By Sanjib Baglari, Madhusree Kole and T. K. Dey *Indian Journal of Physics* Vol 85, pp.585-599 (2011)
6. Electric and magnetic polarizabilities of hexagonal Ln₂CuTiO₆ (Ln = Y, Dy, Ho, Er, Yb) By 2. Debraj Choudhury, Abhijit Hazarika, Adyam Venimadhav, Chandrasekhar Kakarla, Kris T. Delaney, P. Sujatha Devi, P. Mondal, R.Nirmala, J. Gopalakrishnan, Nicola A. Spaldin, Umesh V. Waghmare, D. D. Sarma *Phys. Rev B* 82 134203 (2010)
7. Exergy Analysis of Helium Liquefaction Systems Based on Modified Claude Cycle with Two-Expanders By Rijo Jacob Thomas, Parthasarathi Ghosh, and Kanchan Chowdhury *Cryogenics Journal-ACASC 2009 Special Is* In Press (2011)
8. Experimental Investigation on the Thermal Conductivity and Viscosity of Engine Coolant based Alumina Nanofluids By Madhusree Kole and T. K. Dey *AIP Conference Proceedings (NCTP-09)* vol 1249, pp. 120-12 (2010)
9. Growth and magnetic properties of La₂NiMnO₆ epitaxial thin films By 1. A.Venimadhav, D. A. Tenne, M. J. Wilson, P. Schiffer, Qi Li, J. H. Lee, D. G. Schlom, X. X. Xi *API conference Proceedings* (2010)
10. Large magnetodielectric response in Pr_{0.6}Ca_{0.4}MnO₃/polyvinylidene fluoride nanocomposites By 1. K. Devi Chandrasekhar, A. Venimadhav, and A. K. Das *Appl. Phys. Lett.* 98 122908 (2011)
11. Modeling of Dispersion and Settling of Micron-Sized Dust Particles in Pressure Regulator Used in Oxygen-Enriched Environment By Aditi Oza, Sudipto Ghosh and Kanchan Chowdhury *Journal of ASTM International* Vol. 8, Issue 4, (2011)
12. Observation of enhanced positive magneto resistance at low temperatures in Ni_{0.8}Fe_{0.2/c} granular composites By G. Mandal, V. Srinivas, V. V. Rao *alloys and compd.* 504, 110-114 (2010)

13. Optimum Stacking Pattern for Multi-Stream Plate-Fin Heat Exchanger through a Genetic Algorithm By Ghosh S., Ghosh I., Pratihari D. K., Maiti, B., Das, P. K. *International Journal of Thermal Science* Vol. 50 (2), 214-224 (2011)
14. Role of Expanders in Helium Liquefaction Cycles Parametric Studies Using Collins Cycle By Rijo Jacob Thomas, Parthasarathi Ghosh, and Kanchan Chowdhury *Fusion Engineering and Design Journal* In Press (2011)
15. Synthesis and magnetic properties of La₂NiMnO₆ nanoparticles By K. Devi Chandrasekhar, A. K. Das¹ and Venimadhav. A *AIP Conference Proceedings* (2010)
16. Thermal conductivity and viscosity of Al₂O₃ nanofluid based on car engine coolant By Madhusree Kole and T. K. Dey *Journal of Physics D: Applied Physics* Vol. 43 pp.315501-10 (2010)
17. Thermal Design of Multistream Plate Fin Heat Exchangers – A State of the Art Review By Das P. K. and Ghosh Indranil *Heat Transfer Engineering* (Accepted) (2011)
18. Triboelectrification of Metallic Dust Particles: Experiment and Modeling By Aditi Oza, Sudipto Ghosh and Kanchan Chowdhury *Journal of ASTM International* Vol. 8, Issue 1 (2011)
19. Validation and Customization of Aspen Hysys® for Dynamic Simulation of Helium Liquefier/Refrigerator Systems By Dutta, R., Ghosh, P. and Chowdhury, K *Energy* In Press (2011)
20. Vapour Liquid Equilibria of Carbon Dioxide in Dilute and Concentrated Aqueous Solutions of Piperazine at Low to High Pressure By Dash, S. K., Samanta, A., Samanta, A. N., Bandyopadhyay, S. S. *Fluid Phase Equilibria* 145 – 154 (2011)
21. Viscosity of alumina nanoparticles dispersed in car engine coolant By Madhusree Kole and T. K. Dey *Experimental Thermal and Fluid Science* vol 34, pp. 677–68 (2010)

Papers Presented in Conferences

1. Absorption of CO₂ into Piperazine Activated Aqueous N-Methyldiethanolamine, By Arunkumar Samanata and Bandyopadhyay, S.S., *Distillation and Absorption 2010*, Eindhoven, The Netherlands, (2010)
2. An invited talk on Superconducting Fault Current Limiters-concepts, By Prof. V. V. Rao, *NSC-23*, NIT Rourkela, (2010)
3. Design and Analysis of Large-scale Helium Liquefiers/Refrigerators: Issues with Modeling and Simulation, By Parthasarathi Ghosh, Rijo Jacob Thomas, Rohan Dutta and Kanchan Chowdhury, *23rd National Symposium on Cryogenics (NSC 23)*, NIT Rourkela, India, (2010)
4. Deterioration in Heat Transfer due to Axial Conduction of Heat in Open Cell Metal Foam, By Ghosh, I., *Third International Conference on Porous Media and its Applications in Science, Engineering and Industry*, Montecatini, ITALY, (2010)
5. Development of an Algorithm to Analyse the Conceptual Design of three Dimensional Multi Stage Cabling Scheme for Cable-in-Conduit Conductors (CICC), By G. P. Vishnuvardhan, D. Raja Sekhar, V. S. H. Krishna, Prof. V. V. Rao, Prof. N. K. Kishore, Dr. B. Sarkar, Renu Bahl, *NSc-23*, Rourkela, (0)
6. Dynamic simulation of large-scale helium liquefier using Aspen Hysys®, By Rohan Dutta, Rijo Jacob Thomas, Parthasarathi Ghosh, and Kanchan Chowdhury, *23rd National Symposium on Cryogenics (NSC 23)*, NIT Rourkela, India,, (2010)
7. Effective Thermal Conductivity and Coefficient of Linear Thermal Expansion of HDPE/Fly Ash Composites, By Madhusree Kole, Sanjib Baglari and T. K. Dey, *9th Asian Thermophysical Properties Conference (ATPC)*, Beijing, China, (2010)
8. Effective thermal conductivity and coefficient of linear thermal expansion of HDPE/LBSMO nano-composites, By Madhusree Kole and T. K. Dey, *National Conference on Condensed Matter Physics*, NEHU, Shillong, (2010)
9. Electrolyte NRTL Model for the VLE of CO₂ in 2-Amino-2-Methyl-1-Propanol Activated with Piperazine, By Dash, S. K., Samanta, A. N., Bandyopadhyay, S. S., *Indian Chemical Engineering Congress (CHEMCON-2010)*, Annamalai University, Chidambaram, TN, (2010)
10. Enthalpies of Absorption of CO₂ in Solvents for Post-Combustion CO₂ Capture from Coal Fired Power Plants, By Dash, S. K., Samanta, A. N., Bandyopadhyay, S. S., *Indian Chemical Engineering Congress (CHEMCON-2010)*, Annamalai University, Chidambaram, TN, (2010)
11. Heat Transfer and Flow Friction Studies on Perforated Plates Using Fluent, By Sunil Kumar S. and Nandi T. K., *23rd National Symposium on Cryogenics (NSC-23)*, NIT, Rourkela, (2010)
12. Hydraulic Modelling of Cable-in-Conduit Conductors (CICC): CFD approach, By Prof. V. V. Rao, Prof. N. K. Kishore, Dr. B. Sarkar, Renu Bahl, *NSC-23*, Rourkela, (0)
13. Investigations on the enhanced thermal conductivity of nanoparticle-in gear oil dispersions as advanced energy-efficient coolants, By Madhusree Kole and T. K. Dey, *International Conference on Multifunctional Materials, ICMM-2010*, BHU, Varanasi, U. P., (2010)
14. NATURAL GAS PRODUCTION FROM SUBMARINE NATURAL GAS HYDRATE BY THERMAL STIMULATION, By Subhasis Mandal and Pavitra Sandilya, *CHEMCON 2010*, Chidambaram, (2010)
15. Prediction on performance of cryogenic turboexpander using meanline approach, By Ghosh P., Nandi B. R., Sarangi S, *ICEC 23*, Wroclaw, Poland, (2010)
16. Static and Dynamic Behavior of Cryogenically Cooled Hydrostatic Journal Bearings for Space Applications, By Mukesh Kumar and Nandi T. K., *23rd National Symposium on Cryogenics (NSC-23)*, NIT, Rourkela, (2010)
17. Suitability of alumina nanoparticles filled Polyvinylidene Fluoride nano composites for electronic packaging applications, By Madhusree Kole and T. K. Dey, *NCMCN-2011*, University of Rajasthan, Jaipur, (2011)
18. Superconducting Fault Current Limiters - A review, By Soumen Kar, Sandeep Kulkarni, Prof. S. K. Sarangi, Prof. V. V. Rao, *NSc-23*, NIT Rourkela, (2010)
19. Thermodynamic Analysis of Collins Cycle: Aspects of Designing Large Scale Helium Liquefiers, By Rijo Jacob Thomas, Parthasarathi Ghosh, and Kanchan Chowdhury, *International Cryogenic Engineering Conference ICEC 22*, Wroclaw, Poland, (2010)

Department of Computer Science & Engineering

Head

Prof. Jayanta Mukhopadhyay

Professors

Basu, Anupam	<i>Ph.D.(IIT Kharagpur)</i> , Assistive Technology, Embedded Systems, Language Processing
Chakrabarti, Partha Pratim	<i>Ph.D.(IIT Kharagpur)</i> , Artificial Intelligence, CAD for VLSI & Embedded Systems, Design of Algorithms, Reliable and Fault Tolerant Systems
Dasgupta, Pallab	<i>Ph.D.(IIT Kharagpur)</i> , VLSI CAD & Electronic Design Automation, Formal Verification
Ghose, Sujoy	<i>Ph.D.(IIT Kharagpur)</i> , Networks, Algorithms, AI, Info Systems
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. VLSI Testing 4. Error Correcting Code
Sarkar, Dipankar	<i>Ph.D.(IIT Kharagpur)</i> , Formal Verification, Symbolic Logic and Automated Reasoning
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

Associate Professors

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

Assistant Professors

Bhowmick, Partha	<i>Ph.D.(ISI, Kolkata)</i> , Geometric Algorithms, Computer Graphics, Image Processing, Visual Pattern Recognition
Chakraborty, R S	<i>Ph.D.(CWR Univ.USA)</i> , Hardware Design for Security, Digital Watermarking, VLSI Design and Methodologies
Das, Abhijit	<i>Ph.D.(IISc Bangalore)</i> , Arithmetic and algebraic algorithms, Cryptography and network security
Mukhopadhyay, Debdeep	<i>Ph.D.(IIT Kharagpur)</i> , Cryptology, VLSI, Embedded systems for Cryptographic Systems, Side Channel Analysis

Lecturer

Dey, Partha Sarathi	<i>M.Tech.(IIT Kharagpur)</i> , Digital Logic Design, Data Structure, Computer Architecture & Organization, Microprocessor & Microcontroller, Systems Programming, Operating System, Object Oriented Design
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Faculty Appointments

Rajat Shubhra Chakraborty Assistant Professor

Faculty Promotions

Pabitra Mitra Associate Professor

Faculty Resignation

Gaurav Harit Assistant Professor

New Academic Programmes

Joint M.Tech. + PhD program, Joint M.S. + PhD program

Brief Description of on-going activities

Artificial Intelligence, Bioinformatics, Combinatorial and Computational Geometry, Computer Graphics, 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

Thrust Areas

1. Artificial Intelligence
2. Image Processing and Computer Vision
3. Natural Language Processing
4. VLSI Design and CAD tools

Lectures by Visiting Experts

1. Performance modeling and analysis at AMD: A Guided Tour *by* Dr. Kanishka Lahiri (AMD)
2. Connectivity and Coverage Problems in Emerging Networks *by* Dr Arun Sen (Professor, Computer Science and Engineering Program School of Computing, Informatics and Decision Systems Engineering Arizona State University)
3. Network Management Using SMT Solvers *by* Dr. Ranjita Bhagwan (Mobility, Networks and Systems group Microsoft Research, India)
4. CM: A Programming Environment to utilize the Intel GPU for media and data-parallel Applications *by* Dr. Somnath Ghosh (Sr. Staff Engineer, Visual and Parallel Computing Group Intel Corporation, USA)
5. Enabling the Social Web *by* Dr Krishna Gummadi (Head, Networked Systems Research Group Max Planck Institute for Software Systems (MPI-SWS) Germany)
6. Passive Supporters of Terrorism and Phase Transitions *by* Dr. Tyll Krueger (Co-head, Research Group Department of Physics University of Bielefeld, German)
7. Building Knowledge Bases from the Web *by* Srinivasan H Sengamedu (Director Audience and Search Sciences Yahoo! Labs, India)
8. Zero-sum Risk-sensitive Stochastic Differential Games *by* Dr Arnab Basu (Assistant Professor, Indian Institute of Management, Bangalore)
9. Manycores and Data Intensive Computing *by* Dr Vipin Chaudhary (Chief Executive Officer Computational Research Laboratories Limited)
10. Recent advancements in web search *by* Dr Peeyush Ranjan (Head Research & Development Google, INDIA)
11. The Algebraic IV Differential Attack AIDA An Attack and Analysis Tool *by* Prof. Michael Vielhaber (Professor Hochschule Bremerhaven, Germany & Universidad Austral de Chile Instituto de Matemáticas, Chile)
12. Baaz: A System for Detecting Access Control Misconfigurations *by* Tathagata Das, Ranjita Bhagwan, Prasad N (Microsoft Research)
13. Point placement on a line *by* Dr. Ashish Mukhopadhyay (Professor School of Computer Science University, Windsor Ontario, CANADA)
14. Design Automation of Embedded and Reconfigurable System *by* Dr. Prabhat Mishra (Associate Professor Department of Computer and Information Science and Engineering (CISE) University of Florida (USA))
15. Boxicity and Chromatic Number *by* Dr. L. Sunil Chandran (Assistant Professor Department of Computer Science and Automation Indian Institute of Science, Bangalore)

16. Algebraic Techniques for Reachability Analysis of Continuous Systems by Dr. Sriram Sankaranarayan (Assistant Professor Department of Computer Science University of Colorado Boulder, USA)

Doctoral and MS Degrees Awarded

1. Subrat Kumar Panda : New Approaches for Simulation Based Verification of Pipelined Processors(Ph.D.)
2. Sujan Kr Saha : Machine Learning Algorithms for Hindi Named Entity Recognition(Ph.D.)
3. Vivekananda Bhatt : Some Topics on Audio Watermarking Techniques(Ph.D.)
4. Jaiprakash T. Lallchandni : Slicing UML Models(Ph.D.)
5. Sushanta Karmakar : Design of Adaptive Distributed Systems by Protocol Switching(Ph.D.)
6. Tanmay Dey : Traffic grooming and wavelength assignment in optical networks(Ph.D.)
7. Bivas Mitra : Analyzing the Resilience and Emergence of Superpeer Networks(Ph.D.)
8. Sandip Karmakar : Study of Cellular Automata as Crypto Primitive(MS)
9. Debobrata Dey : Design and Analysis of Nonlinear Stream Cipher using Cellular Automata(MS)
10. Arijit Mondal : A Symbolic Event Propagation Approach to Solving Timing Problems of Digital Circuits(Ph.D.)
11. Aritra Hazra : Cohesive Coverage Management for Simulation and Formal Property Verification(MS)

Member - Professional Bodies

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

Member - Editorial Board

1. Chakrabarti, Partha Pratim (0) *Member* - Journal of IETE
2. Das, Partha Pratim (2003) *Reviewer* - Pattern Recognition Letters
3. Das, Partha Pratim (2010) *Review Writer* - Computing Reviews
4. Mukhopadhyay, Jayanta (2009) *Member* - Journal of Visual Communication and Image Representation

Awards & Honours

1. Mandal, Chittaranjan (2007) *Best paper award, 15th International IEEE Conference on Advanced Computing & Communication (ADCOM 2007)*
2. Mandal, Chittaranjan (2007) *Best paper award, 2nd International Conference on Communication Systems Software and Middleware (COMSWARE 2007)*
3. Mandal, Chittaranjan (2006) *Best paper award, IEEE APCCAS2006*
4. Mandal, Chittaranjan (2010) *Best paper award, International Conference on Emerging Trends in Engineering Technologies (ICETES 2010)*
5. Mandal, Chittaranjan (2009) *EDA contest winner, VLSI Design 2009*
6. Chakrabarti, Partha Pratim (2011) *Felicitation by SNLTR and IT Dept, GoWB*
7. Mitra, Pabitra (2010) *IBM Faculty Award*
8. Mukhopadhyay, Debdeep (2010) *INAE Young Engineer Award*
9. Mukhopadhyay, Debdeep (2010) *INSA Young Scientist Award*
10. Mukhopadhyay, Debdeep (2011) *Outstanding Young Faculty Award*
11. Chakraborty, R S (2010) *Travel Grant as Semi-finalist in the IEEE E.J. McCluskey Best Doctoral Thesis Award Contest*

Fellowships

1. Ganguly, Niloy (2010) *DAAD Fellowship for short visit*
2. Mukhopadhyay, Debdeep (2011) *Oustanding Young Faculty Fellowship*

Sponsored Research Projects

1. 3-D Image Sensor for Capturing Minute Surface Details and Visualization by Geometric Modeling (DST, Rs.33.00 Lakhs)
2. Advanced VLSI Consortium (Multiple Industries (Consortium), Rs.100.00 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. Approaches to Efficient & Safe C++ Generic Programming Interface for a Legacy C Library - ESGP (Interra Systems India Private Limited, Rs.6.89 Lakhs)
6. Building Delay Tolerant Peer-to-peer network (DIT, Rs.55.00 Lakhs)
7. Building Reliable Embedded Real-Time Systems (DST-Indo Brazil Project, Rs.33.66 Lakhs)
8. Creating Accessible Study Materials for Print Impaired Students (MHRD, Rs.53.00 Lakhs)
9. Cross language information access! Phase II (Ministry of Communications and Information Technology, Rs.138.73 Lakhs)
10. Design and Analysis of an Efficient Cryptosystem for Safety Messaging over Vehicular Networks, (General Motors (R&D), India., Rs.25.00 Lakhs)
11. Design and Analysis of Side Channel Attack resistant symmetric Key Cryptosystems (Department of Science & Technology, New Delhi, Rs.9.24 Lakhs)
12. Design Automation of Analog VLSI (DIT, Rs.10.00 Lakhs)
13. Design of an Integrated Scheme for Error Correction and Message Authentication, (SAC Ahmedabad, KCSTC IIT Kharagpur, Rs.6.00 Lakhs)
14. Design of Controller for Finite Field Arithmetic on FPGAs (Centre for Artificial Intelligence and Robotics (CAIR), Defence Research and Development Organisation, Rs.8.34 Lakhs)
15. Development of a Web-enabled e-Healthcare System for Neonatal Patient Care Services (eNPCS) (PCS) (MCIT, Govt. of India, Rs.39.70 Lakhs)
16. Development of Bangla Linux and Standardized Bangla Keyboard (Society for Natural Language Technology Research, Rs.7.50 Lakhs)
17. Development of Elliptic Curve Hardware Engine on Reconfigurable Platform (CAIR, DRDO, Bangalore, Rs.6.96 Lakhs)
18. Development of Infrastructure for Centre of Excellence in Information Assurance (Headquarters Integrated Defense Staff, Ministry of Defense, Rs.50.00 Lakhs)
19. Development of spatio-temporal access control models (Department of Science and Technology, Government of India, Rs.16.18 Lakhs)
20. Development of Web enabled e-Healthcare System for Neonatal Patient Care Services (eNPCS) (Department of Information Technology, Government of India, Rs.39.70 Lakhs)
21. Encryption "E" Encryption in Compressed Domain, (SAC Ahmedabad, (KCSTC IIT Kharagpur), Rs.12.00 Lakhs)
22. Extending the Scope of Equivalence Checking in Complex Embedded System Design Verification (DST, Rs.840000.00 Lakhs)
23. Fault diagnosis in digital systems (under Synopsys CAD Lab) (Synopsys India, Rs.40.00 Lakhs)
24. Fundamental Research in Information Assurance (Headquarters Integrated Defense Staff, Ministry of Defense, Rs.48.00 Lakhs)
25. GM Collaborative Research Laboratory on ECS for Education (General Motors, Rs.184.00 Lakhs)
26. Hardware Security: Ensuring TRUST in Integrated Circuits (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
27. Image analysis for preservation and archiving of Indian Cultural Heritage (DST, Rs.23.00 Lakhs)
28. Indian Language Machine Translation Phase II (Ministry of Communications and Information Technology, Rs.40.00 Lakhs)
29. Investigation of Cryptanalytic Techniques (Headquarters, Integrated Defence Staff, Ministry of Defence, Govt of India, Rs.44.30 Lakhs)
30. Leveraging Simulation Dumps and Failure Traces for Formal Property Verification (INTEL Technology India Pvt. Ltd, Bangalore, Rs.10.00 Lakhs)
31. Linux kernel development and support (Nucleodyne Systems Inc., USA, Rs.5.00 Lakhs)
32. Optimal solutions and applications for the next generation wireless Internet. (VEICET, Rs.45.00 Lakhs)
33. Pattern Recognition Algorithms for Bioinformatics (DST, Rs.24.50 Lakhs)
34. Preprocessing and Analysis of Degraded Documents (MCT, GOI, Rs.34.00 Lakhs)
35. Programming and Data Structures Virtual Lab (MHRD, Rs.20.00 Lakhs)
36. Regression Testing of Object-Oriented Programs (DST, New Delhi, Rs.10.54 Lakhs)
37. Safety messaging in vehicular networks (General Motors India, Rs.0.00 Lakhs)
38. software Tools for Cryptanalysis of Stream Cipher (SAG, DRDO, New Delhi, Rs.19.85 Lakhs)
39. Special Manpower Development Project (DIT, Rs.90.00 Lakhs)
40. Speech Based Computer Interface (Intel, Rs.10.00 Lakhs)
41. Strategies for power reduction during VLSI circuit testing (DIT, Government of India, Rs.31.00 Lakhs)
42. Study of Hardware Malware Vulnerabilities and Mitigation Techniques for FPGAs (Centre for Artificial Intelligence and Robotics (CAIR), Defence Research and Development Organisation, Rs.9.00 Lakhs)
43. The Bangla Treebank (Central Institute of Indian Languages, Mysore, TDIL program, Rs.25.00 Lakhs)
44. Virtual Lab for Computer Organisation & Architecture (MHRD, Rs.56.00 Lakhs)
45. 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. Broadband Architecture Validation (BAAV) (Reliance Communication, Rs.16.00 Lakhs)
3. Cache Timing Attack on Clefia (NTT Labs, Japan, Rs.20.00 Lakhs)
4. Call Centre and Data Warehousing (CRMP) (WBSEDCL, Rs.25.00 Lakhs)
5. Computerization of DVC (Damodar Valley Corporation, Rs.19.10 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. Drafting Revised Guidelines for UG Engineering Program Accreditation (NBA, Rs.0.00 Lakhs)
10. Feasibility studies on upliftment of science and technology in Dubai: the role of IIT Kharagpur (Educare International Foundation, Dubai, Rs.3.00 Lakhs)
11. Formal Design Intent Modeling and Verification of Mixed-Signal Designs (Semiconductor Research Corporation, USA, Rs.45.00 Lakhs)
12. Formal Methods for Component Based Verification of Automotive Feature Controls (General Motors, Rs.60.00 Lakhs)
13. Formal methods for power intent verification (MPIV) (Synopsys (India) Pvt. Limited, RMZ Infinity, Tower A, Old Madras Road, Bangalore-560016, Rs.25.00 Lakhs)
14. Formal Verification of Post Silicon Bug Fixes (INTEL Technology India Pvt. Ltd, Bangalore, Rs.22.06 Lakhs)
15. Formal Verification of Web Interfaces (Google, Rs.22.50 Lakhs)
16. GM Collaborative Research Laboratory on Electronics, Controls and Software: Projects (General Motors, Rs.425.00 Lakhs)
17. IT Consultancy (CITM) (UCO Bank, Rs.15.00 Lakhs)
18. IT Consultant at NIC (National Insurance Company Limited, Rs.3.12 Lakhs)
19. Platform Architecture Modeling for Exploring Power Management Strategies (Intel, Rs.16.00 Lakhs)
20. Sanyog Phase II: A portable communication Tool for the Speech & Neuro Motor Impaired People (Media Lab Asia, New Delhi, Rs.71.12 Lakhs)
21. Synopsys CAD Laboratory (Synopsys, Rs.172.72 Lakhs)
22. Technical Consultancy Services on IT Matters (UCO Bank, Kolkata, Rs.2.50 Lakhs)
23. Web Portal Development (WPDC) - Completed (WBSEDCL, Rs.3.00 Lakhs)
24. West Bengal State Wide Area Network (WANE) (WTL, Rs.30.00 Lakhs)

Technology Transferred

1. Society for Natural Language Technology, Govt of West Bengal - Anweson: Bengali Search Engine : Rs. 0.00 Lakh
2. Vision Aid India and Sushrut Eye Hospital - Shruti: Speech Recognition System : Rs. 0.00 Lakh

Patents (filed / granted)

1. Method and Apparatus for Extracting Assume Properties
2. Method and Apparatus for Operational-Level Functional and Degradation Fault Analysis
3. PROTECTION OF INTELLECTUAL PROPERTY (IP) CORES THROUGH A DESIGN FLOW
4. Shruti: Vernacular Speech Recognition System in Bengali

Visits Abroad by Faculty Members

1. Mall, Rajib - Microsoft Faculty Summit (Seattle, USA,) July 12-13, 2010
2. Bhowmick, Partha - To present paper in 2009 IEEE International Conference on Image Processing (Cairo, Egypt,) November 7-11, 2009
3. Bhowmick, Partha - To present paper in 2009 International Conference on Arts and Technology (Yilan, Taiwan,) September 24-25, 2009
4. Mukhopadhyay, Debdeep - Presenting Paper (Tunisia, Africa,) 21-25 June
5. Mukhopadhyay, Debdeep - Invited Talk (NTT Labs Japan,) 7 days
6. Mukhopadhyay, Debdeep - Presentation of Technical Paper (CT-RSA 2011, San Francisco, USA,) 7 days
7. Ganguly, Niloy - Visiting collaborators (Germany, France,) 1.5 months
8. Ganguly, Niloy - Organizing workshop (Portugal,) 7 days
9. Sarkar, Sudeshna - Organizer of CLIA workshop at COLING 2010 (Beijing, China,) August 2010
10. Mukhopadhyay, Debdeep - Invited Talk (NKC Abu Dhabi, UAE,) 2 days
11. Sengupta, Indranil - Attend Asian Test Symposium 2010 (Shanghai, China,) December 1-4, 2010
12. Dasgupta, Pallab - Annual Review Meeting of SRC Global Research Corporation (University of Texas, Austin, USA,) April 2010
13. Majumder, Arun Kumar - Visiting Professor for research collaboration (George Mason University, Fairfax, Virginia,) May-June 2010
14. Majumder, Arun Kumar - As member of Association of Indian Universities Delegation (Scottish Universities- University of Strathclyde Galsgow, University Abertay Dundee and Edinburgh University,) May 2010
15. Majumder, Arun Kumar - As member of Association of Indian Universities Delegation (Dutch Universities - Eindhoven University of Technology, Tilburgh University, Utrecht University, Erasmus University and Delft University,) May 2010
16. Majumder, Arun Kumar - For research collaboration (Leibniz University, Hannover, Germany,) May 2010
17. Majumder, Arun Kumar - Research Collaboration (Oracle Research, California, USA,) June 2010
18. Mukhopadhyay, Jayanta - Conference (Hong Kong,) 28th Sept. - 2nd October 2010
19. Bhowmick, Partha - Paper presentation at PSIVT 2010 (Singapore,) November 14-17, 2010
20. Bhowmick, Partha - Presenting paper at ICPR 2004 (Cambridge, UK,) August 23-26, 2004
21. Roychowdhury, Dipanwita - To present paper in the conference Automata 2010 (Nancy, France,) 14th to 16th June, 2010

22. Sarkar, Sudeshna - To present paper at RECSYS 2010 (Barcelona, Spain,) September 2010
23. Dasgupta, Pallab - Invited Participant in the Intel Asia Academic Forum (Ho Chi Minh City, Vietnam,) November 2010
24. Chakrabarti, Partha Pratim - Research Project, Collaboration Discussions (Dubai,) Two Days (April 8-9), 2010

Invited Lectures by Faculty Members

1. Program Slicing and Its Applications *by* Mall, Rajib (Trivandrum)
2. Hardware Security: a 21st Century Perspective (tutorial) *by* Chakraborty, R S (IEEE International Conference on VLSI Design (VLSID), Chennai, India)
3. Hardware Trojans: Threats and Emerging Solutions *by* Chakraborty, R S (Short-term Course on Information Security, IIT Kharagpur)
4. Operating System Security *by* Chakraborty, R S (Short-term Course on Information Security, IIT Kharagpur)
5. Hardware Trojans: Threats and Emerging Solutions *by* Chakraborty, R S (Workshop on Network Security, IIT Kharagpur)
6. Exciting moments of research *by* Mukhopadhyay, Jayanta (Shilong)
7. Grid and Cloud Computing in Telemedicine and e-Health *by* Majumder, Arun Kumar (Bhubaneswar, Telemedicon 2010)
8. Video Compression *by* Mukhopadhyay, Jayanta (IIT Guwahati)
9. State based video modeling and its applications *by* Mukhopadhyay, Jayanta (ISI, Kolkata)
10. State based video modeling *by* Mukhopadhyay, Jayanta (MSRCT, Bangalore)
11. Geometry, Vision, and Graphics -- A Number-theoretic Introduction *by* Bhowmick, Partha (NIT Patna)
12. Algorithmic Art *by* Random Digital Curves *by* Bhowmick, Partha (ISI Kolkata)
13. Algebraic Attacks on Stream Cipher *by* Roychowdhury, Dipanwita (National Workshop in Cryptology 2010, PSG College of Technology, Coimbatore, Tamilnadu.)
14. Can Intelligence be Artificial? *by* Dasgupta, Pallab (JBNSTS)
15. Abstractions and Formalisms for Analog CAD *by* Dasgupta, Pallab (Indian Statistical Institute Kolkata)
16. Design Intent Verification *by* Dasgupta, Pallab (Freescall Semiconductors, Austin, Texas, USA)
17. Can Intelligence be Artificial? *by* Dasgupta, Pallab (Bengal Institute of Technology Kolkata)
18. Design Intent Verification *by* Dasgupta, Pallab (Synopsys India Pvt Ltd)
19. Design Intent Verification *by* Dasgupta, Pallab (Intel Technology India Pvt Ltd)
20. Embedded Systems: Challenges & Trends *by* Chakrabarti, Partha Pratim (Jadavpur University, Kolkata)
21. The Sciences of the Artificial *by* Chakrabarti, Partha Pratim (CGCRI, Kolkata)
22. Artificial Intelligence *by* Chakrabarti, Partha Pratim (SNLTR Programme, Kalamandir, Kolkata)
23. Side Channel Attacks, Elliptic Curve Design, Fault Attacks *by* Mukhopadhyay, Debdeep (NTT Labs Japan)
24. Side Channels in Cryptography *by* Mukhopadhyay, Debdeep (National Knowledge Center Abu Dhabi UAE)
25. Hardware Security: A 21st Century Perspective *by* Mukhopadhyay, Debdeep (VLSI Conference, IIT Madras)
26. Coverage-maximization in networks under resource constraints *by* Ganguly, Niloy (Modeling Infectious Diseases, IMSC, Chennai)
27. Growth with restriction *by* Ganguly, Niloy (MPI - SWS)
28. Maximizing Network Coverage under Resource Constraints *by* Ganguly, Niloy (ZIH Colloquium, Dresden)
29. Geometric data structures *by* Pal, Sudebkumar Prasant (NIT Patna, Bihar)
30. Trainer Workshop on NBA Guidelines *by* Kumar, Rajeev (National Board of Accreditation)

Books Published

1. B. Forouzan and D. Mukhopadhyay: Cryptography and Network Security *published by* Tata McGrawHills (2010)
2. J. Mukhopadhyay: Image and Video Processing in the Compressed Domain *published by* CRC Press (2011)

Seminars, Conferences and Workshops Organised

1. 4th India Software Engineering Conference (ISEC), 2011
2. Research Promotion Workshop on Introduction to Graph and Geometric Algorithms

Short-Term Courses, Training Programmes and Workshops organised

1. Advanced Networking and Security (February 12-22, 2011)
2. Advanced Networking and security (April 6-18, 2010)
3. High Performance Architecture and Parallel Programming (7 days)
4. High Performance Parallel and Enterprise Computing (1 week (scheduled in April 2010))
5. Information Security (September 27 - October 7, 2010)
6. LOW-POWER, HIGH-SPEED DIGITAL SUBSYSTEM DESIGN: SPEC-TO-CHIPS (two weeks)
7. Network Security-Theoretical and Practical Perspective (5 days)

Papers Published in Journals

1. A Composite Kernel for Named Entity Recognition *By* Sujan Kumar Saha, Shashi Narayan, Sudeshna Sarkar, Pabitra Mitra *Pattern Recognition Letters* Vol 31-2, 1591-97 (2010)

2. A Dependence Representation for Coverage Testing of Object-Oriented Programs By E. S. F. Najumudheen, Rajib Mall, Debasis Samanta, *Journal of Object Technology* Vol. 9, pp. 1--23, (2010)
3. A Framework for Manual Ontology Engineering for Management of Learning Material Repository By Plaban Kumar Bhowmick, Devshri Roy, Sudeshna Sarkar, Anupam Basu *International Journal of computer Science & Applications* 7(2): 30-52 (2010)
4. A location-based key establishment scheme for static wireless sensor networks with multiple base stations By A.K. Das and I. Sen Gupta *Journal of Information Assurance and Security* Vol. 5, pp. 426-436 (2010)
5. A Low Overhead Partition Oriented ERFair Scheduler for Hard Real-Time Embedded Systems By Arnab Sarkar, Amit Shanker, Sujoy Ghose, P P Chakrabarti *IEEE Embedded Systems Letters* 3(1), 5-8 (2011)
6. A Methodology for Generation of Performance Models for the Sizing of Analog High-Level Topologies By Soumya Pandit, Chittaranjan Mandal, Amit Patra *VLSI Design* vol. 2011, arID: 47 (2011)
7. A new two-pulse synthesis model for digital volume pulse signal analysis By D. Goswami, K. Chaudhuri and J. Mukherjee *Cardiovascular Engineering* 10 (3), pp.109-117. (2010)
8. A Parallel Efficient Architecture for Large Cryptographically Robust $n \times k$ (kn/2) Mappings By Debdeep Mukhopadhyay and Dipanwita Roy Chowdhury *IEEE Transactions on Computers* (2010)
9. A Unified Algorithm for Identification of Various Tabular Structures from Document Images By S. Mandal, A.K. Das, P. Bhowmick, and B. Chanda *International Journal of Digital Library Systems* To appear (2011)
10. A WLAN security Management Framework based on Formal Spatio-Temporal RBAC Model By Padmalochan Bera, S K Ghosh, Pallab Dasgupta *Journal of Security and Communication Networks* August (2010)
11. Alphabetic Bipartite Network (alpha-BiN): Theory and Case Study, By A Maity and N Ganguly *Acta Physica Polonica B Proceedings Supplement* Vol. 3 - No. 2 (2010)
12. An adaptive audio watermarking scheme based on singular value decomposition in wavelet domain By V. Bhat, I. Sen Gupta, and A. Das *Digital Signal Processing* Vol. 20, Issue 6 (2010)
13. An Approach for Early Prediction of Software Reliability By Sirsendu Mohanta, V. Gopika, A.K. Ghosh, Rajib Mall *ACM SIGSOFT Software Engineering Notes* Volume 35, pp. 1--9 (2010)
14. An audio watermarking scheme using singular value decomposition and dither modulation By V. Bhat, I. Sen Gupta, and A. Das *Multimedia Tools and Applications* Vol. 52, pp. 369-383 (2010)
15. An new audio watermarking scheme based on singular value decomposition and quantization By V. Bhat, I. Sen Gupta, and A. Das *Journal of Circuits, Systems and Signal processing* (2011)
16. Bounded Delay Timing Analysis and Power Estimation using SAT By Suchismita Roy, P.P. Chakrabarti, P. Dasgupta *Microelectronics Journal* 41(5), 317-324 (2010)
17. Bounded-Diameter MST Instances with Hybridization of Multi-Objective EA By Soma Saha and Rajeev Kumar *Int. J. Computer Applications* 18(4) 17 - 25 (2011)
18. Broadcasting in DTN as Epidemic Dynamics By Abyayananda Maiti, Fernando Peruani, Romit Roy Choudhury, and Niloy Ganguly *MC2R | Mobile Computing and Communications Review* Volume 14 , Issue 2 (2010)
19. CAvium - Strengthening Trivium Stream Cipher Using Cellular Automata By Sandip Karmakar, Debdeep Mukhopadhyay and Dipanwita Roy Chowdhury *Journal of Cellular Automata* (2011)
20. Coverage-maximization in networks under resource constraints By Subrata Nandi, Lutz Brusch, Andreas Deutsch and Niloy Ganguly *Physical review E* 81:061124 (2010)
21. Cubic Approximation of Curve-shaped Objects in Z^2 : A Generalized Approach Based on Discrete Curvature By S. Pal and P. Bhowmick *Journal of Discrete Mathematical Sciences & Cryptography* 13 (2010)
22. Determining Digital Circularity Using Integer Intervals By S. Pal and P. Bhowmick *Journal of Mathematical Imaging and Vision* To appear (2011)
23. Do We Agree? Measuring Agreement on the Human judgments in Emotion Annotation of News Sentences By Plaban Kumar Bhowmick, Pabitra Mitra, Anupam Basu *Cybernetics and Systems* 41(7): 469-488 (2010)
24. Extracting State Models for Black-Box Software Components By R. R. Suman and R. Mall *Journal of Object Technology*, Vol. 9, pp 79--103 (2010)
25. Fault Attack and Countermeasures on Pairing Based Cryptography By Santosh Ghosh, Debdeep Mukhopadhyay, and Dipanwita Roy Chowdhury *International Journal of Network Security*, Vol. 12, No. 1, pp. 26--33, Jan. 2011. Vol 12, pp 26-33 (2011)
26. Heuristic Search under Contract By Sandip Aine, P P Chakrabarti, Rajeev Kumar *Computational Intelligence* 26 (4), 386 -- 419 (2010)
27. HPC5: An Efficient Topology Generation Mechanism for Gnutella Networks, By Joydeep Chandra, Santosh Shaw, and Niloy Ganguly *Computer Networks* Volume 54, Issue 9, (2010)
28. Integrated Security Analysis Framework for an Enterprise Network-A Formal Approach By Padmalochan Bera, S K Ghosh, Pallab Dasgupta *IET Information Security* 4(4), 283-300 (2010)
29. Integrated State-based Dynamic Slicing Technique for UML Models By Jaiprakash T. Lallchandani and R. Mall *IET Software*, Vol. 4, pp 55-78 (2010)
30. Local Rank Transform: Properties and Applications By J. Mukherjee *Pattern Recognition Letters* 32, 1001-1008 (2011)
31. Model based Regression Test Case Prioritization By Chhabi Rani Panigrahi and Rajib Mall *ACM SIGSOFT Software Engineering Notes* Volume 35, pp. 1--7 (2010)
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35. Modelling Visual Saliency Using Degree Centrality By R. Pal, A. Mukherjee, P. Mitra and J. Mukherjee *IET Journal of Computer Vision* Vol. 4, No. 3, 218-2 (2010)
36. New Architectural Design of CA-Based Codec. By Jaydeb Bhaumik and D. Roy Chowdhury *IEEE Transactions on VLSI* vol. 17, pp1139-1144 (2010)
37. On approximating Euclidean metrics by weighted t-cost distances in arbitrary dimension By J. Mukherjee *Pattern Recognition Letters* 32, 824-831 (2011)
38. On Finding an Orthogonal Convex Skull of a Digital Object By M. Dutt, A. Biswas, P. Bhowmick, and B. B. Bhattacharya *International Journal of Imaging Systems and Technology* 21 (2011)

39. Ontology Based User Modeling for Personalized Information Access By Plaban Kumar Bhowmick, Sudeshna Sarkar, Anupam Basu *International Journal of computer Science & Applications* 7(1): 1-22 (2010)
40. Partition-Oriented Frame Based fair Scheduler By Arnab Sarkar, Sujoy Ghose, P P Chakrabarti *Journal of Parallel and Distributed Computing* (70), 707-718 (2010)
41. Petrel: Power and Timing Attack Resistant Elliptic Curve Scalar Multiplier Based on Programmable GF(p) Arithmetic Unit By Santosh Ghosh, Debdeep Mukhopadhyay, Dipanwita Roychowdhury *IEEE Transactions on Circuits and Systems I* (2011)
42. Policy Based Security Analysis in Enterprise Networks -A Formal Approach By Padmalochan Bera, S K Ghosh, Pallab Dasgupta *IEEE Transactions on Network and Service Management* 7(4), 231-243 (2010)
43. Proactive (t,n) secret sharing scheme using ECC based signcryption scheme By A. Basu, I. Sen Gupta and J.K. Sing *Journal of Information Assurance and Security* Vol. 5, pp. 209-217 (2010)
44. Rain: Reversible Addition with Increased Nonlinearity By Jaydeb Bhaumik, Debdeep Mukhopadhyay and Dipanwita Roy Chowdhury *International Journal of Network Security* (2011)
45. Revisiting the Itoh-Tsujii Inversion Algorithm for FPGA Platforms By Chester Rebeiro, Sujoy Sinha Roy, Sankara Reddy and Debdeep Mukhopadhyay *IEEE Transactions on VLSI Systems* (2010)
46. State-Based Approach To System Testing By Monalisa Sarma and R. Mall *ACTA Journal of Computers and Applications* Volume 32, Issue 2 (2010)
47. Test Case Generation Based on State and Activity Models By Santosh Kumar Swain and Rajib Mall *Journal of Object Technology* Vol.9, No. 5,pp.1-27 (2011)
48. Towards Analyzing the Impact of Advertisement Billboards on Soccer Telecast Viewers By S. Das, S. Sural . and A. K. Majumdar *International Journal of Computational Intelligence and Applications (IJCIA)*, Vol. 09, 241-269 (2010)
49. Wavelet Transcoding in the Block DCT Space, By K. Viswanath, J. Mukherjee and P. K. Biswas *IET Image Processing* vol. 4 (3), 143-157 (2010)
50. Wheel-throwing in Digital Space Using Number-theoretic Approach By Gautam Kumar, Naveen K. Sharma, and Partha Bhowmick *International Journal of Arts and Technology* To appear (2011)

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4. A Fast Technique for Vectorization of Engineering Drawings using Morphology and Digital Straightness, By S. Mandal, A.K. Das, and P. Bhowmick, *Proc. ICVGIP-2010, ACM Press*, Chennai, India, (2010)
5. A Formal Method for Detecting Semantic Conflicts in Protocols between Services with Different Ontologies, By Priyankar Ghosh, Pallab Dasgupta, *International Conference on Web & Semantic Technology*, India, (2010)
6. A Hierarchical Approach for Content-Based Echocardiogram Video Indexing and Retrieval, By Aditi Roy, S. Sural, J. Mukherjee, A. K. Majumdar, *ICCCS11*, Rourkela, (2011)
7. A hybrid genetic algorithm based test case generation using sequence diagrams, By Mahesh Shirole and Rajeev Kumar, *Int. Conf. Contemporary Computing (IC3)*, Noida, (2011)
8. A JPEG-like algorithm for compression of single-sensor camera image, By O.B. Daho, M.C. Larabi, and J. Mukhopadhyay, *Proc. Digital Photography VII, SPIE 7876*, San Francisco, USA, (2011)
9. A Linear-time Algorithm for Generation of Random Digital Curves, By Partha Bhowmick, Oishee Pal, and Reinhard Klette, *Proc. PSIVT, IEEE CS Press*, Singapore, (2010)
10. A Query based formal security analysis framework for enterprise LAN, By Padmalochan Bera, Soumya Maity, S K Ghosh, Pallab Dasgupta, *International Conference on Computer and Information Technology*, India, (2010)
11. A Study of Modeling Techniques in use in Digital and Mixed-Signal Domains for Semi-Formal Verification, By Srobona Mitra, Antara Ain, Priyankar Ghosh, Pallab Dasgupta, *IEEE TechSym*, Kharagpur, India, (2010)
12. A User Friendly Implementation for Efficiently Conducting Hammersmith Infant Neurological Examination, By 2. D. P. Dogra, K. Nandam, A. K. Majumdar, S. Sural, J. Mukhopadhyay, B. Majumdar, S. Mukherjee, A. Singh, *12th International Conference on E-Health Networking, Application and Services (Healthcom 2010)*, Lyons, France, (2010)
13. A User Interactive Method for Measuring Lateral Ventricle Width in Neonates, By P. Mondal, J. Mukhopadhyay, S. Sural, A.K. Majumdar, A. Biswas, A. Singh, and S. Mukherjee, *International Conference on Systems in Medicine and Biology (ICSMB 2010)*, Kharagpur, (2010)
14. Accelerating Itoh-Tsujii Multiplicative Inversion Algorithm for FPGAs, By Sujoy Roy, Chester Rebeiro and Debdeep Mukhopadhyay, *To Appear in the Proceedings of GLS-VLSI 2011*, , (0)
15. ACCORD: With Approximate Covering of Convex Orthogonal Decomposition, By M. Dutt, A. Biswas, and P. Bhowmick, *DGCI-2011: 16th IAPR International Conference on Discrete Geometry for Computer Imagery*, Nancy, France, (2011)
16. Aggregating Preference Graphs for Collaborative Rating Prediction, By Maunendra S. Desarkar, Sudeshna Sarkar, and Pabitra Mitra, *4th ACM Conference on Recommender Systems, RECSYS 2010*, Barcelona, Spain, (2010)
17. An Efficient Parameterized and Scalable S-Bos for Stream Ciphers., By Sourav Das and Dipanwita Roy Chowdhury, *The 6th China International Conference on Information Security and Cryptology (Inscrypt 2010)*, Shanghai, China, October 2010., (2010)
18. An Improved Differential Fault Analysis on AES-256, By Sk Subidh Ali and Debdeep Mukhopadhyay, *To Appear in the Proceedings of Africacrypt 2011*, , (0)
19. An Improved Greedy Construction of Minimum Connected Dominating Sets in Wireless Networks, By Ariyam Das, Chittaranjan Mandal, Chris Reade, M Aasawat, *IEEE Wireless Communications and Networking Conference 2011*, Cancun, Mexico, (2011)
20. Assessing the performance of bi-objective MST for Euclidean and non-Euclidean instances, By Soma Saha, Mohammad Aslam, and Rajeev Kumar, *Int. Conf. Contemporary Computing (IC3)*, Noida, (2011)
21. Auto-Generation of AMS Behavioral Models in Different Languages from Hybrid Automata, By Antara Ain, Pallab Dasgupta, *IEEE TechSym*, Kharagpur, India, (2010)

22. Automated Burst Detection in Neonatal EEG, By S. Bhattacharyya, B. Majumdar, J. Mukhopadhyay, A.K. Majumdar, and A.K. Singh, *Biosignals*, Rome, Italy, (2011)
23. Automatic Posture Estimation for Hammersmith Infant Neurological Examination, By 1. D. P. Dogra, S. Sinha, A. K. Majumdar, S. Sural, J. Mukhopadhyay, B. Majumdar, S. Mukherjee, A. Singh, *Seventh Indian Conference on Computer Vision, Graphics and Image Processing*, New Delhi, (2010)
24. Auxiliary State Machines and Auxiliary Functions: Constructs for Extending AMS Assertions, By Subhankar Mukherjee, Pallab Dasgupta, *ACM/IEEE VLSI Design Conference*, India, (2011)
25. Brief Announcement: Superpeer formation amidst churn and rewiring, By B. Mitra, A. Kumar and N. Ganguly, *PODC*, Zurich, (2010)
26. CAvium - Strengthening Trivium Stream Cipher Using Cellular Automata, By Sandip Karmakar, Debdeep Mukhopadhyay and Dipanwita Roy Chowdhury, *Proceedings of Automata 2010, Nancy, France*, Nancy, France, (2010)
27. Co-occurrence Graph Based Iterative Bilingual Lexicon Extraction From Comparable Corpora., By Diptesh Chatterjee and Sudeshna Sarkar and Arpit Mishra, *Proceedings of the 4th Workshop on Cross Lingual Information Access, COLING 2010 workshop*, Beijing, China, (2010)
28. Combinatorial Construction of the Orthogonal Concavity Tree of a Digital Object, By A. Sarkar, A. Biswas, P. Bhowmick, and B.B. Bhattacharya, *Proc. EAIT-2011, IEEE CS Press*, Kolkata, (2011)
29. Construction of 3D Orthogonal Cover of a Digital Object, By N. Karmakar, A. Biswas, P. Bhowmick, and B.B. Bhattacharya, *Proc. 14th International Workshop on Combinatorial Image Analysis: IWCI'11*, Madrid, Spain, (2011)
30. Contract Search: Heuristic Search under Node Expansion Constraints, By Sandip Aine, P. P. Chakrabarti, Rajeev Kumar, *European Conference on Artificial Intelligence*, (2010)
31. Cryptanalysis of CLEFIA using Differential Methods with Cache Trace Patterns, By Chester Rebeiro and Debdeep Mukhopadhyay, *Proceedings of CT-RSA 2011.*, (2011)
32. d-Monomial Tests of Nonlinear Cellular Automata for Cryptographic Design, By Sandip Karmakar, Debdeep Mukhopadhyay and Dipanwita Roy Chowdhury, *Proceedings of 9th International Conference on Cellular Automata for Research and Industry (ACRI)*, (2010)
33. Data-flow Driven Equivalence Checking for Verification of Code Motion Techniques, By Chandan Karfa, Dipankar Sarkar, Chittaranjan Mandal, *ISVLSI 2010*, Kefalonia, Greece, (2010)
34. Design and Implementation of Packet Filter Firewall using Binary Decision Diagram, By G Paul, A Pothnal, C Mandal, B B Bhattacharya, *2011 IEEE Students Technology Symposium*, IIT Kharagur, (2011)
35. Determining Reliability of Subjective and Multi-label Emotion Annotation through Novel Fuzzy Agreement Measure, By Plaban Kumar Bhowmick, Anupam Basu, Pabitra Mitra, *Language Resources Evaluation Conference*, Edinburgh, UK, (2010)
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44. Generation of improved test cases from UML state diagram using genetic algorithm, By Mahesh Shirole, Amit Suthar, and Rajeev Kumar, *India Software Engineering Conference (ISEC)*, Thiruvananthapuram, (2011)
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47. High Speed Fp Multipliers and Adders on FPGA Platform, By Santosh Ghosh, Debdeep Mukhopadhyay, and Dipanwita Roy Chowdhury, *DASIP 2010*, Edinburgh, Scotland, October 2010, (2010)
48. How do superpeer networks emerge?. By B. Mitra, A. Kumar, S. Ghose and N. Ganguly, *Infocom*, San Jose, (2010)
49. Improvement of bounded-diameter MST instances with hybridization of multi-Objective EA, By Soma Saha and Rajeev Kumar, *Int. Conf. Comm. Comput. Sec. (ICCCS)*, Rourkela, (2011)
50. Improving Bitrate in Detail Coefficient based Audio Watermarking using Wavelet Transformation, By K. Datta and I. Sen Gupta, *International Conference on Communication and Signal Processing (ICCSP 2011)*, Calicut, (2011)
51. Isolating neighbours contribution towards image filtering in the block DCT space, By J. Mukhopadhyay, *Int. Conf. on Image Processing, ICIP -2010*, Hong Kong, (2010)
52. Layout Aware Solution Preparation for Biochemical Analysis on a Digital Microfluidic Biochip, By Sudip Roy, Bhargab B Bhattacharyya, P P Chakrabarti, Krishnendu Chakrabarty, *24th International Conference on VLSI Design (VLSID)*, India, (2011)
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56. Implementation of a Bengali Morphological Generator, By Sanjay Chatterji, Sudeshna Sarkar, Anupam Basu, *Proceedings of 8th International Conference on Natural Language Processing (ICON-2010)*, Kharagpur, (2010)
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60. New Pseudo Near Collision on Tiger, By Dibyendu Mallik and Debdeep Mukhopadhyay, *Proceedings of International Conference on Security and Cryptography, Secrypt*, Athens, Greece, (2010)
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65. Properties of Farey Sequence and their Applications to Digital Image Processing, By Soham Das, Kishaloy Halder, Sanjoy Pratihar, and Partha Bhowmick, *Fourth International Conference on Information Processing*, Bangalore, (2010)
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69. Robust Embedded Software Design through early analysis of Quality Faults, By Dipankar Das, Purnendu Sinha, P P Chakrabarti, *ISEC 2011*, India, (2011)
70. RTL Hardware IP Protection Using Key-Based Control and Data Flow Obfuscation, By R. S. Chakraborty and S. Bhunia, *IEEE International Conference on VLSI Design (VLSID)*, Bangalore, India, (2010)
71. Self-referencing: a Scalable Side-channel Approach for Hardware Trojan Detection, By D. Du, S. Narasimhan, R. S. Chakraborty and S. Bhunia, *Workshop on Cryptographic Hardware and Embedded Systems (CHES)*, Santa Barbara, CA, USA, (2010)
72. Shape Decomposition Using Farey Sequence and Saddle Points, By S. Pratihar and P. Bhowmick, *Proc. ICVGIP-2010, ACM Press*, Chennai, India, (2010)
73. System Level Self-Healing for Parametric Yield and Reliability Improvement under Power Bound, By S. Narasimhan, S. Paul, R. S. Chakraborty, F. Wolff, C. Papachristou, D. J. Weyer and S. Bhunia, *NASA/ESA Conference on Adaptive Hardware and Systems (AHS)*, Anaheim, CA, USA, (2010)
74. Tele-consultation using Clinical Document Architecture in disease specific domains, By D.K. Patra, J. Mukhopadhyay, A.K. Majumdar, B. Majumdar, and D.P. Dogra, *12th IEEE International Conference on e-Health Networking Applications and Services (Healthcom 2010)*, Lyon, France, (2010)
75. The Effects of Restrictions on Number of Connections in OSNs: A Case-Study on Twitter,, By Saptarshi Ghosh, Gautam Korlam, and Niloy Ganguly, *WOSN*, Boston, (2010)
76. Theoretical Modeling of the Itoh-Tsujii Inversion Algorithm for Enhanced Performance on k-LUT based FPGAs, By Sujoy Roy, Chester Rebeiro and Debdeep Mukhopadhyay, *Proceedings of DATE 2011 (Design Automation and Test in Europe)*, Grenoble, France, (2011)
77. TweLEX: A Tweaked Version of the LEX Stream Cipher, By Mainack Mondal, Avik Chakraborti, Nilanjan Datta and Debdeep Mukhopadhyay, *Accepted for 5th Benelux Workshop on Information and System Security (Wissec)*, Nijmegen, the Netherlands, (2010)
78. Unsupervised Feature Generation using Knowledge Repositories for Effective Text Categorization, By R. Rajendra Prasath and Sudeshna Sarkar, *Proc. of the 19th European Conference on Artificial Intelligence*, Lisbon, Portugal, (2010)
79. Vectorization of Thick Digital Lines Using Farey Sequence and Geometric Refinement, By S. Pratihar and P. Bhowmick, *Proc. ICVGIP-2010, ACM Press*, Chennai, India, (2010)
80. Verification of Register Transfer Level Low Power Transformations, By Chandan Karfa, Dipankar Sarkar, Chittaranjan Mandal, *IEEE Computer Society Annual Symposium on VLSI (ISVLSI) 2011*, Chennai, India, (2011)
81. Word Segmentation and Baseline Detection in Handwritten Documents Using Isothetic Covers, By A. Sarkar, A. Biswas, P. Bhowmick, and B.B. Bhattacharya, *Proc. 12th International Conference on Frontiers in Handwriting Recognition (ICFHR)*, IEEE CS Press, Kolkata, (2010)

Department of Electronics & Electrical Communication Engineering

Head

Prof. Chinmay Kumar Maiti

Professors

Bandyopadhyay, Kalyan Kumar	<i>Ph.D.(Jadavpur University)</i> , satellite communication
Banerjee, Swapna	<i>Ph.D.(IIT Kharagpur)</i> , VLSI based embedded system design for signal/image processing, Biomedical Instrumentation, Device modeling, Low power circuits, Mixed-signal design
Biswas, Dhrubesh	<i>Ph.D. (Illinois USA)</i> , Wide-Bandgap Compound Semiconductor Heterostructure Devices, RF / Ultra-high Speed GaAs/InP on Si Devices for High-performance Design, Research on III-V MOS for higher current and higher frequency, High efficiency optical devices using Gan/InGaN multi-junction heterostructures, Education-Enterprise association through ideation incubation and entrepreneurial integration, Technology Interventions of Growth Ventures, Health Exchange System and Information & Communication Technology (ICT) technologies, Business Architecture of Growth Venture
Biswas, Prabir Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Image Processing, Computer Vision, Automated Visual Inspection, Multimedia Network, Pattern Recognition, Sensor Network
Chakraborty, Ajoy	<i>Ph.D.(IIT Kharagpur)</i> , Electromagnetics, EMI/EMC, ESD, Computational Techniques, Array Antenna,
Chakraborty, Mrityunjay	<i>Ph.D.(IIT Delhi)</i> , Digital Signal Processing, Adaptive Signal Processing, VLSI Signal Processing, Signal Processing for Communications
Dutta, Debasish	<i>Ph.D.(IIT Kharagpur)</i> , Optical Networks, Wireless Networks
Gangopadhyay, Ranjan	<i>Ph.D.(IIT Kharagpur)</i> , Wireless and Fibre Communication
Garg, Ramesh	<i>Ph.D.(IIT Kanpur)</i> , Electromagnetics
Maiti, Chinmay Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Microelectronics, Silicon Heterostructure, Online Laboratories
Pathak, Sant Sharan	<i>Ph.D.(IIT Delhi)</i> , Digital Communication
Rajakumar, Ratnam Varada	<i>Ph.D.(IIT Kharagpur)</i> , Digital Signal Processing, Communication Systems, Detection and Estimation
Ray, Ajoy Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Image Processing and Computer Vision, Pattern Recognition in Medicine, Soft computing
Sanyal, Subrata	<i>Ph.D.(IIT Kharagpur)</i> , RF & Microwave Engineering, E.M.Scatter
Sen Gupta, Somnath	<i>Ph.D.(IIT Bombay)</i> , Image Processing and Computer Vision

Associate Professors

Bhattacharya, Amitabha	<i>Ph.D.(IIT Kharagpur)</i> , RF & Microwave Communication
Bhattacharyya, Tarun Kanti	<i>Ph.D.(Jadavpur Univ)</i> , MEMS and Microsystems, RF and Analog VLSI, Thinfilms, Nano- electronics
Chakrabarti, Indrajit	<i>Ph.D. (IIT Kharagpur)</i> , VLSI Design for Video Processing and Communication
Chattopadhyay, Santanu	<i>Ph.D.(IIT Kharagpur)</i> , Fault diagnosis
Datta, Raja	<i>Ph.D.(IIT Kharagpur)</i> , Computer Networks, Ad Hoc Networks, Optical WDM Networks, Distributed Systems
Dhar, Anindya Sundar	<i>Ph.D.(IIT Kharagpur)</i> , VLSI Architecture Design
Ghosh, Bratin	<i>Ph.D.(Univ. of Manitoba)</i> , Applied Electromagnetics
Mahapatra, Sudipta	<i>Ph.D.(IIT Kharagpur)</i> , Parallel and Distributed Systems, Image and Video Compression, Optical and Wireless Networks
Mandal, Pradip	<i>Ph.D.(IISc Bangalore)</i> , Design Automation of CMOS Analog circuits and Systems, Analog Circuit Design
Roy, Rajarshi	<i>Ph.D (Brooklyn Univ.)</i> , Communication Networks, Cooperative Communication, Queuing Theory and Stochastic Processes, Optimization and network control, Performance Evaluation and optimal resource allocation problems, Self-organization and Emergent Phenomena, Learning in random environment, Social

Networks, Network Coding

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

, Sensor, MEMS, Interface Electronics, Integration with CMOS platform

Halder, Achintya

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

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

Sahoo, Bibhudatta

Ph.D.(Univ. of California), Digitally Assisted Analog and RF Circuits, Data Conversion

Selvaraj, M D

Ph.D.(IIT Delhi), Wireless Communications, Performance Analysis of Digital Communication Systems

Varshney, Shailendra Kumar

Ph.D.(University of Delhi), Fiber optics and Integrated optics, Microstructured fibers/PCFs, PhCs

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 Promotions

Rajarshi Roy

Associate Professor

Raja Datta

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 parallel algorithms for lossless data compression and their implementation in high-speed programmable hardware. 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. o) Algorithm development for fault diagnosis in a

distributed system. 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 parallel algorithms for lossless data compression and their implementation in high-speed programmable hardware. 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 wideband 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. n) 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.

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. Bandyopadhyay, Kalyan Kumar, *Fellow* - The Institution of Electronics and Telecommunication Engineers
2. Banerjee, Swapna, *Senior Member* - IEEE
3. Bhattacharya, Amitabha, *Regular* - IEEE
4. Biswas, Dhruves, *Senior member* - IEEE, Electron Devices Society, Microwave Theory & Techniques Society, Communication Society
5. Biswas, Prabir Kumar, *Senior Member* - Institute of Electrical and Electronics Engineers, USA
6. Chakraborty, Ajoy, *Senior* - IEEE
7. Chakraborty, Ajoy, *Senior* - SEMCE(I)
8. Chakraborty, Mrityunjoy, *Senior Member* - IEEE
9. Chakraborty, Mrityunjoy, *Member* - IET (formerly IEE, UK)
10. Datta, Raja, *Member* - IEEE
11. De, Arijit, *Member* - IEEE
12. Dutta, Debasish, *Life Member* - IE
13. Dutta, Debasish, *Member* - IEEE
14. Garg, Ramesh, *Fellow* - IEEE
15. Ghosh, Bratin, *Member* - Institute of Eletronics and Electrical Engineers (IEEE)
16. Halder, Achintya, *Regular* - IEEE

17. Mahapatra, Sudipta, *Life member* - CSI, India
18. Mahapatra, Sudipta, *Member* - IEEE, USA
19. Maiti, Chinmay Kumar, *Senior Member* - IEEE
20. Mandal, Pradip, *Regular* - IEEE
21. Mukhopadhyay, Sudipta, *Senior Member* - IEEE
22. Mukhopadhyay, Sudipta, *Member* - Signal Processing Society, IEEE
23. Mukhopadhyay, Sudipta, *Corresponding Member* - RSNA
24. Saha, Goutam, *Regular* - IEEE, USA
25. Sahoo, Bibhudatta, *Member* - IEEE
26. Sahoo, Ghanashyam, *LIFE MEMBER* - EMC SOCIETY OF INDIA (SEMCE- I)
27. Sanyal, Subrata, *Member* - IEEE
28. Sarkar, Binay Kumar, *Senior Member* - IEEE, USA
29. Sarkar, Binay Kumar, *Life Member* - EMC Society of India
30. Selvaraj, M D, *Member* - IEEE
31. Varshney, Shailendra Kumar, *Regular* - IEEE

Member - Editorial Board

1. Chakraborty, Mrityunjoy (2011) *Associate Editor* - IEEE Transactions on Circuits and Systems, Part I
2. Chakraborty, Mrityunjoy (2010) *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 (0) *Editor* - IEEE Communications Surveys and Tutorials, IEEE Communication Society
6. Dutta, Debasish (0) *Editor* - Journal of Optical Switching and Networks
7. Roy, Rajarshi (2011) *Member* - International Journal of Wireless and Mobile Networks (IJWMN)
8. Roy, Rajarshi (2011) *Member* - International Journal of Computer Networks & Communications (IJCNC)
9. Roy, Rajarshi (2011) *Member* - International Journal of Distributed and Parallel systems (IJDPS)

Awards & Honours

1. Biswas, Dhruves (2010) *Global Academic Cup, EBRF 2010 conference*

Sponsored Research Projects

1. RF MEMS Components (ADA, Bangalore, Rs.187.00 Lakhs)
2. 3-D Image Sensor for Capturing Minute Surface Details and Visualization by Geometric Modelling (DST, Govt. of India, Rs.30.00 Lakhs)
3. An embedded low cost portable CW Doppler Ultrasonography System (DST, New Delhi., Rs.24.00 Lakhs)
4. Analysis of different conducting & dielectric structures as EMI sensors (ISRO, Rs.22.31 Lakhs)
5. Automatic Speaker Recognition over VoIP (Vodafone Essar IIT Kharagpur Centre for Excellence in Telecommunication, Rs.18.00 Lakhs)
6. AVLSI Consortium (Multiple Industrial Organisation, Rs.0.00 Lakhs)
7. Bridge Health Monitoring with Wireless Sensor Network (Indian Railways, Rs.193.00 Lakhs)
8. Content base Image Retrieval for Medical Images (DIT, Rs.25.00 Lakhs)
9. Degradation and breakdown of metal gate/high-K/III-V semiconductor structures (DST, New Delhi, Rs.3.23 Lakhs)
10. Degradation and Breakdown of Metal gate/High-k/III-V Semiconductor Structures (DST New Delhi, Rs.32.36 Lakhs)
11. Design & development of non-invasive blood glucose measuring system (Department of Information Technology, Rs.27.00 Lakhs)
12. Design & Fabrication of high sensitivity micro machined Silicon tunneling accelerometer with micro-g resolution (ISRO, IIT Kharagpur Cell 721302, Rs.10.00 Lakhs)
13. Design and Development of high speed miniaturized RF MEMS switched capacitor (ISRO, Rs.19.70 Lakhs)
14. Design and Development of non-invasive blood glucose measuring system (DIT, New Delhi, Rs.27.00 Lakhs)
15. Design and development of specialised antenna for remote communication with submerged devices (ARDE, Pune, Rs.9.76 Lakhs)
16. Design and full-wave Greens Function analysis of a coax-fed two layer dielectric resonator antenna (CSIR, New Delhi, Rs.13.08 Lakhs)
17. Design Automation of Analog VLSI (MCIT, DIT, Govt. of India, New Delhi, Rs.45.08 Lakhs)
18. Design of Low Power and / or High Speed Adaptive Decision Feedback Equalizers - an Architectural Optimization Approach (DIT under MIT, Rs.30.76 Lakhs)
19. Design of Planar Compact High Performance RF/Microwave Filters for Satellite Applications (ISRO- IIT Kharagpur Cell, Rs.8.94 Lakhs)
20. Design of Planar Compact High Performance RF/Microwave Filters for Satellite Application (ISRO-IIT Kharagpur Cell, Rs.4.80 Lakhs)
21. Design of radiation hardened data converters (ISRO, STC, I.I.T Kharagpur Cell., Rs.31.00 Lakhs)
22. Design, Simulation and Development of Mm-wave six port receiver (ISRO, Rs.9.90 Lakhs)
23. Determination of Frequency Window for Communication with buried Munitions (Armament and Research Establishment, DRDO, Pune, Rs.8.80 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 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)
28. Development of MEMS based Accelerometers for Aerospace Application (NPMASS) (NPMASS, ADA, Bangalore, Rs.449.00 Lakhs)
29. Development of Roof fall prediction system in underground mines using wireless network (CMPDI, Ranchi, Rs.216.98 Lakhs)
30. Development of Traditional Tongue based Diagnostic Software through Grabbing and Processing of Tongue Images for Storage, Retrieval and Rule Generatio (DST, Govt. of India, Rs.7.00 Lakhs)
31. Developmet of MEMS based components for RF applications (NPMASS, Rs.166.00 Lakhs)
32. Digital Electronic Circuits Virtual Laboratory (MHRD, Rs.50.00 Lakhs)
33. Direct Energy Standoff Neutraliser (College of Military Engineering, Pune, Rs.74.75 Lakhs)
34. DSP & FPGA Solution for SRI and Scan Conversion of USG System in DaVinci Platform (Wipro GE Healthcare Private Limited, Bangalore., Rs.32.00 Lakhs)
35. Dual-band reconfigurable antenna tunable over a wide range (DEAL, Dehradun, Rs.9.71 Lakhs)
36. Energy Efficient Radio for next generation cellular (VEICET, Rs.185.00 Lakhs)
37. Enhancement of Transport Layer Performance for Inter Planetary Network (Indian Space Research Organization and KCSTC, Rs.10.00 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. Extraction of Radar Signals in the 70-500 MHz Band by Suppressing Interfering Communications Signals (DLRL, Hyderabad, Rs.10.00 Lakhs)
41. Fault diagnosis techniques for yield enhancement (Synopsys, USA, Rs.25.00 Lakhs)
42. Feasibility Study of Microwave Imaging for Material Resource Exploitation in Planetary Mission (ISRO, IIT Kharagpur Cell, Rs.26.16 Lakhs)
43. FPGA based design and development of H.264 Codec (ISRO, Rs.14.80 Lakhs)
44. 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)
45. Gigahertz Transverse Electromagnetic (GTEM) Cell (GTE) (Army Centre for Electromagnetics, Mhow, Rs.50.00 Lakhs)
46. Green Cellular Radio Network (Vodafone-Essar, Rs.310.00 Lakhs)
47. Handset Normalization and Reduction of Noise and Distrortion for Voice Authentication (ISRO, India, Rs.11.00 Lakhs)
48. Heart Sound Analysis for Cardiac Monitoring (DST, WB, Rs.6.00 Lakhs)
49. Investigation of the microstrip feed to the dielectric resonator antenna (Department of Science and Technology, Rs.15.78 Lakhs)
50. Investigations of CMOS device technologies for strain-engineered MOSFETs using TCAD (Dept. of Information Technology, New Delhi, Rs.33.35 Lakhs)
51. Investigations of CMOS Devices Technologies for Strain-Engineered MOSFETs Using TCAD (DIT/MCIT, New Delhi, Rs.33.00 Lakhs)
52. Ka Band Propagation Experiments over Indian tropical Region for Improvement of Ka Band Satellite Communication (ISRO, IIT Kharagpur Cell, Rs.26.73 Lakhs)
53. Kinematic State Estimation of Multiple Aerospace Targets (KSE) (LRDE, Bangalore, Rs.9.96 Lakhs)
54. MEMS based micropropulsion devices for micro satellite program (ISRO, Rs.123.00 Lakhs)
55. Microelectronics and VLSI Engineering Online Laboratory (MHRD, Rs.100.00 Lakhs)
56. Modeling and Simulation of Memory Devices with High-k Dielectrics (DST, Govt of West Bengal, Rs.10.50 Lakhs)
57. Modeling and simulation of memory devices with high-K dielectrics (Dept. of Science and Technology, Rs.8.70 Lakhs)
58. Modelling, simulation and fabrication of Split Ring Resonators (VRDE, Ahmadnagar, Rs.9.83 Lakhs)
59. MOSFET Modeling and Parameter Extraction (DRDO, New Delhi, Rs.58.00 Lakhs)
60. MOSFET modeling and parameter extraction (Defence Research and Development Organization, New Delhi, Rs.56.60 Lakhs)
61. Multiple Access Array Antenna system at S band using Digital Beam Forming Techniques (DBT) (SAC, ISRO, Rs.5.00 Lakhs)
62. Multiple Access array antenna system at s-band using digital beamforming techniques (ISRO, Rs.24.50 Lakhs)
63. Optimal Solutions and Applications for the Next Generation Wireless Internet (VEICET-Vodafone-Essar, Rs.46.00 Lakhs)
64. Planar inverted F-antenna for mobile communication (Ministry of Science and Technology, Rs.8.00 Lakhs)
65. Power-aware Mesh-of-Tree Based Network-on-Chip Design and Test (Department of Science & Technology, Govt. of India, Rs.17.94 Lakhs)
66. Railway Bridge Health Monitoring System with Wireless Sensor Networks (Indian Railways, Govt. of India, Rs.193.92 Lakhs)
67. Setting up of Dielectric Measurement Facility (Hardware & Software) (Armament Research & Development Establishment, DRDO, Pune, Rs.9.80 Lakhs)
68. Signal Processing and Machine Learning for Pervasive Healthcare (Intel Bangalore, Rs.15.00 Lakhs)
69. Special Manpower Development Programme for VLSI Design & related Software (Ministry of Communication and Information Technology, New Delhi, Rs.145.27 Lakhs)
70. Strategies for Reducing Power Consumption during VLSI Circuit Testing (Department of Information Technology, Govt. of India, Rs.54.05 Lakhs)
71. Studies on Fade Mitigation Control for Microwave Satellite Signal Propagation (SFM) (ISRO-KCSTC, Rs.5.00 Lakhs)
72. 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)
73. Study of CDMA codes for satellite navigation (SCN) (ISRO-KCSTC, Rs.5.00 Lakhs)
74. Sumulation of Electromagnetic Battlespace in a Corps Zone (SEB) (Army Centre for Electromagnetics, Mhow, Rs.50.00 Lakhs)
75. Synthesis of functional groups for immobilization of functional proteins on MEMS based micro-sensor surfaces (Indo-Trento Program for Advanced Research, Rs.164.00 Lakhs)
76. Synthesis of satellite footprints patterns from planar array antennas by combination of paticles swarm optimization and FFT (ISRO, Rs.16.80 Lakhs)
77. Technology Business Incubation For Innovation And Entrepreneurship (TBIIE) (Department of Science and Technology, GOI and SRIC, IIT Kharagpur, Rs.360.00 Lakhs)
78. Technology CAD (TCAD) Online Laboratory (MHRD, Rs.50.00 Lakhs)

79. Technology CAD of nano-MOSFETs in Hybrid Orientation Technology (DST, New Delhi, Rs.18.00 Lakhs)
80. Technology CAD of nano-mosfets in hybrid orientation technology (Dept. of Science and Technology, New Delhi, Rs.18.53 Lakhs)
81. Test Simulator for Satellite based AIS (ISRO, Rs.16.85 Lakhs)
82. Test Simulator for Satellite Based AIS (TSS) (SAC, ISRO, Rs.7.00 Lakhs)
83. Upgrading Facilities for MEMS design activities at National resource centre (NPMASS, ADA, Bangalore, Rs.36.00 Lakhs)
84. Virtual Lab Simulation - Digital Electronic Circuits (MHRD, Rs.50.00 Lakhs)
85. Virtual Lab Simulation - Digital Signal Processing Lab. (MHRD, Rs.50.00 Lakhs)

Consultancy Projects

1. Antenna Design & Development for Ship to Shore Communication (ITR, Chandipur, Rs.1.50 Lakhs)
2. Design of Software-only High Definition Video Codec based on H.264 (Intellisys Technologies and Research Limited, Kolkata, Rs.13.23 Lakhs)
3. Developing Pedagogical Methods (Subject: Network Theory) (MHRD, Govt. of India, Rs.2.00 Lakhs)
4. Efficient and Reliable Transport Protocol for Mobile Ad Hoc Networks (Defence Electronics Applications Lab (DEAL), DRDO, Dehradun, Rs.9.75 Lakhs)
5. Mast Clamp Current Probe Antenna (PCCM) (Naval EMC Centre, Mumbai, Rs.19.90 Lakhs)
6. Real Time Image Processing for Conveyor Belt Health Monitoring (PHOENIX Conveyor Systems, Rs.22.00 Lakhs)

Patents (filed / granted)

1. An Improved Molecular Beam Epitaxy Multi Chamber Cluster Tool And Processes For Integration Of Multiple Growth Combination Of Group III-V Semiconductor Heterostructures
2. An improved ultrasound imaging method/technique for speckle reduction/suppression in an improved ultra sound imaging system
3. Lung Sound Analyzer
4. Method and apparatus for detecting the bad pixels in sensor array and concealing the error
5. Method and apparatus for detection and removal of rain from video using temporal and spatiotemporal properties
6. Method or apparatus to detect the microcalcifications in X-Ray Images using Nonlinear Energy Operator
7. Super-resolution on Polar Domain Data

Visits Abroad by Faculty Members

1. Datta, Raja - Research Collaboration (University of Texas at Arlington (UTA), Texas, USA,) May 22 to May 30, 2010
2. Bhattacharya, Amitabha - To present one paper in ANTEM-2010 (Ottawa, Canada,) July 5-9, 2010
3. Biswas, Dhruves - EBRF Conference (Finland,) 15-17 September, 2010
4. Varshney, Shailendra Kumar - Academic and research discussion for possible collaboration in area of photonics (National Institute of Material Science (NIMS), Tsukuba, Japan,) 15 days
5. Chakraborty, Mrityunjoy - Present paper, attend editorial board meeting, chairing sessions (Paris, France,) May 29-June 4, 2010
6. Chakraborty, Mrityunjoy - Present paper (Shanghai, China,) June 20-24, 2010
7. Bhattacharyya, Tarun Kanti - To deliver a talk and to initiate technical collaboration (IMEC, Belgium,) 1 day
8. Bhattacharyya, Tarun Kanti - Invited Lecture (Frankfurt Institute for Advanced Studies,) 3 Days
9. Biswas, Prabir Kumar - Paper presentation at ICSIP 2010 (Singapore,) Aug. 25-27, 2010
10. Biswas, Dhruves - 7th Annual Satter Conference (University Stern School of Business, New York,) 3-5 November, 2010
11. Bhattacharyya, Tarun Kanti - To participate APCCAS 2010 conference (Malaysia,) 3 Days
12. Sahoo, Bibhudatta - Collaborative research with UCLA (University of California, Los Angeles,) 1 week
13. Maiti, Chinmay Kumar - INDO-SPANISH Joint Research Program (University of Barcelona, Barcelona,) Nov 15-30, 2010
14. Chakraborty, Mrityunjoy - Present paper, chairing TC meeting (Singapore,) December 12-17, 2010
15. Biswas, Dhruves - Qualification of ordered MOCVD tools (M/s SVT Associates, USA,) Feb 20 - Mar 4, 2011
16. Datta, Raja - To present a paper in IEEE ICON (Osaka, Japan,)
17. Datta, Raja - Research Collaboration (George Washington University and NSF, Washington DC, USA,) 31 May to 5 June 2010
18. Banerjee, Swapna - As a session chair and present the paper in IEEE 10th Int. Conf. on Signal Processing (ICSP) (Beijing, China,) 24th to 28th October, 2010
19. Biswas, Prabir Kumar - Paper presentation at TENCON 2010 (Fukuoka, Japan,) Nov. 21-24, 2010

Invited Lectures by Faculty Members

1. Generalized Multi Protocol Label Switching *by* Datta, Raja (A journey of Fiber Optics with Nobel Laureate Dr. Charles Kao IIT Kharagpur)
2. Securing Mobile Ad Hoc Networks *by* Datta, Raja (MHRD/AICTE Short Term Course on Ad Hoc Networks, IIT Kharagpur)
3. Collaborative Intrusion Detection for Mobile Ad Hoc Networks *by* Datta, Raja (University of Texas at Arlington (UTA), Texas, USA)
4. Collaborative Intrusion Detection Techniques for Mobile Ad Hoc Networks *by* Datta, Raja (George Washington University, Washington DC, USA)
5. Network-on-Chip: The Next Generation of Multi-Processor System-on-Chip *by* Chattopadhyay, Santanu (IEEE VLSI Design and Test Symposium, India)
6. Network-on-Chip: The Next Generation of Multi-Processor System-on-Chip *by* Chattopadhyay, Santanu (Second International Conference on Emerging Applications of Information Technology)
7. Challenges in 3-D Image Processing *by* Biswas, Prabir Kumar (SGGS College of Engineering, Nanded)

8. Transform Domain Processing *by* Biswas, Prabir Kumar (Rajiv Gandhi Institute of Technology, Mumbai)
9. VLSI based Embedded Systems for Biomedical applications *by* Banerjee, Swapna (Intl conf. on VLSI & Communication, Keynote speaker in PSG College of Engineering, Coimbatore.)
10. VLSI based Embedded Systems for Biomedical applications *by* Banerjee, Swapna (IEEE Intl conf. on Medicine and Biology (ICSMB-2010), SMST, IIT Kharagpur)
11. An Embedded Doppler Ultrasonography System *by* Banerjee, Swapna (NIT, Hamirpur)
12. An Embedded Doppler Ultrasonography System *by* Banerjee, Swapna (NIT, Jalandhar)
13. VLSI based Embedded Systems for Biomedical applications *by* Banerjee, Swapna (NIT, Agartala)
14. Low loss and efficient antennas *by* Ghosh, Bratin (INS Valsura, Jamnagar)
15. Dielectric Resonator Antennas *by* Ghosh, Bratin (Ambedkar Institute of Technology, New Delhi)
16. Introduction to Medical Imaging *by* Mukhopadhyay, Sudipta (Silicon Institute of Technology, Bhubaneswar)
17. DSP application in US image enhancement *by* Mukhopadhyay, Sudipta (NSTL, Visakhapatnam)
18. Ultra Wideband Techniques with special reference to Time Domain Electromagnetics *by* Bhattacharya, Amitabha (New Horizon College of Engineering, Bangalore)
19. Transient Electromagnetics and Measurements *by* Bhattacharya, Amitabha (LRDE, Bangalore)
20. Microstrip Antenna Design *by* Garg, Ramesh (Puri)
21. Broadband antenna design *by* Garg, Ramesh (Jadavpur University, E & TC Deptt)
22. Challenges in Modern Communication Systems *by* Bhattacharya, Amitabha (IEEE TechSym 2010 at IIT Kharagpur)
23. Computer Networks and Overview *by* Datta, Raja (IIT Kharagpur, Short Term Course on Microwaves)
24. Modern Radars and its applications *by* Sarkar, Binay Kumar (Silicon Institute of Technology, Bhubaneswar)
25. RF MEMS and Adaptive Antenna *by* Sarkar, Binay Kumar (Ambedkar Institute of Technology, Delhi)
26. Impulse Radiating Antenna *by* Sarkar, Binay Kumar (BARC, Mumbai)
27. Radar : Fundamental and Applications *by* Sarkar, Binay Kumar (Birla Institute of Technology, Deoghar)
28. Automatic Speaker Recognition *by* Saha, Goutam (NIT Rourkela)
29. MEMS and its cool applications *by* Bhattacharyya, Tarun Kanti (EFY Design Engineers Conference, Pragati Maidan, New Delhi)
30. Micro Cantilevers and its applications *by* Bhattacharyya, Tarun Kanti (Amity School of Engineering and Technology)
31. MEMS based devices for space application *by* Bhattacharyya, Tarun Kanti (4 th ISSS conference, VNIT, Nagpur)
32. MEMS and Microsystems *by* Bhattacharyya, Tarun Kanti (Institute of Radio Physics and Electronics, Calcutta University)
33. MEMS based accelerometer for g to micro g *by* Bhattacharyya, Tarun Kanti (ToCH institute of Science and Technology)
34. MEMS and Interfacing Electronics *by* Bhattacharyya, Tarun Kanti (IMEC, Belgium)
35. 2.5 Gbps SERDES for CBM experiment *by* Bhattacharyya, Tarun Kanti (Frankfurt Institute for Advanced Studies, Germany)
36. ON BOSES PYRAMIDAL HORN ANTENNA *by* Sanyal, Subrata (CUSAT Kochi- 682022)
37. Optical Networks *by* Dutta, Debasish (Central Glass and Ceramic Research Institute, CSIR Laboratory, Calcutta)
38. Optical Networks *by* Dutta, Debasish (Institution of Engineers, Calcutta)

Books Published

1. Bratin Ghosh: TLM Analysis of Non-Radiating Waveguide Structures and Components *published by* VDM Verlag (2010)
2. Donald P. Leach, Albert P. Malvino and Goutam Saha: Digital Principles and Applications, Seventh Edition *published by* Tata McGraw-Hill (2010)
3. Ronald A. Neeman, Dhruves Biswas: Semiconductor Physics and Devices *published by* Tata McGraw Hill (2011)
4. Santanu Chattopadhyay: Embedded System Design *published by* PHI Learning Pvt. Ltd. (2010)

Short-Term Courses, Training Programmes and Workshops organised

1. Advanced DSP Design Techniques (June 28 - July 2, 2010)
2. Efficient systems for microwave transmission and radiation (18/01/2010 - 23/01/2010)
3. IEP on VLSI aspects on Biomedical Engg. (07-12th March 2011)
4. MHRD/AICTE Short term course on Telecommunication Networks with state-of -the-art hands-on experime (February 17-28, 2010)
5. Optical Communication Networks (Two weeks)
6. Recent Advances in Microwave Communication (2 Weeks)
7. RF Communication , Navigation and Surveillance: Fundamentals and Applications (One week)
8. RF communications, navigation and surveillance fundamentals and applications (December 26-31, 2010)
9. Short Course On C++ and Java (June 8-24, 2010)
10. VLSI DSP based Embedded System for Biomedical Systems (2 weeks)
11. VLSI Signal Processing (Dec. 19 - 23, 2010)
12. VLSI-DSP Based Embedded System for Biomedical Applications (9th July to 22nd July)

Papers Published in Journals

1. Comprehensive error performance analysis of distributed selection combining with multi-antenna amplify-and-forward relay over Nakagami-m fading channels *By* Soumendra Nath Datta, Saswat Chakrabarti and Rajarshi Roy *IET Electronics Letters* V 46(22) p1523-1525 (2010)
2. A High-Speed Low-Power Low-Latency Pipelined ROM-less DDFS *By* I. Hatai and I. Chakrabarti *Communications in Computer and Information Science* 108-119 (2011)
3. A New Adaptive Filter for Estimating and Tracking the Delay and the Amplitude of a Sinusoid *By* M. Chakraborty *IEEE Transactions on Instrumentation and Measurement* November, 3049-3057 (2010)

4. A new current-mode receiver for high-speed electrical/optical link By Vijaya Sankara Rao P. and P. Mandal *International Journal of Electronics and Communication* Vol. 65(2), 107-116 (2011)
5. A Probabilistic Approach for Detection and Removal of Rain from Videos By Abhishek Kumar Tripathi, Sudipta Mukhopadhyay *IETE Journal of Research* 57, 82-91 (2011)
6. A Secure Dynamic IP Configuration Scheme for Mobile Ad Hoc Networks By Uttam Ghosh and Raja Datta *Elsevier Ad-Hoc Networks Journal Accepted* (2011)
7. A strategic review of reduction of dislocation density at the heterogenous junction of GaN epilayer on foreign substrate By S.Das Bhattacharyya, P. Mukhopadhyay, P. Das, D. Biswas *J. Nano- Electron. Phys.* Vol 3 No 1, pp 67 (2011)
8. Active Terminated Current-Mode Pre-emphasis Transmitter for PCI Express Standard By Vijaya Sankara Rao P, Debashis Banerjee and Pradip Mandal *International Journal of Electronics and Communication* 10.1016/j.aeeu.2010. (2010)
9. Active Terminated Transmitter and Receiver Circuits for High-Speed Low-Swing Duobinary Signaling By Vijaya Sankara Rao P. and P. Mandal *International Journal of Circuit Theory and Applications* DOI:10.1002/cta.730 (2010)
10. An Efficient Architecture for 3-D Discrete Wavelet Transform By Anirban Das, Anindya Hazra and Swapna Banerjee *IEEE Transactions on Circuits and Systems for video technology* Vol. 20, pp. 286-296 (2010)
11. An efficient pass-parallel architecture for embedded block coder in JPEG 2000 (Accepted) By K. Sarawadekar and S. Banerjee *IEEE Transactions on Circuits and Systems for Video Technology* (0)
12. An Energy-Efficient Communication Scheme for Wireless Networks: A Redundant Radix-Based Approach By K. Sinha, B. P. Sinha and D. Datta *IEEE Trans. on Wireless Communications* Vol.2, pp. 550-559 (2011)
13. An Entrepreneurship Driven Wellness Business Model in Non-Metro Indian Cities, Contemporary view on Business Partnering for Future By Dhruves Biswas, Amrita, Punit Saurabh *Combi2010* (2010)
14. An experimental analysis of electrostatically vibrated array of polysilicon cantilevers By S.Chakraborty,K.B.M Swamy,S.Sen,T.K .Bhattacharyya *Microsystem Technologies* 16 (pp 2131-2145) (2010)
15. An experimental analysis of pull-out voltage of electro-statically actuated micro-cantilever beam based on contact-stiction model By Subha Chakraborty, A. Bhattacharya and T.K. Bhattacharyya *IET, Micro & Nano Letters* 6 (43-47) (2011)
16. An FFT based Fast Reconstruction Algorithm for 3D Computed Tomography By Abhishek Mitra and Swapna Banerjee *International Journal of Tomography & Statistics* Vol. 15, pp. 70-77 (2010)
17. An Improved Low-Power High-Throughput Log-MAP Turbo Decoder By S.M. Karim and I. Chakrabarti *IEEE Transactions on Consumer Electronics* 450-457 (2010)
18. An Optimal Probabilistic Traffic Engineering Scheme for Heterogeneous Networks DOI: FS022011003 By Chinmay Chakraborty, S.S. Pathak, Rajarshi Roy and Saswat Chakrabarti *CiiT International Journal of Fuzzy Systems. Print: ISSN 0974 " 9721 & Online: ISSN 0974 " 9608.* (2011)
19. Analysis of horn radiation pattern using UTD edge and corner diffraction By M. Ali, S.-O. Park and Subrata Sanyal, *Progress in Electromagnetics Research* 17, pp. 87-99, Feb (2011)
20. AND-OR-XOR Network Synthesis with Area-Power Trade-off By S.N. Pradhan, M. Tilak Kumar, S. Chattopadhyay *Journal of Circuits, Systems, and Computers Accepted* (0)
21. Architectural Design and FPGA Implementation of Radix-4 CORDIC Processor By Kaushik Bhattacharyya, Rakesh Biswas, Anindya S. Dhar and Swapna Banerjee *Microprocessors and Microsystems (MICPRO, Elsevier) Embedded Hardware Design* Vol. 34, pp.96-101 (2010)
22. Architectural Design and FPGA Implementation of Radix-4 CORDIC Processor By K. Bhattacharyya, R. Biswas, A. S. Dhar and S. Banerjee *Microprocessors and Microsystems* vol. 34, pp 96-101 (2010)
23. ARQ-based switched antenna diversity in Markov channels By S.S.Chakraborty, R.Roy and S.De *IET Electronics Letters* V 44(25) p 1475-1476 (2008)
24. Broadband dielectric resonator antennas By A.B. Kakade and B. Ghosh *IEEE Transactions on Antennas and Propagation, in print* (2011)
25. Cervical spine image retrieval with semantic shape features By Pranati Das and Sudipta Mukhopadhyay *International Journal of Computational Vision and Robotics (IJCVR)* 1, 136 - 146 (2010)
26. Characterization of diamond-like nanocomposite thin films grown by plasma enhanced chemical vapor deposition By T. S. Santra, C. H. Liu, T. K. Bhattacharyya, P. Patel, and T. K. Barik *Journal of Applied Physics* 107 (9 pages) (2010)
27. Chemical Bonding States of Plasma Nitrided High-k/Ge Gate Stac By [1]. C. Mahata, T. Das, S. Mallik, M. K. Hota, and C. K. Maiti *Electrochemical and Solid-state Letters* 14, H167-H170 (2011)
28. CNS: A New Energy-Efficient Transmission Scheme for Wireless Sensor Networks By K. Sinha, B. P. Sinha and D. Datta *Journal of Wireless Networks, Springer* Vol.16, pp.2087-2094 (2010)
29. CoopMACA:a cooperative MAC protocol using packet aggregation By M. G. Jibukumar, R. Datta, P. K. Biswas *Wireless Networks* Vol. 16(7) (2010)
30. CORDIC Architectures: A Survey By B. Lakshmi and A. S. Dhar *VLSI Design* ID 794891, 19 pages (2010)
31. Current-Mode Analog Interface for High-Speed Low-Current Differential Signaling By Vijaya Sankara Rao P. and P. Mandal *International Journal of Electronis* Vol. 97(9),1007-1020 (2010)
32. Detection of cardiac abnormality from PCG signal using LMS based least square SVM classifier By Samit Ari, Koushik Hembram, G. Saha *Experts Systems and Applications* 37(12), 8019-8026 (2010)
33. Development of surface micro-machined binary logic inverter for ultra low frequency MEMS sensor applications By Subha Chakraborty and T. K. Bhattacharyya *Journal of Micromechanics and Microengineering* 20 (15 pages) (2010)
34. Dual Transmission Line Microstrip Equiripple Lowpass Filter With Sharp Roll-off, By Vamsi K. Velidi, and S. Sanyal *ETRI Journal (accepted for publication on 15 March 2011.)* (0)
35. Education enterprise model for social entrepreneurship creation in a BASIC country perspective By Sharad Kumar, Amrita, Punit Saurabh, and Dhruves Biswas *Journal for Advances in Entrepreneurship, Firm Emergence, and Growth* Volume 13 (2011)
36. Effects of Ti incorporation on the interface properties and band alignment of HfTaOx thin films on Sulfur passivated GaAs By T. Das, C. Mahata, C. K. Maiti, G. Sutradhar, and P. K. Bose *Applied Physics Letters* 98, 022901 (2011)
37. Efficient Routing in Ad Hoc Network using Multiple Disjoint Energy Aware Minimum Connected Dominating Sets By Tamaghna Acharya and Rajarshi Roy *Foundations of Computing and Decision Sciences* Vol 35(3) pp 145-170 (2010)
38. Experimental study and analysis of corner compensation structures for CMOS compatible bulk micromachining using 25 wt% TMAH By " Mukhiya, R, Bagolini.A, Bhattacharyya, T.K. ,Lorenzelli. L, Zen.M. *Microelectronics Journal* 42 (1), p.127 (2011)
39. Feature selection using singular value decomposition and QR factorization with column pivoting for text-independent speaker identification By S. Chakraborty and G. Saha, *Speech Communication* 52(9), 693-709 (2010)
40. Flatband Voltage Characteristics of Hf-incorporated Y2O3/strained-Si Gate Stacks with Au, Pt and Ni Metal Gates By [3]. C. Mahata, T. Das, S. Mallik, M. K. Hota, S. Varma, and C. K. Maiti *Electrochemical and Solid-state Letters* 14, H80-H83 (2011)

41. Gain Dynamics of EDFA Chains in Wavelength-routed Optical Networks By K. Chaitanya and D. Datta *Journal of Optical Switching and Networking, Elsevier* Vol.7, Issue 8 (2010)
42. Gate leakage current reduction with advancement of graded barrier AlGaIn/GaN HEMT By P. Das, D. Biswas *J. Nano- Electron. Phys.* (2011)
43. Harmonic suppressed compact wideband branch line coupler using unequal length open-stub units By Vamsi K. Velidi, Bhavesh Patel and S. Sanyal *Wiley International Journal of RF and Microwave Computer-Aided Engineering* V 21,1,p115-119 Jan (2011)
44. Harmonics and size reduced microstrip branch line balun using shunt open-stubs By Vamsi K. Velidi, Ajeet Pal and S. Sanyal *Wiley International Journal of RF and Microwave Computer-Aided Engineering* v. 21, 2, p190-205. (2011)
45. Health Problem Mitigation through Advocacy of Public-Private-Partnership for Solution of Local Health Problems through Service Based Health Care Models By Amrita, Punit Saurabh, Dhruves Biswas *RVIM Journal of Management* (2010)
46. High-rejection wide-stopband lowpass filters using signal interference technique By Vamsi K. Velidi, and S. Sanyal *Wiley International Journal of RF and Microwave Computer-Aided Engineering* V20,3,p253-258,May (2010)
47. Image Filtering in the block DCT domain using Symmetric Convolution By K. Viswanath, J. Mukherjee, P. K. Biswas *Journal of Visual Communication and Image Representation* Vol. 22(2) (2011)
48. Image Segmentation using Suprathreshold Stochastic Resonance By R. K. Jha, P. K. Biswas, B. N. Chatterji *World Academy of Science, Engineering and Technology* Vol. 72, pp. 695-709 (2010)
49. Impact of Top (Pt, Au, and Al) Electrodes on HfAlOx-based Metal-Insulator-Metal (MIM) Capacitors By [8]. M. K. Hota, C. Mahata, S. Mallik, C. K. Sarkar and C. K. Maiti *Journal of The Electrochemical Society* 158, H44 (2011)
50. Impact of Transmission Impairments on Demultiplexed Channels in WDM PONs employing AWG-based Remote Nodes By J. Ratnam, S. Chakraborti and D. Datta, *IEEE/OSA Journal of Optical Communications and Networking*, Vol.2, pp.848-858 (2010)
51. Improved Shared Resource Allocation Strategy with SLA for Survivability in WDM Optical Networks By Jaisingh Thangaraj, Praful D Mankar and Raja Datta *Springers Journal of Optics* Vol. 39(2), pp 57-75 (2010)
52. Low Power Finite State Machine Synthesis using Power-Gating By S.N. Pradhan, M. Tilak Kumar, S. Chattopadhyay *Integration, the VLSI Journal* Accepted (0)
53. Low Power VLSI Architectures for One Bit Transformation based Fast Motion Estimation By Sumit K. Chatterjee and I. Chakrabarti *IEEE Transactions on Consumer Electronics* 2652-2660 (2010)
54. Miniaturization of Slot Antennas By B. Ghosh, SK. Moinul Haque and D. Mitra *IEEE Transactions on Antennas and Propagation* in print (2011)
55. Multi-Standard Programmable Baseband Modulator for Next Generation Wireless Communications By I. Hatai and I. Chakrabarti *International Journal of Computer Networks and Communications (IJCNC)* pp. 58-71 (2010)
56. New Contour Point Model for Retrieval of Cervical Spine Images By Pranati Das and Sudipta Mukhopadhyay *International Journal of Medical Engineering and Informatics (IJMEI)* 2,pp. 343 - 354 (2010)
57. New evolving directions for device performance optimization based integration of compound semiconductor devices on silicon By Partha Mukhopadhyay, Palash Das, Edward Y. Chang and Dhruves Biswas *J. Nano- Electron. Phys.* (2011)
58. Novel Three Dimensional Dyadic Diffraction Coefficient for Wireless Channel By Sanjay Soni and A. Bhattacharya *Microwave and Optical Technology Letters* Vol. 52, pp2132-2136 (2010)
59. On the Use of Perceptual Line Spectral Pairs Frequencies and Higher-Order Residual Moments for Speaker Identification By Sahidullah MD., S. Chakraborty and G. Saha *International Journal of Biometrics* 2(4), 358-378 (2010)
60. Packet Loss-Ratio based Scheduler: An adaptive scheduling scheme to increase the number of multimedia applications in WLAN By Jibukumar M. G., Raja Datta and Prabir Kumar Biswas *International Journal of Ultra Wide Band Communication System* Vol. 2, No. 1, 34-43 (2011)
61. Paramagnetic Defects and Charge Trapping Behavior of ZrO₂ Films Deposited on Germanium by Plasma-Enhanced CVD By C. Mahata, M. K. Bera, P.K. Bose and C. K. Maiti *Semiconductor Science and Technology* 24, 025026 (2010)
62. Performance of the optimum and suboptimum receivers with decode-and-forward relaying By M.D. Selvaraj, Ranjan K Mallik, and Rupakshi Goel *IEEE Transactions on Vehicular Technology* accepted (2011)
63. Post-CMOS wafer level growth of carbon nanotubes for low-cost microsensors—a proof of concept By Sumita Santra, Syed Z Ali, Prasanta K Guha, Guofang Zhong, John Robertson, James A Covington, William I Milne, JulianW Gardner and Florin Udrea *Nanotechnology* 21-485301(7p) (2010)
64. Power Aware Multi-level AND-XOR Network Synthesis By Ritesh Parikh, Santanu Chattopadhyay *International Journal of Computers and Applications* 33(1) (2011)
65. Quality of Experience (QoE) assurance by a Multi-path balanced traffic-splitting algorithm in MPLS networks DOI: 10.2478/v10065-009-0013-0 By C.S.Krishnadas and Rajarshi Roy *Annales University of Marie Curie-Sklodowska, Lublin, Polonia, Sectio AI (Informatica)* Vol 9(1), pp 165-177 (2009)
66. Scaled selection combining based cooperative diversity systems with decode and forward relaying By M.D. Selvaraj and Ranjan K Mallik *IEEE Transactions on Vehicular Technology* 59 , pp. 4388-4399 (2010)
67. Sharp Roll-off Lowpass Filter With Wide Stopband Using Stub-loaded Coupled-Line Hairpin Unit By Vamsi K. Velidi, and S. Sanyal *IEEE Microwave and Wireless Components Letters* ACCEPTED 16 March (2011)
68. Sharp-rejection microstrip bandpass filters with multiple transmission zeros By Vamsi K. Velidi, and S. Sanyal *Elsevier AEU- International Journal of Electronics and Communication* V64,2,p1173-1177,Dec (2010)
69. Single-relay cooperative diversity with scaled selection combining By M.D. Selvaraj and Ranjan K Mallik *IEEE Transactions on Communications* 59,pp 701-707 (2011)
70. Solution of Euler-Bernoulli equation using a semianalytical technique for steady state deflection of microelectromechanical cantilever under electrostatic actuation By S. Chakraborty and T. K. Bhattacharyya *IET, Micro & Nano Letters* 5 (215-218) (2010)
71. Spectral entropy and spectral shape based pre-quantization for real time speaker identification system By Gourav Sarkar, G. Saha *International Journal of Speech Technology* 13(4), 189-199 (2010)
72. Strategic review of arsenide, phosphide and nitride mosfets By Gourab Dutta, Palash Das, Partha Mukherjee, Dhruves Biswas *J. Nano- Electron. Phys.* (2011)
73. The Education-Enterprise Model and Its Interaction to Indian Healthcare Sector, Contemporary view on Business Partnering for Future By Dhruves Biswas, Amrita, Punit Saurabh *Comb2010* (2010)
74. The evolution of graphene-based electronic devices By Joydeep Basu, Jayanta Kumar Basu, and Tarun Kanti Bhattacharyya *International Journal of Smart and Nano Materials* 1 (pp 201-223) (2010)
75. Thermal stability of HfO_xN_y Gate Dielectrics on p-GaAs Substrates By [9]. T. Das, C. Mahata, G. K. Dalapati, D. Z. Chi, G. Sutradhar, P. K. Bose, C. K. Chia, S. Y. Chiam, J. S. Pan, Z. Zhang, and C. K. Maiti *Semiconductor Science and Technology* 25, 125009 (2010)

76. Wavelet to DCT Transcoding By K. Viswanath, J. Mukherjee, P. K. Biswas *Signal, Image and Video Processing* Vol. 4(2),pp.129-144 (2010)
77. Wavelet Transcoding in the Block Discrete Cosine Transform Space By K. Viswanath, J. Mukherjee, P. K. Biswas *IET Image Processing* Vol 4(3),pp. 143-157 (2010)

Papers Presented in Conferences

1. FLUID ANTENNAS, By 1. SHUVA JYOTI KAR, Prof(Dr) AJAY CHAKRABARTY, Prof.(Dr) B.K.SARKAR,, *MECAP 2010, CAIRO EGYPT*, (2010)
2. A 2.3 GHz gm-boosted high swing class-AB ultra-wide bandwidth operational amplifier in 0.18 μ m CMOS, By Gangopadhyay, D, Bhattacharyya, T.K, *IEEE MWSCAS, 2010*, Seattle, USA, (2010)
3. A compact-size microstrip rat-race coupler with high performance, By V. K. Velidi, Sarika Shrivastava, and S. Sanyal, *IEEE TechSym, International Conference.*, IIT Kharagpur, (2011)
4. A Comparative Study Between a Micromechanical Cantilever Resonator and MEMS-based Passives for Band-pass Filtering Application., By Joydeep Basu, A. Bhattacharya, S. Chakraborty, and T. K. Bhattacharyya, *IEEE, TechSym 2011*, IIT Kharagpur, (2011)
5. A Comprehensive Correlation between Lattice Strain and Quantum Well thickness of MBE grown AlGaAs/InGaAs/GaAs Pseudomorphic HEMT with Device Performance for Transconductance and Linearity, By Partha Mukhopadhyay, Palash Das, Edward Y. Chang and Dhruves Biswas, *International Conference On Compound Semiconductor Manufacturing Technology (CS ManTech)*, California, USA, (2011)
6. A Deterministic Model for Improved Propagation Prediction in Microcellular Environment, By Sanjay Soni and Amitabha Bhattacharya, *International Conference on Computers, Communications and Devices (ICCCD 2010)*, IIT Kharagpur, (2010)
7. A Fast Algorithm and its VLSI Architecture for Quarter Pixel Block Motion Estimation for H.264/AVC, By Sumit K. Chatterjee and I. Chakrabarti, *6th IEEE INDICON*, Jadavpur University, Kolkata, (2010)
8. A Feasibility Study on Noninvasive Blood Glucose Measurement Using Photoacoustic Method, By Omkar C Kulkarni, Pralay Mandal, Shib Shankar Das and Swapna Banerjee, *the 4th International Conference on Bioinformatics and Biomedical Engineering (ICBBE 2010)*, Chengdu, China, (2010)
9. A Low Complexity Realization of the Sign-LMS Algorithm, By S. S. Rath and M. Chakraborty, *IEEE International Conference on Green Circuits and Systems*, Shanghai, (2010)
10. A monopropellant hydrazine MEMS thruster for attitude control of nanosatellites, By Kundu, P. Bhattacharyya, T.K. Das, S, *IEEE, TechSym 2010*, IIT Kharagpur, (2010)
11. A new application mapping algorithm for mesh based Network-on-Chip design, By P. K. Sahu, N. Shah, K. Manna, S. Chattopadhyay, *Annual IEEE India Conference (INDICON)*, India, (2010)
12. A New Application Mapping Strategy for Mesh-of-Tree based Network-on-Chip, By P. K. Sahu, N. Shah, K. Manna, S. Chattopadhyay, *IEEE International Conference on Emerging Trends in Electrical and Computer Technology*, India, (2011)
13. A New Double Data Rate Dual-Mode Duobinary Transmitter Architecture, By Mrigank Sharad, Vijaya Sankara Rao P. and P. Mandal, *IEEE Int. Conf. on VLSI Design*, Chennai, India, (2011)
14. A New Power Efficient Current-Mode 4-PAM Transmitter Interface for Off-Chip Interconnect, By Vijaya Sankara Rao P, P. Mandal, *IEEE Asia Pacific Conference on Circuits and Systems*, Kuala Lumpur, Malaysia, (2010)
15. A Novel Deadlock-Free Shortest-Path Dimension Order Routing Algorithm for Mesh-of-Tree Based Network-on-Chip Architecture, By K. Manna, S. Chattopadhyay, I. Sengupta, *Advances in Computer Science and Information Technology, Communications in Computer and Information Science*, India, (2011)
16. A Novel Symmetrical Heuristic Diffraction Coefficient for Urban Microcellular Environment, By Sanjay Soni, Puspraj Singh Chauhan and Amitabha Bhattacharya, *2011 International Conference on Network Communication and Computer (ICNCC 2011)*, New Delhi, India, (2011)
17. A Parallel approach for Affine Transform of 3D Biomedical Images, By Pradyut Kumar Biswal and Swapna Banerjee, *2010 International Conference on Electronics and Information Engineering (ICEIE 2010)*, Kyoto, Japan, (2010)
18. A Pipelined Architecture for High Throughput Efficient Turbo Decoder, By S. M. Karim, G. Mahale and I. Chakrabarti, *International Conference on Electronics, Information and Communication Systems Engineering (ICEICE-2010)*, Jodhpur, India, (2011)
19. A Reflection of the G V L Live Case Approach: Integrating action learning, research and business for co-creating global enterprises A Finnish live case study on the Indian Health Kiosk Venture, By Jane Porter Merie Joseph Marko Seppä Dhruves Biswas, *EBRF Conference*, Finland, (2010)
20. A Robust Algorithm for Fingerprint Core-point Detection, By Arnab Sengupta, Sudipta Mukhopadhyay, *IEEE Techsym 2011*, IIT Kharagpur, (2011)
21. A Social Entrepreneurship Driven Wellness Business Model: An Opportunity In Non-Metro Indian Cities For "Beyond Better" Healthcare, By Amrita, Dhruves Biswas, *7th Annual Satter Conference, NYU-Stern Conference on Social Entrepreneurship*, New York, (2010)
22. A SPT Based Low Complexity Realization of the Weight Update Loop of an Adaptive Filter, By S. Choudhary, P. Mukherjee and M. Chakraborty, *APSIPA ASC 2010*, Singapore, (2010)
23. A Switched-Capacitor Based Embedded DC-DC Buck Converter for High Power Efficiency and High Power Density, By Biswajit Maiti and P. Mandal, *TENCON*, Fukuoka, Japan, (2010)
24. A Threshold Cryptography based Authentication Scheme for Mobile Ad Hoc Network, By Haimabati Dey and Raja Datta, *1st Intl. Conference on Computer Science and Information Technology Part II*, Bangalore, India, (2011)
25. Acceleration of Affine Transform for multiplane Image Stabilization in Digital Camera., By Pulak Mondal, Pradyut Biswal and Swapna Banerjee, *3rd IEEE Int. Conf. on Signal Acquisition and Processing (ICSAP 2011)*, Singapore, (2011)
26. An application mapping technique for butterfly-fat-tree network-on-chip, By P. K. Sahu, N. Shah, K. Manna, S. Chattopadhyay, *IEEE International Conference on Emerging Applications and Information Technology*, India, (2011)
27. An Automated Design Methodology for Yield Aware Analog Circuit Synthesis in Submicron Technology, By Sabyasachi Dewati and P. Mandal, *International Symposium on Quality Electronic Design ISQED*, Santa Clara, USA., (2011)
28. APPROACHING SUB-WAVELENGTH RESOLUTION, By SHUVA JYOTI KAR, Prof.(Dr) B.K.SARKAR, *ISAPE 2010, GUANGZHOU, CHINA*, (2010)

29. Area Efficient, High-speed VLSI Design for Ebcot Block Coder in JPEG2000, *By* Kishor Sarawadekar and Swapna Banerjee, *2010 International Conference on Electronics and Information Engineering (ICEIE 2010)*, Kyoto, Japan, (2010)
30. ASIC Implementation of a 512-point FFT/IFFT Processor for 2D CT Image Reconstruction Algorithm, *By* Indranil Hatai, Rakesh Biswas and Swapna Banerjee, *Proceedings of the 2011 IEEE Students' Technology Symposium*, IIT Kharagpur, (2011)
31. Automatic Generation of Saturation Constraints and Performance Expressions for Geometric Programming Based Analog Circuit Sizing, *By* Suprio Maji, Samiran Dam and P. Mandal, *International Symposium on Quality Electronic Design (ISQED)*, Santa Clara, USA., (2011)
32. Closed-form error analysis of noncoherent FSK for dual hop relay network in Nakagami-m fading channel, *By* Soumendra Nath Datta, Saswat Chakrabarti and Rajarshi Roy, *Proc. NCC, Jan 2010.*, IIT Chennai, (2010)
33. Current-Mode Echo Cancellation for Full-Duplex Chip-to-Chip Data Communication, *By* Vijaya Sankara Rao P, P. Mandal, *IEEE Asia Pacific Conference on Circuits and Systems*, Kuala Lumpur, Malaysia, (2010)
34. Customizing Pattern Set for Test Power Reduction via Improved X-Identification and Reordering, *By* 3. Krishna Kumar S, S. Kaundinya, Subhadip Kundu, Santanu Chattopadhyay, *International Symposium on Low Power Electronics and Design*, USA, (2010)
35. Design considerations of high power impulse radiating antenna for directed energy weapon systems, *By* A.K.Shukla and B.K.Sarkar, *ICCCD-2010*, IIT Kharagpur, (2010)
36. Design of a low-power low-phase noise MEMS compatible S-band oscillator in 130 nm CMOS technology, *By* Bhattacharyya, A. Bhattacharyya, T.K, *IEEE, INDICON -2010*, Kolkata, (2010)
37. Determinants of Success for Private Public Partnership in Filling Technology to Health (T2H) Gap in Terms of Expectations, *By* Amrita, Parswati Das, Punit Saurabh, Dhruves Biswas, *EBRF Conference*, Finland, (2010)
38. Development of a Micro-mechanical Logic Inverter for Low Frequency MEMS Sensor Interfacing, *By* Chakraborty, S, Bhattacharyya, T.K, *IEEE VLSI Design 2011*, IIT Madras, (2011)
39. Development of MEMS based universal gate for signal processing circuit in low frequency sensor applications, *By* Chakraborty, S. Bhattacharyya, T.K, *IEEE, TechSym 2010*, IIT Kharagpur, (2010)
40. Discrimination of Canonical Scatterer Based on Singularity Expansion Method, *By* Dhiraj Kumar Singh and Amitabha Bhattacharyya, *14th International Symposium on Antennas and Electromagnetics and The American Electromagnetics Conference, (ANTEM/AMEREM 2010)*, Ottawa, Canada., (2010)
41. DSC-SRI algorithms for motion blind detection of objects in an ultrasound system(Accepted), *By* R. Biswas, K. Sarawadekar, and S. Banerjee, *The IASTED International Symposia on Imaging and Signal Processing in Healthcare and Technology (ISPHT)*, Washington DC, USA, (2011)
42. Dual Loop Push-Pull Feedback Linear Regulator for Embedded DC-DC Converter, *By* Biswajit Maiti, Gaurav Bhagat and P. Mandal, *PEDES*, New Delhi, India., (2010)
43. Dual-band Cylindrical Dielectric Resonator Antenna excited by Coplanar Waveguide, *By* SK. Moinul Haque, D. Mitra and B. Ghosh, *International Conference on Communication, Computers and Devices*, IIT Kharagpur, (2010)
44. Education Enterprise Model for Social Entrepreneurship creation in A BASIC country perspective, *By* Sharad Kumar Amrita Dhruves Biswas, *7th Annual Satter Conference, NYU-Stern Conference on Social Entrepreneurship*, New York, (2010)
45. Energy and performance evaluation of a dimension order routing algorithm for Mesh-of-Tree based Network-on-Chip architecture, *By* K. Manna, S. Chattopadhyay, I. Sengupta, *Annual IEEE India Conference (INDICON)*, India, (2010)
46. Error analysis of noncoherent FSK with variable gain relaying in dual-hop Nakagami-m relay fading channel, *By* Soumendra Nath Datta, Saswat Chakrabarti and Rajarshi Roy, *SPCOM*, Indian Institute of Science, Bangalore, (2010)
47. Fast Transient Frequency Control Voltage Regulator Using Push-Pull Dynamic Leaker Circuit, *By* Biswajit Maiti, Gaurav Bhagat and P. Mandal, *International Conference on Power Electronics*, New Delhi, India, (2011)
48. FIFO optimization for energy-performance trade-off in mesh-of-tree based network-on-chip, *By* S. Kundu, T. V. Ramaswamy, and S. Chattopadhyay, *Proc. of Int'l Conf. on Computer Science and Information Technology*, Kharagpur, (2010)
49. FLUID ANTENNAS AS EMI SENSORS, *By* 2. SHUVA JYOTI KAR, Prof(Dr) AJAY CHAKRABARTY, Prof.(Dr) B.K.SARKAR, *MECAP 2010, CAIRO EGYPT*, (2010)
50. FLUID STEALTH ANTENNAS, *By* SHUVA JYOTI KAR and BINAY K. SARKAR, *GEMiC 2011*, Germany, (2011)
51. Highly sensitive tunneling accelerometer for low actuation voltage operation, *By* Patra, S, Bhattacharyya, T.K, *IEEE Sensors, 2010*, Hawaii, USA, (2010)
52. Identification of the social value proposition to the investors for scaling activities of a social enterprise: Case study of a social enterprise for health care delivery in India, *By* Merie Joseph Mari Suoranta Dhruves Biswas, *7th Annual Satter Conference, NYU-Stern Conference on Social Entrepreneurship*, New York, (2010)
53. Image Segmentation using Suprathreshold Stochastic Resonance, *By* R. K. Jha, P. K. Biswas, B. N. Chatterji, *Intl. Conf. on Signal and Image Processing*, Singapore, (2010)
54. Implementation of Katsevich Algorithm for Helical Cone-Beam Computed Tomography using CORDIC, *By* Pradyut Biswal and Swapna Banerjee, *IEEE International Conference on Systems in Medicine and Biology (ICSMB-2010)*, IIT Kharagpur, (2010)
55. Improving Watermark Detection Performance using Suprathreshold Stochastic Resonance, *By* R. K. Jha, P. K. Biswas, D. Mishra, *IEEE Region 10 Annual International Conference (TENCON)*, Fukuoka, Japan, (2010)
56. Low Offset, Low Noise, Variable Gain Interfacing Circuit with a Novel Scheme for Sensor Sensitivity and Offset Compensation for MEMS Based, Wheatstone Bridge Type, Resistive Smart Sensor, *By* Dutta, A, Bhattacharyya, T.K, *IEEE VLSI Design 2011*, IIT Madras, (2011)
57. Low-cost, high-performance VLSI design of an MQ coder for JPEG 2000, *By* Kishor Sarawadekar and Swapna Banerjee, *Proceedings of IEEE 10th International Conference on Signal Processing(ICSP)*, Beijing, China, (2010)
58. Measurement and Analysis of UDP Traffic over Wi-Fi and GPRS, *By* Sumit Maheshwari, Vasu K., Sudipta Mahapatra, C. S. Kumar, *ICCCD*, IIT Kharagpur, (2010)
59. Micromechanical radial-contour mode disk resonator for a CMOS-MEMS oscillator, *By* Basu, J. Chakraborty, S. Bhattacharyya, T.K, *IEEE, INDICON -2010*, Kolkata, (2010)
60. Multi-level Thresholding-based Breast Segmentation in Mammograms, *By* Subhendu Seth, Sudipta Mukhopadhyay, *International Conference on Communication, Computers and devices(ICCCD-2010)*, IIT Kharagpur, (2010)
61. Multiple fault diagnosis based on multiple fault simulation using Particle Swarm Optimization, *By* 1. Subhadip Kundu, Santanu Chattopadhyay, Indranil Sengupta, Rohit Kapur, *24th IEEE International Conference on VLSI Design*, Bangalore, (2011)
62. New Packet Aggregation Schemes for Multimedia Applications in WLAN, *By* Mangalathu Jibukumar and Raja Datta and Prabir Biswas, *12th IEEE/IFIP Network Operations and Management Symposium (NOMS 2010)*, Osaka, Japan, (2010)
63. Novel Ka-band phaseshifter based on DC contact RF MEMS Switch, *By* B.Gupta,A.Kundu,H.Saha,B.K.Sarkar and S.Lahiri, *ICCCD-2010*, IIT Kharagpur, (2010)

64. Novel Scaling Up of Delivery Model For Tertiary/Secondary Healthcare Empowered By Social Entrepreneurship, By Amrita Dhruves Biswas, *7th Annual Satter Conference, NYU-Stern Conference on Social Entrepreneurship*, New York, (2010)
65. On Boses pyramidal horn antenna, By Subrata Sanyal, *APSYM 2010*, Cochin Univ. of Science and Technology,, (2010)
66. Optimization of RF-MEMS based phase shifter, By Rakesh Gautam, B K Sarkar, *ICCCD-2010*, IIT Kharagpur, (2010)
67. Output of Education-Enterprise Model for Creation of Integrated Circuit (IC) Design Enterprises Cluster in Eastern India, By Amrita, Punit Saurabh, Parswati Das, Sharad Kumar, Dhruves Biswas, *EBRF Conference*, Finland, (2010)
68. OVERCOMING THE DIFFRACTION LIMIT, By . SHUVA JYOTI KAR, Prof.(Dr) B.K.SARKAR,, *INTERNATIONAL CONFERENCE OF FIBER OPTICS AND PHOTONICS*, IIT GUWAHATI, (2010)
69. Parameter Controlled Reconfigurable Baseband Modulator for SDR Architecture, By I. Hatai and I. Chakrabarti, *2nd International Conference on Mechanical and Electronic Engineering (ICMEE 2010)*, Kyoto, Japan, (201)
70. Particle Swarm Optimization Based Scheme for Low Power March Sequence Generation for Memory Testing, By 2. Krishna Kumar S, S. Kaundinya, Santanu Chattopadhyay, *Asian Test Symposium*, China, (2010)
71. Particle Swarm Optimization based vector reordering for low power testing, By S. Krishna Kumar, S. Kaundinya, S. Kundu, S. Chattopadhyay, *International Conference on Computing Communication and Networking Technologies*, India, (2010)
72. Performance analysis of a multi-relay cooperative diversity network with decode and forward relaying, By M.D.Selvaraj and Ranjan K Mallik, *National Conference on Communication (NCC)*, IIT Chennai, (2010)
73. Performance Analysis of Distributed Selection Combining with Dual-Hop Relay Link in Rayleigh Fading Channel, By Soumendra Nath Datta, Saswat Chakrabarti and Rajarshi Roy, *IEEE ICCS*, Singapore, (2010)
74. Performance analysis of square M-QAM with dual-hop relay link in Nakagami-m fading channel, By 32. Soumendra Nath Datta, Saswat Chakrabarti and Rajarshi Roy, *SPCOM*, IISc, Bangalore, (2010)
75. Performance evaluation of a novel Dimension Order Routing algorithm for Mesh-of-tree based Network-on-Chip architecture, By K. Manna, S. Chattopadhyay, I. Sengupta, *1st International Conference on Parallel Distributed and Grid Computing*, India, (2010)
76. Pipelined DSP Implementation of Nonlinear Anisotropic Diffusion for Speckle Reduction of USG Images, By Deep Bera and Swapna Banerjee, *The 2nd Int. Conference on Computer Engineering and Technology (IC CET 2010) Proceedings of IEEE ICET*, Chengdu, China, (2010)
77. Pseudo Concurrent Quad-Band LNA Operating in 900 MHz/1.8 GHz and 900 MHz/2.4 GHz Bands for Multi-standard Wireless Receiver, By Datta, S, Dutta, A, Datta, K, Bhattacharyya, T.K., *IEEE VLSI Design 2011*, IIT Madras, (2011)
78. PSO optimized concurrent dual-band LNA with RF switch for better inter-band isolation, By Datta, Kunal Datta, Rohit Dutta, Ashudeb Bhattacharyya, T. K., *IEEE, ECCSC 2010*, Belgrade, Serbia, (2010)
79. PSO-based output matching network for concurrent dual-band LNA, By Datta, K. Datta, R. Dutta, A. Bhattacharyya, T.K., *IEEE ICMET, 2010*, Chengdu, China, (2010)
80. Pure play Tertiary Care Health delivery models for engaging Indian health through academia-enterprise partnerships, By Parswati Das, Amrita, Punit Saurabh, Dhruves Biswas, *IFKAD*, Matera, Italy, (2010)
81. QoS Aware Fuzzy Rule Based Vertical Handoff Decision Algorithm for Wireless Heterogeneous Networks, By Vasu K., Sumit Maheshwari, Sudipta Mahapatra, C.S.Kumar, *NCC 2011*, IISc, Bangalore, (2011)
82. QSRec: An Algorithm for Quick and Secure Recovery from Link Failures in Mobile Ad Hoc Networks, By Sajal Sarkar and Raja Datta, *International Conference on Communications, Computers and Devices (ICCCD)*, Kharagpur, India, (2010)
83. Registration of 3D Medical Images Using Parallel Affine Transform(Accepted), By Pulak Mondal, Pradyut Biswal and Swapna Banerjee, *The IASTED International Symposia on Imaging and Signal Processing in Healthcare and Technology (ISPHT)*, Washington DC, USA, (2011)
84. RF MEMS DMTL phase shifter on low resistivity silicon for Ku-band with reduced substrate loss, By A.Kundu,B.Gupta,H.Saha,B.K.Sarkar and S.Lahiri, *TENCON-2010*, Japan, (2010)
85. SEP of a scaled selection combining scheme with decode and forward relaying for MPSK signaling, By M.D.Selvaraj and Ranjan K Mallik, *SPCOM 2010*, IISc Bangalore, (2010)
86. Sharp-rejection microstrip lowpass filter using dual-transmission lines, By Vamsi K. Velidi, and S. Sanyal, *APSYM 10, Twelfth national symposium on Antennas and propagation*, Cochin Univ. of Science and Technology,, (2010)
87. Short term rain attenuation prediction models at Ku band for satellite communication systems: neural network approach, By Maruti Tamrakar, K. Bandyopadhyay, *ICCCD 2010*, IIT Kharagpur, (2010)
88. Spectrum Management, Modern Communication Technologies and Tactical Battlefield Area, By Ashwini Bhardwaj and Amitabha Bhattacharya, *11th International Conference on Electromagnetic Interference and Compatibility (INCEMIC-2010)*, Bangalore, India, (2010)
89. SPT Treatment to the Bit-Serial Realization of the Sign-LMS Based Adaptive Filter, By S. Chaudhary, P. Mukherjee, M. Chakraborty, *IEEE International Symposium on Circuits and Systems (ISCAS) - 2011*, Paris, (2010)
90. STEALTH EMI SENSORS, By 3. SHUVA JYOTI KAR, Prof(Dr) AJAY CHAKRABARTY, Prof.(Dr) B.K.SARKAR, *ISAPE 2010, GUANGZHOU, CHINA*, (2010)
91. Test Power Reduction with Test-Time Trade-Off, By 4. Subhodip Kundu, Krishna Kumar S., and Santanu Chattopadhyay, *IEEE International Symposium on Circuits and Systems*, USA, (2010)
92. TREES AS RF ANTENNAS, By SHUVA JYOTI KAR, Prof.(Dr) B.K.SARKAR, *ISAPE 2010, GUANGZHOU, CHINA*, (2010)
93. TREES PERFORMING AS EMI SENSORS, By 7. SHUVA JYOTI KAR, Prof(Dr) AJAY CHAKRABARTY, Prof.(Dr) B.K.SARKAR,, *INDICON 2010, JADAVPUR UNIVERSITY,KOLKATA*, (2010)
94. VLSI Implementation of MQ Decoder in JPEG2000, By Omkar C Kulkarni, Kishor Sarawadekar and Swapna Banerjee, *2011 IEEE Students' Technology Symposium*, IIT Kharagpur, (2011)
95. VLSI Implementation of Real Time Digital Scan Converter for Ultrasound System, By Rakesh Biswas, Deep Bera and Swapna Banerjee, *2010 International Conference on Communication, Computers and Devices (ICCCD 2010)*, IIT Kharagpur, (2010)
96. W-band Penta-Composite Channel InAlAs/InGaAs Metamorphic HEMT for High Power Application and Comparison with Pseudomorphic HEMT, By Partha Mukhopadhyay, S. Kundu, P. Das, S. Pathak, E.Y. Chang and D. Biswas, *International Conference On Compound Semiconductor Manufacturing Technology (CS ManTech)*, Portland, Oregon, USA, (2010)
97. Wideband sharp-rejection signal interference bandstop filter using branch-line coupler, By V. K. Velidi, Subhalaxmi Rath, and S. Sanyal, *ICDeCom 2011*, BIT Mesra, India., (2011)

Centre for Educational Technology

Head

Prof. Bani Bhattacharaya

Assistant Professors

Bhattacharaya, Bani

Ph.D.(IIT Kharagpur), Instructional Design Distance Education Technology Enhanced Learning Pedagogical Research

Das Mandal, Shyamal Kumar

Ph.D.(Jadavpur Univ), Speech and Signal Processing

Mohanty, Atasi

Ph.D.(Utkal University), Cognitive Psychology Human Resource Development & Positive Psychology

Faculty Appointments

Prof. S.K. Das Mandal

Assistant Professor

Visiting Faculty

Prof. A.K. Ray

Ph.D

Educational Technology; Video Systems Engg

Faculty Re-employment (Upto 65 years age)

Prof. A. K Ray

Professor

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". The second batch of students have already joined the programme. CET also offers Ph.D programmes in both, areas related to educational pedagogy and in Speech and Image processing. Research scholars are already working in these areas. Eight research scholars are already working in the area of Educational Technology and Speech processing .

Ongoing Sponsored Projects : 1) National Program on Technology Enhanced Learning - CET, IIT Kharagpur has already developed 30 courses (1200 hours of video courses) as a part of NPTEL phase II which are available in the LAN for internal feedback. CET is planning to develop 40 courses more (1600 hours of courses) by 2011, Dec. 2) Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning 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

M.Tech programme for teachers of AICTE affiliated institutions and industry are being offered through videoconferencing mode at 3 studios in CET

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. 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. 50 lakhs.
2. CET connected 15 locations through Video Conferencing both in IIT-Kharagpur and in extension centers in Kolkata and Bhubaneswar between Dec 2009 and March 2010. 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.
3. 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.

Lectures by Visiting Experts

1. Prosody Modelling by Prof. Hiroya Fujisaki (Emeritus Prof. University of Tokyo)

Member - Professional Bodies

1. Bhattacharaya, Bani, *Regular* - International Forum of Educational Technology and Society
2. Bhattacharaya, Bani, *Associate* - Board of experts in E-Learning Forum and Distance Education, Commonwealth of Learning
3. Bhattacharaya, Bani, *Regular* - Expert committee on Distance education & e-Learning for the Asian Productivity Organization, (APO) Tokyo
4. Bhattacharaya, Bani, *Regular* - Indo US Collaboration for Engineering Education (IUCEE)
5. Mohanty, Atasi, *Life Member - No. 1232* - Indian Academy of Applied Psychology
6. Mohanty, Atasi, *Life Member* - Indian Association of Health Research & Welfare
7. Mohanty, Atasi, *Regular Member* - National Academy of Psychology
8. Mohanty, Atasi, *Regular Member* - National Academy of Psychology

Member - Editorial Board

1. Bhattacharaya, Bani (2011) *Member and reviewer* - ICALT 2011
2. Bhattacharaya, Bani (2011) *Member, Editorial Advisory Board* - Higher Education Institutions and Learning Management Systems: Adoption and Standardization
3. Bhattacharaya, Bani (2010) *Member, Technical Programme Committee* - International Conference on Technology for Education 2010 (IEEE)
4. Bhattacharaya, Bani (0) *Member and Reviewer* - IEEE Techsym

Fellowships

1. Das Mandal, Shyamal Kumar (2010) *Fellow of Japan Society for the Promotion of Science*

Sponsored Research Projects

1. 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)
2. 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)
3. Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning (MHRD, Rs.5.00 Lakhs)
4. NPTEL (MHRD, Rs.1133.00 Lakhs)
5. Pedagogy of Higher Education (Ministry of Human Resource Development, Govt. of India, Rs.0.00 Lakhs)

Visits Abroad by Faculty Members

1. Bhattacharaya, Bani - Paper presentation (South Africa,) 7 days
2. Das Mandal, Shyamal Kumar - JSPS Fellow (University of Tokyo, Japan,) 22 Days

Invited Lectures by Faculty Members

1. *â€œ Experiences in Alternative Learning Environments in Higher Education by Bhattacharaya, Bani (Christ University Bangalore)*

Papers Published in Journals

1. Book Review on-Emotional Intelligence:Perspectives in Organisations *By Atasi Mohanty Journal of Indian Academy of Applied Psychology* Upcoming (2011)
2. Effective Group Therapy for HIV/AIDS *By Atasi Mohanty & Nivedita Das PsyInsight* Vol.1No.2 September (2010)
3. Positive Parenting *By Atasi Mohanty PsyInsight* Vol.1No.4 November (2010)
4. Stress Management & Coping Styles *By Atasi Mohanty PsyInsight* Vol.1No.3 October (2010)
5. The Mental Health Status of Tea-Garden Workers in North-East India: A Case Study *By Atasi Mohanty Indian Journal of Health & Wellbeing* Vol.1No.1&2 Sept-Dec (2010)

Papers Presented in Conferences

1. Analysis and Synthesis of F0 Contour for Bangla Readout Speech, *By Shyamal Das Mandal, Anal H. Warsi, Tulika Basu, Keikichi Hirose, Hiroya Fujisaki, O-COCOSDA 2010, Kathmandu, (2010)*
2. Cognitive Processing ,Reading & Achievement Behaviour Patterns of English & Oriya Medium School Children, *By Atasi Mohanty & Swati Preeti Das, International Conference on Mind Culture & Human Activities, Jawaharlal Nehru University New Delhi, (2010)*
3. Computer Game-based Learning and Pedagogical Contexts: Initial Findings from a Field Study, *By Shiffon Chatterjee Atasi Mohanty & Bani Bhattacharya, IEEE conference on T4E2011, Chennai, (2011)*
4. Effect of Word Order change in Bangla Declarative Sentence Intonation, *By Shyamal Kumar Das Mandal, Sudipta Acharya, Hiroya Fujisaki, Proc. Of FRSM-CMMR 2011, Bhubaneswar, (2011)*
5. Efficacy of Computer Game Based Learning in Childrens Education, *By Shiffon Chatterjee & Atasi Mohanty, International Conference on Mind Culture & Human Activities, Jawaharlal Nehru University New Delhi, (2010)*
6. Experiences in Alternative Learning Environments in Higher Education, *By Bani Bhattacharya, Virtual Global Conference on Technology for Blended and Distributed Education, Bangalore, (2010)*
7. Feature Set Extracted Using Frequency-Time Analysis Approach for Speaker Verification, *By Nirmalya Sen, Shyamal Kr. Das Mandal, T.K Basu, International conference on Devices and Communications, Birla Institute of Technology, Mesra, Ra, (2011)*
8. Indian Language Phonemes and Creation of Pronunciation Lexicon in W3C Framework, *By Shyamal Kr Das Mandal, Tulika Basu, Proc. of WWW:TSIC 2010, New Delhi, (2010)*
9. Managing Workforce Diversity in 21st Century, *By Atasi Mohanty, National Conference on Management of Workforce Divresity: Canadian & Indian Perspectives, Xavier Inst. of Management Bhubaneswar, (2011)*
10. Modeling of Sentence-medial Pauses in Bangla Readout Speech: Occurrence and Duration, *By Shyamal Kr Das Mandal, Arup Saha, Tulika Basu, Keikichi Hirose, Hiroya Fujisaki, Interspeech 2010, Makuhari, Japan, (2010)*
11. Peer Collaboration, Facilitator Intervention and Learning Styles in Computer Game-based Learning: Initial Findings from an Empirical Study, *By Shiffon Chatterjee Atasi Mohanty & Bani Bhattacharya, Vth European Conference on Game Based Learning, Athens, Greece, (2011)*
12. Psychology of E-learning:An Emerging Field in Educational Research, *By Atasi Mohanty, UGC National Conference on Re-engineering & Benchmarking in Higher Education Sector in India: A Way Forward through ICTs, PG Govt.College-Chandigarh, (2011)*
13. Reading ,Achievement Behavior Patterns & Cultural Difference in Indian Classrooms, *By Atasi Mohanty, International Conference on Cognitive Development, Centre of Beh & Cog Sc-Allahabad, (2010)*
14. The Mental Health Status of Tea-Garden Workers in North-East India: A Case Study, *By Atasi Mohanty, International Conference on Positive Psychology: A New Approach to Mental Health, Amity University Jaipur Rajasthan, (2010)*
15. Use of Part Of Speech (POS) and morphological information for resolving Multiple Pronunciations in Pronunciation Lexicon Specification (PLS) for Indian Languages â€œ Bengali as a Case Study, *By S. Das Mandal, S. Chandra, S. Lata, Workshop on Conversational Applications â€œ Use Cases and Requirements for New Models of Human Language to Support Mobile Conversational Systems, Somerset, NJ, US, (2010)*

Department of Electrical Engineering

Head

Prof. A. K. Sinha
Prof. Jayanta Pal

Up to 30.09.2010
From 01.10.2010

Professors

Barua, Alok	<i>Ph.D.(IIT Kharagpur)</i> , BIST for Pipelined ADC
Bhattacharya, Tapas Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Electrical Machines & drives. circuits., Electromagnetics, LIM., Transformer, inrush current minimization
Chakraborty, Chandan	<i>Ph.D.(IIT Kharagpur)</i> , Electric Machines, Industrial Drives, Power Converters
Das, Debapriya	<i>Ph.D.(IIT Delhi)</i> , Electric Power Distribution System Power System Operation and Control
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
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> , Control Systems, Fuzzy Logic Applications in Control Systems, Orthogonal Functions Applications in Control Systems
Mukhopadhyay, Siddhartha	<i>Ph.D.(IIT Kharagpur)</i> , Failure Diagnostics and Prognostics and Tolerance for Vehicular Systems, Behavioral Modelling and CAD and Testing of Analog and Mixed Signal VLSI Systems, Industrial Instrumentation and Control and Automation, Aerospace Tracking and Control and Guidance, 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
Patra, Amit	<i>Ph.D.(IIT Kharagpur)</i> , Power Management Circuits, VLSI Design, Fault Tolerant Control
Ray, Goshaidas	<i>Ph.D.(IIT Delhi)</i> , Robust Stabilization, Time-Delay System, Decentralized Control and State Estimation., Intelligent Control.
Sen Gupta, Sabyasachi	<i>Ph.D.(IIT Kharagpur)</i> , Machine Drives and Power Electronics
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 Professors

Kastha, Debaprasad	<i>Ph.D.(Tennessee)</i> , Wind Electrical Systems, Switched Mode Power Supplies, Machine Drives
Poddar, Gautam	<i>Ph.D.(IISc Bangalore)</i> , Medium voltage converter with high frequency isolation
Pradhan, Ashok Kumar	<i>Ph.D (Sambalpur Univ.)</i> , Power System Protection Wide Area Measurement System Applied Signal Processing
Prasad, Dinkar	<i>Ph.D.(IIT Kharagpur)</i> , Power Electronics, Machine Drives
Routray, Aurobinda	<i>Ph.D.(Sambalpur Univ)</i> , Real Time Signal Processing and Embedded Systems, Diagnostics and Prognostics of Automotive Systems, Cognitive Modelling and Man-Machine Interface

Assistant Professors

Bajpai, Prabodh	<i>Ph.D.(IIT Kanpur)</i> , 1. Renewable Energy Systems, 2. Power System Restructuring
Bhattacharya, Tanmoy	<i>Ph.D.(IISc. Bangalore)</i> , Power Converters and Machine Drives
Biswas, Karabi	<i>Ph.D.(IIT Kharagpur)</i> , Sensor Design & Development of Instrumentation system and Study of Fractional Order systems

Chatterjee, Dheeman	<i>Ph.D.(IIT Kanpur)</i> , Power System Dynamics, Grid Integration of Renewables, FACTS controllers
Chattopadhyay, Souvik	<i>Ph.D (IISc. Bangalore)</i> , Digital Control of Power Converters, Soft-switched dc dc converters
Deb, Alok Kanti	<i>Ph.D.(IIT Delhi)</i> , Control Systems, Computational Intelligence
Mukherjee, Anirban	<i>Ph.D. (IIT Kharagpur)</i> , Computational Biology, Biomedical Signal Processing

Faculty Appointments

Dr. Tanmoy Bhattacharya	Asst. Professor
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Faculty Promotions

Dr. S. Maka	Professor
Dr. C. Chakraborty	Professor

Faculty Resignation

Dr. N. C. Sahoo	Asst. Professor
Dr. Soumitro Banerjee	Professor

New Academic Programmes

Dual-degree programme on Quality, Engineering design and Manufacturing, coordinated by IEM

M. Tech programme on Embedded Software and Control coordinated by ATDC

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

New Acquisitions

1. 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.

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. Advances in Electrical Energy Transmission and Distribution by Mr. R. N. Nayak (Director (Operations), Power Grid Corporation of India Ltd, New Delhi.)
2. Challenges and Innovations in Real Time Optimal Control by Dr. Radhakant Padhi (Department of Aerospace Engineering, IISc, Bangalore.)
3. Smart Grid by Prof. Anjan Bose (Fellow IEEE, College of Engineering & Architecture Washington State University, Pullman, WA 99164-2714, USA.)
4. Robust Control of Negative-Imaginary Systems by Dr. Sourav Patra (Research Associate, Control Systems Centre, School of Electrical and Electronic Engineering, University of Manchester, UK.)
5. Development of First 2MW Grid Connected Solar PV Power Plant in India at Asansol by Dr. S. P. Gon Chaudhuri (Managing Director, West Bengal Green Energy Development Corporation Ltd.(WBGEDCL).)
6. Ongoing research activities in GE, Electrical Power Technology Lab: Power converter topology and controls, Renewable integration, Smart Grid by Dr. Arvind Tiwari (Manager, GE Global Research (Electrical Power Technologies Laboratory, Power Conversion Systems))
7. Product Life Cycle Management (EE Industries), Crompton Greaves Ltd, Mumbai by Mr. Maruthi Krishna (Senior Executive, Technology, CG Global R&D.)
8. Time Optimal Control of DC/DC Converters: A Geometric Approach by Mr. Santanu Kapat (Visiting Scholar, Dept. of ECE, UIUC, USA)
9. Recent trends in multilevel inverter topologies for drives by Dr. K. Gopakumar (Professor & Chairman, CEDT, IISc Bangalore)

Doctoral and MS Degrees Awarded

1. Mr. Sanjib Ganguli : Multi-objective planning of electrical distribution systems using particle swarm optimization(Ph.D)
2. Mr. S. K. Kar : Optimal Control of Dynamic Systems using Orthogonal Functions(Ph.D)
3. Ms. Anwesha Sengupta : Control allocation and design of controller for satellite launch vehicle(MS)
4. Mr. Amitava Banerjee : Process verification aware macromodelling for analog integrated circuits(MS)
5. Mr. Santanu Ghorai : Learning with Proximal Kernel classifiers(Ph.D)
6. Mr. Rakeshbabu Panguloori : High performance power supply architectures for microprocessor loads(Ph.D)
7. Mr. Chandrabhanu Mishra : Modelling and diagnosis of rotor bar and eccentricity faults in three phase squirrel cage induction motor(Ph.D)
8. Mr. Durga Prasad Bagarthy : Analysis & design of an optimally operated double output induction generator based stand alone wind power generation systems(Ph.D)
9. Mr. Tathagata Ray : Unsupervised Texture segmentation with rotational invariance, contextual information and feature level fusion(Ph.D)
10. Mr. Avik Bhattacharya : Investigations on shunt active power filters(Ph.D)
11. Mr. Premalata Jena : Directional relaying for power networks(Ph.D)
12. Mr. Sandip Ghosh : Decentralized stabilization of interconnected systems with time-delays(Ph.D)

Member - Professional Bodies

1. Bajpai, Prabodh, *Member* - IEEE, USA
2. Barua, Alok, *Senior Member* - IEEE
3. Barua, Alok, *Life Member* - System Society of India
4. Biswas, Karabi, *Regular* - IEEE
5. Biswas, Karabi, *Regular* - System Society of India
6. Chakraborty, Chandan, *Senior Member* - IEEE
7. Chatterjee, Dheeman, *Member* - IEEE
8. Das, Sarit Kumar, *Regular* - IEEE, Control system society
9. Deb, Alok Kanti, *Regular* - IEEE

10. Kastha, Debaprasad, *Regular* - IEEE
11. Kishore, N K, *Senior* - IEEE
12. Kishore, N K, *Life Member* - System Society of India
13. Mohan, Bosukonda Murali, *Senior Member* - IEEE (USA)
14. Mohan, Bosukonda Murali, *Regular* - Asian Control Association
15. Mohan, Bosukonda Murali, *Life* - Systems Society of India
16. Mukherjee, Anirban, *Member* - IEEE
17. Mukhopadhyay, Siddhartha, *Member* - IEEE
18. Mukhopadhyay, Siddhartha, *Vice-President* - System Society of India
19. Pal, Jayanta, *Life Member* - Systems Society of India
20. Patra, Amit, *Member* - IEEE
21. Pradhan, Ashok Kumar, *Senior Member* - IEEE, USA
22. Pradhan, Ashok Kumar, *Life member* - Indian Society Of Technical Education (ISTE)
23. Routray, Aurobinda, *Member* - SIAM, USA
24. Routray, Aurobinda, *Member* - IEEE, USA
25. Sinha, Avinash Kumar, *Member* - IEEE, USA

Member - Editorial Board

1. Chakraborty, Chandan (2006) *Associate Editor (2006-)* - IEEE Transactions on Industrial Electronics
2. Chakraborty, Chandan (2008) *Member, Editorial Board (2008-)* - IET Power Electronics
3. Chakraborty, Chandan (2010) *Editor (2010-)* - IEEE Transactions on Sustainable Energy
4. Chakraborty, Chandan (2008) *Associate Editor (2008-)* - IEEE Industrial Electronics Magazine
5. Deb, Alok Kanti (2010) *Reviewer* - IETE J of Education
6. Deb, Alok Kanti (2010) *Reviewer* - IEEE Trans. on Industrial Electronics
7. Deb, Alok Kanti (2011) *Reviewer* - IET-Generation, Transmission and Distribution
8. Deb, Alok Kanti (2010) *Reviewer* - Neurocomputing
9. Mohan, Bosukonda Murali (2010) *Member, Editorial Board* - Int. J. Mathematics and Engineering with Computers
10. Mohan, Bosukonda Murali (2007) *Associate Editor* - Int. J. Automation & Control
11. Mukhopadhyay, Siddhartha (0) *Member* - Paritantra
12. Patra, Amit (0) *Member, Editorial Board* - International Journal of Electrical Engineering Education
13. Pradhan, Ashok Kumar (2009) *Member, Editorial Board* - International Journal of Power and Energy Conversion (IJPEC),
14. Sinha, Avinash Kumar (2007) *Member, Board of Advisors* - The ICFAI Journal of Science and Technology

Awards & Honours

1. Sinha, Avinash Kumar (2010) *IBM Open Collaborative Faculty Award*
2. Kishore, N K (2010) *In the Diamond Jubilee of EE Dept. Osmania University College of Engg. honored as Distinguished Alumnus*
3. Kishore, N K (2010) *Paper in NSC 23 awarded Best paper award from contributed papers presented in Twenty Third National Symposium on Cryogenics (NSC-23) at NIT. Rourkela (October 28- 30 , 2010)*

Sponsored Research Projects

1. A Study of the Impacts of Increased Penetration of Wind Power on Power System Stability (Department of Science and Technology, India, Rs.19.00 Lakhs)
2. Advanced Control and Failure Prognosis and Diagnosis of Industrial Processes for Steelmaking Using Data Fusion-Phase I. (DIT, New Delhi, Rs.58.92 Lakhs)
3. Analytical & Computational Evaluation of Various parameters involved in the design of SC Cables(CIC) type to be used for Fusion Grade magnets (BRFS, Rs.50.00 Lakhs)
4. Artificial Heart Development Programme- Phase II (HDP) (DST, New Delhi, Rs.25.24 Lakhs)
5. Attitude control of launch vehicles (ISRO, VSSC Trivandrum, Rs.6.70 Lakhs)
6. AVLSI Consortium (Multiple Organisations in India and Abroad, Rs.200.00 Lakhs)
7. Centre for Railway Research (CRR) (On-going) (Govt. of India, Rs.914.88 Lakhs)
8. Control of Stand-Alone Wind Energy Conversion Systems (VEICET, Rs.15.00 Lakhs)
9. 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)
10. 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.200.00 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 an Optimal Control Strategy for GSLV MK3 (ISRO, IIT Kharagpur Cell., Rs.7.41 Lakhs)
14. Developing Fractional Order Circuit Element (Fractance) (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
15. Development and Assessment of Modern Multivariable Control Design Paradigms for Aerospace Applications (On-going) (ARDB, Rs.8.35 Lakhs)
16. Educational Component of GM Collaborative Research Laboratory (General Motors, Rs.125.00 Lakhs)
17. Emulation of AMS Circuits for Concurrent Virtual Testing (AVLSI Consortium) (Completed) (, Rs.0.00 Lakhs)
18. High Resolution Delay Cells for Pulse Width Modulators (Infineon Technologies AG, Germany, Rs.6.50 Lakhs)

19. IBM Open Collaborative Faculty Award (IBM, Almaden Research centre, USA, Rs.7.00 Lakhs)
20. 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)
21. Intelligent Reservoir Characterization (ONGC, Rs.48.00 Lakhs)
22. Kinematic State Estimation of Multiple Aerospace Targets using Airborne Radar (On-going) (LRDE, DRDO, Bangalore, Rs.9.96 Lakhs)
23. Modelling and design of polymer coated ion selective constant phase element (CPE) sensor (DST, Rs.14.40 Lakhs)
24. National Programme on Micro and Smart Systems (ADA, Bangalore, Rs.259.60 Lakhs)
25. Online monitoring system for OHE traction parameters (Indian Railways, Rs.218.00 Lakhs)
26. P K Sinha Center for Bioenergy (IIT Foundation - Prabha Sinha, Rs.1000.00 Lakhs)
27. Pedagogy (MHRD, Rs.500.00 Lakhs)
28. Protecting Power Systems using Wide area measurements (DEPARTMENT OF SCIENCE AND TECHNOLOGY, NEW DELHI, Rs.18.00 Lakhs)
29. Real Time Digital Simulator (TDS) (Centre for Development of Advanced Computing, Trivandrum, Govt. of India, Rs.5.47 Lakhs)
30. Renewable Hybrid Energy Power Plant for Telecom station in Isolated Sites (Vodafone Essar-East Limited, Kolkata, Rs.95.00 Lakhs)
31. Robust Control and Optimization of Power Output from Stand-Along Wind Energy Conversion Systems for Isolated Telecom Base Stations (Vodafone Essar-IIT Kgp Center of Excellence in Telecommunications (VEICET), Rs.15.00 Lakhs)
32. Seeker, Radar and INS Data Fusion and Filtering for Kinematic State Estimation of Aerospace Targets (On-going) (Ministry of Defense, Govt. of India, Rs.24.75 Lakhs)
33. Setting up an Advanced Facility for Research in Reliability Engineering (On-going) (BARC, Mumbai, Rs.150.00 Lakhs)
34. Stability and Performance on Photovoltaics (DST, Rs.163.50 Lakhs)
35. STATCOM with neutral compensation (TCO) (Centre for Development of Advanced Computing, Trivandrum, Govt. of India, Rs.4.00 Lakhs)
36. Testing & characterization of In-House Development of MEMS Capacitive Accelerometer (TCA) (ISRO-IIT Kharagpur Cell, Rs.5.00 Lakhs)
37. Virtual HV Laboratory (MHRD, Rs.60.00 Lakhs)
38. Virtual Lab on Embedded Systems (MHRD, Rs.55.00 Lakhs)
39. 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 (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. Concurrent Virtual Test Plan Generation for Mixed Signal Circuits (National Semiconductor Corporation, USA, Rs.100.00 Lakhs)
7. Design of DC-DC Converters for LED Drivers (SiWays Corporation, Rs.2.00 Lakhs)
8. Development of online surface inspection system for hot rolled flat products (RDCIS, SAIL, Rs.10.00 Lakhs)
9. Development of Performance Monitoring System for Critical Stand Motors of Rail & Structural Mill (On-going) (RDCIS, Ranchi, Rs.10.00 Lakhs)
10. Development of Substation Automation System Phase-I (Monitoring) (Damodar Valley Corporation, Rs.25.70 Lakhs)
11. Diagnostics and Prognostics in Automotive Systems (General Motors India Science Lab, Rs.50.00 Lakhs)
12. Formal Design Intend Modelling and Verification of Mixed Signal Behaviors (On-going) (Semiconductor Research Council (SRC), USA, Rs.0.00 Lakhs)
13. General Motors Collaborative Research Laboratory (General Motors, Rs.375.00 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 (HVPS) (Veeral Control Pvt. Ltd. Gandhinagar, Rs.4.00 Lakhs)
16. Impulse Test in Transformers (Bright Transformers Balasore, Rs.0.60 Lakhs)
17. Measurement of Energy in a Spark (Sigma Controls Calcutta, Rs.0.20 Lakhs)
18. Natural Harmonic Compensation of Medium Voltage Converters (NHCM) (C-DAC, Trivandrum, Rs.8.60 Lakhs)
19. On Board Diagnostics of Automotive Engines (GM-IIT Kharagpur Collaborative Research Laboratory, Rs.500.00 Lakhs)
20. PEDAGOGY-POWER SYSTEM COURSE (MHRD, Rs.2.10 Lakhs)
21. Resonant Frequency Converter - II (Megatherm Electronics Limited, Rs.1.00 Lakhs)
22. Sensorless high voltage single phase front-end converter (SHVC) (Signotron India pvt. Ltd., Kolkata, Rs.2.00 Lakhs)
23. Solar inverter for grid connected and standalone mode with MPPT (MPPT) (Signotron India pvt. Ltd., Kolkata, Rs.2.50 Lakhs)
24. Top-Down Approach to the Design of Mixed Signal Circuits (National Semiconductor Corporation, USA, Rs.100.00 Lakhs)
25. Universal auxiliary converter for railways rolling stock (UACR) (Indian Railways and C-DAC, Trivandrum, Rs.5.00 Lakhs)

Patents (filed / granted)

1. A Method of Maintaining the Zone Temperature in a Variable Air Volume Air Conditioning System and a System Thereof

Visits Abroad by Faculty Members

1. Bajpai, Prabodh - To present a paper in International Conference on Energy and Sustainable Development: Issues and Str (Thailand,) 5 Days
2. Chakraborty, Chandan - to attend the ADCOM meeting of the IEEE Industrial Electronics Society and present paper in ISIE2010 (Bari, Italy,) July 4-7, 2010
3. Patra, Amit - To meet Alumni in various cities and promote Institutional Development Programme (UK/USA,) September 2010
4. Mukhopadhyay, Siddhartha - Academic Research Collaboration (Australia,) 10 Days
5. Pradhan, Ashok Kumar - As Visiting Faculty (McGill University,) 2 months May-July2010
6. Kastha, Debaprasad - Attending IEEE PES general Meeting (Minneapolis, Minnesota, USA,) July 26 - July 29, 2010
7. Chakraborty, Chandan - to attend the ADCOM meeting of the IEEE Industrial Electronics Society and present paper in IECON11 (Glendale, AZ, USA,) November 7-10, 2010.
8. Kishore, N K - To attend IEEE CEIDP 2010 ECET Dept., Purdue University (Purdue University West Lafayette IN USA,) Oct. 16, 2010 to Oct. 22, 2010
9. Routray, Aurobinda - CASE 2010 (IEEE International Conference) (Toronto,) Aug 21-24 2010
10. Routray, Aurobinda - INDO-FRENCH WORKSHOP Matrix Information Geometries (MIG) Applications in Sensor and Cognitive System (23rd February 2011 (Thales TRT) 24th-25th February 2011 (Ecole Polytechnique),) 23rd to 25th Feb 2011

Invited Lectures by Faculty Members

1. Green Energy for Radio Base Stations *by* Kishore, N K (Andhra University Visakhapatnam)
2. Green Energy for Radio Base Stations *by* Kishore, N K (Osmania University College of Engg Hyderabad)
3. Workshop on Virtual High Voltage Laboratory *by* Kishore, N K (JNTU Hyderabad)
4. Workshop on Virtual High Voltage Laboratory *by* Kishore, N K (VNRVJIT Hyderabad)
5. Tutorial on Virtual HV Laboatory *by* Kishore, N K (NIT Surathkal - ICIS2010)
6. Research opprotunities in the energy sector to aid global sustainable development *by* Bajpai, Prabodh (Amrita Vishwa Vidhyapeeth, Coimbotore)
7. Through Smart Grid- A Wide Area View *by* Pradhan, Ashok Kumar (KIIT Bhubaneswar)
8. Power System Vulnerability Assessment through Wide-Area Measurements *by* Pradhan, Ashok Kumar (IIT Kharagpur-IBM invited talk)
9. Trends and Challenges in Power System Protection *by* Pradhan, Ashok Kumar (GE Bangalore)
10. Frontiers in Monitoring and Protection- Wide Area Measurements *by* Pradhan, Ashok Kumar (SOM University)
11. Evolutionary Computing Techniques *by* Das, Debapriya (Gitam University, Visakhapatnam)
12. Technology Directions *by* Kishore, N K (NIT Durgapur)
13. Technology? *by* Kishore, N K (AITAM Srikakulum AP)
14. Natural sinusoidal converter for medium voltage applications *by* Poddar, Gautam (Bengal Engineering and Science University (BESU), Howrah)
15. Power Management Circuits *by* Patra, Amit (Bhubaneswar)
16. Neural Networks in Control *by* Deb, Alok Kanti (Int Workshop on Future Directions of ANN at Institute of Management Technology, Nagpur)
17. Tutorial on Computational Intelligence in Control *by* Deb, Alok Kanti (Int. Conf on Power, Controls and Embedded Systems (ICPCES), MNNIT, Allahabad)
18. Tutorial on Sensor Data Fusion (Model Free Techniques) *by* Deb, Alok Kanti (International Conference on System Modelling, Optimisation and Advanced Process Automation (SYMOPA-2010), Thiruvananthapuram)
19. Computational Intelligence in Control *by* Deb, Alok Kanti (Int Conf. on Industrial Electronics, Control & Robotics (IECR-2010), NIT Rourkela)
20. Electrical Safety *by* Deb, Alok Kanti (A 9-Week Duration Course on Industrial Safety Engineering for Tata Steel Officials, Dept of Industrial Engineering & Management, IIT Kharagpur)
21. MEMS and Applications *by* Sen, Siddhartha (NIT Rourkela)
22. MEMS and Microsystems *by* Sen, Siddhartha (NSTL, Visakhapatnam)
23. National Systems Conference *by* Mukhopadhyay, Siddhartha (National Institute of Technology Karnataka, Surathkal)
24. *by* Mukhopadhyay, Siddhartha (Administrative Staff College of India, Hyderabad)
25. *by* Mukhopadhyay, Siddhartha (Bidhan Nagar Govt. High School, Kolkata)
26. Fuzzy Control Theory *by* Mohan, Bosukonda Murali (GITAM Inst of Tech, Visakhapatnam)
27. Introduction to Fuzzy Control *by* Mohan, Bosukonda Murali (Avanthi Inst of Engg & Tech, Visakhapatnam)
28. Reduced Order Modelling. *by* Pal, Jayanta (Hi-Tech College of Engineering, Bhubaneswar-751025)
29. Simplification of Large Scale Dynamical Systems *by* Pal, Jayanta (Gandhi Institute of Engineering and Technology, Gunupur, Orissa)
30. Power Flow Solution Methods *by* Sinha, Avinash Kumar (CESC, Kolkata)
31. Real Time Monitoring of Power Systems Using Synchro-Phasor Measurements *by* Sinha, Avinash Kumar (IEEE Industry Day, Bangalore)

Books Published

1. Alok Barua: Fundamentals of Industrial Instrumentation *published by* Wiley India (2011)

Seminars, Conferences and Workshops Organised

1. Tutorial on Virtual HV Lab

Short-Term Courses, Training Programmes and Workshops organised

1. Training Program for Tata Power Engineers (05-07-2010 to 15-07-2010)

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1. Control oriented technique for the nonlinear element extraction of the long term blood pressure regulation, By M. Shahin, & S. Maka, *Int. Jnl. Biomedical Engg. & Tech.* (0)
2. Functional network changes associated with sleep deprivation and fatigue during simulated driving: Validation using blood biomarkers By Sibsambhu Kar, Aurobinda Routray and Bibhukalyan Prasad Nayak *Clinical Neurophysiology* Vol.122, page 966 (2010)
3. A Risk Based Contingency Analysis Method Incorporating Load and Generation Characteristics. By J. Hazra and A. K. Sinha *International Journal of Electrical Power and Energy Systems* Vol. 32, pp 433-442 (2010)
4. A multiobjective method for network reconfiguration By J.S. Savier and D.Das *International Journal of Engineering* Vol.22-4 333-350 (2009)
5. A New Method for Edge Extraction in Images using Local Form Factors By S.Gupta, A. Routray & A. Mukherjee *Int Journal of Computer Applications* vol.11, page 15-22 (2011)
6. A novel multi-objective PSO for electrical distribution system planning incorporating distributed generation By S. Ganguly N.C. Sahoo and D.Das *Journal of Energy Systems* Vol.1 291-337 (2010)
7. A positive sequence directional relaying algorithm for series compensated line By P. Jena and A. K. Pradhan *IEEE Transaction on Power Delivery* VOL-25, PP-2288-2298 (2010)
8. A procedure using support vector data description and mutual information for end price assessment in online C2C auction By Mamata Jenamani, Aurobinda Routray and Vikash Singh *Electronic Commerce Research* DOI: 10.1007/s10660 (2011)
9. A Shunt Active Power Filter with Enhanced Performance Using ANN-Based Predictive and Adaptive Controllers By A. Bhattacharya and C. Chakraborty *IEEE Transactions on Industrial Electronics* Vol. 58, pp.421-428 (2011)
10. An experimental analysis of electrostatically vibrated array of polysilicon cantilevers By Chakraborty S., Swamy K.B.M., Sen S. and Bhattacharyya T.K. *Microsystem Technologies* vol.16, pp.2131-2145 (2010)
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13. Performance study of a Constant Phase Angle Based Impedance Sensor to Detect Milk Adulteration, By Siuli Das, Mulinti Sivaramakrishna, Karabi Biswas, and Bhaswati Goswami *Sensors and actuators A: Physical.* 167, 273-278 (2011)
14. Cancer Classification from Gene Expression Data by NPPC Ensemble By Ghorai, S. Mukherjee, A. Sengupta S Dutta, P.K. *IEEE/ACM Trans. on Computational Biology and Bioinformatics* vol. 8 no. 3 (2011)
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16. Classification of Power Quality Disturbances Using Parzen Kernels By Mihir Narayan Mohanty, Vinay Kumar, Aurobinda Routray, Prithviraj Kabisatpathy *International Journal of Emerging Electric Power Systems* Vol.11 (2010)
17. Comparison of ICA and WT with S-transform based method for removal of ocular artifact from EEG signals By Kedarnath Senapati, Aurobinda Routray *Journal Biomedical Science and Engineering* Vol.4 page339-349 (2011)
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19. Damping Oscillations in Tie-power and Area Frequencies in a Thermal Power System with SMES-TCPS Combination By R.J. Abraham, D.Das and Amit Patra *International Journal of Electrical Systems* Vol.7-1 71-80 (2011)
20. Delay-range-dependent stability criterion for interval time-delay systems with nonlinear perturbations, By K. Ramakrishnan and Goshaidas Ray *International J. of Automation and Computing* Vol.8, 141-146 (2011)
21. Design and Performance Studies of a Hybrid Voltage Regulator By R. B. Panguloori, D. Kastha and A. Patra *IET Power Electronics* 3 (6): 915-924 (2010)
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23. Design of an SOI-MEMS High Resolution Capacitive Type Single Axis Accelerometer By Mistry K.K., Swamy K.B.M. and Sen S. *Microsystem Technologies* vol.16, pp.2057-2066 (2010)
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25. Design Optimization and Dynamic Performance Analysis of a Stand-Alone Hybrid Wind-Diesel Electrical Power Generation System By T. K. Saha, D. Kastha *IEEE Transaction on Energy Conversion* Vol. 25,pp.1209-1217 (2010)
26. Design Principles of a Symmetrically Coupled Inductor Structure for Multiphase Synchronous Buck Converters By H. N. Nagaraja, D. Kastha, A. Patra *IEEE Transaction on Industrial Electronics* vol. 58, pp.988-997 (2011)
27. Detecting the Genesis of fatigue in trained drivers by studying the variation of Blood Biochemical Parameters under simulated driving condition By Bibhukalyan Prasad Nayak, Gyan Ranjan Satpathy, Biswajit Maharathi and Aurobinda Routray *International Journal of Biological Sciences and Engineering* to appear (2011)
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57. Stability analysis of interconnected time-delay systems in a generalized framework By S Ghosh, S.K. Das, G.Ray *IET Control Theory and Applications* To appear (0)
58. State estimation using orthogonal functions By B.M. Mohan & S.K. Kar *Int. J. Mathematics and Engineering with Computers* vol. 1, pp. 1-20 (2010)
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8. Adaptive relay setting of series compensated line using phasor measurement unit data., By S. Sarangi, A. K. Pradhan, *International Conference on Electrical Power and Energy Systems*, MNIT BHOPAL, (2010)
9. An evolutionary computation based approach for reduced order modelling of linear systems., By Bobby Philip, Jayanta Pal, *2010 IEEE International Conference on Computational Intelligence and Computing Research.*, Tamilnadu Coll.of Engg, Coimbatore., (2010)
10. An improved delay-dependent stability criterion for neutral systems with mixed time-delays and nonlinear perturbations, By K. Ramakrishnan and Goshaidas Ray, *IEEE INDICON*, Jadavpur University, Kolkata., (2010)
11. An RF based Centrifuge Calibrator for Accelerometer Testing, By Zadfiya Rajesh L., Swamy K.B.M and Siddhartha Sen, *6th International Conference on Electrical and Computer Engineering (ICECE 2010)*, Dhaka, Bangladesh, (2010)
12. A comparative assessment of power swing detection techniques, By P.K. Nayak, J. Ganeswara Rao, P. Kundu and A. K. Pradhan and P. Bajpai., *IEEE PEDES-2010-POWER INDIA.*, New Delhi, (2010)
13. Bi-annual Sun Tracking for Solar PV Module Support Structure: Study and Implementation, By P. Bajpai, V. Dash and N.K. Kishore, *National Power System Conference*, Hyderabad, (2010)
14. Bifurcations in load resonant DC/DC converters, By K.Mandal, S.Banerjee and C.Chakraborty, *IEEE-ISCAS 2010*, Paris, France, (2010)
15. Bifurcation behavior of a boost converter under voltage controlled pulse skipping modulation in the light of 1-D discontinuous map model, By S. Kapat, S. Banerjee and A. Patra, *IEEE International Symposium on Circuits and Systems*, USA, (2010)
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19. Delay-range-dependent stability criteria for Lur $\hat{\circ}$ systems with interval time-varying delay, By . K. Ramakrishnan and Goshaidas Ray, *IEEE CDC 2010*, Atlanta, GA, (2010)
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35. Fuzzy Logic based Fast Critical Clearing Time Assessment, By B.K.Saha Roy, A.K.Pradhan, A.K.Sinha, *16th National Power System Conference*, Hyderabad,India, (2010)
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41. Parametric Analyses on Impulse Voltage Generator and Power Transformer Winding for Virtual High Voltage Laboratory Environment, By Sachin Kumar, N K Kishore and B Hemalatha, *16th NATIONAL POWER SYSTEMS CONFERENCE (NPSC-2010)*, Hyderabad, (2010)
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44. Rational approximation of fractional operator - A comparative study., By M. Khanra, J. Pal, K. Biswas, *International Conference on Power, Control and Embedded Systems (ICPES 2010)*, MNNIT, Allahabad, (2010)
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46. Realization of a Fractional Order Filter using PMMA coated Constant Phase Element, By Madhab Ch. Tripathy, Karabi Biswas and Siddhartha Sen, *NATCONIC 2011*, HIT, Kolkata, (2011)
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48. Root locus method for any fractional order commensurate system, By Abir De and Siddhartha Sen, *Techsym*, Kharagpur, (2011)
49. Shunt Active Power Filter/STATCOM Topology for Medium/High Power Applications: Parallel Inverters Operating at Different Switching Frequencies, By T.S.Basu, A. Bhattacharya and C.Chakraborty, *IEEE-IECON 2010*, Glendale, AZ, USA, (2010)
50. Sizing Optimization and Analysis of a Stand-alone WTG System Using Hybrid Energy Storage Technologies, By Prabodh Bajpai, Sowjan Kumar and N. K. Kishore, *PEA-AIT International Conference on Energy and Sustainable Development: Issues and Strategies (ESD 2010)*, Chiang Mai, Thailand., (2010)
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55. Wide area measurement based out-of-step detection technique, By 30. P. Kundu, J. Ganeswara Rao, P. K. Nayak and A. K. Pradhan, *IEEE PEDES-2010-POWER INDIA*, NEW DELHI, (2010)

G S Sanyal School of Telecommunication

Head

Prof. Saswat Chakrabarti
Prof. Debasish Datta

Up to 30.06.2010
From 01.07.2010

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

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 to 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. Chakrabarti, Saswat, *Member - IEEE*

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. Energy Efficient Radio for Next Generation Cellular (Vodafone, Rs.185.00 Lakhs)
4. Fading Channel & Mobile Communications (MHRD, Rs.53.00 Lakhs)
5. Self Configuring Networks: Flexible Spectrum Sharing for Home Base Station in Next Generation Mobile Telecommunication Systems (Vodafone, Rs.19.00 Lakhs)
6. STANDARDIZATION ACTIVITY IN 4G & BEYOND IN RAN. (Vodafone, Rs.32.75 Lakhs)
7. Studies on FadeMitigation Control for Microwave Satellite Signal Propagation (ISRO, Rs.10.00 Lakhs)

Invited Lectures by Faculty Members

1. Advances in Telecommunication Engineering *by* Chakrabarti, Saswat (KIST, Bhubaneswar)
2. Advances and Opportunities in Telecommunications *by* Chakrabarti, Saswat (VSSUT, Burla, Odisha)

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* The River Publishers Series in Communications (2009)
2. Ramjee Prasad, Suvra Sekhar Das, Muhammad Imadur Rahman: Adaptive PHY-MAC Design for Broadband Wireless Systems *published by* The River Publishers Series in Communications (2010)

Papers Published in Journals

1. Comprehensive error performance analysis of distributed selection combining with multi-antenna amplify-and-forward relay over Nakagami-m fading channels *By* S. N. Datta, S. Chakrabarti, and R. Roy *IET Electronic Letters* vol. 46,pp.1523-25 (2010)
2. Impact of Transmission Impairments on Demultiplexed Channels in WDM PONs employing AWG-based Remote Nodes *By* J. Ratnam, S. Chakrabarti and D. Datta *IEEE/OSA J. of Optical Communications and Networking* Vol. 2,10, pp848-858 (2010)
3. Unified Error Analysis of Dual-Hop Relay Link in Nakagami-m Fading Channel *By* 1. S. N. Datta and Saswat Chakrabarti *IEEE Comm. Letter* (2010)

Papers Presented in Conferences

1. A Network Coding based Probabilistic Routing scheme for Wireless Sensor Network, *By* R. R. Rout, S. K. Ghosh and S. Chakrabarti, *Proc. WCSN*, Allahabad, (2010)
2. Closed-form error analysis of noncoherent FSK for dual hop relay network in Nakagami-m fading channel, *By* Soumendra Nath Datta and Saswat Chakrabarti, *Nat. Conference in Communications*, IIT Chennai, (2010)
3. Comparison of Rain Fade Mitigation Techniques using CRC and embedded Pilot methods in Ka-band Satellite Links, *By* Suvra Sekhar Das, Shatanu Mondal, Jayeeta Saha, Kalyan Bandyopadhyay, *73rd IEEE VTC Spring*, Budapest Hungary, (2011)
4. Comparison of SVD-MIMO with Antenna Selection BLAST using Linear Receivers under Channel Estimation Errors for ITU Channels, *By* Suvra Sekhar Das, Subhendu Batabyal, *74th IEEE VTC Fall*, San Francisco, CA, USA, (2011)
5. Error analysis of noncoherent FSK with variable gain relaying in dual-hop Nakagami-m relay fading channel, *By* S. N. Datta, S. Chakrabarti and R. Roy, *Proc. SPCOM*, IISc Bangalore, (2010)
6. Issues in Femtocell Deployment in Broadband OFDMA Networks : 3GPP LTE a case study, *By* Suvra Sekhar Das, Prabhu Chandhar, Soumen Mitra, Priyangshu Ghosh, *74th IEEE VTC Fall*, San Francisco, CA, USA, (2011)
7. Performance analysis of distributed selection combining with dual-hop relay link in Rayleigh fading channel, *By* S. N. Datta, S. Chakrabarti and R. Roy, *Proc. ICCS*, Singapore, (2010)
8. Performance analysis of square M-QAM with dual-hop relay link in Nakagami-m fading channel, *By* S. N. Datta, S. Chakrabarti and R. Roy, *Proc. SPCOM*, IISc Bangalore, (2010)

Department of Humanities & Social Sciences

Head

Prof. Damodar Suar Up to 30.09.2010
Prof. K. B. L. Srivastava From 01.10.2010

Professors

Basu, Partha *Ph.D.(Calcutta Univ)*, Quantitative Economics with special ref. to Efficiency and Growth
Chatterjee, Suhita Chopra *Ph.D.(Bombay)*, Sociology of Health /Medical Sociology / Sociology of Science
Chatterjee, Bani *Ph.D.(BHU, Varanasi)*, Development Planning, Manpower Management, International Finance
Giri, Vijai Nath *Ph.D.(IIT Kharagpur)*, Communication Studies
Roy, Anjali *Ph.D.(Bombay)*, Postmodern and postcolonial theory and literature, Culture Studies, Media Studies, Performance Studies, Diaspora Studies, Oral Histories, Partition and Punjab Studies, Folklore
Srivastava, Kailash Bihari Lal *Ph.D.(IIT Kanpur)*, Human Resource Management and Development, Organizational Behaviour, Knowledge management and innovation
Suar, Damodar *Ph.D.(IIT Kharagpur)*, Social and organizational psychology, Cognitive psychology
Tewari, Hare Ram *Ph.D.(IIT Kharagpur)*, Sociology

Associate Professors

Chakraborti, Chhanda *Ph.D.(Univ of Utah)*, Bioethics, Business ethics, Philosophy of Mind, Logic and Philosophy of logic
Chakraborty, Jayshree *Ph.D.(IIT Kanpur)*, Syntax, Semantics, Applied Linguistics, Sociolinguistics, Indian English, Communication
Goswami, Kishor *Ph.D.(IIT Kharagpur)*, Development Economics (Globalization - Gender and Trade - Poverty - Food Security), Agricultural Economics, Economics of Biofuels
Nayak, Narayan Chandra *Ph.D.(Utkal Univ)*, Labour Market Dynamics Social Sector Development Agricultural Economics International Finance
Patnaik, Priyadarshi *Ph.D.(Utkal Univ)*, Indian aesthetics, Visual Culture and Communication, Cultural Translation theory and practice, Media and Multimedia Studies

Assistant Professors

Behera, Bhagirath *Ph.D.(Univ. of Bonn, Germany)*, Environmental and Natural Resource Economics, Development Economics
Das, Saswat Samay *Ph.D.(Utkal Univ.)*, Postmodern/postcolonial studies Critical theory Continental Philosophy
Komaresha, H. S. *Ph.D.(IIT Kharagpur)*, Indian Womens Short Fiction in English
Mahakud, Jitendra *Ph.D.(IIT, Bombay)*, Equity Research, Financial Economics, Corporate Finance, Fixed Income Securities, Financial Econometrics, Financial Markets
Mishra, Pulak *Ph.D (Vidyasagar University)*, Industrial Economics, Public Economics, Economics of Rural Development
Pradhan, Rabindra Kumar *Ph.D.(Utkal Univ.)*, Organisational Behaviour, Positive Psychology, Social Psychology, Industrial & Organisational Psychology, Human Resource Development and Management
Singh, Seema *Ph.D.(BHU)*, Communication Skills, Indian Women Writing in English & Feminist Narratology, Technical Communication, Managerial Communication Styles & Employee Outcomes

Faculty Appointments

Prof. P S Das Adjunct Faculty

Fulbright-Nehru Fellow of USIEF

Prof. Roman Taraban

Ph.D.

Cognitive Psychology

Adjunct faculty

Prof. Dipankar Dasgupta

Ph. D.

Economics of Growth

Adjunct faculty

Prof. Achin Chakraborty

Ph. D.

General Equilibrium and Welfare Economics

Faculty Promotions

Jayshree Chakraborty

Associate Professor

Kishor Goswami

Associate 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 behaviour 13. Interpersonal, intercultural and organizational communication 14. Visual aesthetics 15. Business ethics, corporate social responsibility.

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

New Acquisitions

1. 1. Library modernization 2. Development of economics laboratory 3. Upgradation of language lab 4. Psychological testing materials

Lectures by Visiting Experts

1. Guest Lecture by Mr. Tapas Acharya (Chief Manager, HR, Haldia Petrochemicals)
2. Guest Lecture by Mahmood Hassan (Rtd. Head, HR, Tata Steel)
3. Direct and Indirect tax on Products and Services by Prof. Pinaki Chakraborty (National Institute of Public Finance and Policy, New Delhi)
4. Inequality in the Functioning Space: Some Conceptual, Measurement and Policy Issues by Prof. Achin Chakraborty (Institute of Development Studies Kolkata)
5. The Social and Economical Changes in Poland: Transformation from Communist to Post Communist Society and state by Dr. Pabjan Barbara (Member of the academic staff at the Institute of Sociology, Wroclaw University, Poland)
6. Guest Lecture by Dr. A.K. Sinha (Sr. Vice President, Jayashree Textiles)
7. Pedagogy Matters by Dr. Maria Larsson (Lund University Cognitive Science Center, Lund University, Sweden)

Doctoral and MS Degrees Awarded

1. Upasana Singh : Exploring the dynamics of interpersonal and organizational trust(Ph.D)
2. Anupam Ghosh : Beyond Corporate Social Responsibility: On Sustainable Business Practices of Indian Oil and Gas Sector(Ph. D.)
3. Runa Chattopadhyay : An assessment of group housing affordability in Kolkata(Ph.D)
4. Amrita Basu : Representation of Women through the Lens of Narrative Structure: The Case of Indian Music Videos(Ph. D.)
5. Prabha : Rural Poverty in Uttar Pradesh: A District Level Analysis(Ph.D)
6. Biswajit Mohapatra : Techo-managerial Dimensions of Watershed Development and Management Influencing Sustainable Livelihood(Ph. D.)
7. Sandip Ghosh Hazra : Service Quality and its Relationship with Customer Satisfaction, Loyalty, Commitment and Trust in Indian Banking Industry(Ph. D.)
8. Pankaj Singh : Antecedents and Consequences of Job Burnout among Indian Software Developers(Ph. D.)
9. Suchitra Pradhan : Cancer Management at the Regional Cancer Centre in Orissa: Womens Experience of Breast and Cervix Cancer Care(Ph. D.)
10. Shiva Prasad H.C. : Antecedents and Moderators of India Software Professionals Performance(Ph. D.)

Member - Professional Bodies

1. Basu, Partha, *Life Member* - Indian Academy of Social Sciences
2. Chakraborti, Chhanda, *Regular member* - International Network of Women Philosophers, UNESCO
3. Chakraborti, Chhanda, *Member* - American Philosophical Association (APA)
4. Chakraborti, Chhanda, *Life member* - Indian Philosophical Congress
5. Chakraborti, Chhanda, *Member* - Forum of Medical Ethics Society
6. Chakraborti, Chhanda, *Member* - International Association of Bioethics
7. Chakraborti, Chhanda, *Nominated Program Advisor* - International Program Committee, 14th Congress of Logic, Methodology and Philosophy of Science (LMPS)
8. Chakraborty, Jayshree, *Life Member* - Dravidian Linguistics Association
9. Chakraborty, Jayshree, *Life Member* - Linguistic Society of India
10. Chatterjee, Bani, *Life Member* - Indian Academy of Social Sciences
11. Chatterjee, Bani, *Life Member* - Regional Science Association
12. Chatterjee, Bani, *Life Member* - International Society of Adult Education
13. Giri, Vijai Nath, *Regular* - International Communication Association, USA
14. Goswami, Kishor, *Regular* - International Society on Multiple Criteria Decision Making (MCDM), USA
15. Goswami, Kishor, *Life Member* - Agricultural Economics Research Association, New Delhi, India
16. Goswami, Kishor, *Life Member* - Indian Red Cross Society, India
17. Goswami, Kishor, *Life Member* - Circle for Child and Youth Research Cooperation in India â€œ CCYRCL, Lucknow, India
18. Komalesha, H. S., *Member* - American Literary Translators Association
19. Nayak, Narayan Chandra, *Life Member* - Indian Economic Association
20. Nayak, Narayan Chandra, *Member* - Regional Science Association, India
21. Nayak, Narayan Chandra, *Member* - Poverty and Economic Policy Research Network (PEP-Network)
22. Patnaik, Priyadarshi, *Regular* - Word and Music Association
23. Pradhan, Rabindra Kumar, *Life Membership* - Indian Academy of Applied Psychology
24. Pradhan, Rabindra Kumar, *Life Membership* - INDIAN Society for Training and Development
25. Pradhan, Rabindra Kumar, *Annual* - National Academy of Psychology, India
26. Pradhan, Rabindra Kumar, *Life Membership* - Indian Science Congress Association
27. Pradhan, Rabindra Kumar, *Annual* - International Association of Applied Psychology
28. Roy, Anjali, *Life* - IASA
29. Roy, Anjali, *Regular* - IACS
30. Roy, Anjali, *President* - AASA
31. Roy, Anjali, *Life* - IACALS
32. Singh, Seema, *member* - Multi - Ethnic Literatures of the World, MELOW â€œ India
33. Singh, Seema, *Member* - International Association of Business Communicators (IABC), San Fransisco, California, USA
34. Singh, Seema, *member* - Indian Association for Commonwealth Literature and Language Studies (IACLALS), New Delhi
35. Singh, Seema, *Member* - Multi - Ethnic Literatures of the US, MELUS â€œ India
36. Singh, Seema, *Member* - Association for Business Communication (ABC), NY, USA
37. Singh, Seema, *Member* - International Association for the Teachers of English as a Foreign Language (IATEFL), University of Kent, UK
38. Singh, Seema, *member* - English Language Teachers Association of India (ELTAI), Chennai
39. Singh, Seema, *Regular* - Association for Learning Technologies (ALT), Oxford, UK
40. Singh, Seema, *member* - Indian Society for Technical Education (ISTE), New Delhi
41. Srivastava, Kailash Bihari Lal, *Member of the Executive Committee* - Academy of International Business, India Chapter
42. Srivastava, Kailash Bihari Lal, *Member* - Indian Academy of Management
43. Srivastava, Kailash Bihari Lal, *Regular* - National Academy of Psychology
44. Suar, Damodar, *Member* - Association for Psychological Science
45. Suar, Damodar, *Life Member* - National Academy of Psychology
46. Suar, Damodar, *Life Member* - Indian Society of Training and Development
47. Suar, Damodar, *Member* - Asian Association of Social Psychology

Member - Editorial Board

1. Chakraborti, Chhanda (2009) *Member* - Indian Journal of Medical Ethics
2. Goswami, Kishor (2009) *Reviewer* - International Journal of Ecology and Development
3. Goswami, Kishor (2011) *Associate Editor* - The International Journal of Economics and Business Modeling
4. Goswami, Kishor (2011) *Associate Editor* - Journal of Business Excellence
5. Goswami, Kishor (2009) *Reviewer* - Journal of Rural and Community Development, Canada
6. Singh, Seema (2009) *Member, Board of Reviewers, Management Communication Quarterly, SAGE pub.* - Management Communication Quarterly
7. Singh, Seema (2008) *Board of Reviewers, Management Communication Quarterly, SAGE pub.* - Management Communication Quarterly
8. Srivastava, Kailash Bihari Lal (0) *Reviewer* - ICFAI Journal of Knowledge Management
9. Srivastava, Kailash Bihari Lal (0) *Reviewer* - Psychological Studies
10. Srivastava, Kailash Bihari Lal (0) *Reviewer* - ICFAI Journal of Mergers and Acquisitions
11. Srivastava, Kailash Bihari Lal (0) *Member Editorial board* - Journal of Technology & Management
12. Srivastava, Kailash Bihari Lal (2010) *Member, Editorial Advisory Board* - Journal of Contemporary research in Management
13. Suar, Damodar (2002) *Associate Editor* - Psychological Studies

Awards & Honours

1. Chakraborti, Chhanda (2010) *Director dEtudes Associe*
2. Roy, Anjali (2010) *Senior Research Fellowship, Asia Research Institute National University of Singapore*

Fellowships

1. Roy, Anjali (2010) *Full Travel Grant to present invited paper in Conference on Lock n Loll*
2. Roy, Anjali (2010) *Full Travel Grant to give a public talk in Conference on Diasporizing Punjab Reorienting Bhangra*
3. Roy, Anjali (2010) *Senior Research Fellowship, Asia Research Institute National University of Singapore*

Sponsored Research Projects

1. Agro-Management Practices Adopted by the Rubber Growers in Assam – A Case Study (Rubber Research Institute of India, India, Rs.0.00 Lakhs)
2. Bangla Treebank (CILL, Mysore, Rs.30.00 Lakhs)
3. Cognition in context (Swedish Research Council, Sweden, Rs.0.00 Lakhs)
4. Developing Corporate Governance Norms for SMEs (National Foundation for Corporate Governance, C/O - Confederation of Indian Industry, Rs.6.50 Lakhs)
5. Economic Value Addition of Jatropa Based Products in Northeast India (National Oilseeds and Vegetable Oils Development (NOVOD) Board, Ministry of Agriculture, Govt. of In, Rs.12.05 Lakhs)
6. Expansion of Trade and Development of Women Entrepreneurs in Handloom Industry in Assam (Indian Council of Social Science Research, Rs.5.52 Lakhs)
7. Functional Explanations in Language : an Inquiry in the Context of Indian Languages (IIT, Kharagpur (ISIRD), Rs.1.60 Lakhs)
8. Ganga River Basin Management Plan: Socio-Economic and Cultural Aspects (Ministry of Forests and Environment, Government of India, New Delhi, Rs.19.45 Lakhs)
9. Impact Assessment of Mahatma Gandhi NREGS in Orissa: A Study of Mayurbhanj and Ganjam District (Indian Council of Social Science Research, New Delhi, Rs.5.85 Lakhs)
10. 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)
11. Monitoring Convergence between NREGS and Ongoing Schemes of the other Ministries in Orissa (UNDP, India, Rs.10.29 Lakhs)
12. Performing India (SSHRC, Rs.18.00 Lakhs)
13. Setting up Community Radio at IIT Kharagpur (SRIC, Rs.3.00 Lakhs)
14. Sustainability of Biodiesel Industry in North East India (South Asian Network for Development and Environmental Economics, Rs.9.15 Lakhs)
15. The Transnational Flows of Bollywood and its Role in Promoting in India Canada Relations (Shastri Indo-Canadian Institute, Rs.6.00 Lakhs)

Consultancy Projects

1. Setting up of the Indian Institute of Corporate Affairs (Ministry of Corporate Affairs, Rs.200.00 Lakhs)

Visits Abroad by Faculty Members

1. Singh, Seema - present paper - 19th MELTA International Conference on Transformations in English Language Teaching (Kuala Lumpur, Malaysia,) 7th – 8th Jun. 2010
2. Singh, Seema - present paper at the 3rd Redesigning Pedagogy Conference (Singapore,) 31-05-2009 to 06-06-2009

3. Goswami, Kishor - Invited by SANDEE to a Training Course on Environmental and Natural Resource Economics (Asian Institute of Technology, Bangkok,) May 3-20, 2010
4. Roy, Anjali - Public Talk in a Confence on Diasporizing Punjab and Reorienting Bhangra (University of British Columbia Vancouver Canada,) 1 week
5. Chakraborti, Chhanda - To deliver invited lectures at European Summer School on Health Law and Bioethics (1. University of Toulouse III (Paul Sabatier University), Toulouse, France,) June 30-July 9, 2010
6. Chakraborti, Chhanda - research collaboration (INSERM, Ethics Division, Paris, France,) June 2010
7. Chakraborti, Chhanda - Joint research project (Lund University, Sweden,) May 2010
8. Pradhan, Rabindra Kumar - TO PRESENT A SCIENTIFIC PAPER IN THE 27TH INTERNATIONAL CONGRESS OF APPLIED PSYCHOLOGY (MELBOURNE, AUSTRALIA,) 11-16 July 2010
9. Roy, Anjali - Senior Research Fellowship Asia Research Institute National University of Singapore (Singapore,) May to July 2010
10. Roy, Anjali - Invited paper at Conference (University of Heidelberg Germany,) 4 days
11. Goswami, Kishor - Invited by SANDEE to the 20th Biannual Research and Training Workshop (Negombo, Sri Lanka,) July 7-10, 2010
12. Goswami, Kishor - Invited by SANDEE to a Research and Training Workshop (Kathmandu, Nepal,) December 8-10, 2010
13. Nayak, Narayan Chandra - To present a paper at the International Conference on Business and Economic Research (ICBER 2010) (Malaysia,) November 26-28
14. Chakraborty, Jayshree - To attend the international conference Said and Unsaid. (Vlora, Albania,) September 10-14, 2010

Invited Lectures by Faculty Members

1. Logic and Logics by Chakraborti, Chhanda (V R Siddhartha College of Engineering, Vijayawada)
2. Bioethical issues in healthcare and healthcare delivery: Perspective from India by Chakraborti, Chhanda (University of Toulouse III, France)
3. Basic Managerial Skills-Part-I by Pradhan, Rabindra Kumar (Integrated Test Range, DRDO, Chandipur, Orissa)
4. Basic Managerial Skills-Part-II by Pradhan, Rabindra Kumar (Integrated Test Range, DRDO, Chandipur, Orissa)
5. Career Planning by Pradhan, Rabindra Kumar (Integrated Test Range, DRDO, Chandipur, Orissa)
6. Mentoring by Pradhan, Rabindra Kumar (Integrated Test Range, DRDO, Chandipur, Orissa)
7. Motivation & Communication by Pradhan, Rabindra Kumar (NIST, Vishkhapatam)
8. Executives EQ by Pradhan, Rabindra Kumar (NIST, Sciences12-15 December 2010)
9. Emotional Intelligence: Assesment & Intevention by Pradhan, Rabindra Kumar (ISTD, Kolkata Chapter)
10. CSR and Responsible Business Practices by Chakraborti, Chhanda (Nasscom Foundation, Kolkata)
11. On the ontological status of extra-physical facts by Chakraborti, Chhanda (Jawaharlal Nehru University, New Delhi)
12. Regression Analysis by Mishra, Pulak (Department of Commerce with Farm Management, Vidyasagar University)
13. Public Talk on Reorienting Bhangra in the New Millennium by Roy, Anjali (University of British Columbia Vancouver)
14. Bollywood at Large: Who is Watching Bollywood Films? by Roy, Anjali (IIT Gandhinagar)
15. Annual Lecture on Bhangra's "Cool" Return in the Global Village by Roy, Anjali (IIT Guwahati)
16. Tilism and The Cinema of Enchantment by Roy, Anjali (St Xaviers College Kolkata)
17. Cosmopolitans of a Borderless Space by Roy, Anjali (Tarakeswar)
18. Functional Aspects of English in India by Komalesha, H. S. (C R Engineering College, Tirupati)
19. Three Cheers and Three Curses: English in India by Komalesha, H. S. (MIT, Mandsaur)
20. Role of Linguistics in Language Teaching by Chakraborty, Jayshree (University of Ranchi)
21. Pragmatics and Language Teaching by Chakraborty, Jayshree (University of Ranchi)
22. Postdisaster Trauma and Predisaster Preparedness by Suar, Damodar (International Conference on Advances in Military Psychology: Soldier Preparedness, DIPR, DRDO, Delhi)
23. Hypothesis, Sampling, Structural Equation modeling by Suar, Damodar (KIIT School of Management)

Books Published

1. Anjali Gera Roy: Bhangra Moves: From Ludhiana to London and Beyond *published by* Aldershot: Ashgate (2010)
2. P. Patnaik: How to Face Interviews and Succeed in Group Discussions *published by* Foundation Books, Cambridge University Press, India (2011)
3. Patnaik, P (Module II) D. Sen, B. P. Sandilya, Eva Dutta (Module I): Teachers' Handbook on Pracice in Basic Language and Communication Skills *published by* Centre for Advanced Communication, STEP, IIT Kharagpur (2011)

Seminars, Conferences and Workshops Organised

1. Orientation Program for IIT Faculty (Spring 2010)

Short-Term Courses, Training Programmes and Workshops organised

1. A Short Term Course on Research Methodologies in Management and Social (Sciences12-15 December 2010)
2. Financial Modelling and Risk Management: Theory and Practice (May 24-27, 2010)
3. Functional English for Science and Engineering Teachers (14-20 July 2009)
4. Imaginative Reading, Creative Writing: Language, Literature and Teacher (1-7 February 2010)
5. Research Methodologies in Management and Social Sciences, (12-15 December 2010)
6. Short Term Course on Emotional Intelligence: Optimizing Human Performance at Work (23-25 December 20)

Papers Published in Journals

1. Assessing the impact of organizational communication on job satisfaction and job performance By Giri, V. N., & Kumar, B. P. *Psychological Studies* 55,137-143 (2010)
2. 1. Dynamic Adjustment towards Target Capital Structure: Evidence from Indian Companies By S. Mukherjee and J. Mahakud *Journal of Advances in Management Research* Vol.7, pp. 250-266 (2010)
3. 3. Growth Opportunity and Capital Structure Dynamics: Evidence from Indian Manufacturing Companies By S. Mukherjee and J. Mahakud *Journal of Management Research* Vol.10, PP.180-192 (2010)
4. 6. Determinants of Financial Performance of Indian Companies: A Panel Data Analysis By J. Mahakud and S. Mukherjee *Journal of Business Management Research* Vol.1, PP. 1-26 (2009)
5. A Critical Review of Impact of and Adaptation to Climate Change in Developed and Developing Economies By Pradosh, K. N and Bhagirath Behera *Environment, Development and Sustainability* 13(1): 141-162 (2011)
6. A Development Delivery Institution for the Tribal Communities: Experience of the National Rural Employment Guarantee Scheme in India By Pulak, M., Bhagirath Behera and N. C. Nayak *Development Policy Review* 28(4): 457-479 (2010)
7. A Development Delivery Institution for the Tribal Communities: Experience of the National Rural Employment Guarantee Scheme in India By Pulak Mishra, Bhagirath Behera, Narayan Chandra Nayak *Development Policy Review* 28(4), 457-479 (2010)
8. An Examination of Structural Transformation in the Indian Economy By Falguni Pattanaik and Narayan Chandra Nayak *International Journal of Business Policy and Economics* Vol 3(2), pp.327-337 (2010)
9. An Exploration of the Indian Mindset By J. B. P. Sinha, S. Singh, P. Gupta, K. B. L. Srivastava, R. B. N. Sinha, S. Srivastava, A. Ghosh, R. N. Siddiqui, N. Tripathi, M. Gupta, S. Srivastava, Z. Mulla, .Vijayalakshmi, A. Pandey *Psychological Studies* Vol. 55(1), 3-18. (2010)
10. Antecedents and consequences of job burnout among software developers By Singh, P., & Suar, D. *Indian Journal of Training and Development* 40 (1), 65-74 (2010)
11. Assessing Farmers Awareness for Modern Inputs in India By Bipasha Maity and Bani Chatterjee *European Journal of Social Sciences* 15(4):537-543 (2010)
12. Audience response to gender role portrayals in Indian advertisements By Dwivedy, A.K., Patnaik, P., & Suar, D. *Journal of Creative Communications* 4(2), 65-85 (2009)
13. Redesigning Pedagogy: The MI Theory in the English Classroom By seema singh *Asian Journal of Management (In Press)* (0)
14. The Quest for Selfhood in Ladies Coupe: A Study of Feminist Narratology in Anita Nair By Maninder Kapoor & Seema Singh *Wasafiri: The Magazine of International Contemporary Writing (Forthcoming)* (0)
15. What the [Female] Body Remembers: Shauna Singh Baldwin and Feminist Narratology By Maninder Kapoor & Seema Singh *ARIEL: A Review of International English Literature (Forthcoming)* (0)
16. Bhakti and Ashiqi?: Hindi Cinema's Syncretic Heritage By Anjali Gera Roy *Studies in South Asian Film and Media* 2 (1). pp. 41-55 (2010)
17. Celebrating the "Sons of Jats": The Return of the Tribes in the Global Village By Anjali Gera Roy *South Asian Diaspora* 3(2). pp 89-102 (2011)
18. Challenges of ITES Companies in India By Soni Agrawal, Kishor Goswami, and Bani Chatterjee *International Journal of Humanities and Social Science* 1 (2), 218-226 (2011)
19. Climate Change and Rural Livelihoods in Developing Countries: Issues and Challenges By Pradosh K. Nath and Bhagirath Behera *Vidyasagar University Journal of Economics* 14(1): 113-126 (2009)
20. Coconut Oil and Jasmine Flowers By Anjali Gera Roy *Muse India* 30, March-April (2010)
21. Code-switching and Code-mixing as Communication Strategies in Indian English Fiction : A Case Study of The God of Small Things By S. Mukherjee, J. Chakraborty *South Asian Language Review* XIX (0)
22. Compound Verbs in Hindi : A Functional Approach By J. Chakraborty *South Asian Language Review* XIX (0)
23. Corporate Social Responsibility: A Developmental Tool for India By Anupam Ghosh and Chhanda Chakraborti *IUP journal of Corporate Governance* IX (4): 40-56 (2010)
24. Curfew (Short Story) Sanjukta Rout (also printed in volume on Women Writing) By P. Patnaik (Translation) *Sahitya: The Journal of the Comparative Literature Association of India* No.1 (2011)
25. Customer satisfaction in Indian commercial banks through total quality management approach By Lenka, U, Suar, D., & Mohapatra, P. K. J. *Total Quality Management and Business Excellence* 21 (12), 1315-1341 (2010)
26. Determinants of Foreign Equity Investment in the Indian Chemical Industry By Debanjana Chaki and Partha Basu *International Journal of Economic Research* Vol.7, No.1 (2010)
27. Displacement and resettlement in tribal and non-tribal dominated dam projects of Orissa: Who reconstructs livelihood and how? By Hota, L. B., & Suar, D. *Psychology and Developing Societies* 23 (1), 85-120 (2011)
28. Do stakeholder management strategy and salience influence corporate social responsibility in Indian companies? By Mishra, S., & Suar, D. *Social Responsibility Journal* 6 (2), 306-327 (2010)
29. Does corporate social responsibility influence firm performance of Indian companies? By Mishra, S., & Suar, D. *Journal of Business Ethics* 95 (4), 571-601 (2010)
30. Dynamics of Positive Emotions and Creative Potential By Rabindra Kumar Pradhan & Papri Nath *Indian journal of Positive Psychology* 2(1),103-107 (2011)
31. Examining the effect of job experience, career stage, and hierarchy on leadership style in Indian organizations By Giri V. N. & Santra T. *Singapore Management Review* 32, 85-93 (2010)
32. Examining the relationship of organizational communication and job satisfaction in Indian organizations By Kumar, B. P. & Giri, V. N. *Journal of Creative Communications* 4, 177-184. (2009)
33. Experiences of Structural Transformation in Orissa By Falguni Pattanaik and Narayan Chandra Nayak *Indian Journal of Regional Science* Vol43(1),Forthcoming (2011)
34. Factors Influencing Rural Poverty in Uttar Pradesh: A District Level Analysis By Prabha, Kishor Goswami, and Bani Chatterjee *Indian Development Review: An International Journal of Development Economics* 8 (1-2), 317-330 (2010)
35. Foreign Direct Investment in India By Suhita Chatterjee, Bani Chatterjee, P Mishra *Journal of Economics* 16:99-112 (2009)
36. Global flows: Ethnographic Studies of the Hindi Movie in Africa By Anjali Gera Roy *IRCALC.Journal of African Literature and Culture* 7, Across Borders 8th Series.pp 33-48 (2010)

37. Handedness and handwriting: Are they related? By Bhushan, B., Suar, D., & Mandal, M.K. *International Handwriting Analysis Review* 5(1), 1-8 (2010)
38. Impact of service quality on customer satisfaction, loyalty and commitment in Indian banking sector. By Hazra, Sandip, G. & Srivastava, K.B.L. *Indian Journal of Marketing* Vol. XL, (5), 16-24 (2010)
39. Indian Women's Short Fiction in English: Exploring the Neglected Form By Priyanka Tripathi and H S Komalesha *IUP Journal of English Studies* vol.6, no.11 (2011)
40. Influence of personal values and value congruence on unethical practices and work behavior By Suar, D., & Khuntia, R. *Journal of Business Ethics* 97 (3), 443-460 (2010)
41. Influence of social environment on young carers, assistance and consequences of caregiving By Sahoo, R., & Suar, D. *Psychological Studies* 55(4), 323-329. (2010)
42. Kalapurusa of Guruprasad Mohanty By P. Patnaik *Muse India* (2010)
43. Koili Poety: An Exploration By P. Patnaik *Kavya Bharati* 164-182 (2010)
44. Lessons from A H1N1 Influenza Response, India 2009: Ethics in Pandemic Planning By Chhanda Chakraborti *Indian Journal of Medical Ethics (IJME)* VIII (4): 216-219 (2010)
45. Linkage between Rural Poverty and Agricultural Productivity in UP By Prabha, Bani Chatterjee, Kishore Goswami *Journal of Development and Agricultural Economics* 2(2):26-40 (2010)
46. Mergers, Acquisitions and Firms' Performance: Experience of Indian Pharmaceutical Industry By Pulak Mishra, Tamal Chandra *Eurasian Journal of Business and Economics* 3(5), 111-126 (2010)
47. Nature of Ownership and Financial Performance: Experience of Indian Banking Sector By Deepti Sahoo, Pulak Mishra *Vidyasagar University Journal of Economics* 15, 69-77 (2010)
48. Payments for Environmental Services: Issues and Implications for India By Bhagirath Behera, Pulak Mishra and N. C. Nayak *Economic and Political Weekly* Forthcoming (2011)
49. Perception of Entrepreneurial Orientation and Emotional Intelligence By Rabindra Kumar Pradhan & Papri Nath *Global Business Review* Accepted (2012)
50. Performance assessment of Indian software professionals By Prasad H. C. S., & Suar, D. *Journal of Advances in Management Research* 7(2), 176-193 (2010)
51. Positive Writing and Positive Well-being: Issues and Implications By Papri Nath & Rabindra Kumar Pradhan *Indian Journal of Health and Wellbeing* 2(1), 61-64 (2011)
52. R&D Efforts by Indian Pharmaceutical Firms in the New Patent Regime By Pulak Mishra *South East European Journal of Economics and Business* 5(1), 83-94 (2010)
53. Rethinking Entrepreneurship: Developing a Psychosocial Framework By Rabindra Kumar Pradhan & Papri Nath *Journal of Indian Academy of Applied Psychology* (2011)
54. Returns to Scale of Foodgrain Production: An Empirical Test in India By Bipasha Maity and Bani Chatterjee *European Journal of Social Sciences* 14(3):496-501 (2010)
55. Review of Pakistani Diasporas: Culture, Conflict, and Change. Karachi: OUP 2009 By Anjali Gera Roy *South Asian Diaspora* 2(2).pp 233 -235 (2010)
56. Revisiting the relationship between hand preference and lateral eye movement. By Misra, I., Suar, D., & Mandal, M.K. *Psychological Test and Assessment Modeling* 52 (3), 261-271 (2010)
57. Routing Relationships through Diaspora: Short Fiction of Jhumpa Lahiri By Priyanka Tripathi and H S Komalesha *Indian Journal of Postcolonial Literatures* vol.10, no.2 (2010)
58. Social indicators affecting post-tsunami trauma of survivors By Suar, D., Das, N., & Hota, L.B *Journal of Health Management* 12 (4), 483-500 (2010)
59. Structure, Conduct and Performance in Indian Pharmaceutical Industry, A Simultaneous Equations Investigation By Pulak Mishra, Vikas *Review of Development and Change* 15(1), 69-99 (2010)
60. The Evolution of Offshore Outsourcing in India By Soni Agarwal, Kishore Goswami, Bani Chatterjee *Global Business Review* 11(2):239-254 (2010)
61. The Folktales in Achebe's Fiction By Anjali Gera Roy *IRCALC Journal of African Literature and Culture* 8 (2011)
62. Translation and Power: The Indian Context By P. Patnaik *Translation Today* (in press) (2010)

Papers Presented in Conferences

1. Ecology of an Alternative Health Movement in Modern India: Challenges For Biomedicine ?, By Suhita Chopra Chatterjee, *Enigma of Health . Maladies and the Politics of Healing*, IIT GHN, (2011)
2. 1. Determinants of Adjustment Speed to Target Capital Structure: Evidence from Indian Manufacturing Firms, By , *International Conference on Economics and Finance-ICEFR-2011*, Singapore Organized by IEEE, (2011)
3. Bioethical issues in Healthcare and Healthcare Deliveries, By Chhanda Chakraborti, *Conference on Health Laws and Bioethics at 10th European Summer School on Health Laws and Bioethics*, University of Paul Sabatier, France, (2010)
4. Does Crop Diversification Reduce Risks and Make Agriculture Sustainable? Empirical Evidence from India, By Pulak Mishra and Bhagirath Behera, *National Convention on Making Growth Inclusive: Opportunities, Scope and Challenges at the State Level*, Gujarat Institute of Development Research, (2009)
5. Does Emotional Intelligence influence Employees' Job Outcomes? Some evidence from Indian IT Industry, By Rabindra Kumar Pradhan & Debolina Maitra, *27th International Congress of Applied Psychology*, Melbourn Convention Centre, Melbourne, (2010)
6. Economic Crisis and The Crisis on Our Planet, By Bani Chatterjee, *Indian Social Science Congress*, Hyderabad, (2010)
7. Employment Guarantee Act and Rural Labour Forces: An Experience in Orissa, By Pulak Mishra, Bhagirath Behera, Narayan Chandra Nayak, *52nd Annual Conference of the Indian Society of Labour Economics (ISLE)*, Karnataka University, Dharwad, (2010)
8. Employment Intensity of Service Sector in India: Trends and Determinants, By , *International Conference on Business and Economic Research (ICBER 2010)*, Kuala Lumpur, Malaysia, (2010)
9. Encoding Specificity in Discourse, By J. Chakraborty, *SALA 29 Roundtable*, Mysore, (2011)
10. Ethical Language Usage and Pandemic Plans of South Asia, By Chhanda Chakraborti, *3rd National Bioethics Conference: Ethics , Equity and Justice in Healthcare*, All India Medical Sciences, New Delhi, (2010)

11. Group decision: What, where, why, and how?, *By* Suar, D., *XXth Annual Conference of National Academy of Psychology*, JNU, New Delhi, India, (2010)
12. Growth, Poverty and the size of Working Poor in India: A State-level Analysis, *By* Falguni Pattanaik and Narayan Chandra Nayak, *52nd Annual Conference of the Indian Society of Labour Economics (ISLE)*, Karnataka University, Dharwad, (2010)
13. Indices of Revealed Comparative Advantage and Their Consistency with Heckscher-Ohlin Theory, *By* Kaveri Deb and Partha Basu, *15th National Conference of Input-Output Research Association of India*, Hyderabad Central University, Hyderabad, (2011)
14. Infectious diseases, and systemic negligence: Health system constraint in developing countries, *By* Chhanda Chakraborti, *10th World Congress of Bioethics*, Singapore, (2010)
15. Markets for Environmental Services in India: Opportunities and Challenges, *By* Bhagirath behera, Pulak Mishra, Narayan Chandra Nayak, *Seminar on "Climate Change and Markets: Opportunities, Challenges, and Policy Concerns"*, India Habitat Centre, New Delhi, (2011)
16. Organizational Justice, trust, and organizational Citizenship Behaviour, *By* Srivastava, K.B.L., *National Academy of Psychology Conference*, JNU New Delhi, (2010)
17. Positive Emotion & Creative Potential, *By* Papri Nath & Rabindra Kumar Pradhan, *NAOP Annual Conference, India*, JNU, New Delhi, India, (2011)
18. Realizing the Unsaid : an Analysis of Speaker Intent in Interpreter of Maladies, *By* J. Chakraborty, *The Said and the Unsaid*, Vlora, Albania, (2010)
19. Redesigning Pedagogy: The Multiple Intelligences Theory in the English Classroom, *By* seema singh, *19th MELTA International Conference on Transformations in English Language Teaching: Vision, Innovation, Implementation*, Kuala Lumpur, Malaysia, (2010)
20. Spirituality at the Workplace: A Case for Spirituality in Management, *By* seema singh, *National Conference on Spirituality & Ethics in Management, School of Management Sciences, Varanasi*, Varanasi, (2010)
21. Why Meditation - Yoga for life skills education, *By* seema singh, *International Conference on Life Skills Education*, RGNIYD, Sriperumbudur, Sriperumbudur, (2010)

Ranbir and Chitra Gupta School of Infrastructure Design and Management

Head

Prof. Kusam Sudhakar Reddy

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

Department of Industrial Engineering & Management

Head

Prof. Biswajit Mahanty

Professors

Acharya, Damodar	<i>Ph.D.(IIT Kharagpur),</i>
Banerjee, Rabindra Nath	<i>PGDM (Edinburgh UK),.</i>
Mahanty, Biswajit	<i>Ph.D.(IIT Kharagpur),</i> System Dynamics, Operations Research, Information Systems, Project Management
Mohapatra, Pratap Kumar Jagadev	<i>Ph.D.(IIT Kharagpur),</i> Industrial Engineering & Management
Mukherjee, Jyoti	<i>Ph.D.,</i>
Ray, Pradip Kumar	<i>Ph.D.(IIT Kharagpur),</i> Ergonomics, Quality Design, Operations Management, Optimization of Engineering/Service Systems
Sahu, Sadananda	<i>Ph.D.(IIT Kharagpur),</i> 1.Industrial Engineering 2.Supply Chain Management 3.Productivity management
Srinivasan, S	<i>Ph.D.(IIT Kharagpur),</i> Management & Productivity
Tiwari, Manoj Kumar	, Logistics and Supply Chain Management, Manufacturing Systems, Intelligent Search Techniques and Metaheuristics, Production Planning and Control, Continuous Improvement Techniques

Associate Professors

Maiti, Jhareswar	<i>Ph.D.(IIT Kharagpur),</i> Safety engineering and management, Engineering ergonomics and worksystem design, Quality engineering and management
Sarmah, Sarada Prasad	<i>Ph.D.(IIT Kharagpur),</i> Inventory Management, Supply chain Management and logistics, Operations Management

Assistant Professors

Jenamani, Mamata	<i>Ph.D.(IIT Kharagpur),</i> Information System, E-Business, Auctions, Recommender Systems
Jha, Jitendra Kumar	<i>Ph.D.(IIT Kanpur),</i> Supply Chain Management, Inventory Control, Production and Operations Management
Thakkar, Jitesh J	<i>Ph.D.(IIT Delhi),</i> Supply Chain Management, Lean Manufacturing, Performance Measurement

Senior Lecturer

Nandy, Ayan	<i>Ph.D.(IIM, Calcutta),</i>
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Faculty Appointments

Jitendra Kumar Jha	Assistant Professor
Jitesh J Thakkar	Assistant Professor

Faculty Promotions

V.N.A. Naikan	Professor
M.K. Tiwari	Professor
S.P. Sarmah	Associate 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. Logistics and Supply Chain Management, Simulation and Soft Computing, Optimization of Work Systems

Lectures by Visiting Experts

1. Keynote address as the Chief Guest on the Research Scholars Day of the Dept of IE and M by Prof Jatinder N D Gupta (Professor, College of Business Administration, University of Alabama at Huntsville, USA)
2. Modern Manufacturing Systems by Prof Kathryn E Stecke (Professor, University of Texas at Dallas AM)
3. Virtuous and Vicious Cycles: Boom and Bust in Ireland by Prof Malcolm Brady (Faculty Member, Dublin City University Business School of Republic of Ireland)

Doctoral and MS Degrees Awarded

1. Arun Kumar Ray : Bidding decision, supplier retention and business allocation in multi attribute reverse auction with limited supplier base(Ph.D)
2. N C Nayak : Studies on Flexibility in Production Systems(Ph.D)
3. G Partha Sarathi : Modeling Supply Chain Contracts for Short Life-Cycle Products(Ph.D)
4. Vivek Vilas Khanzode : Modeling Risk of Occupational Injury(Ph.D)
5. Sidhartha Siladitya Padhi : E-Procurement in Government: Adoption, Evaluation, and Collusion Studies(Ph.D)

Member - Professional Bodies

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

Member - Editorial Board

1. Mahanty, Biswajit (2007) *Member of Editorial Board* - International Journal of System Dynamics and Policy Planning
2. Tiwari, Manoj Kumar (2009) *Editorial Board Member* - International Journal of Computer Integrated Manufacturing (IJCIM)
3. Tiwari, Manoj Kumar (2009) *Editorial Board Member* - International Journal of Decision Making in Manufacturing and Services
4. Tiwari, Manoj Kumar (2009) *Editorial Board Member* - International Journal of Production Research (IJPR)
5. Tiwari, Manoj Kumar (2009) *Editorial Board Member* - Production Planning and Control (PPC)
6. Tiwari, Manoj Kumar (2011) *Editorial Board Member* - European Journal of Operational Research (EJOR)
7. Tiwari, Manoj Kumar (2009) *Associate Editor* - Journal of Intelligent Manufacturing (JIM)
8. Tiwari, Manoj Kumar (2009) *Editorial Board Member* - Robotics and Computer Integrated Manufacturing (RCIM)
9. Tiwari, Manoj Kumar (2011) *Associate Editor* - Decision Support Systems (DSS)
10. Tiwari, Manoj Kumar (2009) *Associate Editor* - International Journal of System Science (IJSS)
11. Tiwari, Manoj Kumar (2009) *Editorial Board Member* - International Journal of Advanced Manufacturing Technology (IJAMT)

12. Tiwari, Manoj Kumar (2009) *Editorial Board Member* - Journal of Mechanical Engineering Science (Proceedings of the IMechE, Part C)
13. Tiwari, Manoj Kumar (2009) *Editorial Board Member* - Journal of Transportation Security (JTS)

Sponsored Research Projects

1. Developing comprehensive supply chain performance indices and benchmarks for Indian industry (SRIC, IIT Kharagpur, Rs.4.00 Lakhs)
2. ERP System for the Institute (IER) (IIT Kharagpur, Rs.51.00 Lakhs)
3. FIST project for Development of Ergonomics Laboratory (DST, Rs.45.00 Lakhs)
4. Virtual Lab for Simulation and Gaming (MHRD, Rs.52.00 Lakhs)
5. VLS/21 Gaming and Simulation Lab (MHRD, Rs.52.00 Lakhs)

Consultancy Projects

1. Assessment of residual reliability of armoured fighting vehicles through CBM (AFVC) (Military College of Electronics and Mechanical Engineering Hyderabad, India, Rs.0.00 Lakhs)
2. Development of Educational Complex (Tirupati Assets, Kolkata, Rs.50.00 Lakhs)
3. Logistics Solver for Route Optimization and Truck Load Capacity Planning for Proctor & Gamble India Limited (Proctor & Gamble India Limited, Rs.3.00 Lakhs)
4. Pilot Project on Implementation of Lean Engineering Practices at 11BRD, AF (Indian Air Force, Rs.56.00 Lakhs)
5. Restructuring of OLIMMS and providing failure safe system (Neyveli Lignite Corporation Limited, Rs.87.52 Lakhs)
6. Setting up of Indian Institute of Corporate Affairs (Ministry of corporate affairs, Rs.160.00 Lakhs)
7. Studies on the norms in transit / handling and bed loss of ore during material handling in OMC operated mines (The Orissa Mining Corporation Limited, Bhubneswar, Rs.7.50 Lakhs)
8. Study, Development and Implementation of Collaborative Framework for Contract Awarding For Neyveli Lignite Corporation (Neyveli Lignite Corporation, Rs.200.00 Lakhs)
9. Support for database administrator for OLIMMS (Neyveli Lignite Corporation Limited, Rs.19.42 Lakhs)

Visits Abroad by Faculty Members

1. Sahu, Sadananda - Conference (Singapore,) Feb 2011
2. Ray, Pradip Kumar - To attend CAMM-2010 conference/workshop as Invited Speaker and Workshop Resource Person (Cental Queensland University, Gladstone, Australia,) March 16-26, 2010
3. Ray, Pradip Kumar - To attend COMADEM-2009 conference (San Sebastian, Spain,) June 7-12, 2009
4. Sahu, Sadananda - Conference (London,) June-July 2010
5. Sarmah, Sarada Prasad - To present paper and chair technical session in IEOM 2011 (Malaysia,) 22-24th. January,2011
6. Sarmah, Sarada Prasad - To present paper in Int. Conference (London, UK,) 30th. June to 2nd. July 2010

Invited Lectures by Faculty Members

1. Queuing & Simulation by Thakkar, Jitesh J (VGSOM, IIT Kharagpur)
2. Delivered a lecture on Evolutionary Computations in solving the Manufacturing Planning Problems by Tiwari, Manoj Kumar (Jadavpur University, Kolkata)
3. OR Applications on Urban Development by Srinivasan, S (OR Conference, Madurai)
4. Logistics Solver by Tiwari, Manoj Kumar (IIITM Gwalior, Madhya Pradesh)
5. Buyer vendor coordination models in Supply chain by Sarmah, Sarada Prasad (Vanasthali University, Rajasthan)
6. Project Scheduling by Sarmah, Sarada Prasad (Mc Nalley Bharat Ltd. Kolkata)
7. Boost Economy â€ Leveraging SCM Techniques by Ray, Pradip Kumar (IIMM, Calcutta)
8. Recent Developments in Manufacturing Technology by Ray, Pradip Kumar (IE, Agartala)
9. Soft Computing Applications in Decision Technology by Ray, Pradip Kumar (Jadavpur University, Calcutta)
10. Optimal Output from Workforce with Ergo Interventions by Ray, Pradip Kumar (Tata Steel, Jamshedpur)
11. Safety Engineering by Ray, Pradip Kumar (CII, Calcutta)
12. Issues in Quality Design and Control in Manufacturing/Production Systems by Ray, Pradip Kumar (MIT, Bishnupur, West Bengal)

Books Published

1. Rao V Dukkupati and Pradip K Ray: Product and Process Design for Quality Economy and Reliability *published by* New Age International (2010)

Seminars, Conferences and Workshops Organised

1. Project Management Fundamentals

Short-Term Courses, Training Programmes and Workshops organised

1. Industrial safety engineering for Tata Steel Officials (May 24 to July 23, 2010)
2. Industry Professional Training Program on Lean Manufacturing (December 3-6, 2010)
3. Lean Manufacturing (December 3-6, 2010)
4. Short-Term Course on Six Sigma Fundamentals and Applications (November 8 to 11, 2010)
5. Six-Sigma Fundamentals and Applications (4 days)
6. Training on Lean manufacturing practices to industry professionals (03-06 December 2010)
7. Training Programme on Industrial Safety Engineering for Tata Steel Officials (Nine Weeks (May 24 to July 23, 2010))

Papers Published in Journals

1. A CBSFA approach to resolve Distributed Manufacturing Process Planning Problem in Supply Chain Environment By Nishikanta Mishra, Vikas Kumar, Felix Chain and M. K. Tiwari *International Journal of Production Research* (2010)
2. A decision framework for supply chain planning in SMEs: A QFD-ISM enabled ANP-GP approach By Thakkar, J., Kanda, A. and Deshmukh, S.G. *Supply Chain Forum: An International Journal* 12, 4 (2011)
3. A Framework for Integrated Analysis of Quality Defects in Supply Chain By Aravindan S and J Maiti *Quality Management Journal* Accepted (0)
4. A Hybrid Taguchi-Immune Approach to Optimize an Integrated Supply Chain Design Problem with Multiple Shipping By Shubham Agrawal, N. Raghavendra, M. K. Tiwari and S. K. Goyal *European Journal of Operation Research (EJOR)* Vol.203, pp: 95-106 (2010)
5. A mapping framework to evaluate supply chain learning for Small and Medium Scale Enterprises (SMEs) By Thakkar, J., Kanda, A. and Deshmukh, S.G. *The Learning Organization – An international journal* 4 (2011)
6. A Methodology for Evaluation and Monitoring of Recurring Hazards in Underground Coal Mining By Vivek V Khanzode, J Maiti and P K Ray *Safety Science* Accepted (2011)
7. A Methodology for Evaluation and Monitoring of Recurring Hazards in Underground Coal Mining By Khanzode, V. V., J Maiti, and P. K. Ray *Safety Science* Forthcoming (2011)
8. A Procedure using Support Vector Data Description and Mutual Information for End Price Assessment in Online C2C Auction By Jenamani M., Routray A., Singh V.K. *Electronic Commerce Research* DOI: 10.1007/s10660- (2011)
9. A Real Option based Six Sigma project evaluation and selection model By R.K.Padhy, S.Sahu *International Journal of Project Management(available online)* to appear (2011)
10. Agent oriented petroleum supply chain co-ordination: Co-evolutionary particle swarm optimization By Asekh K Sinha, H. K. Aditya, M. K. Tiwari and F. T. S. Chan *Expert Systems with Applications (ESWA)* Vol-38, pp:6132-6145 (2011)
11. Aggregate procurement, production and shipment planning decision problem for a three-echelon supply chain using swarm based heuristic By A. Pal, F. T. S. Chan, B. Mahanty and M. K. Tiwari *International Journal of Production Research (IJPR)* (2010)
12. Aggregate Procurement, Production, and Shipment Planning Decision Problem for A Three-Echelon Supply Chain Using Swarm-Based Heuristics By Pal, A., F.T.S. Chan, B. Mahanty and M.K Tiwari *International Journal of Production Research* 49 (10), 2873 - 29 (2010)
13. An adapted NSGA-2 algorithm based dynamic process plan generation for reconfigurable manufacturing system By Anuj Chube, L. Benyoucef, and M.K. Tiwari *Journal of Intelligent Manufacturing* (2010)
14. An Empirical Investigation of the Relationships between Manufacturing Flexibility and Product Quality By Nayak, N. C. and Ray, Pradip K *Int. Journal of Modelling in Operations Management* Forthcoming (2011)
15. An Integrated Approach for Logistics and Vendor Managed Inventory in Supply Chain By V. Arora, F. T. S. Chan and M. K. Tiwari *Expert Systems with Applications* Vol.37, pp: 39-44 (2010)
16. An observational approach for assessment of dynamic loading during underground coal pillar extraction By Singh R, Singh A K, Maiti J, Mandal P K, Singh R and Kumar R *International Journal of Rock Mechanics and Mining Sciences* Accepted (0)
17. Assessment of mining induced stress development over coal pillars during depillaring By Singh A K, Singh R, Maiti J, Mandal P K, Kumar R *International Journal of Rock Mechanics and Mining Sciences* Accepted (2011)
18. B2B Multi-attribute e-procurement By F. T. S. Chan, M Shukla, M. K. Tiwari, R. Shankar and K. L. Choy *International Journal of Production Research (IJPR)* Vol 49, pp: 321-341 (2011)
19. Capabilities of Product Development Process of a Firm: An Empirical Study By Chimata Murali Krishna and Pradip Kumar Ray *International Journal of Innovation and Technology Management* Forthcoming (2011)
20. Clustering Indian Stock Market Data for Portfolio Management By S. R. Nanda, B. Mahanty and M. K. Tiwari *Expert Systems with Applications* vol-37, pp: 8793-8798 (2010)
21. Clustering Indian Stock Market Data for Portfolio Management By Nanda S.R., B. Mahanty, and M.K. Tiwari *Expert Systems with Applications* 37(12), 8793-8798 (2010)
22. Coordinating Collaborative Assembly involving heterogeneous CAD agents by an Automated Coordinator By Kaushik Mishra, Chiranjiv Mohanty, M. K. Tiwari and L. Benyoucef *International Journal of Computer Integrated Manufacturing* Vol 24, pp: 365-374 (2011)
23. Coordination and Price Competition in a Duopoly Common Retailer Supply Chain By Sinha, S., Sarmah S.P. *Computers and Industrial Engineering* Vol. 59 pp.280-295 (2010)
24. Developing a Reconfigurability index using multi-attribute utility theory By Kapil Gumasta, Santosh Kumar Gupta, M. K. Tiwari and Lyes Benyoucef *International Journal of Production Research (IJPR)* Vol-49, pp:1669-1683 (2011)
25. Development of a Measurement Metric for Manufacturing Process Robustness By Mondal, S. C., Maiti, J. and Ray, P. K. (2010) *Int. Journal of Productivity and Quality Management* 6 (2) : 156-181 (2010)
26. Development of Worksystems Safety Capability Index (WSSCI) By J Maiti *Safety Science* 48 (2010)
27. ECOS: Publishing the published competencies By Nitesh Khiliwani, Jennifer Anne Harding and M. K. Tiwari *Proceedings of the Institution of Mechanical Engineering, Part-B, Journal of Engineering Manufactur* (2010)
28. EMPSO based optimization for Inter-Temporal Multi-Product Revenue Management under salvage consideration By Ankit Kumar Gandhi, Sri Krishna Kumar, Mayank Kumar Pandey and M. K. Tiwari *Applied Soft Computing Journal* Vol 11, pp: 468-476 (2011)

29. Factors Governing R&D Practices in Indian Manufacturing Firms: Structural Equation Modelling By Sushant Tripathy, Pradip Kumar Ray and Sadananda Sahu *Int. Journal of Modelling in Operations Management* Forthcoming (2011)
30. Flexibility Adoption in Indian Manufacturing Firms: A Current Perspective By Nayak, N. C. and Ray, Pradip K. *Int. Journal of Process System Engineering* Forthcoming (2011)
31. Flexibility and Performance Relationships: Evidence from Indian Bearing Manufacturing Firm By Nayak, N. C. and Ray, P. K. *Int. Journal of Modelling in Operations Management* 1(1): 67-82 (2010)
32. Fuzzy goal programming for inventory management: A bacterial foraging approach By Paras Deshpande, Deepak Shuka and M. K. Tiwari *European Journal of Operational Research (EJOR)* (2011)
33. Hybrid Petri net for modeling and performance evaluation of Supply Chain By Nitesh. Khiliwani, M. K. Tiwari and I. Sabuncuoglu *International Journal of Production Research* (2010)
34. Implementation of Six Sigma in Indian industries-A Delphi Study By R.K.Padhy,S.Sahu,R.K.Das *International Journal of ComputerAided Engineering and Technology* vol 3,pp 19-33 (2011)
35. Injury Count Model for Quantification of Risk of Occupational Injury By Vivek V Khanzode, J Maiti and P K Ray *International Journal of Injury Control and Safety Promotion* iFirst (2011)
36. Injury Count Model for Quantification of Risk of Occupational Injury By Khanzode, V. V., J Maiti, and P. K. Ray *Int. Journal of Injury Control and Safety Promotion* March: 1-12 (2011)
37. Injury Severity Assessment for Underground Coalmine Workers By Khanzode, V. V., J Maiti, P. K. Ray, and V. K. Tewari *Applied Ergonomics* 41:242-250 (2010)
38. Knowledge discovery and data mining integrated (KOATING) Moderator for collaborative projects By A. K. Choudhary, J. A. Harding, Lin, Hasio-Kang, M. K. Tiwari and Ravi Shankar *International Journal of Production Research* (2010)
39. Measuring satisfaction in buyer-supplier relationships from the suppliers perspective By Meena,P.L, Sarmah, S.P, Sinha S *Int Journal of business performance and supply chain Management* Accepted (2011)
40. Minimization of Supply Chain Cost with Embedded Risk using Computational Intelligence Approaches By Sri Krishna Kumar, M. K. Tiwari and Radu F. Babiceanu *International Journal of Production Research (IJPR)* Vol 48, pp:3717-3739 (2010)
41. New solution methods for single machine bicriteria scheduling problem: Minimization of average flow time and number of tardy jobs By Fatih Safa Erenay, Ihsan Sabuncuoglu, Ays_egA%l Toptal and M. K. Tiwari *European Journal of Operation Research (EJOR)* Vol. 201, pp: 89-98 (2010)
42. On the architecture of a human-centred CAD agent By Shreya Modi, M. K. Tiwari, Yingzi Lin and W. J. Zhang *Computer Aided Design* vol-43, pp: 170-179 (2011)
43. Operation allocated in automated manufacturing system using GA-based approach with multifidelity models By F. T. S. Chan, A. Chube, V. Mohan, V. Arora and M. K. Tiwari *International Journal of Robotics and Computer-Integrated Manufacturing* vol-26, pp: 526-534 (2010)
44. Operation allocation and part type selection in E-manufacturing: An auction based heuristic supported by agent technology By M. K. Tiwari, Sujit Kumar Jha and Raj Bardhan Anand *International Journal of Robotics and Computer-integrated Manufacturing* Vol. 26, pp: 313-324 (2010)
45. Optimizing the Operational Design of a Supply Chain Network Using the Psychoclonal Algorithm By Sanjay Kumar Shukla, Ravi Shankar and M. K. Tiwari *Computers & Industrial Engineering* Vol.58, pp: 29-39 (2010)
46. Performance Measurement of R&D is a Vaccine for Innovation Capability: Evidence from Indian Manufacturing Organizations By Sushant Tripathy, Pradip Kumar Ray and Sadananda Sahu *Int. Journal of Electronic Transport* Forthcoming (2011)
47. Process monitoring and fault detection strategies: A review By Anupam Das, J Maiti and R N Banerjee *International Journal of Quality & Reliability Management* Accepted (2011)
48. Sequential metamodeling applications to improve porthole die design problem By Mayank Kumar Pandey, R. K. Singh, S. Venkataramanaiah, and M. K. Tiwari *Proceedings of Institute of Mechanical Engineering Part: B Journal of Engineering Manufacture* Vol. 224, pp:279-295 (2010)
49. Single vendor multi buyer discount pricing model under stochastic demand environment By Sinha, S., Sarmah S.P *Computers and Industrial Engineering* Vol. 59 (4), pp. 945 (2010)
50. Sourcing decisions under risk of catastrophic event disruptions By Meena, P. L, Sarmah, S.P., Sarkar *Transportation Research Part E* doi: 10.1016/j.tre.2 (2011)
51. Supplier behavior modeling and winner determination using parallel MDP By Ray A. K., Jenamani M., and Mohapatra P. K. J. *Expert System with Applications* 38(5)-pp4689-4697 (2010)

Papers Presented in Conferences

1. A Comprehensive Framework for Physical Evaluation of Manual Material Handling Tasks, By Ratri Parida and P K Ray, *Second Int. Conference on Production and Industrial Engineering (CPIE-2010)*, NIT, Jalandhar, Punjab, (2010)
2. A new secure protocol for multi-attribute multi-round e-reverse auction, By Srinath T.R., K. Samrat, Jenamani M., *International Conference on Emerging Applications of Information Technology* EAIT 2011, Kolkata, (2011)
3. Designing a multi echelon flexible logistics network using co-evolutionary immune-particle swarm optimization with penetrated hyper-mutation (COIPSO-PHM), By N C Hiremath, Sadananda Sahu, and Manoj Kumar Tiwari, *2nd International Conference on Mechanical, Industrial, and Manufacturing Technologies (MIMT 2011)*, Singapore, (2011)
4. Designing a multi-echelon flexible logistics network for an automotive manufacturing supply chain, By N C Hiremath, Sadananda Sahu, and Manoj Kumar Tiwari, *International Conference on Advanced Materials, Manufacturing, Management and Thermal Sciences [AMMMT 2010]*, S I T, Tumkur (Karnataka), India, (2010)
5. Designing a multi-echelon flexible logistics network using co-evolutionary immunio-particle swarm optimization with penetrated hyper mutation(COIPSO_PHM), By N .C.Hiremath,S.Sahu and MKTiwari, *Int Conf on Mech,Indl and Manufacturing Technologies(MIMT)*, Singapore, (2011)
6. Discount pricing model to coordinate supply chain under stochastic demand environment, By Sarmah S. P., Sinha, S, *ICMEEM 2010*, Imperial College, London, UK, (2010)
7. GA Based Winner Determination In Combinatorial Reverse Auction, By Patodi P., Ray A. K., Jenamani M., *International Conference on Emerging Applications of Information Technology* EAIT 2011, Kolkata, (2011)
8. Improving Operations Research Models, By Dr.S.Srinivasan, *International Conference On Opern. Research*, Madurai, (2010)
9. Integrated approach to FMEA using DSM, By Ematty, F J, Sarmah, S P, *Conference APM-2011, CIPET*, Chennai, (2011)

10. Issues in lean manufacturing, *By* Shashank Thanki and Jitesh Thakkar, *National conference of Research Scholars in Management*, IIITM Gwalior, (2011)
11. Optimization for Efficient Supply Chain using Swarm Intelligence: an outsourcing perspective, *By* N C Hiremath, Sadananda Sahu, and Manoj Kumar Tiwari, *International Conference of Manufacturing Engineering and Engineering Management (World Congress on Engineering [WCE 2010]) June 30 - July 02, 2010*, London, U K, (2010)
12. Optimization for efficient supply chain using swarm intelligence:An outsourcing perspective, *By* N.C.Hiremath,S.Sahu,M.K.Tiwari, *Int Conf on Manufacturing Engg & Engg Management*, London, (2010)
13. SCM based performance measurement: An application of systems dynamics approach, *By* P.R.C Gopal and Jitesh Thakkar, *National conference of Research Scholars in management*, IIITM Gwalior, (2011)
14. Supplier selection under the risk of supply disruptions, *By* Meena, P L, Sarmah, S P, *IEOM 2011*, Malaysia, (2011)

School of Information Technology

Head

Prof. Jayanta Mukhopadhyay

Professor

Gupta, Arobinda

Ph.D.(Iowa), Distributed Systems, Mobile Computing

Associate Professors

Ghosh, Soumya Kanti

Ph.D., Geospatial Database and Web Services, Network Security

Sural, Shamik

Ph.D., Information and System Security, Image and Video Processing

Assistant Professors

Misra, Sudip

Ph.D.(Carleton Univ., Canada), Computer Networks, Software Engineering

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

New Academic Programmes

School has introduced M.Tech. in Information and Communication Technology for teachers in AICTE approved colleges and Industry professionals.

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. 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, ubiquitous computing, network security, database systems and data mining, systems security, human computer interaction, geographical information system, speech processing, computer vision, VLSI design.

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. Samrat Mondal : Security Analysis of Role Based Access Control Model with Temporal and Spatiotemporal Constraints(Ph.D)
2. Nirnay Ghosh : Securing Enterprise Network using Automatically Generated Minimal Attack Graph(MS)
3. Ashalatha Nayak : Automatic Synthesis of Test Cases wityh some Behavioral UML Models(Ph.D)
4. Kamalika Datta : Audio Water Marking Techniques using Discrete Wavelet Transform(MS)

Member - Professional Bodies

1. Ghosh, Sourmya Kanti, *Member* - IEEE
2. Gupta, Arobinda, *Regular* - IEEE
3. Gupta, Arobinda, *Regular* - IEEE
4. Gupta, Arobinda, *Regular* - ACM
5. Gupta, Arobinda, *Regular* - ACM
6. Misra, Sudip, *Member* - IEEE
7. Samanta, Debasis, *Senior Member* - IEEE
8. Sreenivasa Rao, Krothapalli, *Life Member* - Indian Society for Technical Education (ISTE)
9. Sreenivasa Rao, Krothapalli, *Regular* - IEEE
10. Sreenivasa Rao, Krothapalli, *Regular* - IEEE Signal Processing Society
11. Sreenivasa Rao, Krothapalli, *Regular* - International Speech Communication Association (ISCA)
12. Sural, Shamik, *Senior Member* - IEEE

Member - Editorial Board

1. Misra, Sudip (0) *Editorial Board Member* - IET Communications
2. Misra, Sudip (0) *Associate Editor* - Telecommunication Systems Journal (Springer SBM)
3. Misra, Sudip (0) *Editorial Board Member* - Computers & Electrical Engineering Journal (Elsevier)
4. Misra, Sudip (0) *Associate Editor* - EURASIP Journal on Wireless Communications and Networking
5. Misra, Sudip (0) *Editorial Board Member* - Journal of High Speed Networks (IOS Press, Netherlands)
6. Misra, Sudip (0) *Associate Editor* - International Journal of Communication Systems (Wiley)
7. Misra, Sudip (0) *Editorial Board Member* - Journal of Computer Systems, Networks and Communications (Hindawi)
8. Misra, Sudip (0) *Associate Editor* - Security and Communication Networks (Wiley)
9. Misra, Sudip (0) *Editorial Board Member* - International Journal of Automation and Computing (Science Press and Springer-Verlag GmbH)
10. Misra, Sudip (0) *Editor-in-Chief* - International Journal of Communication Networks and Distributed Systems (Inderscience)
11. Misra, Sudip (0) *International Advisory Committee Member* - International Journal of Wireless Networks and Broadband Technologies (IGI Global)
12. Misra, Sudip (0) *Editorial Board Member* - International Journal of Internet Protocol Technology (Inderscience)
13. Misra, Sudip (0) *Editor-in-Chief* - International Journal of Information and Coding Theory (Inderscience)
14. Samanta, Debasis (2008) *Honorary Member of the Editorial Board* - International Journal of Bio-Science and Technology
15. Samanta, Debasis (2008) *Member of the Editorial Board* - ICFAI University Journal of Information
16. Samanta, Debasis (2009) *Member of the Editorial Board* - International Journal of Communication Networks and Distributed Systems
17. Sreenivasa Rao, Krothapalli (0) *Member* - International Journal of BioSciences and Technology
18. Sural, Shamik (2008) *Member Editorial Board* - International Journal of Artificial Intelligence and Soft Computing
19. Sural, Shamik (2009) *Member Editorial Board* - International Journal of Data Mining, Modelling and Management
20. Sural, Shamik (2010) *Associate Editor* - International Journal of Computers and Their Applications

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 (Fast Track Scheme for Young Scientists), Rs.7.00 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 Enterprise GIS system based on Open standard (Department of Science & Technology, GOI, New Delhi, Rs.40.50 Lakhs)
8. 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)
9. Development of Spatio-temporal Access Control Models (Dept. of Science & Technology, Govt. of India, Rs.16.18 Lakhs)
10. Development of text to speech (TTS) synthesis system for Indian languages (Department of Information Technology, Rs.35.66 Lakhs)
11. Efficient Index-supported Multimedia Search on the Internet (Dept. of Science & Technology, Govt. of India, Rs.6.38 Lakhs)
12. Enhanced SANYOG: A Portable Communication Tool for the Speech and Neuro Motor Impaired People (Media Lab Asia, Rs.71.00 Lakhs)
13. Speaker recognition system for handheld devices in varying background environments (Department of Science and Technology, Rs.23.03 Lakhs)
14. Synthesis of Low Power High Performance Mixed VLSI COME Circuits (Department of Science and Technology, Govt. of India, Rs.26.00 Lakhs)
15. Vehicular Communication & Security (under GM-CRL) (GM R&D, Bangalore, Rs.500.00 Lakhs)

Consultancy Projects

1. Design & Development of a Penetration Testing and Security Assessment Tool, (Ministry of Defence, New Delhi, Rs.49.00 Lakhs)
2. Formal Security Analysis of Access Control Models and Extensions (National Science Foundation, USA (Through Rutgers University)), Rs.14.00 Lakhs)

Visits Abroad by Faculty Members

1. Sural, Shamik - Alexander von Humboldt Fellowship for Experienced Researchers (Munich, Germany,) 3 Months
2. Gupta, Arobinda - Present paper (Beijing, China,) 3 days
3. Sreenivasa Rao, Krothapalli - Presenting a paper at COCODA - 2010 (Kathmandu, Nepal,) Nov 22-24, 2010
4. Sreenivasa Rao, Krothapalli - Presenting 2 papers in International Conference on Speech Prosody - 2010 (Chicago, USA,) May 11-14, 2010
5. Ghosh, Soumya Kanti - Presenting Paper in ICEMT-2010 Conference (Cairo, Egypt,) 2-4 November, 2010
6. Sreenivasa Rao, Krothapalli - Presenting 2 papers in 14th World Multiconference on Systemics, Cybernetics and Informatics (WMSCI (Orlando, Florida, USA,) June 29 - July 2, 2010
7. Gupta, Arobinda - Present Paper in IEEE AINA 2010 Workshops (Perth, Australia,) April 19-24, 2010

Invited Lectures by Faculty Members

1. Realization of National Spatial Data Infrastructure by Ghosh, Soumya Kanti (North Eastern Council (NEC), Shillong)
2. Technology for Humanity by Samanta, Debasis (IEEE Region 10 Meet, Cebu, Philippines)

Papers Published in Journals

1. A Formal Verification Framework for Security Policy Management in Mobile IP based WLAN By Soumya Maity, P Bera, S K Ghosh *International Journal of Network Security and Its Applications* 2(4), 194 - 211 (2010)
2. A Planner-based Approach to Generate and Analyze Minimal Attack Graph By Nirnay Ghosh, S.K. Ghosh *Applied Intelligence* 1-22 (2010)
3. A Tool for Automatic Hammersmith Infant Neurological Examination By D. P. Dogra, K. K.Nandam, A. K. Majumdar, Shamik Sural, J. Mukherjee, B. Majumdar, A. Singh and S. Mukherjee *International Journal of E-Health and Medical Communications* 2(2), 1-13 (2011)
4. A WLAN Security Management Framework based on Formal Spatio-Temporal RBAC Model. By P. Bera, Pallab Dasgupta and S. K. Ghosh *Journal of Security and Communication Networks* DOI:10.1002/sec.232 (2010)
5. Adaptive broadcast by fault-tolerant spanning tree switching By S. Karmakar and A. Gupta *Journal of Parallel and Distributed Computing* 70 (9) (2010)
6. Application of prosody models for developing speech systems in Indian languages By K. Sreenivasa Rao *International Journal of Speech Technology* 14, 19-33 (2011)
7. Database Intrusion Detection using Sequence Alignment By A. Kundu, Shamik Sural and A. K. Majumdar *International Journal of Information Security* 9(3), pp. 179-191 (2010)
8. Dependence Representation for Coverage Testing of Object-Oriented Programs By E. S. F. Najumdeen, Rajib Mall, and Debasis Samanta *Journal of Object Technology (JOT)* pp. 1-23, Vol. 9(4) (2010)
9. Fast and Accurate Personal Identification-Based on Iris Biometric By Somnath Dey, Debasis Samanta *International Journal of Biometrics (IJBM)* pp. 250-281, 2(3) (2010)
10. Integrated Security Analysis Framework for an Enterprise Network-A Formal Approach By P. Bera, Pallab Dasgupta, S. K. Ghosh *Journal of IET Information Security* 4(4) (2010)

11. Policy based Security Analysis in Enterprise Networks -A formal approach By P. Bera, S. K. Ghosh, Pallab Dasgupta . *IEEE Transactions on Network and Service Management* 7(4) (2010)
12. Real Time Prosody Modification By K. Sreenivasa Rao *Journal of Signal and Information Processing* 50-62 (2010)
13. Security Analysis of GTRBAC and its Variants using Model Checking By S. Mondal, Shamik Sural and V. Atluri *Computers & Security* 30(2-3), pp. 128-147 (2011)
14. Selection of Suitable Features for Modeling the Durations of Syllables By K. Sreenivasa Rao and Shashidhar G. Koolagudi *Journal of Software Engineering and Applications* 3, 1107-1117 (2010)
15. Synthesis of Test Scenarios using UML Activity Diagrams By Ashalatha Nayak, Debasis Samanta *Journal of Software and System Modeling (SoSyM)* pp. 63-89, Vol. 10, (2011)
16. Test Coverage Analysis Based on an Object-Oriented Program Model By E. S. F. Najumdheen, Rajib Mall and Debasis Samanta *Journal of Software Maintenance and Evolution: Research and Practice* Online, June 2010 (2010)
17. Toward Analyzing the Impact of Advertisement Billboards on Soccer Telecast Viewers By S. Das, Shamik Sural and A. K. Majumdar *International Journal of Computational Intelligence and Applications* 9(3), pp. 241-269 (2010)
18. Two stage emotion recognition based on speaking rate By Shashidhar G. Koolagudi and K. Sreenivasa Rao *International Journal of Speech Technology* 14, 35-48 (2011)

Papers Presented in Conferences

1. A Framework for Geospatial Information Service on Mobile Device Based on Composition of Web Services, By Arindam Dasgupta, S.K. Ghosh, *International Conference on Communication, Computers and Devices (ICCCD 2010)*, Kharagpur, India, (2010)
2. A Fuzzy Reasoning Framework for Resolving Spatial Queries through Service Driven Integration of Heterogeneous Geospatial Information, By Indira Mukherjee, S.K. Ghosh, *2nd International Conference on Computer Technology and Development, IEEE Explore*, Cairo, Egypt, (2010)
3. A Geo-Spatial Web Service based Decision Support Framework for Realization of e-Governance and Sustainable Development, By P.S. Acharya, I. Mukherjee, Arindam Dasgupta, S.K. Ghosh, *International Conference on Education and Management Technology (ICEMT)*, Cairo, Egypt, (2010)
4. A Hierarchical Approach for Content-based Echocardiogram Video Indexing and Retrieval, By Aditi Roy, Shamik Sural, J. Mukherjee and A. K. Majumdar, *International Conference on Communication, Computing & Security*, India, (2011)
5. A Mobile IP based WLAN Security Management Framework with Reconfigurable Hardware Acceleration, By Soumya Maity, P. Bera, S.K. Ghosh, *3rd International ACM Conference on Security of Information and Networks (SIN10)*, Taganrog, Rostov-on-Don, Russia, (2010)
6. A Query based formal security analysis framework for enterprise LAN, By P. Bera, Soumya Maity, S. K. Ghosh, Pallab Dasgupta, *10th International Conference on Computer and Information Technology 2010 (CIT 2010)*, IEEE Computer Society, Bradford, UK, (2010)
7. A SAT Based Verification Framework for Wireless LAN Security Policy Management supported by STRBAC Model, By P. Bera, S. K. Ghosh, Pallab Dasgupta, *3rd International Conference Network Security and Applications (CNSA 2010)*, Springer CCIS, Chennai, India, (2010)
8. A User Friendly Implementation for Efficiently Conducting Hammersmith Infant Neurological Examination, By D. P. Dogra, K. K.Nandam, A. K. Majumdar, Shamik Sural, J. Mukherjee, B. Majumdar and A. Singh, *IEEE International Conference on E-Health Networking, Application and Services*, France, (2010)
9. A User Interactive Method of Measuring Lateral Ventricles Width in Neonates, By P. Mondal, J. Mukherjee, Shamik Sural, A. K. Majumdar, A. Biswas, A. Singh and S. Mukherjee, *International Conference on Systems in Medicine and Biology*, India, (2010)
10. Accessing Dynamic Web Page in Users Language, By Debasis Samanta, Manoj Sharma, Pradipta Saha, Sayan Sarcar, and Soumya Ghosh, *IEEE Students Technology Symposium 2011(TechSym 2011)*, IIT Kharagpur, (2011)
11. An Access Control Framework for Semi-infrastructure Ad Hoc Networks, By Soumya Maity, P. Bera, S K Ghosh, *2nd International Conference on Computer Technology and Development*, Cairo, Egypt, (2010)
12. Application of secondary information for misbehavior detection in VANET, By 1. A. Vulimiri, A. Gupta, P. Roy, S. Muthaiah, A. Kherani, *IFIP Networking*, Chennai, India, (2010)
13. Automatic Posture Estimation for Hammersmith Infant Neurological Examination, By D. P. Dogra, S. Sinha, A. K. Majumdar, Shamik Sural, J. Mukherjee, A. Singh and S. Mukherjee, *International Symposium on Medical Imaging: Perspectives on Perception and Diagnostics*, India, (2010)
14. Building Unit Selection Speech Synthesis in Indian languages: An Initiative by an Indian Consortium, By Hema A Murthy, Ashwin Bellur, Vinodh Viswanath, Badri Narayanan, Anila Susan, G Kasturi, K. Sreenivasa Rao, Sudhamay Maity, N. P. Narendra, Ramu Reddy, Krishnendu Ghosh, K. G. Sulochana, E. L. Abhilas, *COCOSDA 2010*, Kathmandu, Nepal, (2010)
15. DTCC: A delay-tolerant congestion control scheme for connectionless networks, By G. Gokuldasan, A. Gupta, *23rd IEEE International Conference on Advanced Information Networking and Applications Workshops*, Perth, Australia, (2010)
16. Effect of Low Bit Rate Speech Coding on Epoch Extraction, By Anil Kumar Vuppala, Jainath Yadav, K. Sreenivasa Rao and Saswat Chakrabarti, *IEEE International Conference on Devices and Communications (IEEE ICDeCom)*, Ranchi, India, (2011)
17. Effect of speech coding on speaker identification, By Anil Kumar Vuppala, K. Sreenivasa Rao and Saswat Chakrabarti, *IEEE INDICON*, Kolkata, India, (2010)
18. Emotion Recognition from Speech Signal using Epoch Parameters, By Shashidhar G. Koolagudi, Ramu Reddy and K. Sreenivasa Rao, *IEEE International Conference on Signal Processing and Communication (SPCOM)*, IISC Bangalore, India, (2010)
19. Framework for Spatial Query Resolution for Decision Support using Geospatial Service Chaining and Fuzzy Reasoning, By Jayeeta Mukherjee, Indira Mukherjee, S.K. Ghosh, *5th International Conference on Information Systems, Technology and Management (ICISTM) 2011*, Springer, Gurgaon, India, (2011)
20. Gait Recognition in the Presence of Occlusion: A New Dataset and Baseline Algorithms, By Martin Hofmann, Shamik Sural, Gerhard Rigoll, *International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision*, Czech Republic, (2011)
21. Generating Policy based Security Implementation in Enterprise Network - A Formal Framework, By P Bera, Soumya Maity, S K Ghosh, Pallab Dasgupta, *17th ACM Conference on Computer and Communications Security*, Chicago, US, (2010)

22. Grapheme to phoneme conversion in Bengali for Festival based TTS framework, *By* Krishnendu Ghosh, Shashidhar G Koolagudi, Sudhamay Maity, Ramu Reddy, Narendra and K. Sreenivasa Rao, *International Conference on Natural Language Processing (ICON)*, IIT Kharagpur, India, (2010)
23. IITKGP-SEHSC: Hindi speech corpus for emotion analysis, *By* Shashidhar G. Koolagudi, Ramu Reddy, Jainath Yadav and K. Sreenivasa Rao, *IEEE International Conference on Devices and Communications (IEEE ICDeCom)*, Ranchi, India, (2011)
24. Mining RBAC Roles under Cardinality Constraint, *By* R. Kumar, Shamik Sural and A. Gupta, *6th International Conference on Information Systems Security*, India, (2010)
25. Mining RBAC Roles under Cardinality Constraint, *By* R. Kumar, S. Sural, A. Gupta, *ICISS*, Gandhinagar, India, (2010)
26. Real life emotion classification using VOP and pitch based spectral features, *By* Shashidhar G.Koolagudi and K. Sreenivasa Rao, *IEEE INDICON*, Kolkata, India, (2010)
27. Robust Speaker Recognition on Mobile Devices, *By* K. Sreenivasa Rao, Anil Kumar Vuppala, Saswat Chakrabarti and Leena Dutta, *IEEE International Conference on Signal Processing and Communication (SPCOM)*, IISC Bangalore, India, (2010)
28. Robust Tracking of Facial Feature Points with 3D Active Shape Models, *By* M. Kaiser, D. Arsic, Shamik Sural and G. Rigoll, *International Conference on Image Processing*, Hong Kong, (2010)
29. Speech emotion recognition and verification using segmental level prosodic analysis, *By* Shashidhar G. Koolagudi, Nitin Kumar and K. Sreenivasa Rao, *IEEE International Conference on Devices and Communications (IEEE ICDeCom)*, Ranchi, India, (2011)
30. Towards Role Mining with Restricted User-Role Assignment, *By* Manisha Hingankar and Shamik Sural, *2nd International Conference on Wireless Communications, Vehicular Technology, Information Theory and Aerospace & Electronic Systems*, India, (2011)
31. Tracking of Facial Feature Points by Combining Singular Tracking Results with a 3D Active Shape Model, *By* M. Kaiser, D. Arsic, Shamik Sural and G. Rigoll, *International Conference on Computer Vision Theory and Applications*, France, (2010)
32. Traffic congestion estimation in VANET and its application to information dissemination, *By* R. Singh, A. Gupta, *12th International Conference on Distributed Computing and Networking (ICDCN 2011)*, Bangalore, India, (2011)
33. Two-stage isolated consonant-vowel (CV) unit recognition in Indian languages, *By* Anil Kumar Vuppala, K. Sreenivasa Rao and Saswat Chakrabarti, *International Conference on Communication, Computers and Devices (ICCCD - 2010)*, IIT Kharagpur, India, (2010)

School of Medical Science & Technology

Head

Prof. Pranab Kumar Dutta

Associate Professors

Chaudhury, Koel	<i>Ph.D.(Delhi)</i> , Women's Health, Oxidative stress and Infertility, Clinical Proteomics and Metabolomics, Nanobiotechnology
Das, Soumen	<i>Ph.D (IIT Kharagpur)</i> , Microsystem Technology, BIOMEMS, Electro-physiological characterisation of biospecies, Medical electronics
Mandal, Mahitosh	<i>Ph.D.(Jadavpur Univ.)</i> , Cancer Biology, Signal Transduction, Apoptosis, Cell Cycle, Angiogenesis, Drug Delivery
Mitra, Analava	<i>Ph.D.(IIT Kharagpur)</i> , Nutraceuticals & herb based medicine/Diabetology, Drug encapsulation, Clinical trials

Assistant Professors

Bhattacharya, Sangeeta Das	<i>MD (Johns Hopkins Univ.)</i> , 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	<i>Ph.D.(IIT Kharagpur)</i> , Biostatistics, Medical Image Analysis, Biomedical Pattern Classification, Medical Informatics
Chatterjee, Jyotirmoy	<i>Ph.D.</i> , Multimodal Medical Imaging-Analysis Regenerative Medicine Pre-cancer Cancer Natural Healing Agents
Dhara, Santanu	<i>Ph.D.(IIT Kharagpur)</i> , Biomaterials and Tissue Engineering, Nano/Micro Fabrication and surface Modification
Manjunatha M	<i>Ph.D. (IIT Madras)</i> , Medical Instrumentation & Biosensors, Functional Electrical Stimulation of Nerve and Muscle, Neural Signal Processing and Functional NeuroImaging, Neural / Retinal Prosthesis, Visual Evoked Response, Bio-Signal Processing & Medical Imaging

Faculty Appointments

Dr. Sudarshan Ghosh Dastidar	Adjunct Professor
Dr. Asim Bardhan	Visiting Professor

Faculty Promotions

Dr. Koel Chaudhuri	Associate Professor
Dr. Somen Das	Associate Professor
Dr. Mahitosh Mondal	Associate Professor
Dr. Analava Mitra	Associate Professor

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. • Design, Synthesis and reactivity of beta-lactum based hybrid molecules. • Signal Transduction • Cancer Biomarker • Neutraceuticals 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

Lectures by Visiting Experts

1. Development and Commercialization of Heart Assist Pumps in the USA by Dr. Pratap Khanwilkar (President, Ignition Key LLC)
2. Research and Development activities in Biomedical Technology at Shree Chitra by Dr. G. S. Bhuvaneshwar (Head, Biomedical Technology Wing, Shree Chitra Tirunal Institute for Medical Sciences and Technology (SCTIMST))
3. Segmentation of Retinal Images by Professor Andrew Hunter (Dean for Science, Technology and Engineering, Lincoln University, UK)

Doctoral and MS Degrees Awarded

1. Asha Lata G : The clinical use of aromatase inhibitor letrozole for routine ovulation induction(Ph.D.)
2. Dhairitri Goswami : Photoplethysmography (PPG) Signal Modeling towards Preventive Cardiology(Ph.D.)
3. B Dinesh Kumar : Diabetes prevalence in Bengal: Its management through dietary oil intake and herbal products(Ph.D.)
4. P Venkatesan : Nanocarrier (liposome nanoparticle) mediated drug (celecoxib) delivery in colon cancer(Ph.D.)

Member - Professional Bodies

1. Bhattacharya, Sangeeta Das, *Regular* - American College of Physicians
2. Chakraborty, Chandan, *Regular* - IEEE
3. Chakraborty, Chandan, *Life Member* - Indian Society for Medical Statistics
4. Chakraborty, Chandan, *Regular* - ISCA
5. Chatterjee, Jyotirmoy, *Member* - IEEE Engineering in Medicine and Biology Society
6. Chatterjee, Jyotirmoy, *Member* - IEEE
7. Chaudhury, Koel, *Life membership* - Indian Society of Andrology
8. Chaudhury, Koel, *Member* - European Society of Human Reproduction and Embryology (ESHRE)
9. Chaudhury, Koel, *Life membership* - Indian Society for the Study of Reproduction and Fertility (ISSRF)
10. Chaudhury, Koel, *Life membership* - Indian Society of Biomaterials
11. Chaudhury, Koel, *Life membership* - National Magnetic Resonance Society
12. Chaudhury, Koel, *Life Membership* - The Society for Free Radical Research-India (SFRR-India)
13. Chaudhury, Koel, *Member* - American Society for Reproductive Medicine (ASRM)
14. Dhara, Santanu, *Regular* - American Ceramics Society
15. Dhara, Santanu, *Regular* - Powder Matrix (UK)
16. Dhara, Santanu, *Regular* - Society for Polymer Science, India
17. Mandal, Mahitosh, *Associate Member* - American Association for Cancer Research
18. Mandal, Mahitosh, *Associate Member* - American Society for Biochemistry and Molecular Biology
19. Mandal, Mahitosh, *Associate Member* - Indian Association for Cancer Research
20. Mandal, Mahitosh, *Associate Member* - Indian Science Congress Association
21. Manjunatha M, *M* - Institute of Engineers (I)
22. Manjunatha M, *Life Member* - Biomedical Engineering Society of India
23. Manjunatha M, *Member* - Indian Society for Technical Education
24. Manjunatha M, *M* - Institute of Electrical and Electronics Engineers USA
25. Manjunatha M, *Member* - IEEE-Engineering in Medicine & Biology Society
26. Mitra, Analava, *Member* - American Chemical Society
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. Mitra, Analava (2011) *Member* - Indian Journal of Pharmacology
2. Mitra, Analava (2008) *Member Editorial Board* - Medical equipment and Automation
3. Mitra, Analava (2011) *Member* - Pharmaceutics & Novel Drug Delivery Systems : Current Research.
4. Mitra, Analava (2010) *Member of Editorial Board* - International Journal of Life Sciences and Technology
5. Mitra, Analava (2009) *Member Editorial Board* - International Journal of BioSciences, Alternative and Holistic Medicine
6. Mitra, Analava (2009) *Member of Editorial Board* - International Journal of Biological Sciences and Technology
7. Mitra, Analava (2009) *Member Editorial Board* - International Journal of Pharmaceutical Drugs, Sciences and Technology (IJPST)
8. Mitra, Analava (2009) *Member of Editorial Board* - International Journal of BioSciences, Healthcare Technology and Management
9. Mitra, Analava (2011) *Member* - World Journal of Diabetes
10. Mitra, Analava (2009) *Member of Editorial Board* - International Journal of BioEngineering and Technology
11. Mitra, Analava (2011) *Member* - African Journal of Food Science
12. Mitra, Analava (2007) *Member Editorial Board* - Anthropology Today: Trends, Scope And Applications, Published by

Awards & Honours

1. Chatterjee, Jyotirmoy (2011) *Best Paper in National Conf. on Emerging Trends in Natural Product Research(NPR-2011)*
2. Chatterjee, Jyotirmoy (2010) *Best Paper in Oral Presentation ,ICSMB2010*
3. Chaudhury, Koel (2011) *Col. Rangachari Award for the best scientific paper by the All India Ophthalmologic Society*
4. Chaudhury, Koel (2010) *Dr. B. K. Mitra Award for the best scientific paper by the Ophthalmological Society of West Bengal*
5. Bhattacharya, Sangeeta Das (2010) *Master of Public Health, Johns Hopkins School of Public Health*
6. Chatterjee, Jyotirmoy (2010) *Second Best Poster Presentation in ICSMB2010*

Sponsored Research Projects

1. DST FIST for SMST (DST, Gov. of India, Rs.89.00 Lakhs)
2. A Computer-Aided Diagnostic System for Bronchial Asthma using a Clinico-Epidemiological Knowledgebase (SRIC, IIT Kharagpur, Rs.4.00 Lakhs)
3. Assessment of endometrial receptivity and its correlation with sub endometrial blood flow (SEBF) in women with latent genital tuberculosis undergoing (ICMR, Rs.30.86 Lakhs)
4. Comparative Evaluation Of Anti-diabetic Potential of Two Indian Medicinal Plants in Vivo (IIT Kharagpur, Rs.5.00 Lakhs)
5. Computer Vision Approach to Diabetic Retinopathy Screening (IBM, USA (under IBM-SUR Award 2011, Rs.24.00 Lakhs)
6. Design & Development of a Distributed Database System, Statistical Analyser and Disease Pattern Recogniser for Preventive & Promotive Healthcare in Ru (DIT, Govt. of India, Rs.25.60 Lakhs)
7. 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)
8. Development of a Medical Expert System for Screening & Diagnosis of Coronary Artery Diseases (VECC Kolkata, DAE, Govt. Of India, Rs.43.20 Lakhs)
9. Development of a MEMS based assay for biomedical diagnostics (ISRO-IIT Kharagpur cell, Rs.5.50 Lakhs)
10. Development of a Statistical Analyser based Computer Aided Diagnostic (CAD) System for Asthma (SERC Fast Track Scheme for Young Scientist, DST, Govt. of India, Rs.13.00 Lakhs)
11. Development of Ceramic Nanofiber-polymer Resin based Composite for Dental Filler (DST, Govt. of India, Rs.18.60 Lakhs)
12. Development of Medical Image Analyser for Cervical Cancer(CerviScan) (DIT, Govt of India, Rs.42.02 Lakhs)
13. Development of neonatal patient care management system (Ministry of Communication and Information Technology, Gol, Rs.0.00 Lakhs)
14. Development of novel nano-bio composite osteogenic matrices for cell based bone tissue engineering (DRDO, Rs.21.60 Lakhs)
15. Does in-vivo antioxidant administration improve semen parameters in infertile men? (Indian Council of Medical Research (ICMR), Rs.9.77 Lakhs)
16. Enhanced production, purification and characterization of marine bacterial lipopeptide as potential broad spectrum antimicrobial and anti cancer ag (Ministry of Earth Science, Govt. of India, Rs.100.36 Lakhs)
17. Evaluation of S100A7 (Psoriasin) as an Early Detection Marker of Squamous Cell Carcinoma. (Dept. of Science and Technology, India, Rs.34.82 Lakhs)
18. Feasibility study of MEMS based biochip platform for characterization of bio-species (ISIRD, SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
19. Identification of potential biomarkers for the diagnosis of endometriosis: a proteomics approach (DST, Rs.25.20 Lakhs)
20. Impact of immunization programs in children with HIV in West Bengal (IIT SRIC, Rs.3.00 Lakhs)
21. Indian Origin Silk based biomimetic scaffolds for engineering of load bearing tissue (Dept of Biotechnology, India., Rs.54.45 Lakhs)
22. Laser Speckle Imaging of Bloodflow in Microcirculation (SRIC IIT-KHARAGPUR, Rs.5.00 Lakhs)
23. Medical Image Analysis and MEMS Based Flow Sensor Development(MIA) (Texas Instruments (India) Pvt. Ltd., Rs.92.00 Lakhs)
24. MEMS based micropropulsion devices for microsatellite programme (ISRO, Bangalore, Rs.122.96 Lakhs)
25. Net Shape Fabrication of Dental Crown using Computer Numerical Control (CNC) Machining of Green Ceramic Compacts (DBT, Govt. of India, Rs.43.02 Lakhs)
26. Prevention of Pneumonia in Children with HIV infection (ICMR, Rs.55.00 Lakhs)
27. Separation and electrical characterisation of biological cells using microfluidic device (ADA-NPMASS, Govt of India, Rs.86.75 Lakhs)
28. Separation and Electrical Characterization of Biological cells Using Microfluidic Device (ECB) (NPMASS Programme Cell, Aeronautical Development Agency ., Rs.86.57 Lakhs)
29. Separation and Electrical Characterization of Biological Cells using Microfluidic Device (ECB) (ADA-NPMASS, Rs.86.50 Lakhs)
30. Study of Extracellular Fibrillar Bio polymers- natural silk fibres, Silk protein Scaffolds and Proteoglycan Fibril of both Mucus and Extracellular Mat (Dept. of Science and Technology, India, Rs.15.25 Lakhs)

31. To Evaluate the Clinical Efficacy of the Functional electrical Stimulation (FES) therapy in Stroke Survivors (Indian Council of Medical Research, Rs.20.00 Lakhs)
32. To investigate the role of MMPs & TIMPs in follicular fluid of women with endometriosis undergoing IVF (WB DST, Rs.9.64 Lakhs)
33. Upgrading facilities for MEMS design activities at National Resources Centres (NPMASS, ADA, Bangalore, Rs.38.73 Lakhs)
34. Web Enabled Medical Information Access Using Handheld Devices in a Wireless Environment for Telemedicine Applications (Ministry of Information Technology, GoI, Rs.62.00 Lakhs)

Consultancy Projects

1. Evaluation of photosensitivity, conductivity and photoluminescence of conducting polymer coated textiles (DRDO, Kanpur, Rs.9.70 Lakhs)

Patents (filed / granted)

1. A process for Production of Collagen and By-Products from Fresh Water Fish Origin and Applications Thereof
2. Digital Microscopy Equipment With Image Acquisition, Image Analysis and Image Communication
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. Method and System for Analyzing Breast Carcinoma using Microscopic Image Analysis of Fine Needle Aspirates
6. Method and System for Detection of Oral Sub-mucous Fibrosis using Microscopic Image Analysis of Oral Biopsy Samples

Visits Abroad by Faculty Members

1. Mandal, Mahitosh - Collaboration (MD Anderson Cancer Center, Houston, TX, USA,) 1 week
2. Mandal, Mahitosh - Collaborative Research Work (Virginia Commonwealth University, Richmond, USA,) 2 months
3. Manjunatha M - To attend the R-10 Meeting of IEEE (Yogyakarta, INDONESIA,) MARCH 5-6, 2011
4. Manjunatha M - Present a paper in the 32nd Annual International Conference of the IEEE EMBC 2010 (Buenos Aires, ARGENTINA,) August 31-September 4, 2010
5. Chaudhury, Koel - 26th Annual Meeting of the European Society of Human Reproduction and Embryology (ESHRE) (Rome, Italy,) Jun 27-30 2010
6. Chaudhury, Koel - 14th WABT Annual General Conference (Budapest, Hungary,) Dec 10-12 2010

Invited Lectures by Faculty Members

1. Raman Spectroscopy of Isolated Human Spermatozoa *by* Chaudhury, Koel (Recent Trends in Photonics and Biophotonics, Manipal, India)
2. Atomic force microscopy and Raman spectroscopy of isolated human spermatozoa *by* Chaudhury, Koel (14th World Academy of Biomedical Technologies, Budapest, Hungary)
3. Microelectronics to MEMS: An evolution *by* Das, Soumen (IIT Kharagpur)
4. BioMEMS *by* Das, Soumen (NEHU, Shilong)
5. MEMS and microsystems *by* Das, Soumen (Naval Science & Technological Laboratory, Visakhapatnam)
6. Recent Development in Hard Tissue Engineering *by* Dhara, Santanu (NIT DURGAPUR)
7. Biodiversity and Application in Health Care *by* Dhara, Santanu (P. K. College, Contai)
8. Pattern Recognition of Ovarian Follicles in Obstetrics Ultrasound Images *by* Chakraborty, Chandan (Science City, Kolkata)
9. ZD6474 enhances paclitaxel antiproliferative and apoptotic effects in breast carcinoma cells. *by* Mandal, Mahitosh (Virginia Commonwealth University, USA)
10. ZD6474, a dual kinase inhibitor of Epidermal growth factor receptor and Vascular endothelial growth *by* Mandal, Mahitosh (MD Anderson Cancer Center)
11. Recent Trends in Hard Tissue Engineering *by* Dhara, Santanu (Bengal Engineering and Science University (Shibpur))
12. Challenges in Artificial Retinal Implant in Indian Context *by* Manjunatha M (Mind Tree, BANGALORE, (Retina India))

Books Published

1. Debdoot Sheet, Ajoy Kumar Ray, Jyotirmoy Chatterjee: Feature Usability Index-A Simple Approach to Feature Selection *published by* Lap Lambert Academic Publishing GmbH & Co. KG, Germany (2011)

Short-Term Courses, Training Programmes and Workshops organised

1. Image Processing and Pattern Recognition for Early Diagnosis of Disease (June 6-11)

Papers Published in Journals

1. A brief description of diabetes in India. By B.Dineshkumar, SP.Bhuvaneshwaran, P.Vignesh Kumar, Analava Mitra, Manjunatha M *J Pharmacy Res* 3 (8):1719-172 (2010)
2. A Comparison between Sub-Acute and Chronic Stroke Subjects in Motor Recovery and walking ability with Functional Electrical Stimulation Therapy By Sabut S.K, Sikdar C, Kumar R, Manjunatha M. *Journal of Mechanics in Medicine and Biology* Accepted (2010)
3. A mirror reflection and aspect ratio invariant approach to object recognition using Fourier descriptor By Maruti Agarwala, Vikram Venkatraghavanb, Chandan Chakraborty, Ajoy K. Ray, Applied Soft Computing (in Press) (2011)
4. A new two-pulse synthesis model for digital volume pulse signal analysis. By D Goswami, K Chaudhury, J Mukherjee. *Cardiovascular Engineering* 10(3):109-117 (2010)
5. A portable neuroprosthesis for applications in gait rehabilitations with stroke patients By 5. Sabut S.K, Sikdar C, Kumar R, Singh P, Manjunatha M. *Int J of Med Eng Informatics* In Press (2010)
6. A Review on select Indian medicinal plants having AntiDiabetic potential. By Bratati Santra, Dimple Hemani, Sutapa Mukherjee, Analava Mitra *IJBSAHM* 1(3):33-41 (2010)
7. Amino acid based amphiphilic copolymer micelles as carriers of non-steroidal anti-inflammatory drugs: Solubilization, in vitro release and biological evaluation. By Dutta P, Dey J, Perumal V, Mandal M. *Int J Pharm* Apr 4407(1-2):207-1 (2011)
8. An Electronic Navigational Aid for Visually Impaired By Kumar, A. Patra, R. Manjunatha, M. Mukhopadhyay, J. Majumdar, A.K. *Current Science* (0)
9. Antidiabetic and hypolipidaemic effects of few common plants extract in Type 2 diabetic patients at Bengal. By Balasubramaniam Dineshkumar, Mitra Analava, Mahadevappa Manjunatha. *Int J Diabetes Metabol* 18:61-67 (2010)
10. Antidiabetic and Hypolipidemic Effects of Mahanimbine (carbazole alkaloid) from *Murraya koenigii* (Rutaceae) Leaves By B. Dineshkumar, Analava Mitra, Manjunatha Mahadevappa *International Journal of Phytomedicine* 2, 22-30 (2010)
11. Apoptotic effect of eugenol in human colon cancer cell lines. By Jaganathan SK, Mazumdar A, Mondhe D, Mandal M. *Cell Biology International* Nov 2.(in press) (2010)
12. Arrhythmia disease diagnosis using SVM and Genetic algorithm optimized k-means clustering By Martis R. Joy., Chakraborty Chandan *Journal of Mechanics in Medicine and Biology* (in Press) (2010)
13. Assessment of Malignant Potentiality of Oral Sub-mucous Fibrosis through Evaluation of p63, E-cadherin and CD105 Expression By R K Das, M Pal, A Barui, R R Paul, C Chakraborty, AK Ray, S Sengupta, and J Chatterjee *J of Clinical Pathology* 63:894-899 (2010)
14. Automated leukocyte recognition using fuzzy divergence By Madhumala Ghosha, Devkumar Dasa, Chandan Chakraborty, Ajoy K. Ray *Micron* 41(7) 840-846 (2010)
15. Automated screening of arrhythmia using wavelet based machine learning techniques By Roshan Joy Martis, M. Muthu Rama Krishnan, Chandan Chakraborty, Sarbajit Pal, Debranjani Sarkar, K. M. Mandana, Ajoy Kumar Ray *Journal of Medical Systems* (in Press) (2010)
16. Azurin synthesis from *Pseudomonas aeruginosa* MTCC 2453, properties, induction of reactive oxygen species, and p53 stimulated apoptosis in breast carcinoma cells By Sankar R, Sarkar S, Mazumadar A and Mandal M. *Journal of Cancer Science & Therapy*. (in Press) (2010)
17. Biomarkers for the diagnosis of thyroid cancer. By Sethi K, Sarkar S, Das S, Mohanty B, Mandal M. *J Exp Ther Oncol.* 8(4):341-52 (2010)
18. Brightness Preserving Dynamic Fuzzy Histogram Equalization By D. Sheet, H. Garud, A. Suveer, J. Chatterjee and M. Mahadevappa *IEEE Trans., Consumer Electronics* Vol. 56 No. 4 (2010)
19. Brownian motion curve based textural classification and its application towards cancer diagnosis By M. Muthu Rama Krishnan, Pratik Shah, Chandan Chakraborty, Ajoy K. Ray *Analytical Quantitative Cytology and Histology* (in Press) (2011)
20. Comparative analyses of different surfactants on matrix-assisted laser desorption/ionization mass spectrometry peptide analysis. By Mandal SM, Dey S, Mandal M, Maria-Neto S, Franco OL. *Eur J Mass Spectrom* 16(5):567-75. (2010)
21. Comparison of oral dydrogesterone with progesterone gel and micronized progesterone for luteal support in 1373 women undergoing IVF: a randomized clinical study. By A Ganesh, N Chakravorty, R Mukherjee, SK Goswami, BN Chakravarty and K Chaudhury *Fertility and Sterility* In Press (2011)
22. Computer vision approach to morphometric feature analysis of basal cell nuclei for evaluating malignant potentiality of oral submucous fibrosis By M. Muthu Rama Krishnan, Mousumi Pal, Chandan Chakraborty, Ranjan Rashmi Paul, Jyotirmoy Chatterjee, Ajoy K. Ray *Journal of Medical Systems* (in Press) (2010)
23. Crosslinking of gelatin-based drug carriers by genipin induces changes in drug kinetic profiles in vitro By Goutam Thakur, Analava Mitra, D'Rick Rousseau, Amit Basak, Siddik Sarkar, Kunal Pal. *Journal of Materials Science: Materials in Medicine* 22 (1) : 215-223 (2010)
24. Design of a programmable multi-pattern FES system for restoring foot drop in stroke rehabilitation By Sabut SK, Kumar R, Mahadevappa M. *Journal of Medical Engineering & Technology* 34,3,pp217-223 (2010)
25. Development of a cardiac pre-screening device for rural population in emerging economies using ultra-low power embedded system. By S Mandal, K Basak, M Manjunatha, J Chatterjee, AK Roy, *IEEE Transactions on Biomedical Engineering* 58(3):745-749 (2011)
26. Development of a low-cost non-invasive neurostimulator for applications in post stroke hemiplegics By S.K. Sabut A1, M. Manjunatha A2, Ratnesh Kumar A3, P. Lenka A4 *International Journal of Biomedical Engineering and Technology* Vol. 4, No.3 - p245-56 (245)
27. Development of Ultrafine Chitosan Fibers through Modified Wet-spinning Technique By Falguni Pati, Basudam Adhikari, Santanu Dhara *Journal of Applied Polymer Science* DOI: 10.1002/app.337 (2011)
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2. Honey Based Fibrous Scaffold for Tissue Engineering Application, By A Barui, R K Das,P Banerjee S. Dhara, J Chatterjee ,, *LiSSA11*, NIH, Bethesda ,Marryland,USA, (2011)
3. A comparative study of phonocardiogram analysis techniques based on mixed signal processor, By Basak, K. Mandal, S. Manjunatha, M. Chatterjee, J. Ray, A.K., *India Conference (INDICON), 2010 Annual IEEE*, Bangalore(10.1109/INDCON.2010.5712668), (2010)
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6. Adrenomedullin, Nitric oxide and Malondialdehyde levels in follicular fluid of infertile women with endometriosis, By AK Singh, R Chattopadhyay, BN Chakravarty and K Chaudhury., *International Conference on Recent Trends in Therapeutic Advancement of Free Radical Science & 10th Annual Meeting of the Society for Free Radical Research*., Chennai, India, (2011)
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13. Changes in Blood Biochemistry Profile Due to Dietary Changes in Selective Rural Population of Bengal, By Sutapa Mukherjee, Analava Mitra, Gautam Thakur, *7th APCCN 2011*, Bangkok, Thailand., (2011)
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16. Characterization of oil-in-water gelatin emulsion gels: Effect of homogenization time, By Goutam Thakur, Analava Mitra*, Amit Basak, Dárick Rousseau, Kunal Pal, *ICSMB*, IIT Kharagpur, (2010)
17. Chitosan-Collagen Composite Scaffolds for Tissue Engineered Skin, By Soumi Dey Sarkar, Brooke Farrugia, Tim Dargaville, Falguni Pati, Jyotirmoy Chatterjee and Santanu Dhara, *TERMIS-AP 2010 Asia-Pacific Meeting*, Sydney, Australia, (2010)
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64. Statistical pattern analysis of white blood cell Nuclei morphometry, By Madhumala Ghosh, Devkumar Das, Subhodip Mandal, Chandan Chakraborty, Mallika Pal, Ashok K Maity, Suriya K Pal, Ajoy K Ray, *IEEE-TechSym*, IIT Kharagpur, India, (2010)
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Department of Mechanical Engineering

Head

Prof. Ajay Kumar Chattopadhyay
Prof. Ranjan Bhattacharyya

Up to 30.09.2010
From 01.10.2010

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, Transport Phenomena in Materials Processing, Computational Fluid Dynamics (CFD)
Chatterjee, Anindya	<i>Ph.D.(Cornell University)</i> , Applied mechanics, Dynamics
Chattopadhyay, Ajay Kumar	<i>Ph.D.(Jadavpur Univ)</i> , Machining, Grinding, Surface Coating, Metal-Ceramic Joining
Das Gupta, Anirvan	<i>Ph.D.(Kanpur)</i> , Wave propagation, Dynamics of discrete and continuous systems
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
Guha, Abhijit	<i>Ph.D.(Cambridge)</i> ,
Karmakar, Ranjit	<i>Ph.D.(IIT Kharagpur)</i> , APPLIED MECHANICS
Maiti, Biswajit	<i>Ph.D.(IIT Delhi)</i> , Fluid Machinery, Two-Phase Flow, Applications of Finite Element Method
Maiti, Rathindranath	<i>Ph.D.(IIT Kharagpur)</i> , Mechanical and Fluid Power Transmission and Gear Engineering, Mechanical and Fluid Power Transmission and Gear Engineering
Mishra, Prasanta Kumar	<i>Ph.D.(Jadavpur Univ)</i> , Mfg Sci & Engg (Nonconventional Mfg), Innovative Machine Design
Mohanty, Amiya Ranjan	<i>Ph.D.(Kentucky)</i> , Machinery Condition Monitoring, Acoustics and Noise Control, Underwater Acoustics
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> , 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> , Numerical Heat Transfer and Fluidmechanics, Flow and Heat Transfer in Porous Media, Solar Energy Thermal Systems
Som, Sankar Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Thermal Science and Engineering, Thermal Science and Engineering

Associate Professors

Bandyopadhyay, Partha Pratim	<i>Ph.D.(IIT Kharagpur)</i> , Surface technology
Bhattacharyya, Kingshook	<i>Ph.D (IIT Kharagpur)</i> , Dynamics

Biswas, Kajal	<i>Ph.D.(IIT Kharagpur), Manufacturing science and engineering</i>
Chakraborty, Goutam	<i>Ph.D (IIT Kanpur), Applied Mechanics</i>
Das, Manab Kumar	<i>Ph.D.(IIT Kanpur), Fluid Mechanics and Heat Transfer</i>
Gupta, Sanjay	<i>Ph.D.(Delft), Biomechanics, Finite Element Analysis, Machine Design</i>
Kumar, Cheruvu Siva	<i>Ph.D.(IIT Kharagpur), Robotics, Control Systems, Computer Networks</i>
Moulic, Sandipan Ghosh	<i>Ph.D.(Arizona), Theoretical and computational fluid dynamics and heat transfer, Hydrodynamic and thermal instability, Spectral methods in fluid dynamics, Non-Newtonian fluid dynamics</i>
Pal, Surjya Kanta	<i>Ph.D (IIT Kharagpur), Manufacturing Process Modelling and Simulation</i>
Ramgopal, Maddali	<i>Ph.D.(IIT Madras), Refrigeration & air conditioning, Metal hydride based energy conversion systems</i>
Ray, Kumar	<i>Ph.D.(IIT Kharagpur),</i>
Roy Chowdhury, Asimava	<i>Ph.D.(IIT Kharagpur), 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</i>
Saha, Partha	<i>Ph.D.(IIT Kharagpur), Laser processing of materials, Micro manufacturing, Nonconventional manufacturing, Rapid prototyping</i>
Samantaray, Arun Kumar	<i>Ph.D (IIT Kharagpur), Systems and Control, Vehicle system dynamics, Rotor dynamics, Nonlinear Mechanics</i>

Assistant Professors

Deb, Sankha	<i>Ph.D.(Univ. of Montreal, Canada), 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</i>
Gupta, Abhishek	<i>Ph.D.(RICE Univ.), Robotics, Mechatronics, Haptics</i>
Panda, Sushanta Kumar	<i>Ph.D.(IIT, Delhi), 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</i>
Racherla, Vikranth	<i>Ph.D.(Univ. of Pennsylvania), Design and characterization of high dielectric constant electroactive polymers, Failure analyses of nanostructured thermal spray coatings, Composite mechanics, Metal plasticity</i>
Ramanujam, S	<i>Ph.D.(IIT Kharagpur),</i>
Sarangi, Mihir	<i>Ph.D.(IIT Kharagpur), Machine Design</i>

Faculty Appointments

Abhishek Gupta

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

Suspension and bogie technology for high-speed rail-vehicle

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

Modelling and simulation of through-process hot steel rolling using bond graph

Model based fault detection and isolation

Development of liquid spring technology

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, design of vehicle simulators

Thrust Areas

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

New Acquisitions

1. Active Pirani Transmitter
2. Baratron Absolute Capacitor Manometer
3. Fluke Industrial Thermal Imager
4. Ansys Academic Research CFD 25 Task Bundle
5. Trinius Encoder
6. Oil Injected Air Compressor
7. Plasma Spray Gun (Ador Fontech)
8. Amptech CdTi Detector and Preamplifier, Digital Pulse Processor
9. Anton Paar Rheometer
10. Micro-Epsilon Laser Displacement Sensor
11. Krohne Marshall Mass-flow meter
12. High-temperature Muffle Furnace
13. Twin-Lab Continuous-duty Root Pump
14. Flexible Manufacturing System (MTAB FMC)
15. Vertical Milling Machine (Bharat Fritz)
16. YOKOBAWA Digital High-storage Data Acquisition
17. PVD Digital Vibrometer (PolyTech)
18. Smart Laser Allignment System (PrufTechnik)
19. National Instruments Multiplexer Amplifier

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.

Research collaboration with Univ. Lille for development of process supervision software

UK-India Education and Research Initiative (UKIERI) Project in collaboration with Univ. Southampton

Research collaboration with Växjö University, Sweden

Indo-US Project/ DST-NSF Project with UIUC and UCI

DST-JSPS Project with University of Tokyo and Tokai University

Student exchange program with Polytech-Lille (France)

Lectures by Visiting Experts

1. Power Generation using low-rank coals recent advances and R&D Needs. *by Sankar Bhattacharya (Monash University, Australia)*
2. Robust fault diagnosis using bond graph approach. *by Genevieve Dauphin-Tanguy (Ecole Centrale de Lille, France)*
3. Integrated design of multiphysics controlled systems : Some success stories using bond graphs. *by Genevieve Dauphin-Tanguy (Ecole Centrale de Lille, France)*
4. French education system : Different possibilities of international student exchange at Ecole Centrale De Lille *by Genevieve Dauphin-Tanguy (Ecole Centrale de Lille, France)*
5. Mechanism for increased interactions between faculty/students at IIT-KGP and VCU *by James Mcleskey (Virginia Commonwealth University, USA)*
6. Chemical Heterogeneities and Microstructure formation in solidified products. *by Arvind Kumar (Institut Jean Lamour, Ecole des Mines de Nancy, France)*
7. Bioengineering at the University of Southampton Accounting for variability and verifying computational Models. *by Martin Browne & A S Dickinson (University of Southampton, UK)*

Doctoral and MS Degrees Awarded

1. Shahab Fatima : Noise Control of Domestic Appliances By Jute Based Materials(MS)
2. Ranabir Dey : Effects of Heat Transfer on Flow Frictional Characteristics in Microfluidic Channels(MS)
3. Manoj Masanta : Characterization and performances evaluation of Ceramic composite coatings synthesized by laser Cladding of preplaced precursor on steel substrate(Ph.D.)
4. Vidyut Dey : Experimental Investigations and Input-Output Modeling of Electron Beam Welding Process Using Statistical Regression Analysis and Soft Computing(Ph.D.)
5. Kamal Pal : Multi-Sensor based Monitoring of Pulsed GMAW Process(Ph.D.)
6. Rashmi Ranjan Das : Adhesion failure and Delamination of Bonded Tubular joints made with Laminated FRP Composites and Functionally Graded Materials(Ph.D.)
7. Amitesh Kumar : Heat Transfer Model for Laser Cladding with Powder Feed(Ph.D.)
8. Satyajit Chatterjee : Development of Aluminium Oxide - Titanium Boride-Titanium Nitride Composite Coating on Low Carbon Steel by Combined Self-propagating High-temperature Synthesis and Laser Surface Alloying(Ph.D.)
9. Laxmindhar Biswal : Natural ,Forced, and Phase-change Convective Transport in Microchannels(Ph.D.)
10. Gedam Benu Madhab : Design and Control of a Piezoelectric Actuated Bio-inspired Compliant Robotic Microgripper(Ph.D.)
11. Kiran Kumar Kupireddi : Carbon dioxide based Natural Circulation Loops : Application to Refrigeration and Air Conditioning systems(Ph.D.)
12. Siddhartha Das : Theoretical Studies of Electrokinetic Transport and Separation in Nanofluidic Channels(Ph.D.)
13. Arun Kumar Jalan : Model Based Fault Diagnosis of a Rotor System for Unbalance, Misalignment and Crack(Ph.D.)
14. Soumya Gangopadhyay : Development and Machining Performance of Titanium Nitride-Molybdenum Disulphide Composite Coated Tools using Pulsed DC CFUBMS(Ph.D.)
15. Mrityunjay Kumar Sinha : Heat Transfer augmentation factor for pin Finned Vertical flat plate in Laminar Natural convection(Ph.D.)
16. Arup Kumar Das : Development of computational algorithms for dispersed two phase flow and flow with complex interfaces(Ph.D.)

Member - Professional Bodies

1. Chakraborty, Suman, *Member - ASME*

2. Chakraborty, Suman, *Life Member* - ISHMT
3. Das, Prasanta Kumar, *Life member* - Indian Society of heat and mass transfer
4. Deb, Sankha, *Member* - American Society of Mechanical Engineers(ASME)
5. Gupta, Sanjay, *Member* - European Society of Biomechanics
6. Pal, Surjya Kanta, *Life member* - Indian Institute of Metals
7. Pratihari, Dilip Kumar, *Member* - Association for Machines and Mechanisms
8. Pratihari, Dilip Kumar, *Member* - IEEE
9. Ramgopal, Maddali, *Member (MIE)* - Institute of Engineers (IE) India
10. Saha, Partha, *Life Member* - Indian Laser Association
11. Sarangi, Mihir, *Regular* - Society for Experimental Mechanics, Inc., USA

Member - Editorial Board

1. Bhattacharyya, Souvik (2009) *Member, Editorial Board* - Energy Conversion & Management
2. Bhattacharyya, Souvik (2009) *Editorial Board Member* - Int J of Power & Energy Systems
3. Bhattacharyya, Souvik (2010) *Editor* - Journal of Nano Energy and Power Research
4. Bhattacharyya, Souvik (2011) *Associate Editor* - International Journal of Alternative Energy
5. Chakraborty, Suman (0) *Editorial Board Member* - International Journal of Micro-Nano Scale Transport
6. Chakraborty, Suman (0) *Editorial Board Member* - International Journal of Micro and Nano Systems
7. Chakraborty, Suman (0) *Editorial Board Member* - Open Journal of Thermodynamics
8. Deb, Sankha (0) *Editorial Board Member* - Journal of Modern Manufacturing Technology
9. Mohanty, Amiya Ranjan (2009) *Technical Acoustics-Editor* - Journal of the Acoustical Society of India
10. Paul, Soumitra (2006) *Member* - International Journal of Abrasive Technology
11. Pratihari, Dilip Kumar (2009) *Member of Editorial Board* - Energy and Power Engineering
12. Pratihari, Dilip Kumar (2009) *Member of Editorial Board* - Technology and Investment
13. Pratihari, Dilip Kumar (2011) *Member of Editorial Board* - International Journal of Knowledge and Web Intelligence
14. Pratihari, Dilip Kumar (2009) *Member of Editorial Board* - Intelligent Information Management
15. Pratihari, Dilip Kumar (2011) *Member of Editorial Board* - Intelligent Control and Automation
16. Pratihari, Dilip Kumar (2010) *Guest Editor of a special issue on "Hybrid Computing"* - International Journal of Computational Intelligence Studies
17. Pratihari, Dilip Kumar (2008) *Member of Editorial Board* - International Journal of Advanced Intelligence Paradigms
18. Pratihari, Dilip Kumar (2008) *Member of Editorial Board* - International Journal of Data Mining, Modelling and Management
19. Ramgopal, Maddali (2009) *Member* - Editorial Advisory Board, Buildings & Environment
20. Ray, Manas Chandra (2010) *Editorial Board Member* - Smart Materials Research

Awards & Honours

1. Pratihari, Dilip Kumar (2001) *Alexander von Humboldt Fellowship, Germany*
2. Deb, Sankha (2011) *Biography in Marquis Whos Who in the World, 28th Edition, USA*
3. Deb, Sankha (2011) *Named as a member of the IBC Top 100 Engineers by International Biographical Centre, Cambridge, England*
4. Mohanty, Amiya Ranjan (0) *Rais Ahmed Memorial Award, Acoustics Society of India, 2009*

Fellowships

1. Das Gupta, Anirvan (2010) *Alexander von Humboldt Reinvitation Fellowship*
2. Maiti, Rathindranath (2010) *DAAD Research Stay*
3. Ray, Manas Chandra (2010) *Fellow of the Indian National Academy of Engineering (FNAE)*

Sponsored Research Projects

1. 2D Laser Doppler Velocimetry and Phase Doppler Particle Analyser (MHRD - FIST, Rs.120.00 Lakhs)
2. A Study Of Microscale Transport Processes Leading To The Development Of A Cooling Strategy For Electronic Components (DIT, Rs.0.00 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. Biomechanical Analysis and Design of Orthopaedic Implants (Department of Biotechnology, New Delhi, Rs.60.00 Lakhs)
6. Carbon dioxide based natural circulation loops (CSIR, Rs.13.50 Lakhs)
7. Cell Culture inside Microfluidic Channels with Extended Air-water Interface (DBT, Rs.0.00 Lakhs)
8. Deep drawing of laser welded advanced high strength steels (Department of Science and Technology, Rs.19.02 Lakhs)
9. Design and development of automobile for SAE Formula 1 international competition for students (SRIC, Rs.10.00 Lakhs)
10. Development and Characterization of Nano-fluid for Micro-thermal Heat Transfer Applications in Advanced Satellite (DCN) (, Rs.0.00 Lakhs)

11. Development of a Schlieren imaging system to study natural convection of heated vertical plate (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
12. Development of Cage for Mariculture through Numerical and Physical Modeling (Ministry of Earth Science, Government of India., Rs.45.00 Lakhs)
13. Development of Robust Signal Processing Techniques for Detection of Underwater Impact and Burst Noise (Ministry of Earth Sciences, Rs.60.00 Lakhs)
14. Development of Sound Proofing Composite Materials using Jute Products (JMDC, Kolkata, Rs.32.26 Lakhs)
15. 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)
16. Droplet based microfluidics for skin cooling in small form factor computing devices (INTEL, Rs.0.00 Lakhs)
17. 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)
18. Finite element analysis of weld location on formability of tailor welded blanks (SRIC, IIT Kharagpur, Rs.4.90 Lakhs)
19. GM-CRL on ECS (GM USA, Rs.0.00 Lakhs)
20. High Power laser workstation - 2 kW CW Fibre Laser with five axis CNC table (DST-FIST (SERC), Rs.200.00 Lakhs)
21. Indo-US Center for Research Excellence in Fabricionics (Indo-US Science and Technology Forum, Rs.0.00 Lakhs)
22. Intelligent Data Mining for Forward and Reverse Modeling of Manufacturing Processes (DST-SERC, Rs.15.00 Lakhs)
23. Measurement of residual stress in thermally sprayed ceramic splats (DST-EPFL; Indo-Swiss JUAF scheme, Rs.4.00 Lakhs)
24. Multi Sensor Based Tool Condition Monitoring in Drilling (CSIR, Rs.7.56 Lakhs)
25. MVL (MHRD, Rs.200.00 Lakhs)
26. Nanoscale Processes for Clean Coal and Bioinspired Water and GHG Efficient Energy Technologies (DST / GITA, Rs.8.00 Lakhs)
27. National Mission Project on Education through ICT, Developing suitable pedagogical methods (Thermodynamics) (MHRD, Rs.0.00 Lakhs)
28. Numerical simulation of turbulent plane offset jet flow and conjugate heat transfer (Department of Science and Technology, Rs.9.60 Lakhs)
29. On the dynamics of artificial joints (SRIC, IIT Kharagpur, Rs.4.90 Lakhs)
30. Optimal design of human muscle like electro active polymer actuators (DST, Rs.8.14 Lakhs)
31. Optimal design of tough wear resistant nanostructured coatings (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
32. Pedagogy (Mechanics of materials) (MHRD, Rs.0.00 Lakhs)
33. Pre-clinical analysis of failure mechanisms and design optimization of acetabular prosthesis (DBT, New Delhi, Rs.23.38 Lakhs)
34. Preclinical Analysis and Design of Improved Acetabular Prostheses (UKIERI British Council, Rs.54.00 Lakhs)
35. Rapid DNA Hybridization in Microfluidic Channels (DBT, Rs.0.00 Lakhs)
36. Setting up a research and development centre for Damodar Valley Corporation at Kolkata (DVC, Kolkata, Rs.10600.00 Lakhs)
37. STANDARDIZATION OF PROCESS PARAMETERS IN WITHERING, MACERATION, ROLLING, FERMENTATION AND DRYING OF TEA (Tea Board, GOI, Rs.366.96 Lakhs)
38. Steel Technology Centre (Minsitry of Steel & DST, Rs.2025.00 Lakhs)
39. Studies on process optimisation and visualisation of laser cladding process (Board for Research in Nuclear Sciences (BRNS), DAE, GOI., Rs.18.86 Lakhs)
40. 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)
41. Suspension and Bogies Technology for High Speed Trains (Center for Railway Research and RDSO, Rs.400.00 Lakhs)
42. Transient Boiling and Counter Current Flow Phenomena during Direct in Bundle Emergency Coolant Injection (BARC, Rs.45.00 Lakhs)
43. Transport Phenomena across Biological Cell Membranes within Microfluidic Lab-on-a-Chip Systems (British Council, Rs.0.00 Lakhs)
44. Turbulent Flow Computation of Two-Dimensional Incompressible Viscous Flow through a Cascade (ARDB Aerodynamics Panel, Rs.12.61 Lakhs)
45. Vibration induced transport of particles (DST, Rs.26.60 Lakhs)
46. Virtual Laboratory on Mechanical Systems and Signal Processing (MHRD, Rs.50.00 Lakhs)
47. Virtual Laboratory on multiphase flow (MHRD, Rs.0.00 Lakhs)
48. Virtual Labs (Mechanisms) (MHRD, Rs.17.00 Lakhs)
49. VLS-4 (MHRD, Rs.58.00 Lakhs)

Consultancy Projects

1. Acoustical Design of Kolkata Kala Kendra (Government of West Bengal, 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. Developing suitable pedagogical methods for various classes, intellectual calibers and research in e-learning (Pedagogy) (MHRD, Rs.0.00 Lakhs)
5. Development of a fundamental model for characterizing solidification transport in the mushy region (General Motors, Rs.0.00 Lakhs)
6. Development of a Multiphase Flowmeter (General Electric, India, Rs.3.00 Lakhs)
7. Development of Numerical Models for Emulsion and Nanofluid Heat Transfer (TATA Steel, Rs.0.00 Lakhs)
8. Development of System for monitoring of slow speed running equipment (SAIL, RDCIS, Ranchi - Completed, Rs.8.50 Lakhs)
9. Experimental sample preparation by Wire Cut EDM (Various institutes, Rs.0.75 Lakhs)
10. Flow equalization in PA cold duct, (Jindal Steel and power Ltd, Rs.2.00 Lakhs)
11. Heat Transfer and Fluid Flow Analysis for Cast Soap Manufacturing Process (ITC, Rs.0.00 Lakhs)
12. 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)
13. Plume trajectory analysis (GRSE Kolkata, Rs.19.85 Lakhs)
14. Pulling force estimation on a ribbed bar (Tata Steel, Rs.5.50 Lakhs)

15. Residence time computation in a tundish to improve its performance (IFGL refractories ltd, Rs.1.00 Lakhs)
16. Vibration Studies in Conveyor drive units (The Dhamra Port Company Limited, Bhubaneswar, Rs.2.00 Lakhs)
17. Wear analysis in laying head pipe (TISCO Jamshedpur, Rs.2.50 Lakhs)

Technology Transferred

1. RDCIS, Sail Ranchi - Software for detection of faults in slow speed running machines : Rs. 8.50 Lakh

Patents (filed / granted)

1. A method of maintaining the zone temperature in a variable air volume air conditioning system and a system thereof

Visits Abroad by Faculty Members

1. Bandyopadhyay, Partha Pratim - Visiting Scientist: To conduct research on splat-substrate adhesion in thermal spraying (Swiss Federal Lab for Materials Testing and Research (EMPA)Thun 3602, Switzerland,) 2nd August, 2009 - 21st, December, 2009
2. Deb, Sankha - Invited as Visiting Professor (Ecole Polytechnique, University of Montreal, Canada,) June 2009
3. Nath, Ashish Kumar - To make oral presentation of a contributed paper in MIMT2011 (2011 2nd International Conference on Mechanical, Industrial, and Manufacturing Technologies (MIMT 2011), Singapore,) Feb.24-28, 2011
4. Chakraborty, Suman - collaborative research (University of California, Berkeley,)
5. Maiti, Rathindranath - DAAD Research Stay Fellowship (IFD, TU-Dresden, Germany,) 23 May-7 July, 2010
6. Gupta, Sanjay - Collaborative research project between IIT Kharagpur and Southampton University (University of Southampton, United Kingdom,) Six weeks June 5 - July 17, 2010.
7. Sarangi, Mihir - Senior Visiting Researcher (Lulæe University of Technology, Lulæe, Sweden,) 71 days
8. Chakraborty, Suman - collaborative research (University of California Irvine,)
9. Chakraborty, Suman - Collaborative Project (University of Southampton, UK,)
10. Bandyopadhyay, Partha Pratim - To work on interfacial toughness of thermally sprayed coatings (Univ of Sc and Tech., Lille, France,) May-June, 2010
11. Satyamurty, V V - To attend ES2010 Conference (Phoenix, AZ, USA,) May 17-22, 2010
12. Bhattacharyya, Souvik - Invited Panelist and Keynote Address in International Symposium, Gave a talk at Vrije University (Brussels,) September 27-30, 2010
13. Das Gupta, Anirvan - AvH reinvitation fellowship (TU Darmstadt, Germany,) May-July, 2010
14. Chatterjee, Anindya - Conference (Aberdeen, Scotland,) 1 week
15. Ray, Manas Chandra - To carry out research on fluid-structure interaction (Virginia Polytechnic Institute and State University, Blacksburg, Virginia, USA,) May 17 - July 16, 2010
16. Mohanty, Amiya Ranjan - eMaint 2010 Conference (Lulea, Sweden,) 1 week
17. Mohanty, Amiya Ranjan - ICSV17 Conference (Cairo, Egypt,) 1 week

Invited Lectures by Faculty Members

1. Electron Beam Micro-Welding *by* Pratihar, Dilip Kumar (IIT Kanpur)
2. Traditional vs. Non-Traditional Optimization Techniques *by* Pratihar, Dilip Kumar (NIT Durgapur)
3. Applications of Soft Computing in Robotics and Manufacturing Science *by* Pratihar, Dilip Kumar (ITER, Bhubaneswar)
4. Charge injection and high dielectric constant polymer nanocomposites *by* Racherla, Vikranth (IIT Hyderabad)
5. Nanostructured thermal spray coatings: Effect of bimodal microstructures *by* Racherla, Vikranth (Proof and Experimental Establishment, DRDO, Chandipur, Orissa)
6. How to bring natural refrigerants faster to market *by* Bhattacharyya, Souvik (Atmosphere 2010, Brussels)
7. Laser applications in Micromanufacturing *by* Nath, Ashish Kumar (Indian Institute of Technology, Kanpur)
8. Recent advances in laser applications in manufacturing *by* Nath, Ashish Kumar (CMERI, Durgapur)
9. Vibration induced particle transport *by* Das Gupta, Anirvan (TU Berlin)
10. Air-supported structures: a platform for adaptronics *by* Das Gupta, Anirvan (Fraunhofer Institute AdRIA)
11. Biomicrofluidics: A Journey with DNAs, Cells, and Painless Microneedles *by* Chakraborty, Suman (University of Southampton)
12. Droplets and Bubbles in Microsystems *by* Chakraborty, Suman (Aurangabad)
13. Modeling of Flow Phenomena over Different Scales *by* Chakraborty, Suman (IT BHU)
14. Innovation in cBN grinding wheel through brazing, surface coating and touch dressing *by* Chattopadhyay, Ajay Kumar (4th SERC School on microfabrication and micromachining, Department of Production Engineering, Jadavpur University, April 10, 2010)
15. Advances in Automotive Engg *by* Mohanty, Amiya Ranjan (Gandhi Institute of Engineering & Technology,)
16. Machinery Condition Monitoring *by* Mohanty, Amiya Ranjan (amshedpur)

Books Published

1. J P Holman and Souvik Bhattacharyya: Heat Transfer *published by* Tata McGraw Hill ISBN: 9780071069670 (2011)

Short-Term Courses, Training Programmes and Workshops organised

1. Knowledge-based Systems in Engineering/Soft Computing (5 days)
2. Second Short term Course on Thermal Power Plant for TATA Power Engineers (13 to 23 December 2010)

Papers Published in Journals

1. Studies on low viscous oil-water flow through return bends By M. Sharma, P. Ravi, S. Ghosh, G. Das, P.K. Das *Experimental Thermal and Fluid Science* 35,3 pp455-469 (2011)
2. Disturbance-Observer-Based Force Estimation for Haptic Feedback By Abhishek Gupta and Marcia K. OMalley *Journal of Dynamic Systems, Measurement, and Control* Vol. 133 (2011)
3. Study on the role of PVD TiN coating in improving the performance of electroplated monolayer superabrasive wheel By D. Bhaduri, A. K. Chattopadhyay *Surface and Coatings Technology* 205/2, 658-667 (2010)
4. A hybrid computing scheme for forward and reverse mappings of metal inert gas welding process By S. Datta, D.K. Pratihar *International Journal of Computational Intelligence Studies* 1,3, pp.256-272 (2010)
5. A hybrid computing scheme for shape optimization in thermo-fluid problems By S. Ghosh, D.K. Pratihar, B. Maiti, P.K. Das *International Journal of Computational Intelligence Studies* 1,3, pp.207-226 (2010)
6. A Neuro Ant Colony Optimized Model for Drill Flank Wear Prediction By N. Raghavendra, Koranne, Rakshit, Patra, Karali, and Pal, Surjya K., *International Journal for Manufacturing Science and Production* 10, 169-184 (2009)
7. A study on heat affected zone softening in resistance spot welded dual phase steel by nanoindentation By Victor Hugo Baltazar Hernandez, Sushanta Kumar Panda, Yasuaki Okita, and Norman Y. Zhou *J. Mater. Sci.* v 45, p. 1638-1647 (2010)
8. A study on laser drilling of thin steel sheet in air and underwater By A. K. Nath, D. Hansdah, S. Roy, A. Roy Choudhury *Journal of Applied Physics* 107, doi:10.1063/1.3 (2010)
9. Acoustical and Fire Retardant Properties of Jute Composite Materials By S. Fatima and A. R. Mohanty *Applied Acoustics* 78, 108-114 (2011)
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5. An experimental study on the effect of lubrication, die land length and vibration in multi-hole extrusion process, By R. Das, U. S. Dixit and Sankha Deb, *International Conference on Production and Industrial Engineering (CPIE-2010)*, Jalandhar, India, (2010)
6. An integrated scheme for optimization of mechanical structure and controller of 2-dof manipulator tracking paths, By R. Rajendra, D.K. Pratihari, *ICTACEM-2010*, IIT Kharagpur, (2010)
7. Analysis Of Conduction Controlled Rewetting Considering Different Regimes Of Boiling, By Nagesh D. Patil, P.K.Das, Souvik Bhattacharyya, *20th National and 9th International ISHMT-ASME Heat and Mass Transfer Conference*, Mumbai, (2010)
8. Analytical model for describing the deformation behavior of unimorphs based on dielectric polymers, By Racherla V, *International Conference on Theoretical, Applied, Computational, and Experimental Mechanics*, Kharagpur, India, (2010)
9. A Dynamically-Adaptive Algorithm for Multi-Scale Resolution in Dendritic Solidification Processes, in Proceedings of National Conference on Mathematical Modeling and Computer Simulation, pp. 1-1, By K. Bhaduri, K. Das, S. Chakraborty, , (0)
10. Investigation on heat transfer in microchannels with asymmetric and periodic slip at the walls, in Proceedings of ASME International Mechanical Engineering Congress and Exposition IMECE2010 Nove, By A. C. Gunde, S. Chakraborty, S. K. Mitra, , (0)
11. The study of combined electroosmotic and pressure driven flow in wavy nanochannels, in Proceedings of ASME International Mechanical Engineering Congress and Exposition IMECE2010 November 12-18,, By N. S. K. Gunda, S. Chakraborty, S. K. Mitra, , (0)
12. Charge injection and high dielectric constant polymer nanocomposites, By Racherla V, *4th International Conference on Electroactive Polymers*, Surajkund, India, (2010)
13. Cumulative Frequency Distributions For Hourly Clearness Indices Through Generalized Parameters, By Satyamurty,V.V. and RaviKumar, P., *ASME 2010 International Conference on Energy Sustainability ES 2010*, Phoenix, AZ, USA, (2010)
14. Deformation behavior of unimorphs based on dielectric polymers, By Racherla V, *4th International Conference on Electroactive Polymers*, Surajkund, India, (2010)
15. Dynamic modeling of crab walking of a hexapod robot, By S.S. Roy, D.K. Pratihari, *ICTACEM-2010*, IIT Kharagpur, (2010)
16. Dynamic modeling of energy efficient crab walking of hexapod robot, By S.S. Roy, D.K. Pratihari, *MMT*, Singapore, (2011)
17. Dynamic modeling of energy efficient hexapod robots locomotion over gradient terrains, By S.S. Roy, P. SenChoudhury, D.K. Pratihari, *FIRA Robot World Congress 2010*, Bangalore, India, (2010)
18. Effect of die land length and lubrication on the mechanical properties of the extruded products in a multi-hole extrusion process: an experimental study, By R. Das, U. S. Dixit, and Sankha Deb, *International Conference on Advances in Mechanical Engineering*, Surat, India, (2010)
19. Effects of change in stem length on the mechanics of a resurfaced femur, By Pal B, Gupta S, New AMR, *6th World Congress of Biomechanics*, Singapore, (2010)
20. Experimental measurement of strains and micromotion in the resurfaced femur, By Pal B, Ghosh D, Gupta S, New AMR, *17th European Society of Biomechanics Conference*, University of Edinburgh, United Kingdom, (2010)
21. Fabrication of tungsten-copper composite by direct metal laser sintering process and characterization of its mechanical and microstructural properties, By Subrata Kumar Ghosh, Saumitra Singh, Arvind Agrawal, Partha Saha, *3rd International and 24th All India Manufacturing Technology Design and Research Conference*, Andhra University, Visakhapatnam, (2010)
22. Finite element analysis of uncemented acetabular component designs, By Ghosh R, Pal B, Ghosh D, Gupta S, New AMR, *6th World Congress of Biomechanics*, Singapore, (2010)
23. Gear Fault Detection using Instantaneous Angular Speed Measurement, By A. R. Mohanty and Devesh Agrawal, *e-Maint 2010*, Lulea, Sweden, (2010)
24. Generation of Optimal Sequence of Machining Operations in Set-up Planning by Genetic Algorithms, By C. Kumar and Sankha Deb, *3rd International & 24th AIMTDR Conference*, Visakhapatnam, India, (2010)
25. Grasping Strategies for a Dexterous Multi-finger Robot Gripper, By A. Das and Sankha Deb, *3rd International & 24th AIMTDR Conference*, Visakhapatnam, India, (2010)
26. Hybrid optimization scheme for radial basis function neural network, By V. Dey, D.K. Pratihari, G.L. Datta, *SEAL-10*, IIT Kanpur, India, (2010)
27. Inter-Electrode Gap Control in Micro-Electrochemical Machining Operations - A Case Study through Response Surface Methodology, By Alok Kumar Das and Partha Saha, *3rd International and 24th All India Manufacturing Technology Design and Research Conference*, Andhra University, Visakhapatnam, (2010)
28. Jute as an acousticsl material for noise control of a domestic dryer, By A. R. Mohanty and S. Fatima, *ICSV 17*, Cairo, Egypt, (2010)
29. Model Based Fault Diagnosis of a Rotor System, By A. R. Mohanty and A. K. Jalan, *e-Maint, 2010*, Lulea, Sweden, (2010)
30. On characterization and performance evaluation of TiN-MoS_x composite coated drill in dry machining of AISI 1030 steel, By S Gangopadhyay, D Bhaduri, A K Chattopadhyay, S Paul, *3rd international AIMTDR conference*, Andhra University, Visakhapatnam, (2010)
31. On deposition and characterisation of MoS_x-Ti multilayer coating and performance evaluation in dry turning of aluminium alloy and steel, By S. Gangopadhyay, R. Acharya, A.K. Chattopadhyay, S. Paul,, *36th International MATADOR Conference*,, University of Manchester, UK., (2010)
32. Optimal microstructures for high dielectric constant polymer nano composites, By Racherla V, *International Conference on Theoretical, Applied, Computational, and Experimental Mechanics*, Kharagpur, India, (2010)
33. Performance of a transcritical CO₂ heat pump for simultaneous water cooling and heating, By Sarkar, J., Bhattacharyya, S., Gopal, M.R, *2010 ASHRAE Winter Conference*, Orlando, Florida, USA, (2010)
34. Pre-clinical analysis of uncemented metallic acetabular component, By Ghosh R, Pal B, Ghosh D, Gupta S, New AMR, *17th European Society of Biomechanics Conference*, University of Edinburgh, United Kingdom, (2010)
35. Prediction of residual stress using micro-magnetic properties in high speed grinding, By M Vashista and S Paul,, *8th International Conference on Barkhausen Noise and Micromagnetic Testing (ICBM-8)*,, Kalapakkam, (2010)
36. Reconfiguration of four legged walking robot for actuator faults, By V.L. Krishnan, P.M. Pathak, S.C. Jain, A.K. Samantaray, *2010 Spring Simulation Multiconference (SpringSim 10)*, Orlando, FL, USA, (2010)

37. Scaling criteria for an advanced heavy water reactor for entrainment analysis, *By* DN Basu, ND Patil, Souvik Bhattacharyya, PK Das, *4th National Conference on Nuclear Reactor Technology (NRT-4)*, BARC, Mumbai, (2011)
38. Simulation of desiccant air conditioning system using cross corrugated solar collector, *By* Yadav, A.K., Ram Gopal, M., *International Conference on Renewable Energy, ICRE-2011*, Jaipur, India, (2011)
39. Statistical Pattern Analysis of White Blood Cell Nuclei Morphometry, *By* Ghosh, Madhumala, Das, Debkumar, Mandal, Subhodip, Chakraborty, Chandan, Pal, Mallika, Maity, Ashok, Pal, Surjya K., and Ray, Ajoy K., *IEEE Students'™ Technology Symposium*, IIT Kharagpur, (2010)
40. Strategies for Intelligent Tool Wear Prediction in a Machining Process, *By* Karali Patra, Surjya K. Pal and Kingshook Bhattacharyya,, *International congress on Condition Monitoring and Diagnostic Engineering Management (COMADEM)*, Nara, Japan, (2010)
41. Temperature field of repetitive laser pulse irradiation and its effect on laser surface hardening, *By* Aniruddha Gupta and Ashish Kumar Nath, *2011 2nd International Conference on Mechanical, Industrial, and Manufacturing Technologies (MIMT 2011)*, Singapore, (2011)

Department of Geology & Geophysics

Head

Prof. Biswajit Mishra

Professors

Bhattacharya, Abhijit	<i>Ph.D.(IIT Kharagpur)</i> , Metamorphic Petrology, Igneous Petrology
Bhowmik, Santanu Kumar	<i>Ph.D.(Jadavpur Univ)</i> , Metamorphic Petrology, Geochronology
Das, Subhasish	<i>Ph.D.(IIT Kharagpur)</i> , Sedimentology, Basin Tectonics
Gupta, Anil Kumar	<i>Ph.D.(BHU, Varanasi)</i> , Paleomonsoons, Paleoclimatology, Micropaleontology, Paleoceanography
Gupta, Saibal	<i>Ph.D.(Cantab)</i> , Structural Geology, Metamorphic Petrology, Tectonics
Mishra, Biswajit	<i>Ph.D.(IIT Kharagpur)</i> , Ore Geology
Nath, Sankar Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Earthquake and Engineering Seismology, Seismic Hazard & Risk Assessment and Microzonation, Seismic Prospecting, Geophysical Signal Processing, Geophysical Tomography, Computational Geophysics
Panigrahi, Mruganka Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Economic Geology, Crustal Fluids, Computer Applications
Sarkar, Anindya	<i>Ph.D (Gujrat Univ.)</i> , Stable Isotope Geochemistry, Sedimentology, Palaeoclimatology
Sen Gupta, Debashish	<i>Ph.D.(PRL, Ahamdabad)</i> , Modeling of Environmental Radioactivity & Nuclear Geophysics and its applications
Tripathy, Subhasish	<i>Ph.D.(IIT Bombay)</i> , Environmental Geochemistry, Waste Utilization

Associate Professors

Bhattacharya, Amit Kumar	<i>Ph.D.(IIT Kharagpur)</i> ,
Mamtani, Manish A	<i>Ph.D.(MSU, Baroda)</i> , Structural Geology, Microtectonics
Mohanty, William Kumar	<i>Ph.D.(Delhi Univ.)</i> , Seismology, Seismic Hazard Assessment, Gravity & Magnetic Methods of Prospecting
Sharma, Shashi Prakash	<i>Ph.D.(BHU, Varanasi)</i> , Electrical and EM Geophysics, Integrated Geophysical Research, Modeling and Inversion, Groundwater Geophysics

Assistant Professors

Basu, Arindam	<i>Ph.D.(The Univ. of Hong Kong)</i> , Rock Mechanics, Engineering Geology
Dalai, Tarun K	<i>Ph.D.(PRL Ahmedabad)</i> , Surficial and aqueous geochemistry, Radiogenic isotopes in natural envt., Trace element geochemistry
Mitra, Supriyo	<i>Ph.D.(Cambridge Univ)</i> , Continental Tectonics, Seismic Tomography, Earthquake Seismology, Lithospheric Structure
Mukherjee, Abhijit	<i>Ph.D.(Univ. of Kentucky, USA)</i> , 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	<i>Ph.D.(IIT Kharagpur)</i> , Sulfide Phase Equilibria, Experimental Petrology, Ore Geology
Ray, Sanghamitra	<i>Ph.D.(Calcutta Univ)</i> , Vertebrate paleobiology, Gondwana stratigraphy and sedimentation
Sanyal, Prasanta	, Stable Isotope Geochemistry, Sedimentology
Upadhyay, Dewashish	<i>Ph.D.(Univ. of Bonn, Germany)</i> , Geochemistry, Igneous Petrology, Cosmochemistry

Lecturer

Datta, Indira	<i>Ph.D.(IIT Kharagpur)</i> , Digital Remote SensingData Analysis in Geoscience
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Senior Scientific Officer

Sengupta, Probal

Ph.D.(IIT Kharagpur), Seismology, Seismic Hazard & Microzonation, Seismic Prospecting

Faculty Appointments

Kamal Lochan Pruseth

Assistant Professor

Abhijit Mukherjee

Assistant Professor

Faculty Promotions

Saibal Gupta

Professor

Santanu Kumar Bhowmik

Professor

Amit Kumar Bhattacharya

Professor

Faculty Resignation

Naresh Chandra Pant

Associate Professor

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. 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)
2. An HANNA multiparameter meter (for measuring water quality)
3. A FRANTZ magnetic barrier separator
4. A FRITSCH disc mill

Lectures by Visiting Experts

1. Incorporating the fourth dimension into geophysical data interpretation *by* Dr. Jung-Ho Kim (Korea Institute of Geoscience and Mineral Resources, Daejeon, South Korea)
2. Early Life on Earth *by* Prof. Stefan Bengtson (Swedish Natural History Museum, Stockholm, Sweden)
3. Remote Sensing and GIS applications in Coastal Disaster Studies in India *by* Dr. D. Mitra (IIRS, Dehradun, India)
4. Helicopter-borne Time domain electromagnetic surveys *by* Dr. S. K. Verma (National Geophysical Research Institute, Hyderabad, India)
5. Time-domain electromagnetic survey employing a grounded transmitter cable *by* Prof. T. Mogi (University of Hokkaido, Japan)
6. Full-Wavefield Seismic to extract fracture and stress information for shale gas exploration *by* Dr. Satish Sinha (RGIPT, Rae Bareilly, India)
7. Inside a fossil high pressure cell in the Crust: high resolution multi scale study of a crack - seal vein system in the Oman mountains *by* Prof. Janos Urai (RWTH Aachen University, Germany)

8. Natural Radionuclides in Aqueous Systems: Tracing and Timing Biogeochemical processes and Particle Dynamics by Prof. S. Krishnaswami (Physical Research Laboratory, Ahmedabad, India)
9. Metamorphism of crustal rocks at ultra-high temperatures by Prof. Michael M Raith (University of Bonn, Germany)

Doctoral and MS Degrees Awarded

1. Sriparna Goswami : Petrology of an Inverted Metamorphic Sequence from the Western Arunachal Himalaya, India(Ph.D.)
2. Sakthi Sarvana C : Greenstone metamorphism, geochemistry, ore mineralogy and fluid evolution of the granitoid-hosted gold mineralization at Jonnagiri, eastern Dharwar Craton(Ph.D.)
3. Baidehi Mukherjee : Holocene record of Southwest Monsoon Variability from the Northwest Arabian Sea (Let 117)(Ph.D.)
4. Sabyasachi Maiti : Coastal change study along Midnapur Balasore coast of eastern India through integrated Remote Sensing and Geographic Information System based approach(Ph.D.)
5. M.K. Bera : SEQUENCE STRATIGRAPHY AND STABLE ISOTOPES OF PALAEOGENE SEDIMENTS, SUBATHU SUB-BASIN, INDIA: IMPLICATIONS TO EVOLUTION OF THE HIMALAYAN FORELAND(Ph.D.)

Member - Professional Bodies

1. Basu, Arindam, *Member* - International Society for Rock Mechanics (through the National Group of India)
2. Das, Subhasish, *Member* - Wadia Institute of Himalayan Geology, Dehradun
3. Das, Subhasish, *Member* - Research Board of Advisors, American Biographical Institute, USA
4. Das, Subhasish, *Life Member* - Indian Association of Sedimentologists, Aligarh
5. Datta, Indira, *Life Member* - Life Member of Association of Exploration Geophysics
6. Datta, Indira, *Life Member* - Life Member of Indian Society of Theoretical and Applied Mechanics
7. Mishra, Biswajit, *Member* - INSA National Committee of IUGS-SCL-INQUA
8. Mishra, Biswajit, *Life Fellow* - Geological Society of India
9. Mishra, Biswajit, *Fellow* - Society of Economic Geologists (SEG), USA
10. Mishra, Biswajit, *National representative* - IMA-COM (International Mineralogical Association-Commission on Ore Mineralogy)
11. Mukherjee, Abhijit, *Life Member* - Indian Science Congress Association
12. Mukherjee, Abhijit, - Geological Society of America
13. Mukherjee, Abhijit, - International Association of Hydrogeologists
14. Nath, Sankar Kumar, *Senior Life Fellow* - Life Fellow (No.236): The Geological, Mining and Metallurgical Society of India (GMMSI)
15. Nath, Sankar Kumar, *Senior Fellow* - Life Fellow: The Society of Geoscientists and Allied Technologists (SGAT).
16. Nath, Sankar Kumar, *Regular Member* - Member Registration No. 8810 : The Mining Geological & Metallurgical Institute of India (MGMI)
17. Nath, Sankar Kumar, *Regular Member* - Member (No. 10283967): American Geophysics Union (AGU).
18. Nath, Sankar Kumar, *Senior Member* - Member (No. 16472): The Seismological Society of America (SSA).
19. Nath, Sankar Kumar, *Senior Life Member* - Life Member (L/141): The Indian Society of Theoretical and Applied Mechanics
20. Panigrahi, Mruganka Kumar, *Member* - Society for Geology Applied to Mineral Deposits
21. Panigrahi, Mruganka Kumar, *Member* - Society of Resource Geology
22. Panigrahi, Mruganka Kumar, *Member* - Association of Applied Geochemists
23. Sharma, Shashi Prakash, *Regular* - National Academy of Sciences, Allahabad, U.P.
24. Sharma, Shashi Prakash, *Regular* - Association of Exploration Geophysicist, Hyderabad, India

Member - Editorial Board

1. Bhowmik, Santanu Kumar (2011) *Editorial Advisory Board* - Indian Journal of Geosciences
2. Gupta, Saibal (0) *Member, Editorial Board* - Himalayan Geology
3. Gupta, Saibal (0) *Member, Editorial Board* - Indian Journal of Geology
4. Mamtani, Manish A (2010) *Editorial Board Member* - Journal of the Geological Society of India
5. Mohanty, William Kumar (2010) *Member Editorial Board* - Prakruti Vikash
6. Mukherjee, Abhijit (2011) *Guest Editor* - Applied Geochemistry
7. Mukherjee, Abhijit (2011) *Associate Editor* - Applied Geochemistry
8. Mukherjee, Abhijit (2011) *Associate Editor* - Journal of Hydrology
9. Mukherjee, Abhijit (2008) *Guest Editor* - Journal of Contaminant Hydrology
10. Panigrahi, Mruganka Kumar (2010) *Member, Advisory Editorial Board* - Resource Geology
11. Sen Gupta, Debashish (2010) *Member, Editorial Board* - International Journal of Geology and Mining
12. Sharma, Shashi Prakash (2010) *Co-Editor of a special Volume* - Journal of Physics and Chemistry of the earth

Awards & Honours

1. Basu, Arindam (2006) *Postdoctoral Fellowship by FAPESP @ Universidade de São Paulo, Brazil*

Sponsored Research Projects

1. Contrasting Styles of Exhumation of Monocyclic and Polycyclic Granulites from the Sausar Mobile Belt in Central India: Constraints from Metamorphic P- (DST, Rs.14.03 Lakhs)
2. Create Infrastructure Facilities and Additional Provisions needed for sustaining a 24-Month M.Tech. Programme in Computational Seismology (Completed) (Ministry of Earth Sciences, Govt. of India, Rs.175.36 Lakhs)
3. 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)
4. Establishment of Electron Probe Micro Analyzer (EPMA) National Facility IIT, Kharagpur (DST, Rs.573.18 Lakhs)
5. 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)
6. Geophysical Survey using Gravity and Magnetic methods in South Purulia Shear Zone (BRNS, Department of Atomic Energy, Rs.19.63 Lakhs)
7. Global Seismic Monitoring by Broadband Seismological Observatory at IIT Kharagpur (Ongoing) (Ministry of Earth Sciences, Govt. of India, Rs.23.59 Lakhs)
8. Gravity and magnetic study around south Purulia shear zone (BRNS, DAE, Mumbai, Rs.20.00 Lakhs)
9. 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)
10. 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)
11. 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)
12. Isostatic coherence anisotropy using wavelet method (ISIRD, Rs.3.00 Lakhs)
13. Isotopes of water in India (2008-2013; on-going) (DST, Rs.12.00 Lakhs)
14. Mesozoic Gondwana vertebrates from Madhya Pradesh, India: an integrated study in paleobiology (DST, India, Rs.22.80 Lakhs)
15. National stable Isotope facility project at IIT, Kharagpur, sponsored by DST (outlay ~Rs. 200 lacs, 2004-2010; on-going). (DST, Rs.230.00 Lakhs)
16. Phase relations in the Fe-S-Au-S system and possible role of partial melting of ores in concentrating gold (DST, Rs.36.05 Lakhs)
17. Predicting crack initiation stress by porosity and evaluating microstructural control on crack initiation: a study on granite (DST, New Delhi, Rs.18.77 Lakhs)
18. Quantitative assessment of weathering grades of rock materials (ISIRD, IIT Kharagpur, Rs.3.90 Lakhs)
19. Reservoir Characterization using Artificial Intelligent Techniques (Soft Computing) (Oil & Natural Gas Corporation Ltd. (ONGC), Dehradun, Rs.45.72 Lakhs)
20. Seismic Hazard and Risk Assessment of Darjeeling-Sikkim Himalaya (Ongoing) (Ministry of Earth Sciences, Govt. of India, Rs.40.00 Lakhs)
21. Seismic Hazard Assessment, Microzonation, and Evaluation of Vulnerability & Risk of the Urban Kolkata (Project sanctioned, fund just released) (Ministry of Earth Sciences, Govt. of India, Rs.432.71 Lakhs)
22. Spatial relationship between metallogenesis and geodynamic evolution of granite-greenstone ensembles of the Eastern Dharwar craton from the perspective (Department of Science and Technology, Rs.11.00 Lakhs)
23. Testing models for mountain building in the northeastern Himalaya (Royal Society, Rs.0.00 Lakhs)
24. The exhumation factor in the genesis of inverted metamorphic sequences – an evaluation from structure, metamorphism, fluid inclusions and earthquake (DST, Rs.14.22 Lakhs)
25. The Indian Continental Shelf as a potential source of Phosphate (Ministry of Earth Sciences, Rs.93.00 Lakhs)
26. The relationship between anisotropy of magnetic susceptibility, strength anisotropy and microstructure in rocks devoid of mesoscopic foliations (DST, New Delhi, Rs.19.55 Lakhs)
27. 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)
28. Thermal History of the Inverted Metamorphic Sequence from the Northwestern Arunachal Pradesh: Constraints from Microstructure, Thermobarometry and P-T (CSIR, Rs.18.72 Lakhs)

Consultancy Projects

1. Ground Vibration study on Inganijharan Iron and Manganese Mines in District Keonjhar, Orissa (Bhanja Minerals Pvt. Ltd., Rs.2.48 Lakhs)
2. Integrated geological and geophysical study around Tangarapada area, Orissa (The Industrial Development Corporation of Orissa Ltd. (IDCOL) Government of Orissa, Rs.10.68 Lakhs)
3. Probabilistic seismic hazard analysis for Kakrapar Atomic Power Plant (KAPS- 1,2) (Nuclear Power Corporation of India Limited, Government of India, Rs.10.75 Lakhs)
4. 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)
5. 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. Mamtani, Manish A - Collaborative Research (University of Catania (Italy),) 19 June - 8 July 2010
2. Bhowmik, Santanu Kumar - To Initiate Collaborative Research (Taiwan National University, Taipei, Taiwan,) 1 week
3. Sen Gupta, Debashish - Made two Oral Presentations at 10th Intl. Workshop on Geological Aspects of Radon Risk (Prague, Czech Republic,) September 21st-September 24th, 2010

4. Sarkar, Anindya - Visiting Professor (Department of Earth & Atmospheric Sciences, Purdue University, USA,) February-August, 2010
5. Sarkar, Anindya - Benjamin Meaker Professor at Institute of Advanced studies and Dept.of Chemistry (Institute of Advances Studies and Dept. of Chemistry, Bristol University, UK,) September-December, 2010
6. Basu, Arindam - To participate in the 11th IAEG Congress (Auckland, New Zealand,) 5-10 September 2010

Invited Lectures by Faculty Members

1. Application of Nuclear Geophysics for studies on Environmental Radioactivity by Sen Gupta, Debashish (Department of Geology, Utkal University, Orissa)
2. Sulfur isotopes in Proterozoic pyrites by Sarkar, Anindya (Swedish Natural History Museum, Stockholm)
3. Evolution of Ganges Brahmaputra delta during late Quaternary by Sarkar, Anindya (Department of Earth & Atmospheric Sciences, Purdue University, USA)
4. Marine to continental transition in Himalayan foreland and antiquity of Indian monsoon by Sarkar, Anindya (Department of Earth & Atmospheric Sciences, Purdue University, USA)
5. Stable isotopes in palaeoelevation estimation by Sarkar, Anindya (Bristol University, UK)
6. Evolution of Ganges Brahmaputra delta during late Quaternary by Sarkar, Anindya (Public lecture at Bristol University)
7. Environmental Implications and Hazard Estimation for Uranium Mines by Sen Gupta, Debashish (IIT Kharagpur)
8. AMS, AARM and SEM-EBSD analysis and the deformation mechanism of magnetite in polymineralic rocks by Mamtani, Manish A (University of Catania (Italy))
9. AMS & Rock Magnetism: Principles, Methods, Scope and Limitations by Mamtani, Manish A (Mizoram University, Aizawl)
10. Case Studies in AMS with special reference to Structural Geology and Tectonics by Mamtani, Manish A (Mizoram University, Aizawl)
11. Disaster Mitigation and Management for West Bengal with special emphasis to Seismic Microzonation of by Nath, Sankar Kumar (International Symposium on Interdisciplinary Studies and Promotion of Research on Natural Disaster organized by MICRODIS - Jadavpur University at HYATT REGENCY, Kolkata.)
12. Status of Seismic Microzonation Studies in the North East India by Nath, Sankar Kumar (National Workshop on Earthquake Risk Mitigation Strategy in the North East at Administrative Staff College, Guwahati organized by NIDM, NDMA, MHA, GOI.)
13. Assembly and Growth of the Greater Indian landmass: Record from the Central Indian Tectonic zone by Bhowmik, Santanu Kumar (Taiwan National University, Taipei, Taiwan)
14. Transition from Accretionary to Collisional orogenesis in the Central Indian Tectonic Zone: Linking by Bhowmik, Santanu Kumar (AOGS-2010 Conference, Hyderabad)
15. Groundwater issues in India by Mukherjee, Abhijit (Corporate Social Responsibility Conclave, Mumbai)

Short-Term Courses, Training Programmes and Workshops organised

1. Solid and Hazardous Waste Management (12th November-19th November 2010)

Papers Published in Journals

1. Hydrogeochemical characteristics of acid mine drainage and water pollution at Makum Coalfield, India By Equeenuddin SM, Tripathy S, Sahoo PK, Panigrahi MK *Journal of Geochemical Exploration* 105, 75-82 (2010)
2. Influence of different forms of acidities on soil microbiological properties and enzyme activities at an acid mine drainage contaminated site By Sahoo PK, Bhattacharyya P, Tripathy S., Equeenuddin M and Panigrahi MK *Journal of Hazardous Materials* 179, 966-975 (2010)
3. Paleoproterozoic granite-ore systems in the perspective of crustal evolution: Insights from the Malanjkhand copper deposit and surrounding granitoids in the Central Indian craton By Panigrahi MK, Pandit D, Moriyama T, Ishihara S *SMART SCIENCE FOR EXPLORATION AND MINING* 2,957-959 (2010)
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5. Application of anisotropy of magnetic susceptibility in evaluating folds in naturally deformed rocks, By Mamtani, M.A., *Rock Deformation & Structures (RDS-I)*, Jadavpur University, Kolkata, (2010)
6. Attenuation of Coda waves of local Earthquakes in the Northeastern India, By Alok Kumar Mohapatra and William K. Mohanty, *The 2001 Bhuj Earthquake and Advances in Earthquake Science AES 2011*, ISR, Gandhinagar, Gujarat, India, (2011)
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9. Chromite investigation in Tangarparha, Orissa : an example of integrated geological and geophysical study for mineral exploration, By Saibal Gupta, â€”Recent Developments in Geology, Mineral and Groundwater Resources of Indiaâ€”, Aurangabad, (2011)
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Department of Mining Engineering

Head

Prof. J. Bhattacharyya
Prof. Samir Kumar Das

Up to 30.09.2010
From 01.10.2010

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
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
Pathak, Khanindra	<i>Ph.D.(London Univ)</i> , RS and GIS Application in Environmental Management in Surface Mining. Disaster Management
Rao, Karanam Uma Maheshwar	<i>Ph.D.(IIT Kharagpur)</i> , Rock Mechanics, Mine Development, Underground Metal Mining
Sastry, Bhamidipati Suryan	<i>Ph.D.(Utah)</i> , Underground Environment and Ventilation

Associate Professors

Deb, Debasis	<i>Ph.D.(Alabama Univ, USA)</i> , Rock Mechanics, Numerical modelling, Mine Design, Ground Control
Majumder, Arun Kumar	<i>Ph.D.(Univ. of Queensland)</i> , Mineral and Coal Processing Solid-Fluid Interactions Fine Particle Processing
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 when abraded against different rocks.

Assistant 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
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
Prusty, Basanta Kumar	<i>Ph.D.(Southern Illinois)</i> , Coalbed methane and shale gas, Geological Carbon Sequestration, Clean Coal Technology
Samanta, Biswajit	<i>Ph.D.(IIT Kharagpur)</i> , Mine planning, Geostatistics, Mine environment and ventilation
Verma, Abhiram Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Rock Mechanics and Ground Control, 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, stochastic 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.

5. 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. Temperature controlled gas desorption on canister with portable gas measurement system
10. Refrigerated Centrifuge 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 Research

Korea Institute of Geosciences 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 â€ 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. Bhattacharya, Jayanta, *Member* - Indian Society of Technical Education
2. Bhattacharya, Jayanta, *Member* - Institution of Engineers India
3. Bhattacharya, Jayanta, *Fellow* - Indian National Acedemy of Engineering
4. Bhattacharya, Jayanta, *Member* - Mining Geological and Metallurgical Institute of India
5. Bhattacharjee, Ashis, *Life Member* - Mining, Geological and Metallurgical Institute of India
6. Bhattacharjee, Ashis, *Life Member* - The Institution of Engineers India
7. Chakravarty, Debashish, *Associate* - Associate Member of IEI
8. Chakravarty, Debashish, *Life Member* - Life Member of MGMI
9. Deb, Debasis, *Life Member* - Indian Society of Theoretical and Applied Mechanics (ISTAM)
10. Deb, Debasis, *Life-time* - International Soceity of Rock Mechanics (ISRM)
11. Deb, Debasis, *Life-time* - Mining, Geology and Metallurgical Society of India (MGMI)
12. Dey, Kaushik, *Life Member* - Indian Society of Rock Mechanics and Tunelling Technology
13. Dey, Kaushik, *Life member* - Indian Science Congress Association
14. Dey, Kaushik, *Life Member* - Mining Geological and Metalurgical Society of India
15. Dey, Kaushik, *Life Member* - Mining Engineers Association of India
16. Dey, Kaushik, *Associate Member* - Institute of Engineers (India)
17. Majumder, Arun Kumar, *Life Member* - Institution of Engineers (India)
18. Majumder, Arun Kumar, *Life Member* - Indian Institute of Mineral Engineers
19. Majumder, Arun Kumar, *Life Member* - Indian Institute of Metals
20. Majumder, Arun Kumar, *Life Member* - Institute of Standard Engineers
21. Mukhopadhyay, Subir Kumar, *Senior Life Member* - Indian Society of Technical Education
22. Mukhopadhyay, Subir Kumar, *Senior Life Member* - Mining Engineers Association of India
23. Mukhopadhyay, Subir Kumar, *Chartered Engineer (Regular)* - The Institution of Engineers (India) Estd. 1923
24. Mukhopadhyay, Subir Kumar, *Senior Life Member* - The Mining, Geological & Metallurgical Institute of India, Estd. 1906
25. Pal, Samir Kumar, *Fellow* - The Institution of Engineers (India)
26. Pal, Samir Kumar, *Life Member* - The Mining, Geological and Metallurgical Institute of India
27. Pathak, Khanindra, *Life member* - ISTE
28. Pathak, Khanindra, *Member* - PNG Chamber of Mines and Petroleum
29. Pathak, Khanindra, *Life member* - Institution of Engineers (India)
30. Pathak, Khanindra, *Life Member* - MGMI
31. Pathak, Khanindra, *Life Member* - Acoustic Society of India
32. Patra, Aditya Kumar, *Life member* - Mining, Geological and Metallurgical Institute of India (MGMI)
33. Patra, Aditya Kumar, *Life member* - Indian Science Congress Association (ISCA)
34. Patra, Aditya Kumar, *Life member* - Society of Geoscientists and Allied Technologists (SGAT)
35. Patra, Aditya Kumar, *Life member* - IME Journal Readersâ€™ Forum
36. Patra, Aditya Kumar, *Member* - Institution of Engineers (India) (IE)
37. Patra, Aditya Kumar, *Life member* - Institution of Public Health Engineers (IPHE)
38. Prusty, Basanta Kumar, *Life Member* - Mining Engineers Association of India
39. Prusty, Basanta Kumar, *Life Member* - Mining Geological and Metallurgical Institute of India
40. Prusty, Basanta Kumar, *Life Member* - Society of Geoscientist and Allied Technologists, India
41. Prusty, Basanta Kumar, *Life Member* - Indian Science Congress Association
42. Rao, Karanam Uma Maheshwar, *Fellow Institution of Engineers FIE-112784* - Institution of Enginners - FIE
43. Samanta, Biswajit, *Regular* - MGMI
44. Samanta, Biswajit, *Regular* - Institute of Engineer
45. Samanta, Biswajit, *Regular* - SME (Society of Mining Engineering, USA)

Member - Editorial Board

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

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. Majumder, Arun Kumar (2007) *“Institute’s 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”.*
4. Mukhopadhyay, Subir Kumar (2011) *Eminent Mining Engineer - Honour MEAI (Jaipur) - delivered lecture as Guest of Honour.*
5. Bhattacharya, Jayanta (2011) *Honorary Advisor, Corporate and Social Performance, Tata Steel*
6. 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.*
7. Chakravarty, Debashish (2010) *Institute Bronze Medal from MGMI*
8. 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 the IIME International Seminar on Mineral Proc*
9. 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 Engineers (India).*
10. 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.*
11. 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.*
12. 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 the Institution of Engineers (India) , Vol 89, pp*

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. "Model Studies on the Efficiency of Gravity Blind Backfilling Method and Evaluation of a Pre-Jamming Indication Parameter (Ministry of Coal, New Delhi, Rs.395.18 Lakhs)
3. Development & implementation of extended finite element method (XFEM) for modeling cohesive discontinuities in rock mass (DST, New Delhi, Rs.16.00 Lakhs)
4. Development of roof fall prediction system for underground mines using wireless network (Coal India Limited, Rs.220.00 Lakhs)
5. Development of RS-GIS based database for Uranium Mining and Milling in the West Khasi Hills district, Meghalaya (BRNS, Rs.32.00 Lakhs)
6. Dispersion of particulate matter from deep opencast mines (ISIRD, SRIC, Indian Institute of Technology Kharagpur, Rs.5.00 Lakhs)
7. Effects of Mine Tailing and Jarofix leaching on Water Contamination (Hindustan Zinc Limited, Rs.19.00 Lakhs)
8. Investigation on Augmentation of Life of Dump-Truck Tyres through the Improvement of Tyre Retreading Compound-Phase II (Coal India Limited, Rs.53.28 Lakhs)
9. Investigations of Bolt Behaviour in Development and Depillaring Panels under Blast Induced Dynamic Loading (CIL R&D Board, Rs.229.00 Lakhs)
10. Modeling Extent of Overbreak and Cracked Zone due to Blasting in Tunnels of Hydro-Electric Projects (CSIR, Rs.20.84 Lakhs)
11. National Mission on Education through Information and Communication Technology -NMEICT (MHRD, Rs.-0.00 Lakhs)
12. Pedagogy Project for Mine Ventilation (MHRD, Rs.0.00 Lakhs)
13. Remote Sensing and GIS based infrastructure for baseline environment for new uranium mining sites (BRNS, Mumbai, Rs.42.00 Lakhs)
14. Study of the Behavior of Oil Spill on Ocean Surface through Laboratory experiments, modeling and Satellite Image (Ministry of Earth Science, GoI, Rs.78.00 Lakhs)
15. Technical Study of Old and Active OB Dumps of WCL for Dimensional Optimization (CIL R&D Board, Rs.359.29 Lakhs)
16. 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)
17. Underground coal gasification and its process optimisation for sub-bituminous coals of India by a laboratory study (SRIC, IIT, Rs.5.00 Lakhs)

18. Use of hyperspectral remote sensing for mineral identification and mapping (STC, ISRO, Rs.14.90 Lakhs)
19. Virtual Laboratory for mine automation and virtual reality (MHRD, Rs.56.00 Lakhs)

Consultancy Projects

1. Advice for compliance of FC & EC conditions of KIOM-MIOM including submission of reports and presentations and supervision during execution of report (Raw Materials Division, KBR-MBR Group of Mines, SAIL, Rs.22.94 Lakhs)
2. Applied Rock and Soil Mechanics Works for Mine Design System in UCIL mines (RSMW) (Uranium Corporation of India Ltd. (UCIL) GoI, Rs.9.88 Lakhs)
3. Arresting flow of fines from fines heaps at Gua ore mines (SAIL, Rs.0.80 Lakhs)
4. Assessment of technologies for CO₂ storage for carbon sequestration (National Thermal Power Corporation Limited, Greater Noida, New Delhi, Rs.19.27 Lakhs)
5. Blast Vibration Studies for the Mining Operations (Bheema Cements, Rs.2.10 Lakhs)
6. Blast Vibration Study at Kaliapani Chromite Mine of Balasore Alloys Limited (SKCM) (Balasore Alloys Limited, Jajpur, Orissa, Rs.0.40 Lakhs)
7. Consultancy by IIT-KGP for compliance of FC & EC Conditions of KIOM-MIOM, (SAIL, Rs.22.00 Lakhs)
8. 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)
9. Design of air-cooling system at SCCL mine, Kothagudem (SCCL, Rs.3.75 Lakhs)
10. Determination of IPT and CPT of Jhillimili mine (SEC L, Rs.0.40 Lakhs)
11. 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)
12. Environmental impact assessment for fly-ash mixed dumping in JOCCM#1 (JSPL, Rs.5.10 Lakhs)
13. Evaluation of sealed off areas at Moonidih Mine, India (Southern Illinois University Carbondale, U.S.A., Rs.9.85 Lakhs)
14. Feasibility studies of underground mining in weathered rock in Kaliapani Chromite Mines of Balasore Alloys Ltd (Balasore Chromite Mines, Rs.4.95 Lakhs)
15. Geo-Environmental Study for Fly-Ash Mixed Dumping in JPOCCM (JPL, Rs.5.20 Lakhs)
16. 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)
17. Heightening the tailings dam embankment at Sukinda Chromite Mines (Tata Steel, Rs.2.50 Lakhs)
18. 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)
19. 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)
20. Monitoring of Strata Movement of Pit Slope (Balasore Alloys Ltd, Rs.1.80 Lakhs)
21. Numerical Modelling of Tailings Pond Dam for TATA SCM (SCM, TATA, Rs.2.60 Lakhs)
22. Performance Measurement of Surface Miner and Cost Benefit Analysis (NALCO, Rs.3.90 Lakhs)
23. Rock Mechanics Study at Narwapahar Mines, UCIL, Phase - I (Uranium Corporation of India Ltd., Govt. of India Enterprise, Rs.3.25 Lakhs)
24. Rock Mechanics Study at Narwapahar Mines, UCIL, Phase - II (Uranium Corporation of India Ltd., Govt. of India Enterprise, Rs.2.96 Lakhs)
25. Rock Mechanics Study at Narwapahar UCIL Mines (Phase I-II) (Uranium Corporation of India Limited (UCIL) GoI, Rs.6.00 Lakhs)
26. Rock Mechanics Study at Narwapahar UCIL Mines (Phase I-IV) (Uranium Corporation of India Limited (UCIL), Rs.12.00 Lakhs)
27. Rock Stability Analysis of Decline and Design of Vertical Shaft Lining at Mohuldih Uranium Mine (Uranium Corporation of India Limited (UCIL) (GoI), Rs.3.40 Lakhs)
28. Slope Stability Analysis (Sarda Mines, Rs.6.00 Lakhs)
29. Slope Stability studies for Rawan Captive Limestone mine in Raipur (Ambuja Cements Ltd., Rs.4.50 Lakhs)
30. Slope Stability Study of the Excavation in the Beneficiation Plant Area, Unchabali Iron and Manganese Ore Mine (Thriveri Earth Mover Pvt. Limited, Rs.2.50 Lakhs)
31. Stability of Dump Slopes at Sukinda chromite mines, Sukinda. (TISCO -Tata Iron & Steel Co. Limited, Rs.12.00 Lakhs)
32. Stope Design and its Stability Analysis at Narwapahar Mine, UCIL (Uranium Corporation of India Ltd., Govt. of India Enterprise, Rs.2.85 Lakhs)
33. 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)
34. Stopes Design and Their Stability Analysis at Turamdih Mine, UCIL - Phase I (Uranium Corporation of India Ltd., Govt. of India Enterprise, Rs.2.98 Lakhs)
35. Study of Dump Stability at Sukinda Chromite Mines, Tata Steel (Tata Steel, Rs.12.22 Lakhs)
36. Study of Pit Slope Stability of Jaquela-Ou-Jacadevicho Mollo & Madachem Bat Amalgamated Iron Ore Mine, Pale, Goa (Jaquela-Ou-Jacadevicho Mollo & Madachem Bat Amalgamated Iron Ore Mine Pale, Goa, Rs.3.80 Lakhs)
37. Study of ventilation system at Boula Chromite mine (FACOR, Rs.0.80 Lakhs)
38. Study Project for determining suitability of Surface Miners at NALCO Mines, Damanjodi, Orissa (NALCO, Rs.8.60 Lakhs)
39. Time and Motion Study of Dumpers and Shovels in Kaliapani Chromite Mines (Balasore Alloys Ltd., Rs.1.06 Lakhs)

Technology Transferred

1. TechnoSoft - ROCKVISION hardware and software : Rs. 5.00 Lakh

Visits Abroad by Faculty Members

1. Bhattacharjee, Ashis - Keynote speaker at the 5th International Forum on Workplace Safety (Beijing,) one hour
2. Rao, Karanam Uma Maheshwar - Appointed as a visiting Professor for a year from May 2008 - May 2009 (Chonnam National University, Gwangju South Korea,) one year
3. Bhattacharya, Jayanta - To teach the Masters Students "Mineral Quality Control" (Curtin University,) 15 day
4. Chakravarty, Debashish - Academia - Industry Interaction, on invitation by CII (Australia,) Seven days.
5. Pathak, Khanindra - To attend conference as author in International Symposium on Earth Science and Technology (Kiyushu University, Fukuoka, Japan,) December 8th - 9th, 2009
6. Pal, Samir Kumar - Attending Korean Rock Mechanics Conference 2010 (South Korea,) 18-24 October 2010
7. Rao, Karanam Uma Maheshwar - Invited Lectures (Chonnam National University, South Korea,) 18th Oct, 2010
8. Rao, Karanam Uma Maheshwar - Invited Lectures (Dong-A University, Pusan South Korea,) 19 Oct., 2010
9. Rao, Karanam Uma Maheshwar - Key Note Speaker and Invited lecturer (Seoul National University, SNU- S.Korea,) 20th Oct. - 22 Oct., 2010
10. Rao, Karanam Uma Maheshwar - Invited Lectures (Kangwon National University, Korea,) 21st Feb- 24th Feb., 2011
11. Das, Samir Kumar - As Professor and Head of Dept. of Mining Engg. (Papua New Guinea University of Technology, Papua New Guinea,) From May, 2009 to March, 2010

Invited Lectures by Faculty Members

1. Blind Backfilling of Underground Mine Voids *by* Pal, Samir Kumar (South Korea)
2. Techniques of fragmentation control in surface mines and its impact on productivity *by* Dey, Kaushik (IIT Kharagpur)
3. Applications of Numerical Methods in Rock Discontinuity and Reinforcement *by* Deb, Debasis (Hamirpur, HP)
4. Strategies to Optimize the Performance of Coal Washing Unit Operations with Changing Feed Coal Washa *by* Majumder, Arun Kumar (Indian Institute of Coal Management, Ranchi)
5. Delivered Four Lectures in a Short Course *by* Majumder, Arun Kumar (Indian School of Mines, Dhanbad)
6. Root cause analysis of mine accidents/injuries with special reference to human factors aspects *by* Bhattacharjee, Ashis (Udaipur)
7. Investigations on Rotary Rock Drilling *by* Rao, Karanam Uma Maheshwar (Channam National University, Gwangju, South Korea)
8. Modes of Rock Mass Failure and Investigations on Rotary Rock Drilling *by* Rao, Karanam Uma Maheshwar (Dong-A University, Pusan South Korea)
9. On the mechanics of rock fragmentation in rock drilling and Temperature measurements at the bit-rock *by* Rao, Karanam Uma Maheshwar (Seoul National University, SNU- S.Korea)
10. Mine Development *by* Rao, Karanam Uma Maheshwar (Kangwon National University, Korea)
11. Adequacy in legislation on mine ventilation, fire and explosion *by* Das, Samir Kumar (NIT Rourkela)
12. Various reasons of mine fire and its control *by* Das, Samir Kumar (NIT, Rourkela)
13. Energy Policy of India - Some Observations (A keynote address) *by* Mukhopadhyay, Subir Kumar (Jaipur, Rajasthan)
14. Abatement of Greenhouse Gas Emission by Methane Drainage from Coal *by* Prusty, Basanta Kumar (NIT Rourkela)
15. Coalbed Methane "An unconventional Energy Resource" *by* Prusty, Basanta Kumar (IMMT Bhubaneswar)
16. Development of Curriculum, its delivery and Students Assesment *by* Pathak, Khanindra (Tezpur University)
17. Oil Spill Management *by* Pathak, Khanindra (Department of Chemistry, Jadavpur University)
18. CO2 Sequestration: road map for India *by* Pathak, Khanindra (NETRA, NTPC, Delhi)

Books Published

1. Dr. D. Deb: Finite Element method: Concept and Application in Geomechanics, 2nd Edition *published by* PHI Learning (2011)
2. Khanindra pathak: Mining Machinery : Maintenance and Capacity Utilisation *published by* Cygnus, Kolkata (2010)
3. Patra, Aditya: Particulate matter emission from paved road surface *published by* LAP Lambert Academic Publishing, Germany (2010)

Short-Term Courses, Training Programmes and Workshops organised

1. A Training Course on Numerical Modeling to SCCL Executives (10 days)
2. Environmental Clearance of Mining Projects ()
3. Environmental Clearance of Projects (5days)
4. Forest and Environmental Clearance of Forests. (23-27 November 2010)
5. Forest and Environmental Clearance of Projects (5 days)
6. Machinery for Mining and Bulk Material Handling: Selection, Maintenance and Modernization (November 18-20, 2010)
7. Mine Closure Planning and Environmental Management: RS and GIS Applications (February 25-27, 2011)
8. Mines Safety and Legislation (From 28th Sept- 1st October, 2010)
9. Rock Mechanics for Practicing Engineers (4 days)
10. Slope Stability Design, Analysis and Monitoring Issues: Rock & Soil Slope Engineering (5 days)

Papers Published in Journals

1. 1. Development and Validation of a Spectrophotometric Method to Measure Sulfate Concentrations in Mine Water without Interference *By* Arup Roy, Bidus Kanti Das, Jayanta Bhattacharya *Mine Water and the Environment* DOI 10.1007/s10230-0 (2011)
2. 18. Microwave-assisted synthesis and characterization of CaO nanoparticles *By* Roy A, Bhattacharya J *International Journal of Nanoscience* Vol. 10, No. 1 (2011) (2011)

3. 6. Occurrence and Role of Algae and Fungi in Acid Mine Drainage Environment with Special Reference to Metals and Sulfate Immobilization By Das BK, Roy A, Koschorreck M, Mandal SM, Wendt-Potthoff K, Bhattacharya J *Journal of Water Research* 43, 883-894. (2009) 43, 883-894. (2010)
4. A Study of Physico Chemical and Minerological Properties of Talcher Coal Fly Ash for Stowing in Underground Coal Mines By Mishra D.P and Das S.K *Material Characterization* Vol 61 , 1252- (2010)
5. Air permeability studies of surface soils over in-situ coal seam fire-areas in Jharia coalfield. By Pal, S.K., Prusty, B.K., and Tripathy, A. *Transaction of MGMI* communicated (2011)
6. "Cuttability Index" A Rockmass Classification Approach for Performance Prediction of Surface Miners By Ghose A. K. and Dey. K, *Journal of Mines, Metals and Fuels* Vol.58 (10),274 -278 (2010)
7. Effects of Granulometric Variation on Permeability of Sand By Samir K. Pal, Shushanta Pal, Kedar A. Bijurkar and Anup K. Tripathi *Transactions of Mining, Geological and Metallurgical Institute of India* Vol.106, pp 67-74 (2010)
8. Image-based quality monitoring system of limestone ore grades By S. Chatterjee, A. Bhattacharjee, B. Samanta, S. K. Pal *Computers in Industry* V 61,I 5,pp 391-408 (2010)
9. Studies on gas permeability of sandstone By Samir K. Pal, Bhola Singh and Anup K. Tripathi *Journal of Mines Metals & Fuels* V 58,No.6,pp.168-171 (2010)
10. Ca(OH)₂ nanoparticle synthesis as a technology development for treatment of Acidic Wastewater:Early Results By Arup Ray,Debashis De and Jayanta Bhattacharya *Journal of Indian School of Mines* Special Volume 5-12 (2010)
11. Delineation of Hydrologically Similar Units in a Watershed based on Fuzzy Classification of Soil Hydraulic Properties By Santra, P., Das, B. S and Chakravarty, D., *Hydrol. Process* 25, 64-79 (2011)
12. Design and Stability Analysis of Open Slopes in Hard Jointed Rockmass " An Integrated Techno-economic Approach By Dr. S K Mukhopadhyay, Dr. D. Deb and Dr. K. U. M. Rao *IE(I) Journal " MN* Volume 91, pp. 1-11 (2011)
13. Discrete element approach for mine dump stability analysis By Koner, R K and Chakravarty D *Mining Science and Technology* Vol 20 (6), 809-813 (2010)
14. Earthquake response of external mine overburden dumps: a micromechanical approach By Koner, R K and Chakravarty, D., *Natural Hazards* Vol 56(3),941-959 (2011)
15. Effect of fillers on natural rubber/high styrene rubber blends with nano silica: Morphology and Wear By Kaushik Pal, R. Rajasekar, Dong Jin Kang, Zhen Xiu Zhang, Samir K. Pal, Chapal K. Das, Jin Kuk Kim *Materials and Design* V.31,I 2, pp.667-686 (2010)
16. Effect of impinging angle and rotating speed on erosion behavior of aluminum By A. K. JHA, R. BATHAM, M. AHMED, A. K. MAJUMDER, O. P. MODI, S. CHATURVEDI, A. K. GUPTA *Transactions of Non-Ferrous Metals Society of China* Volume 21 PP 32-38 (2011)
17. Effect of synthesis parameters on the compressive strength of fly ash based geopolymer concrete. By Patra, A.K., Chowdhury, M. and Prusty, B.K *International Journal of Environmental Pollution Control and Management*. accepted (2011)
18. Enriched finite element procedures for analyzing decoupled bolts installed in rock mass By Deb. D and K.C. Das *Int. J. Numer. Anal. Meth. Geomech* DOI: 10.1002/nag.970 (2010)
19. Estimation of Blast Induced Peak Particle Velocity at Underground Mine Structures Originating from Neighbouring Surface Mine By Deb. D and A.K. Jha *Mining Technology* Vol. 119 No. 1, pp. (2010)
20. Estimation of near-field peak particle velocity: A mathematical model By Arora Shrey and Dey K. *Journal of Geology and Mining Research* Vol. 2 (4), 68-73 (2010)
21. Extended Finite Element Method for the Analysis of Discontinuities in Rock Masses By Deb. D and K.C. Das *Geotechnical and Geological Engineering* Vol. 28: pp. 643-66 (2010)
22. Genetic algorithms for feature selection of image-based quality monitoring model: An application to an iron ore mine By Chatterjee Snehamoy and Bhattacharjee Ashis *Engineering Applications of Artificial Intelligence* Vol. 24, 10 pp. (2011)
23. Hydrodynamic Modeling of Subernarekha River and its Floodplain using Remote Sensing and GIS Techniques By Yarrakula K., D. Deb and B. Samanta *Journal of Scientific & Industrial Research* Vol. 69, July 2010, (2010)
24. Influence of carbon blacks on butadiene rubber/high styrene rubber/natural rubber with nanosilica: Morphology and wear By Kaushik Pal, R. Rajasekar, Dong Jin Kang, Zhen Xiu Zhang, Samir K. Pal, Chapal K. Das, Jin Kuk Kim *Materials and Design* V.31,I3,pp.1156-1164 (2010)
25. Influence of fillers on NR/SBR/XNBR blends. Morphology and Wear By Kaushik Pal, Samir K. Pal, Chapal K. Das, Jin Kuk Kim *Tribology International* vol43,I8,pp1542-1550 (2010)
26. Integration of DInSAR Technique and Conventional Methods through GIS for Verification of Quantified Surface Changes By Ghosh D and Chakravarty D *IJRS* (accepted) (0)
27. Investigations on impact of blasting in tunnels By Dey K. and Murthy V. M. S. R. *International Journal of Geotechnical Earthquake Engineering* 1(2), 59 - 71 (2010)
28. Land-Use-Land-Cover Changes in East Singbhum Mineralized Zone By Pal K., Deb, D, Vardhan, H., Aruna, M., Samanta, B *Advances in Management* (under review) (0)
29. Long-term Mine Planning of Malanjhand Copper Deposit By Samanta, G., Samanta,B, Chakravarty, D. *Transactions of SME* (under review) (0)
30. Longwall Face Stability Index for Estimation of Chock-Shield Pressure and Face Convergence By Verma A.K. and D. Deb *Geotechnical and Geological Engineering* Vol. 28: pp. 431-4 (2010)
31. Modeling of Particle Fluid Interactions in a Flowing Film Concentrator By A K Majumder *International Journal of Mineral Processing* Volume 97 PP 7-19 (2010)
32. Modelling of Fully Grouted Rock Bolt Based on Enriched Finite Element Method By Deb. D and K.C. Das *Int. J. of Rock Mechanics and Mining Sciences* Vol. 48 (2011) pp. 2 (2010)
33. New Model for Predicting Blast-Induced Overbreak in Development Drivages of Metal Mines By Dey K. and Murthy V. M. S. R. *Journal of Rock Mechanics and Tunneling Technology* Vol 16. (2), 85 -9 (2010)
34. Performance Evaluation of a Knelson Concentrator to Upgrade Placer Minerals By A. K. Majumder & J. P. Barnwal *Journal of the Institution of Engineers (India), Mining Engineering* Volume 91, PP. 19-21 (2011)
35. Predicting Performance of Surface Miner using Artificial Neural Network By Dey K. and Ghose A. K. *Journal of Mines Metals and Fuels* Vol.58(8),207 - 211 (2010)
36. Processing of Coal Fines in a Water Only cyclone By A K Majumder and J P Barnwal *Fuel* Volume 90 (2) PP 834 (2011)
37. Rain water harvesting for artificial recharge to ground water- A sustainable innovative vision. By *International Journal of Environmental Engineering and Management (e-journal)* 1(1):77-80 (2010)
38. Relationship between normal load and dynamic co-efficient of friction on rock-rubber wear mechanism By Kaushik Pal, S. K. Pal, C. K. Das, Jin Kuk Kim *Materials and Design* V.31,I10,pp4792-4799 (2010)

39. Role of synthesis parameters on strength of fly ash based geopolymer concrete. By Patra, A.K., Chowdhry, M., and Prusty, B.K. *Transaction of MGMI* communicated (2011)
40. Slurry transport in blind backfilling By Samir K. Pal, Gudivadas S. Rao, Susmita Panda and Anup K. Tripathi *Journal of Mines Metals & Fuels* V57, No.12, pp.450-454 (2009)
41. Stability Assessment of a Pit Slope under Blast Loading: A Case Study of Pasir Coal Mine By 6. Deb D. K.N.R. Kaushik, B.H. Choi, C. H. Ryu, Y.B.Jung and C. Sunwoo *Geotechnical and Geological Engineering* DOI: 10.1007/s10706- (2010)
42. Uncertainty Based Mine Production Scheduling for Ore Grade Contro using Conditional Simutaionl and Multi-objective Genetic Algorithm By Samanta B., Raj K V, Bhattacharjee A, and Chakravarty D *Expert System* (under review) (0)
43. Underground Coal Gasification - A Clean Energy Alternative. By Prusty, B.K., Mahapatra, S. and Patra, A.K. *Journal of Mine, Metals and Fuels* Jan (2011)
44. Underground coal mine instrumentation using electromagnetic sensors for roof health monitoring and fall prediction By S K Ghosh, S. Bhattacharjee, K.U.M. Rao, D. Deb and S. K. Pal, *Int. Jl. Of Earth Sci. & Engineering Dec.2009, No.6, ISSN-0974-5904, , Vol.04No.2* (2011)
45. Utilization of ventilation air methane "fe" feasibility study at Moonidih mine. By Prusty, B.K., and Harpalani, S. *Journal of Mine, Metals and Fuels* June (2010)

Papers Presented in Conferences

1. Laboratory model jigs as a tool for the better understanding of jiggling for modeling purposes, By A.K. Majumder, Sumantra Bhattacharyya, J.P.Barnwal, *International Seminar on Mineral Processing Technology 2010 (MPT-2010)*, NML, Jamshedpur, (2010)
2. A Retrospective Assessment of Longwall Mining with A Focus on Successful Mechanized Underground Mining Technology, By 6. Prasad V.N.S., M.U. Siva Sankar, S.K. Mukhopadhyay, and D. Deb, *3rd Asian Mining Congress*, Kolkata, (2010)
3. A study on Loose Material Filled PVC Props as an alternative to Conventional Wooden Supports, By Samir K. Pal, Rahul Kedia and Anup K. Tripathi, *Underground Coal Mining-Challenges and Opprtunities*, Kolkata, (2010)
4. An enriched-FEM Model for Fully Grouted Decoupled Rock Bolts, By Das K C, Deb D and Raja Sekhar G P, *Oral presentation on the 55th congress of ISTAM*, NIT Hamirpur, HP, (2010)
5. Analysis of fully grouted rock bolt based on enriched finite element method, By Deb. D and K.C. Das, *ISRM International Symposium 2010 and 6th Asian Rock Mechanics Symposium - Advances in Rock Engineering*, New Delhi, India, (2010)
6. Analysis of peak particle velocity at underground mine roof originated from an adjacent surface mine, By Jha A.K. and D Deb, *ISRM International Symposium 2010 and 6th Asian Rock Mechanics Symposium - Advances in Rock Engineering*, New Delhi, India, (2010)
7. Design and Stability Analysis of Underground Metal Mine Workings, By Mukhopadhyay S.K., D. Deb and K.U.M. Rao, *3rd Asian Mining Congress*, Kolkata, (2010)
8. Global CO2 storage scenario vis-a-vis Indian initiatives., By Patra, A. K., and Pathak, K., *In Proceedings of the 3rd Asian Mining Congress on Asian Mining - Resurgence of Mining in Asia: Prospects and Challenges*, Kolkata, (2010)
9. Key Note Speaker: Characterization of rock material based on Signal Emission Levels under Uni-axial compression, By K.U.M.Rao, *International Conf. On Rock Engg-Challenges for Creation of New Geo Space*, Seoul National University, S.Korea, (2010)
10. Open Stope Design in Hard Jointed Rock Mass, By Dr. Subir Kumar Mukhopadhyay, *Global Mining Scenario and Emerging Challenges*, pp. 34-43, Jaipur, Rajasthan, (2011)
11. Risk Analysis of Injuries of Coal Miners using an Epidemiologic Approach: A Case-Control Study, By Bhattacharjee Ashis and Kunar Bijay Mihir, *5th International Forum on Workplace Safety*, Beijing, (2010)
12. Role of Technical Education in N.E India, By Pathak , K, *National Conference on Daiiamond Jubilee of Assam Engg Insti.*, Guwahati, (2011)
13. RS GIS based development of spatial decision support system (SDSS) for mine closure planning., By 5. Pathak K. and Raumuria, V., *National Seminar cum Workshop on Environment and Sustainable Development in Mineral Industry and Solid Waste Management, 14-15 March 2011, organised by Department of Geology, Andhra University, Vaizag*, (2011)
14. Studies on Gravity Blind Backfilling for Ground Stabilization above Abandoned Underground Mines, By Dr. Samir Kumar Pal, Prof. Subir Kumar Mukhopadhyay, Susmita Panda, Dr. Anup Kumar Tripathi, *Korean Rock Mechanics Conference 2010*, South Korea, (2010)

Department of Mathematics

Head

Prof. A. R. Roy

Prof. Parmeshwary Dayal Srivastava

Up to 30.09.2010

From 01.10.2010

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. Non-Smooth Optimization
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
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> , Statistical Decision Theory, Estimation Theory, Quantum Information and Computation, Statistical Data Analysis, Experimental Designs
Roy, Akhil Ranjan	<i>Ph.D.(IIT Kharagpur)</i> , General Th.of Reativity, Theoretical Cosmology, Fuzzy Optimization, 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

Chakraborty, Debjani	<i>Ph.D.(IIT Kharagpur)</i> , Fuzzy Optimization, Fuzzy logic and its applications
Kumar, Pawan	<i>Ph.D.(IIT Kanpur)</i> , Graph Theory
Murthy, P V S N	<i>Ph.D.</i> , Convective Heat and Mass Transfer, Bio-fluid Mechanics
Nahak, Chandal	<i>Ph.D.</i> , Applied Functional Analysis and Optimization, Algebra, Fractional Calculus, Numerical Optimization, Optimization
Panda, Geetanjali	<i>Ph.D.</i> , Optimization
Pandey, Rajnikant	<i>Ph.D.</i> , Differential Equations (Ordinary), Numerical Analysis, Singular Boundary Value Problems
Panigrahi, Pratima	<i>Ph.D.(Bangalore)</i> , Combinatorics, Graph Theory
Raja Sekhar, G P	<i>Ph.D.(Hyderabad Univ)</i> , Boundary integral methods for viscous flows, Mass transfer in porous biological pellets

Assistant Professors

Biswas, Debapriya	<i>Ph.D.(Leeds Univ)</i> , Functional Analysis, Lie Groups Lie Algebras and their Representation theory, Complex 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, Certificateless Public Key Cryptosystem
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 turbulence and sediment transport in open channel flow
Kumar, Jitendra	<i>Ph.D.(Univ. of Magdeburg, Germany)</i> , Numerical mathematics, Numerical solutions of integro-partial differential equations

Mukhopadhyay, Sourav

Ph.D.(ISI, Kolkata), Digital rights management, Cryptanalysis on symmetric cipher, Key management in wireless adhoc network, Traitor-Tracing in broadcast encryption

Nelakanti, Gnaneshwar

Ph.D.(IIT Bombay), ill-posed problems, Spectral approximation, Approximate solutions of operator equations

Faculty Appointments

Asish Ganguly

Assistant Professor

Faculty Retirement

Syed Samsul Alam

Professor

Sudarsan Nanda

Professor

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 other fields of research in the area of Clifford Analysis, Fuzzy Mathematics, Soft Algebra, Bio Mechanics, Chaos and Bifurcation in Nonlinear systems, Inventory Models, 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. Department has obtained the reports from the external experts of the peer review committee concerning its different academic programmes and is now awaiting finalization of the report to be submitted to the institute.

Thrust Areas

1. Fluid Mechanics and Functional Analysis

Lectures by Visiting Experts

1. Lie Group and Representation Theory *by* Prof.V.Muruganadhan (NISER, Bhabhaneswar)
2. Continuum Mechanics : The Eternal Well Spring *by* Prof. K. R. Rajagopal (Texas A & M, USA)
3. Stokes flow in and around liquid spheres *by* Prof. B. S. Padmavathi (University of Hyderabad)
4. Convex Optimization and Fired Point Theory *by* Prof. P. Veermani (IIT Madras)
5. A Panoramic View of Gupta-Vizing Theorem & Vizing's Conjectures *by* Prof. S. A. Choudum (IIT Madras)
6. Directional Data and its Application *by* Prof. Ashish Sengupta (I.S.I., Kolkata)
7. Data Mining Techniques *by* Prof. A.K. Pujari (Sambalpur University)
8. Bayesian Inference a First Lesson *by* Prof. Kalyan Das (University of Kolkata)

Doctoral and MS Degrees Awarded

1. Sachin Shaw : Blood flow through a stenosed artery and magnetic drug targeting in microvessels-Effect of Blood Rheology(Ph.D.)
2. Sangeeta Jaiswal : Duality results for crisp and fuzzy optimization problems with generalized ϵ -convexity(Ph.D.)
3. Soma De : Analysis of local and global bifurcations in piecewise smooth discrete dynamical systems(Ph.D.)
4. Ajay Kumar Mahapatra : Reliability and hazard rate estimation for exponential populations(Ph.D.)
5. Rishi Raj Kairi : Convective transport in a power-law fluid saturated non-darcy porous medium(Ph.D.)

Member - Professional Bodies

1. Biswal, Mahendra Prasad, *Life Member* - Operational Research Society of India
2. Chakraborty, Debjani, *Member* - Indian National Academy of Science, Allahabad
3. Dutta, Ratna, *Member* - eCrypt-2 MAYA Working Group
4. Dutta, Ratna, *life-member* - CRSI
5. Ganguly, Asish, *Category S Member* - American Mathematical Society USA
6. Ganguly, Asish, *Life Member* - Indian Association for Cultivation of Science, Jadavpur
7. Ganguly, Asish, *Life Member* - Calcutta Mathematical Society Saltlake

8. Ghoshal, Koeli, *Member* - The Indian Society for Hydraulics
9. Gupta, Dharmendra Kumar, *Member* - National Academy of Sciences
10. Gupta, Dharmendra Kumar, - Life member of ISTAM
11. Kumar, Somesh, *Elected Life Member* - National Academy of Sciences
12. Kumar, Somesh, *Life Member* - Indian Society for Probability and Statistics
13. Kumar, Somesh, *Life Member* - Indian Statistical Association
14. Kumar, Somesh, *Life Member* - Forum for Interdisciplinary Mathematics
15. Nahak, Chandal, *Life member* - Indian Science Congress Association
16. Nahak, Chandal, *Life Member* - Operational Research Society of India
17. Nahak, Chandal, *Member* - Virginia Academy of Science (USA)
18. Nahak, Chandal, *Life Member* - Orissa Mathematical Society
19. Panigrahi, Pratima, *member* - A member of Orissa Mathematical Society
20. Panigrahi, Pratima, *member* - A member of Academy of Discrete Mathematics and Application, India
21. Raja Sekhar, G P, *Secretary, Life Member* - Indian Society of Theoretical and Applied Mechanics
22. Roy, Akhil Ranjan, *Life* - Indian Association of GRG, IUCAA, Pune

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 (2008) *Executive Editor* - International Journal of Mathematics and Computation
5. Kumar, Somesh (2009) *Reviewer* - Journal of Applied Probability and Statistics
6. Kumar, Somesh (2010) *Reviewer* - Communications in Statistics-Simulation and Computation
7. Kumar, Somesh (2005) *Editor* - International Journal of Applied Mathematics and Statistics
8. Kumar, Somesh (2008) *Reviewer* - Statistics
9. Kumar, Somesh (2010) *Reviewer* - Statistics and Probability Letters
10. Kumar, Somesh (2008) *Editor* - International Journal of Statistics and Economics
11. Kumar, Somesh (2010) *Reviewer* - Communications in Statistics- Theory and Methods
12. Kumar, Somesh (2010) *Reviewer* - Hacettepe Journal of Mathematics and Statistics
13. Kumar, Somesh (2010) *Reviewer* - Entropy
14. Kumar, Somesh (2010) *Reviewer* - Journal of Iranian Statistical Society
15. Kumar, Somesh (2010) *Reviewer* - Journal of Indian Statistical Association
16. Murthy, P V S N (2009) *Member, Editorial Advisory Board*, - The Open Transport Phenomena Journal, <http://www.bentham.org/open/totpj/>
17. Panigrahi, Pratima (2005) *A member of the Editorial Board* - The Aligarh Bulletin of Mathematics

Awards & Honours

1. Chakraborty, Debjani (2010) *Best Paper Award in presentation session in ICSMB 2010*
2. Ganguly, Asish (1993) *National Scholar (BSc)*
3. Ganguly, Asish (2005) *Post-Doctoral Fellow Valladolid University Spain*
4. Ganguly, Asish (1996) *Project Fellow CSIR*
5. Ganguly, Asish (1997) *Research Fellow CSIR*
6. Ganguly, Asish (2004) *Visiting Fellow CINVESTAV Mexico*

Fellowships

1. Raja Sekhar, G P (2010) *Alexander von Humboldt Fellowship for Experienced Researchers*

Sponsored Research Projects

1. A Class of Non-Smooth Optimization Problems under Non-Fuzzy and Fuzzy Environments (CSIR, New Delhi, Rs.3.00 Lakhs)
2. 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)
3. Boundary integral work bench for Viscous flows through porous media (DST-India, Rs.9.32 Lakhs)
4. Classification of the actions of semi-simple Lie groups on homogeneous spaces. (SRIC, IIT Kharagur (ISIRD) (duration 3 years), Rs.1.65 Lakhs)
5. Construction of Boolean Functions to Design Cryptographically Secure Stream Cipher (ISIRD, SRIC, IIT-KGP, Rs.5.00 Lakhs)
6. Continuous and periodic review inventory model in Fuzzy and/or Stochastic Environment (Department of Science & Technology, Rs.12.00 Lakhs)
7. Designing ABE Schemes for Fine-Grained Access Control in DTNs (ISIRD, SRIC, IIT-KGP, Rs.5.00 Lakhs)
8. Electro-osmotic Flow and Mixing in a charged Micro and Nano-Channels: A Computational and Analytical Study (DST, Rs.0.00 Lakhs)

9. FIST Program Department of Mathematics (DST New Delhi, Rs.22.00 Lakhs)
10. Flow perturbation and sediment suspension over sandy bedforms: Theoretical and experimental studies (DST, Rs.1.26 Lakhs)
11. Investigation into the character of parameter space of piecewise smooth systems (DST, New Delhi, Rs.4.20 Lakhs)
12. Localization and Navigation Using Semantics(thematic), Second year (European Aeronautics Defence Space Company, Rs.46.82 Lakhs)
13. Multi-Objective and Multi-Level Decision Making Model with an Applications to Environmental and Regional Planning (DST, New Delhi, Rs.12.07 Lakhs)
14. Numerical Investigation Of Stability and Convective Transport in Double Diffusive non-Darcy Porous Media with focus on Second Order Effects. (C S I R, Rs.7.50 Lakhs)
15. On a class of doubly singular boundary value problems arising in Physiology (, Rs.8.24 Lakhs)
16. Singularity methods for Stokes flows in presence of rigid /porous planar interface (CSIR-India, Rs.7.56 Lakhs)
17. Studies on the equilibrium problems under generalized convexity and generalized monotonicity in Banach space (CSIR, Rs.7.26 Lakhs)
18. Wall proximity on bluff body wake:3-D aspects (C.S.I.R., Rs.0.00 Lakhs)

Patents (filed / granted)

1. Procedure for Navigation with relations

Visits Abroad by Faculty Members

1. Kumar, Jitendra - Reserach Activities (University of Magdeburg, Germany,) Two Months
2. Raja Sekhar, G P - on Alexander von Humboldt Fellowship for Experienced Researchers (Institute of Applied Analysis and Numerical Simulation, University of Stuttgart, Germany,) 10 May - 16 July, 2010
3. Raja Sekhar, G P - Research Collaboration (ZeTeM, University of Bremen, Germany,) 26 - 29 May 2010
4. Bhattacharyya, Somnath - Visiting Professor (Cenetr of Smart Interfaces, TU Darmstadt, Germany,) May-July, 2010

Invited Lectures by Faculty Members

1. The cell average technique and other schemes for the computation of population balance equations *by* Kumar, Jitendra (Nit Calicut)
2. Lectures on numerical approximations of population balance equations *by* Kumar, Jitendra (University of Magdeburg)
3. Inventory Modeling under stochastic and fuzzy environment *by* Goswami, Adrijit (Banasthali University, Rajasthan)
4. Optimization and Control problems *by* Nahak, Chandal (KIIT University, Bhubaneswar)
5. Mathematical Programming & Applications *by* Nahak, Chandal (OMS, Bhubaneswar)
6. Fractional Calculus & Optimization *by* Nahak, Chandal (FM College, Baleswar)
7. Introduction to Lie groups and Lie algebras with applications *by* Biswas, Debapriya (Department of Mathematics, Assam University, Silchar)
8. A note on Lie groups and Lie algebras *by* Biswas, Debapriya (Allahabad)
9. An application of Fuzzy regression analysis to asses the cause of arsenic pollution in West Bengal *by* Chakraborty, Debjani (NIT Durgapur)
10. On Radio k-colorings of powers of cycle *by* Panigrahi, Pratima (Cochin University of Science and Technology)
11. Potential Theory for Viscous Flows *by* Raja Sekhar, G P (BSNV Post Graduate College, Lucknow University)
12. Hydrodynamics and nutrient transport inside porous pellets *by* Raja Sekhar, G P (GITAM University)
13. Convection diffusion reaction inside a permeable cylindrical porous pellet under oscillatory flow - *by* Raja Sekhar, G P (IIT Madras)
14. Matrices to Mechanics *by* Raja Sekhar, G P (NIST, Berhampur, India.)

Books Published

1. Debjani Chakraborty, S. Nanda, D. Dutta Majumdar: Fuzzy Logic and its Applications in Technology and Management *published by* Narosa (2007)

Short-Term Courses, Training Programmes and Workshops organised

1. Recent Advances in Computational Science with Application (one week)

Papers Published in Journals

1. $\$KT$ -rho-(eta,xi,theta) $\$$ -invex and $\$FJ$ -rho-(eta, xi, theta) $\$$ -invex Control problems *By* S. K. Padhan and C. Nahak *Int. J. Optim. Theory Methods Appl* to appear (2011)
2. Collusion Resistant Generalized Self-Healing Key Distribution in Wireless Ad hoc Networks *By* Ratna Dutta *IEEE/ACM Transactions on Networking* (submitted) (2011)
3. Graceful Labelling of some 3-distant trees *By* P. Panigrahi *Utilitas Mathematica* 83 (2010), 81-93 (2010)

4. Multi-Objective Fuzzy Probabilistic Programming Problems involving Laplace distribution By S. K. Barik, M.P. Biswal and D. Chakraborty *The International Journal of Fuzzy Mathematics* Accepted (2010)
5. (p, r) - ρ - (η, θ) -Invexity in Multiobjective By P. Mandal and C. Nahak *Int. J. Optim. Theory Methods and Applications* to appear (2011)
6. A Fuzzy Random Continuous Review Inventory System By Oshmita Dey, Debjani Chakraborty *International Journal of Production Economics* (2011)
7. A fuzzy random periodic review system: A technique for real-life application By Oshmita Dey and Debjani Chakraborty *International Journal Operational Research*, (2011)
8. A fuzzy replenishment policy for deteriorating items with ramp type demand under inflation By G.C. Mahata, A. Goswami *International Journal of Operational Research* Vol. 5, No. 3, 328-3 (2009)
9. A single period inventory model with a truncated normally distributed fuzzy random variable demand By Oshmita Dey Debjani Chakraborty *International Journal of Systems Science* 1464-5319 (2010)
10. A third order method for fixed points in Banach spaces By S.K.Parhi and D.K.Gupta *Journal of Mathematical Analysis and Applications* Vol-359, 642-652 (2009)
11. Access Polynomial Based Self-Healing Key Distribution with Collusion Resistance Property By Ratna Dutta *AD HOC NETWORKS journal* (submitted) (2011)
12. Adaptive Routing Strategy for Large Scale Rearrangeable Symmetric Networks By A. Chakraborty, M. Collier and S. Mukhopadhyay *International Journal on Grid and High Performance Computing* 53-63 (2010)
13. Addition of two generalised fuzzy numbers By Debashree Guha and Debjani Chakraborty *International Journal of Industrial Mathematics* 2, 9-20 (2010)
14. Advent of Quaternions: Dedicated to 300th anniversary of Leonhard Euler's birth. By Debapriya Biswas *Assam University Journal of Science and Technology*, 5, No. II, pp. 8-11 (2010)
15. An improved class of Regula falsi methods of third order for solving nonlinear equations in R By D.K.Gupta and S.K.Parhi *International Journal of Applied Mathematics and Computing* Vol-33, 35-45 (2010)
16. Analysis of stationary discrete-time GI/D-MSP/1 queue. By S. K. Samanta, U. C. Gupta, M. L. Chaudhry *4OR, A Quarterly Journal of Operations Research* 7: 327-361 (2009)
17. Analyzing Important Ground Water Parameters in West Bengal with a Fuzzy Approach in the Context of Arsenic Pollution By Snigdha Pal Chaudhury, Debjani Chakraborty, Arindam Mukhopadhyay, Debashree Guha and Jyotirmoy Chatterjee *IEEE Xplore* 273-277 (2011)
18. Computationally secure self-healing key distribution with revocation in wireless ad hoc networks. By R. Dutta, S. Mukhopadhyay and M. Collier *Ad Hoc Networks* Volume 8, Number 6 (2011)
19. Convection-diffusion-reaction inside a spherical porous pellet in the presence of oscillatory flow By Jai Prakash, Raja Sekhar, G. P., Sirshendu De, Michael Boehm *European Journal of Mechanics B/Fluids* Vol. 29, 483-49 (2010)
20. Convection-diffusion-reaction inside a spherical porous pellet under oscillatory flow including external mass transfer By Jai Prakash, Sirshendu De, Raja Sekhar, G. P. *Fluid Dynamics Research* 43, 015508-015527 (2011)
21. Dirichlet problem for convection-diffusion-reaction inside a permeable cylindrical porous pellet By Jai Prakash, Raja Sekhar, G. P., Sirshendu De *International Journal of Engineering Science* doi:10.1016/j.ijengsci (2011)
22. Discrete multi-projection methods for eigen-problems of compact integral operators By Guangqing Long, Gnaneshwar Nelakanti, Bijaya Laxmi Panigrahi, Mitali Madhumita Sahani *Applied Mathematics and Computation* Vol217, pp3974-3984 (2010)
23. Duality results using higher order E-Invex function By G. Panda, S.Jaiswal *Int Journal of computing science and mathematics* 3(3)288-298 (2010)
24. Estimating a common mean of two normal populations By M. R. Tripathy and Somesh Kumar *Journal of Statistical Theory and Applications* V. 9, pp. 197-215 (2010)
25. Finite-buffer bulk service queue under Markovian service process: GI/MSP(a,b)/1/N By A .D. Banik and U. C. Gupta and M. L. Chaudhry *Journal of Stochastic Analysis and Application* 27, 3, 500-522 (2009)
26. Fuzzy multi attribute group decision making method to achieve consensus under the consideration of degrees of confidence of experts' opinions By Debashree Guha and Debjani Chakraborty *Computers & Industrial Engineering* 60(4) 493-504 (2011)
27. Grain-size distribution of bed load: Inferences from flume experiments using heterogeneous sediment beds By K. Ghoshal, B. S. Mazumder and B. Purkait *Sedimentary Geology*, 223, 1-10 (2010)
28. Higher Order Supersymmetry and Associated Lane-Emden Equation By D J Fernandez C and A Ganguly *Physics of Atomic Nuclei* 73 (288) (2010)
29. Improved lower bounds for Radio k-chromatic number of Hypercube Q_n By Srinivasa Rao Kola and P. Panigrahi *Computers and Mathematics with Applications* 60(2010), 2131-2140 (2010)
30. Inequalities for polynomials with a prescribed zero By V.K.Jain *Bull.Math.Soc.Sci.Math.Roumanie(N.S.)* 52(100)no,4,441-449 (2009)
31. Integration of Fuzzy Databases: Problems and Solutions By D.K.Gupta, Awadhesh Kumar Sharma and A. Goswami *International Journal of Computer Applications* 2(3):36-40, (2010)
32. Local and Global Bifurcations in Three-Dimensional, Continuous, Piecewise Smooth Maps By *International Journal of Bifurcation and Chaos* (2011)
33. Magnetic targeting in the impermeable micro-vessel with two phase fluid model - Non-Newtonian characteristics of blood By Sachin Shaw and P. V. S. N. Murthy *Micro vascular Research* 80, 209-220 (2010)
34. Magnetic targeting in the permeable blood vessel - The effect of blood rheology By Sachin Shaw and P. V. S. N. Murthy *Journal of Nanotechnology in Engineering and Medicine* 1 (2), 1-11, (2010)
35. Monotone method for singular BVP in the presence of upper and lower solutions. By R. K. Pandey and A. K. Verma *Applied Mathematics and Computation* Vol.215,11,3860-3867 (2010)
36. Multi-Objective Stochastic Transportation problem Involving log-normal distribution By D. R. Mohapatra, S.K. Roy, and M.P. Biswal *Journal of Physical Sciences* 14, pp.63-76 (2010)
37. Multi-Objective Two-stage Stochastic Programming Problems involving By S. K. Barik, M.P. Biswal and D. Chakraborty *International Journal of Optimization: Theory, Methods and Applications* Accepted (2011)
38. New Exact Solutions of a Generalized Shallow Water Wave Equation By B Bagchi, S Das and A Ganguly *Physica Scripta* 82, 025003 (1-7) (2010)
39. New operations on Intuitionistic Fuzzy Sets By A.R.Roy and P.K.Maji *Fuzzy sets and Systems* (2011)
40. Nonsmooth ρ - (η, θ) -Invexity in Multiobjective Programming Problems By C. Nahak and Ram N Mohapatra *Optimization Letters* to appear (2011)

41. Numerical methods for solving two-dimensional aggregation population balance equations By Kumar, R. Kumar, J. Warnecke, G. *Computers & Chemical Engineering* In Press (2011)
42. On solvability of derivative dependent doubly singular boundary value problems By R. K. Pandey and A. K. Verma *Applied Mathematics and Computing* Vol. 33, 1, 489-511 (2010)
43. One Way Hash Chain Based Self-Healing Key Distributions with Collusion Resistance Property By Ratna Dutta and Sourav Mukhopadhyay *Adhoc & Sensor Wireless Networks (submitted)* (2010)
44. Optimal retailer replenishment decisions in the EPQ model for deteriorating items with two level of trade credit financing By A. Goswami, G.C.Mahata, Om Prakash *International Journal of Mathematics in Operational Research* Vol.2, No. 1, 17-39 (2010)
45. Performance analysis of a finite-buffer batch service queue with general input and exponential multiple vacations By K. Sikdar, U.C. Gupta and A.D. Banik *Journal of Probability and Statistical Science* 7 (2) 191-210 (2009)
46. Provably Secure Hybrid Key Agreement Protocols in Cluster Based Wireless Ad Hoc Networks By Ratna Dutta and Tom Dowling *Ad Hoc Networks* 9(5) : 767-778 (2011)
47. Reduction of drag and vortex shedding frequency through porous sheath around a circular cylinder. By S. Bhattacharyya, A.K. Singh *Int. J. Heat Mass Transf.* 53 3202-3212 (2010)
48. Region of variability of two subclasses of univalent functions By S. Ponnusamy and A. Vasudevarao *J. Math. Anal. Appl.* 332 (2007)
49. Rigorous estimates for the 2D Oseen-Brinkman transmission problem in terms of the Stokes-Brinkman expansion By Mirela Kohr, Raja Sekhar, G. P., Wolfgang L Wendland *Mathematical Methods in the Applied Sciences* 33, 2225 - 2239 (2010)
50. Second and Higher Order Duality in Banach Space under ρ - (η, θ) - ρ -invexity By S. K. Padhan, C. Nahak and Ram N Mohapatra *Nonlinear Analysis: Hybrid Systems* to appear (2011)
51. Second Order Duality for the Variational Problems By S. K. Padhan and C. Nahak *Computers and Mathematics with Applications* 60 3072--3081 (2010)
52. Semilocal Convergence of Stirling-Like Method in Banach spaces By S.K.Parhi and D.K.Gupta *International Journal of Computational Methods* Vol-7, 215-228 (2010)
53. Solving Probabilistic Programming Problems Involving Multi-Choice Parameters By M.P. Biswal and S. Acharya *OPSEARCH* Accepted (2010)
54. Some New Classes of Graceful Lobsters Obtained from Diameter Four Trees By D. Mishra and P. Panigrahi *Mathematica Bohemica* 135(3) (2010), 257-2 (2010)
55. Soret and Dufour Effects on Free Convection Heat and Mass Transfer from a Horizontal Flat Plate in a non-Darcy Porous Medium By P V S N Murthy and P.A. Lakshmi Narayana *International Journal of Fluid Mechanics Research*, 37, 70-84 (2010)
56. Spectrum & fine spectrum of generalized 2nd order difference operator Δ_{2uv} on sequence space c_0 By P.D.Srivastava & B.L.Panigrahi *Thai journal of Mathematics*, vol 9 , no.1, pp 57- (2011)
57. Stochastic based on multi-objective transportation problems involving normal randomness. By D.R. Mahapatra, S.K. Roy, and M.P. Biswal *Advanced Modeling and Optimization* 12, pp.205-223 (2010)
58. Stochastic Programming problems involving Pareto Distribution By S. K. Barik, M.P. Biswal, and D. Chakraborty *Journal of Interdisciplinary Mathematics* Accepted (2010)
59. Stokes flow of an assemblage of porous particles-stress jump condition By Jai Prakash, Raja Sekhar, G. P., Mirela Kohr *ZAMP* ∞ *Journal of Applied Mathematics and Physics* Doi:10.1007/s00033-0 (2011)
60. Supersymmetry Across Nanoscale Heterojunction By B Bagchi, A Ganguly and A Sinha *Physics Letters A* 374 (2397) (2010)
61. Symmetric duality with (ρ, r) - ρ - (η, θ) - ρ -Invexity By P. Mandal and C. Nahak *Applied Mathematics and Computation* to appear (2011)
62. The Actions of Subgroups of $SL(2, R)$ for the Clifford Algebra in EPH cases. By Debapriya Biswas *Communications in Mathematical Analysis (CMA)* 11, No. 1, pp.41-50 (2011)
63. The continuous coagulation equation with multiple fragmentations By Giri, A.K. Kumar, J. Warnecke, G. *Journal of Mathematical Analysis and Applications* 374 (2011)
64. The Effect of Body Acceleration on Two Dimensional Flow of Casson Fluid through an Artery with Asymmetric Stenosis By Sachin Shaw, P. V. S. N Murthy and S. C. Pradhan *The Open Transport Phenomenon Journal* 2, 55-68 (2010)
65. The effect of double dispersion on mixed convection heat and mass transfer in a non-Newtonian fluid saturated non-Darcy porous medium By 3. R R Kairi and P V S N Murthy *Journal of Porous Media* 13, 749-758 (2010)
66. The Introduction of Projective Coordinates and Compactification for the three EPH Cases. By Debapriya Biswas (*communicated*) (0)
67. The multi-projection method for weakly singular Fredholm integral equations of the second kind By Guangqing Long Gnaneshwar Nelakanti *International Journal of Computer Mathematics* Vol 87, pp3254-3262 (2010)

Papers Presented in Conferences

1. A fuzzy stochastic JELS model with gamma distribution, By G.Panda, S Behura, *ORSI-2010-ORURD*, Madurai, (2010)
2. A Hierarchical Deterministic Key Predistribution for WSN Using Steiner System, By Sarbari Mitra, Ratna Dutta and Sourav Mukhopadhyay, *4th Canada-France MITACS Workshop on Foundations & Practice of Security*, Paris, France (submitted), (2011)
3. A note on distance measures between intuitionistic fuzzy numbers, By Debashree Guha and Debjani Chakraborty, *National conferece on Mathematical Sciences and Applications*, Jadavpur University, (2011)
4. A note on Lie groups and Lie algebras, By Debapriya Biswas, *International Conference on Mathematics of Date (ICMD)*, Allahabad, (2011)
5. Analysis of a finite buffer bulk service queue with versatile batch service rule and batch-size dependent service policy, By A. Banerjee and U.C. Gupta, *International conference on productivity, Quality, Reliability, Optimization and Modelling*, New Delhi, India, (2011)
6. Computing queueing time distribution of MAP/D_N/1 queue- An alternative approach, By Gagandeep Singh and U.C. Gupta, *International conference on productivity, Quality, Reliability, Optimization and Modelling*, New Delhi, India, (2011)
7. Duality for E-convex programming problem, By G Panda, *ICRDMSA-2010*, Calcutta, (2010)
8. Estimating entropy of an exponential population under linex loss function, By S. Kayal and Somesh Kumar, *Advances in Mathematics and Statistics*, IIT Kanpur, (2010)

9. Estimating measures of information, By S. Kayal and Somesh Kumar, *International Conference on Development and Applications of Statistics in Emerging Areas of Science and Technology and XXX Annual Convention of Indian Society for Probability and Statistics*, University of Jammu, (2010)
10. Fuzzy Multi-level sequential mining in incremental databases, By A. Goswami, *Recent developments in Applied Mathematics and its Applications*, Vidyasagar University, West Bengal, (2011)
11. Introduction to Lie groups and Lie algebras with applications, By Debapriya Biswas, *National Conference on Recent Advances in Mathematical Sciences and their Applications (RAMSA-10)*, Deptt. of Mathematics, Assam University, (2010)
12. Magnetic drug targeting in the permeable micro vessel - The effect of blood rheology, By Sachin Shaw and P V S N Murthy, *First World Conference on Nanomedicine and Drug Delivery (WCN-2010)*, Kottayam, Ker, (2010)
13. Mathematics as we know it, By A.R.Roy, *Ist A.K.Gayen Memorial Lecture*, Ak. Gayen memorial Foundation, (0)
14. Solving fuzzy multi-objective optimization problems by modified normal boundary intersection method, By Debdas Ghosh and Debjani Chakraborty, *Conference on Recent Dvelopments in Mathematical Sciences and their Applications (ICRDMSA2010)*, Calcutta Mathematical Society, (2010)
15. Stochastic Manufacturing Inventory System with process deterioration and machine breakdown, By A. Goswami, *Recent applications in Mathematics*, Burdwan University, Burdwan, (2011)
16. Symmetric Rearrangeable Networks: Algorithms and Rearrangement Limits, By A. Chakraborty, M. Collier and S. Mukhopadhyay, *Seventh International Conference on Information Technology: New Generations, ITNG 2010*, Las Vegas, Nevada, USA, (2010)
17. Towards Deterministic Hierarchical Key Predistribution for WSN Using Dual Fano Plane, By Sarbari Mitra, Ratna Dutta and Sourav Mukhopadhyay, *The 5th Asia International Conference on Mathematical/Analytical Modelling and Computer Simulation, AMS2011*, Kuala Lumpur, and Manila (submitted), (2011)
18. Vector Space Access Structure and ID based Distributed DRM Key Management, By Ratna Dutta, Sourav Mukhopadhyay and Dheerendra Mishra, *First International Conference on Advances in Computing and Communications (ACC-2011)*, KOCHI, INDIA, (2011)

Department of Physics & Meteorology

Head

Prof. Ram Naresh Prasad Choudhary	Up to May 2010
Prof. B. K. Mathur	Up to 31.01.2011
Prof. S. K. Ray	From 01.02.2011

Professors

Bharadwaj, Somnath	<i>Ph.D.(IISc Bangalore)</i> , Astrophysics, Cosmology
Chandra, Naresh	<i>Ph.D.(Queens Univ, UK)</i> , Atomic, Molecular, and Optical Physics
Chandrasekar, A	<i>Ph.D.(IISc Bangalore)</i> , Atmospheric Sciences
Choudhary, Ram Naresh Prasad	<i>Ph.D.(Edinburgh, UK)</i> , Ferroelectricity, Crystal structure, Liquid Crystals, Condensed Matter Physics(experimental), Nanomaterials and nanotechnology
Ghatak, Sobhendu Kumar	<i>Ph.D.(Calcutta Univ)</i> , Condensed Matter Physics, BioPhysics,
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> , Nuclear and Particle Physics
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> , Effect of Gamma Radiation on Metal Oxide Thin Films, Nuclear Phys (Fission Phys and Radiation Measurement), Semiconductor Phys (Devices for Radiation Detection and Monte Carlo Simulations)
Srinivas, Veeturi	<i>Ph.D.(IIT Bombay)</i> , Electronic properties of solids, Magnetic, electrical transportproperties, Nanomaterials, Non-crystalline solids
Taraphder, Arghya	<i>Ph.D.(IISc Bangalore)</i> , Condensed matter physics

Associate Professors

Datta, Prasanta Kumar	<i>Ph.D.(Burdwan Univ)</i> , Ultrafast Lasers and Nonlinear Optics, Photonics
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 Oxides, Magnetic metal Nanoparticles, Multiferroics, Magnetic Spinel ferrites for high frequency use, Metallic glasses (bulk and nanocrystalline), Superconductivity
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, 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
Das, Baidya Nath	<i>Ph.D.(IIT Kharagpur)</i> , solid state 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
Roy Chaudhuri, Partha	<i>Ph.D.(IIT Delhi)</i> , Fiber & Integrated Optics and Optoelectronics, Experimental Bio-Photonics & Nano-Photonics
Singh, Ajay Kumar	<i>Ph.D.(Calcutta Univ)</i> , Experimental Nuclear Physics, Double Beta decay studies
Srivastava, Sanjeev Kumar	<i>Ph.D.(JNU, New Delhi)</i> , Materials Engineering using Ion Beams, Thin Films and Multilayers, 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

Scientific Officer

Chakraborty, Syamal	<i>Ph.D.(IIT Kharagpur)</i> , Glass and ceramics, Sol-gel science, Preparatory course physics, Writing popular science
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Faculty Retirement

Choudhary, R N P	Professor
Ghatak, S K	Professor

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

Lectures by Visiting Experts

1. Optical spectroscopy and cancer: strange bed fellows. *by* Dr. C. D. Muralikrishna (ACTREC, Tata Memorial Centre, Navi Mumbai)
2. Modeling non-linear large scale structure using Lagrangian perturbation theory. *by* Dr. Sharvari N. Ghosh (Cornell Univ., NY, USA)
3. In-situ surface characterization using reflected high energy electron diffraction (RHEED). *by* Dr. Herald Polivka (Staib Instruments, Germany)
4. Is there a preferred direction in the universe? *by* Prof. Pankaj Jain (IIT Kanpur)
5. Defect engineering in semi-insulating semiconductors by high energy light ions. *by* Dr. D. Kabiraj (IUAC, New Delhi)
6. The paired-electron crystal and unconventional superconductivity. *by* Prof. Sumit Mazumdar (Dept. of Physics, Univ. of Arizona, Tucson, AZ)
7. Plasma application on thin film and biology. *by* Dr. Abhijit Majumdar (IoP, Greifswald, Germany)
8. Technical challenges in advanced gravitational wave detectors. *by* Prof. Ju Li (Univ. of Western Australia)
9. Aspects of Dirac physics in graphene. *by* Prof. Krishnendu Sengupta (IACS, Kolkata)

Doctoral and MS Degrees Awarded

1. Namita Shukla : Ion transport and stability in clay intercalated and dispersed polymer nanocomposites(Ph.D.)
2. Avijit Ghosh : Defects mediated optical properties of ZnO based nanostructures(Ph.D.)
3. Sourabh Roy : Studies on light propagation in optical waveguides and microstructured optical fibers and devices(Ph.D.)
4. V S Reddy : Optoelectronic properties of organic based thin film devices(Ph.D.)
5. S P Mondal : Cadmium sulphide based nanostructures for electronic and optoelectronic devices(Ph.D.)
6. K Jawahar : Structural, dielectric and electrical properties of lanthanum, neodymium, dysprosium and yttrium modified bismuth iron garnets(Ph.D.)
7. M Govindan Kutty : The impact of three dimensional variational satellite data assimilation in simulating various monsoon disturbances over India using the WRF model(Ph.D.)
8. Gopal Dixit : Relativistic many-body studies of atomic and molecular systems(Ph.D.)
9. Prasun Datta : Probing turbulence in the interstellar medium using rapid-interferometric observations of neutral hydrogen(Ph.D.)
10. Surajit Mondal : Synthesis and characterization of zinc oxide nanostructures(Ph.D.)
11. Amaresh Chandra Mishra : Microstructure and magnetoimpedance response in core-shell structured composite wires(Ph.D.)
12. Maheswar Panda : Scaling and relaxation behaviour of polymer composites across the percolation threshold(Ph.D.)

Member - Professional Bodies

1. Bharadwaj, Somnath, *Member* - International Astronomical Union
2. Chandra, Amreesh, *Life Member* - Indian Solid State Ionics Society
3. Chandra, Amreesh, *Life Member* - Indian Science Congress Association
4. Choudhary, Ram Naresh Prasad, *Life Member* - Materials Research Society of India
5. Choudhary, Ram Naresh Prasad, *Life Member* - The National Academy of Sciences, Allahabad India
6. Choudhary, Ram Naresh Prasad, *Annual/Regular Member* - American Physical Society, USA
7. Choudhary, Ram Naresh Prasad, *Member* - Indian Physical Society, Calcutta
8. Choudhary, Ram Naresh Prasad, *Life Member* - The Indian Ceramic Society
9. Choudhary, Ram Naresh Prasad, *Member* - International Thermoelectric Society
10. Choudhary, Ram Naresh Prasad, *Life Member* - International Academy of Physical Sciences, Allahabad
11. Choudhary, Ram Naresh Prasad, *Life Member* - Indian Society of Liquid Crystal
12. Datta, Prasanta Kumar, *Member* - SPIE (USA)
13. Datta, Prasanta Kumar, *Regular* - Optical Society of America
14. Datta, Prasanta Kumar, *Life* - Indian Laser Association
15. Datta, Prasanta Kumar, *Regular Associate* - International Centre for Theoretical Physics, Trieste, Italy
16. Kar, Sayan, *Secretary, IAGRG Council* - Indian Association for General Relativity and Gravitation
17. Mathur, Balbir Kumar, *Senior Member* - IEEE
18. Mathur, Balbir Kumar, *Life member* - MRSI
19. Nath, Tapan Kumar, *Life Time Member* - Magnetic Society of India
20. Nath, Tapan Kumar, *Life time member* - Material Research Society of India
21. Ray, Samit Kumar, *Member* - MRS, USA
22. Ray, Samit Kumar, *Member* - IEEE, USA
23. Roy Chaudhuri, Partha, *Regular* - Indian Science Congress Association, ISCA
24. Roy Chaudhuri, Partha, *Life Member* - Optical Society of India, OSI
25. Roy Chaudhuri, Partha, *Regular* - Optical Society of America, OSA
26. Roy Chaudhuri, Partha, *Life Member* - Institute of Electronics & Telecommunication Engineers, IETE
27. Roy Chaudhuri, Partha, *Regular* - KIT International Exchange Club, Japan
28. Sharma, Shivcharan Lal, *Member* - IEEE
29. Sharma, Shivcharan Lal, *Life Member* - Acoustical Society of India
30. Sharma, Shivcharan Lal, *Life Member* - Materials Research Society of India
31. Sharma, Shivcharan Lal, *Life Member* - Nuclear Track Society of India
32. Sharma, Shivcharan Lal, *Life Member* - Indian Physics Association
33. Sharma, Shivcharan Lal, *Life Member* - Indian Physical Society
34. Srinivas, Veeturi, *MEMBER (L0898)* - MATERIALS RESEARCH SOCIETY OF INDIA
35. Srinivas, Veeturi, *MEMBER* - MAGNETIC SOCIETY OF INDIA

Member - Editorial Board

1. Bharadwaj, Somnath (2010) *Member Editorial Board* - Journal of Astrophysics and Astronomy
2. Choudhary, Ram Naresh Prasad (2010) *Editorial Board Member* - The Open Materials Science
3. Choudhary, Ram Naresh Prasad (2010) *Editorial Board Member* - Advanced Materials Letters
4. Choudhary, Ram Naresh Prasad (2008) *Editorial Board Member* - PMC Physics B
5. Choudhary, Ram Naresh Prasad (0) *Editorial Board Member* - International Academy of Physical Sciences
6. Choudhary, Ram Naresh Prasad (2010) *Editorial Board Member* - Advances in Condensed Matter Physics, USA
7. Choudhary, Ram Naresh Prasad (2010) *Editorial Board Member* - Enwergy and Power Engineering
8. Choudhary, Ram Naresh Prasad (0) *Editorial Board Member* - Bulletin of Pure and Applied Sciences D

9. Kar, Sayan (2010) *Member, Editorial Board* - Indian Journal of Physics
10. Ray, Samit Kumar (2010) *Editorial Board Member* - Journal of Nano Energy and Power Research.
11. Ray, Samit Kumar (2010) *Member of the Editorial Board* - Nanotrends
12. Srinivas, Veeturi (2009) *Member* - Journal of Magnetism
13. Thakur, Awalendra Kumar (2010) *Associate Editor* - Journal of Applied Sciences, Engineering and Technology
14. Thakur, Awalendra Kumar (2009) *EDITORIAL BOARD MEMBER* - THE OPEN ENERGY & FUELS JOURNAL

Awards & Honours

1. Thakur, Awalendra Kumar (2010) *Best Paper Award at Recent Trends in Materials and Devices (RTMD-2010), AUUP, Noida*
2. Chandra, Amreesh (2010) *Best Poster Award, International Conference on Electroactive Polymers: Materials and Devices (Delhi NCR, Nov. 21-26, 2010)*
3. Chandra, Amreesh (2012) *Elected Sectional Committee Member, Materials Science Section, Indian Science Congress Association*
4. Datta, Prasanta Kumar (2004) *Regular Associate of the International Centre for Theoretical Physics (ICTP), Trieste, Italy for the period 2004-11*

Fellowships

1. Nath, Tapan Kumar (0) *Royal Society (London) Grant Award for the Royal Society International Short Visits Scheme Fellowship for 2008 June - July and 2008 December, 2008-09*
2. Ray, Samit Kumar (1997) *INSA-DFG*
3. Ray, Samit Kumar (1995) *DST BOYSCAST*

Sponsored Research Projects

1. A Complete Study on the Effects of Gamma Radiation on Structural, Optical and Electrical Properties of Indium Oxide Doped Tellurium Dioxide Thin Films (DAE-BRNS-GOI (Under preparation), Rs.55.00 Lakhs)
2. Co-operative Phenomena and Nanosize effect in some Correlated Systems (DAE-BRNS, Rs.18.00 Lakhs)
3. Co-ordinated Research Project (CRP)-Spintronics materials - Simulation and Design of Spintronics Materials (BRNS, Rs.27.94 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 and evaluation of novel nanostructured ionic conductors for low temperature solid-state secondary battery applications (ARMREB,DRDO, Rs.52.56 Lakhs)
6. Development of Artificially Structured Nano Magnetic Materials for High Frequency Sensor Applications (DRDO, Rs.31.00 Lakhs)
7. Development of cantilever beam magnetometer for in-situ measurement of mechanical and magnetic properties of thin films for spintronic application (DRDO, Rs.69.92 Lakhs)
8. Development of Optical Parametric Oscillator tunable in the Range of 0.35 micron to 16 micron for Airborne Detection of Chemical and Biological Warfa (Defence Research and Development, Govt. of India, Rs.73.29 Lakhs)
9. Development of Real-Time Gamma Radiation Dosimeters Employing Thin Films of Different Metal Oxides and Their Mixtures (DAE-BRNS-GOI (Sanctioned for funding, order awaited.), Rs.29.00 Lakhs)
10. Development of Soft Magnetic Materials from Nano Dispersion of Magnetic Particles for High Frequency Applications (ARMREB (DRDO), Rs.36.56 Lakhs)
11. Experimental and computational study of magnetic interactions of impurities in solids. (SRIC, Rs.4.70 Lakhs)
12. Fabrication and characterization of Novel Photonic Crystal Structures and Si/Ge Quantum Dots for Photonic Applications (India-Trento Programme for Advanced Research, Rs.28.14 Lakhs)
13. Fabrication of group-IV semiconductor (Si&Ge) nanowires for flash memory and nanoelctronic devices (India-Taiwan Programme in Science & Technology, Rs.0.00 Lakhs)
14. Feasibility study of neutrinoless double beta decay in ^{124}Sn (DST India, Rs.43.00 Lakhs)
15. Generation of tunable mid-infrared coherent radiation in the range of 12.7-17 μm for strategic spectroscopic application (BRNS, Rs.22.57 Lakhs)
16. Investigation of Electrical-, Magneto-Transport, Extraordinary Hall resistivity, Specific Heat and Magnetic studies in nanostructured CMR Manganites (DST, India, Rs.128.00 Lakhs)
17. Investigation of electronic properties of heusler alloys for the development of environmentally friendly thermoelectric materials. (Department of Science and Technology, Rs.32.38 Lakhs)
18. Low temperature Raman measurements on novel materials (Department of Science and Technology, Rs.36.83 Lakhs)
19. 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)
20. Measuring the HI power-spectrum with the GMRT (BRNS, DAE, Rs.7.73 Lakhs)
21. Multifunctional Ceramics and Polymer Composites (ISIRD, SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
22. Nanostructured, Hetero-junction Solar Cell based on ZnO Nanorods and Copper Indium Gallium Selenide Nanoparticles (SRIC, Innovative Research and Development (ISIRD) programme, IIT Khargapur, Rs.3.50 Lakhs)
23. 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)
24. R&D in Photonic Crystal Fibers: Design, Fabrication and Experimental Characterization for Applications in Optical Communications and Sensors (Department of Science & Technology, Govt. of India, Rs.35.28 Lakhs)

25. 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)
26. Second order cascaded nonlinear optical processes for all-optical photonic devices (DST, Govt. of India, Rs.7.62 Lakhs)
27. Spectroscopy of nuclei close to beta stability line by using complete, incomplete and deep-inelastic reaction (DST, Rs.13.00 Lakhs)
28. Structural Phase Transitions in Multiferroic Ceramics (BRNS, BARC, Mumbai, Rs.16.54 Lakhs)
29. 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)
30. Studies on protein-metal interaction by Raman spectroscopy (Department of Science and Technology, Rs.21.05 Lakhs)
31. Study of magnetic properties of thin films on semiconductor substrates using a cantilever beam magnetometer (CSIR, Rs.15.12 Lakhs)
32. Swift heavy ion induced phase separation and nanostructure formation. (Department of Science and Technology, Rs.11.04 Lakhs)
33. Technology Development and Research with Photonic Crystal Fibers and Components for Advanced Photonic Sensor System (Defence Research and Development, Govt. of India, Rs.62.84 Lakhs)
34. Terahertz Emission of Si/SiG Structures Doped with Shallow Acceptors (Department of Science & Technology, Govt. of India, Rs.9.63 Lakhs)
35. Theoretical studies on transition metal dichalcogenides (TID) (DST, Rs.15.00 Lakhs)
36. Theoretical Study of Hyperfine Interaction in Heavy Atoms and Molecules for Quantum Computation and Frequency Standard (IIT-Kharagpur/ISIRD), Rs.3.00 Lakhs)
37. Tuning of structural and electrical properties of semiconductors by high energy ion-irradiation (CSIR, Rs.18.38 Lakhs)
38. Vibration Induced Transport of Particles (VIT) (DST, New Delhi, Rs.26.60 Lakhs)

Consultancy Projects

1. Characterization of thin film capacitors (EPCOS, Nasik, Rs.1.20 Lakhs)
2. Development of Admission Modules (IISER Admission Committee, Rs.6.00 Lakhs)
3. Guest House management System (IIT Kharagpur, Rs.3.00 Lakhs)
4. Measurement of optical nonlinearity of organic and polymer samples (DMSRDE, DRDO Kanpur, Rs.0.53 Lakhs)
5. Students Academic Management (IISER Pune, Rs.6.00 Lakhs)
6. Thin Film Characterization (Various department s& agencies, Rs.0.00 Lakhs)

Patents (filed / granted)

1. Solar based mobile charger

Visits Abroad by Faculty Members

1. Chandra, Amreesh - Under the Max Planck India Fellowship program (Max Planck Institute for Polymer Research, Mainz, Germany,) 1 month
2. Panigrahi, Kamal Lochan - Research (Universita di Genova,) one week
3. Majumder, Sonjoy - Collaboration under DAAD project (Technical University of Munich, Germany,) 60 days
4. Datta, Prasanta Kumar - to attend Photonics West Conference as Author (San Francisco, USA,) 22-28 January, 2011
5. Thakur, Awalendra Kumar - To participate in 4th NUS-India Joint Physics Symposium (The National University of Singapore, Singapore,) February 23 - 25, 2011
6. Ray, Samit Kumar - Invited talk in EMRS Fall Meeting - 2010 (Warsaw, Poland,) One week
7. Ray, Samit Kumar - Collaborative Research Project (University of Trento, Italy,) One week
8. Taraphder, Arghya - Collaborative (Michigan State University,) June 2010
9. Shukla, Pragya - Scientific Collaboration and seminar speaker (University of Melbourne, Sydney, Australia,) 12 days
10. Taraphder, Arghya - Academic (Max Planck Institute, Dresden,) May-July 65 days

Invited Lectures by Faculty Members

1. Oxide Nanoparticles for application in alternate energy systems *by* Chandra, Amreesh (Indian Science Congress, SRM University, Chennai)
2. Quantum Phase transition in Kicked Rotor *by* Shukla, Pragya (IIT Madras, Quantum chaos and quantum information workshop (21st-24th July))
3. Typical Weak and Superweak Values *by* Shukla, Pragya (Thiruchirapally, Tamilnadu, Centre for Nonlinear Dynamics, Bharatidasan University, NCNSD-2011, (27 Jan-30 Jan 2011))
4. Typical weak and superweak values *by* Shukla, Pragya (School of Physical Sciences, Jawaharlal Nehru University, New Delhi, SPS@25, (10-11 March 2011))
5. Percolation and Dielectric Relaxation in Polar Polymer-Conductor Composites *by* Thakur, Awalendra Kumar (G. G. University (Central University), Bilaspur)
6. State-of-the art Status of Ion Conducting Polymer Nanocomposites for Energy Storage Device Applicati *by* Thakur, Awalendra Kumar (M. G. University, Kottayam, Kerala, India)
7. Plastic Separators for Storage Devices : Prospects and Problems *by* Thakur, Awalendra Kumar (The National University of Singapore (NUS), Singapore)

8. Light Emission and Floating Gate Memory Characteristics of Germanium Quantum Dots *by* Ray, Samit Kumar (EMRS Fall Meeting, Warsaw Institute of Technology, Poland)
9. Quantum Dot based Memory and Light Emitting Devices *by* Ray, Samit Kumar (CGCRI, Kolkata)
10. Excitements with One Dimensional Semiconductor Nanostructures *by* Ray, Samit Kumar (Jadavpur University, Kolkata)
11. II-VI Semiconductor Hybrid Nanocomposites for Photovoltaic Applications- *by* Ray, Samit Kumar (EU-India workshop/ EICOON School "Nanomaterials for Sustainable Energy", Delhi)
12. Silicon Germanium Nanostructures for Electronic and Photonic Devices *by* Ray, Samit Kumar (Presidential lecture: 98th Indian Science Congress, Chennai)
13. MBE Growth of SiGE heterostructures *by* Ray, Samit Kumar (Kolkata University)
14. Semiconductor based sensing devices *by* Ray, Samit Kumar (CGCRI, Kolkata)
15. Sources & detectors for fibre optic communication *by* Ray, Samit Kumar (DST-SERC School on Guided Wave Optics and Devices , Kolkata)
16. Nanostructured Magnetic Materials *by* Nath, Tapan Kumar (National Workshop on QPAM-11, Vidyasagar University, Midnapur (23- 25 March, 2011))
17. Magnetic Nanoparticles *by* Nath, Tapan Kumar (International Conference on Nanomaterials and Nanotechnology (NANO-2010), KSR College, Tamilnadu)
18. Ion beam synthesis of buried Au and Ag nanoparticle layers in SiO_x. *by* Srivastava, Sanjeev Kumar (ISCA Congress, SRM University, Chennai)
19. Large Scale Structures *by* Bharadwaj, Somnath (North Bengal University)
20. Boundary value problems for the Helmholtz equation *by* Khastgir, Sugata Pratik (IIT Kanpur, India)
21. Quantum Phase transition in Kicked Rotor *by* Shukla, Pragya (Sydney, Australia, "Dynamics Days 2010 (DDAP6)", (12th - 14th July))
22. X-Ray Scattering for Soft Materials *by* Dhar, Achintya (NIT, Rourkela)
23. Organic Solar Cells - Some Points to Ponder *by* Dhar, Achintya (Jadavpur University)
24. Novel geometric flows using higher order and higher derivative terms *by* Kar, Sayan (26th IAGRG Meeting, HRI, Allahabad)
25. Femtosecond Fiber Laser *by* Datta, Prasanta Kumar (Dept. of Physics, IIT Delhi)
26. Development of optical parametric Oscillator tunable in the range 0.95-1.4um *by* Datta, Prasanta Kumar (LASTEC, DRDO, Delhi)
27. Strategic application of optical parametric oscillator *by* Datta, Prasanta Kumar (IRDE, DRDO, Dehradun)
28. Curious case of 2H-TaSe₂ *by* Taraphder, Arghya (International conf. Mysore)
29. Transition metal dichalcogenides *by* Taraphder, Arghya (HRI Allahabad)
30. The colorful small world *by* Roy, Anushree (J.M. DasSarma Memorial Lecture, Scottish Church College, Kolkata)
31. Recent trends in semiconductor nanostructures *by* Ray, Samit Kumar (Vidyasagar University)
32. Convection patterns in slowly rotating fluids *by* Kumar, Krishna (Indian Association of Cultivation of Sciences, Jadavpur)
33. Rotating Convection at low Prandtl-number convection *by* Kumar, Krishna (Bethune College, Kolkata)
34. Bifurcation in rotating convection in zero-Prandtl-number fluids *by* Kumar, Krishna (Viswabharati, Shantiniketan, West Bengal)
35. Strongly correlated systems *by* Taraphder, Arghya (IIT Roorkee)
36. Correlated and frustrated systems *by* Taraphder, Arghya (MPI Dresden)

Books Published

1. Suvra Prakash Mondal and Samit K Ray: Cadmium Sulphide Nanostructures for Device Applications *published by* Lambert Academic Publishing, Germany (2010)

Papers Published in Journals

1. Anderson Localisation in tight-binding models with flat bands *By* J.T.Chalker, T.S.Pickles and P. Shukla, *Physical Review B* 82, 104209 (2010)
2. Slow manifold and Hannay angle in the spinning top *By* M.V. Berry and P. Shukla *European Journal of Physics* 32, 115 (2011)
3. A.C. Conductivity and Relaxation Behavior in Polymer Nanocomposite *By* A. L. Sharma and Awalendra K. Thakur *Ionics* 17(2), 135-143 (2011)
4. Accurate Estimations of Stellar and Interstellar Transition Lines of Triply Ionized Germanium *By* Narendra Nath Dutta, Sonjoy Majumder *Astrophysical Journal* Accepted (2011)
5. An automated home made low cost vibrating sample magnetometer, *By* S. Kundu and T. K. Nath, *American Institute of Physics (AIP) Proceedings*, in press, accepted (2011)
6. An extended Falicov-Kimball model on a triangular lattice *By* Umesh K. Yadav, T. Maitra, Ishwar Singh, A. Taraphder *Europhysics Letters* 93, 47013 (2011)
7. Characteristics of Electrochemically Grown Dendritic Metallic Zinc *By* P. K. Samanta, S. Basak, P. Roy Chaudhuri *OPTIK, International Journal for Light and Electron Optics* In Press (2011)
8. Conductivity Enhancement in Polymer Electrolytes on Gamma Irradiation *By* Pradyot Nanda, Sanjoy Mondal, Ruma Ray, Namita Pandey, A. K. Thakur and S. Tarafdar *Radiation Physics and Chemistry* 80, 22 "27 (2011)
9. Confinement of test particles in warped spacetimes *By* S. Ghosh, H. Nandan, S. Kar *Physical Review D* 82, 024040 (2010)
10. Cross-correlation of the H I 21-cm signal and Ly α forest: a probe of cosmology *By* Guha Sarkar, Tapomoy Bharadwaj, Somnath Choudhury, Tirthankar Roy Datta, Kanan K. *Monthly Notices of the Royal Astronomical Society* 410, 1130 (2011)
11. Defect induced magnetic interactions in highly oriented pyrolytic graphite (HOPG): A local investigation using TDPAD method *By* S.N. Mishra, S.K. Mohanta, S.M. Davane and S.K. Srivastava *Hyperfine Interactions* vol. 197, pp. 71-75 (2010)
12. Effect of gamma radiation on electrical and optical properties of (TeO₂)_{0.9}(In₂O₃)_{0.1} thin films *By* S. L. Sharma and T. K. Maity *Bulletin of Materials Science* Vol. 34 pp 1-9 (2011)
13. Effect of saturable index change on all-optical logic operation in passive vertical cavity semiconductor saturable absorber *By* P. K. Datta and R Pradhan *IET-Optoelectronics* 5 (2011)

14. Efficient compensation of thermal birefringence of a flash-lamp pumped Nd:YAG laser by a simple but novel method By S. Mondal S. Datta S. Dey S. Bera S. P. Singh P. K. Datta *Proc. SPIE* 7912, 79122F (2011)
15. Electrical and magnetoelectronic properties of La_{0.7}Sr_{0.3}MnO₃/SiO₂ /p-Si heterostructure for spintronic applications, By S. Chattopadhyay and T. K. Nath *Current Applied Physics* 1-6 (2011)
16. Electrochemical Growth of ZnO Microspheres and Nanosheets By P.K. Samanta, S. Basak, P. Roy Chaudhuri *Advanced Science Letters* Vol1, pp. 1-4. (2011)
17. Electrochemical Growth of ZnO Microspheres and Nanosheets By P. K. Samanta, S. Basak and P. Roy Chaudhuri *Advanced Science Letters* 1, 1-4 (2011)
18. Electronic structure and Magnetic Properties of (Fe,Co) codoped ZnO: Theory and Experiment By Debjani Karmakar, T. V. C. Rao, J. V. Yakhmi, A. Yaresko, V. N. Antonov, R. M. Kadam, S. K. Mandal, R. Adhikari, A. K. Das, T. K. Nath, N. Ganguli, I. Dasgupta, and G. P. Das *Physical Review B* 81, 184421 (2010)
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21. Emergence of Ferromagnetism in Nanoparticles of Antiferromagnetic Nd_{0.4}Sr_{0.6}MnO₃, By S. Kundu and T. K. Nath, *American Institute of Physics (AIP) Proceedings*, 1276, 350-355 (2010)
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25. Evidence of conformational changes in adsorbed lysozyme molecule on silver colloids By G. Chandra, K.S. Ghosh, S. Dasgupta, A. Roy *International Journal of Biological Macromolecules* 47,361 (2010)
26. Field dependent dynamics in the metallic regime of the half-filled Hubbard model By D. Parihari, N. S. Vidhyadhiraja and A. Taraphder *J. Phys. Condens-matter* 23, 055602 (2011)
27. First-principles calculation of the electric field gradient and magnetic hyperfine field in rare-earth metals (Gd-Lu) and dilute alloys with Cd. By S.K. Mohanta, S.N. Mishra, S.K. Srivastava and M. Rots *Solid State Communications* 150, 1789 (2010)
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29. GMRT observation towards detecting the post-reionization 21-cm signal By Ghosh, Abhik Bharadwaj, Somnath Ali, Sk. Saiyad Chengalur, Jayaram N. *Monthly Notices of the Royal Astronomical Society* 411, 2426 (2011)
30. Ground state phase diagram of a spinless, extended Falicov-Kimball model on a triangular lattice By Umesh Kumar, T. Maitra, I. Singh and A. Taraphder *J. Phys. Condens-matter* 22, 295602 (2010)
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32. H I 21 cm opacity fluctuations power spectra towards Cassiopeia A By Roy, Nirupam Chengalur, Jayaram N. Dutta, Prasun Bharadwaj, Somnath *Monthly Notices of the Royal Astronomical Society* 404, L45 (2010)
33. High-spin spectroscopy in ¹²⁵Xe By A. Al-Khatib, G. B. Hagemann, G. Sletten, A. K. Singh, H. Amro, G. Benzoni, A. Bracco, P. Bringel, F. Camera, M. P. Carpenter, P. Chowdhury, R. M. Clark, C. Engelhardt, P. Fallon, B. Herskind, H. Huebel, R. V. F. Janssens, T. L. Khoo et al. *Physical Review C* 83, 024306 (2011)
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35. Improved charge storage characteristics of the tetralayer non-volatile memory structure using nickel nanocrystal trapping layer By D Panda, A Dhar and S K Ray *Semicond. Sci. Technol.* 24 ,115020 (5pp) (2009)
36. Improvement in Voltage, Thermal, Mechanical stability and Ion Transport Properties in Polymer-Clay Nanocomposites By A. L. Sharma and Awalendra K. Thakur *J. Applied Polymer Science* 118, 2743-2753 (2010)
37. Improvement of efficiency in solar cells based on vertically grown copper phthalocyanine nanorods By S Karak, S K Ray and A Dhar *J. Phys. D: Appl. Phys* 43, p. 245101 (2010)
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39. Influence of deposition temperature on structure and morphology of nanostructured SnO₂ films synthesized by pulsed laser deposition By S.K. Sinha, R. Bhattacharya, S.K. Ray, I. Manna *Materials Letters* 65, pp. 146-149, (2011)
40. Interplay of defects in 1.2 MeV Ar irradiated ZnO By S. Chattopadhyay, S. Dutta, D. Jana, S. Chattopadhyay, A. Sarkar, P. Kumar, D. Kanjilal, D. K. Mishra, and S. K. Ray *Journal of Applied Physics* 107, p.113516 (2010)
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43. Ion Transport Model in Exfoliated and Intercalated Polymer-Clay Nanocomposites By Namrata Shukla and Awalendra K. Thakur *Solid State Ionics* 181(19-20), 921-929 (2010)
44. Large magnetodielectric response in Pr_{0.6}Ca_{0.4}MnO₃/polyvinylidene fluoride nanocomposites By K. Devi Chandrasekhar, A. K. Das, and A. Venimadhav *Applied Physics Letter* 98, 122908 (2011)
45. Light emission and floating gate memory characteristics of germanium nanocrystals By S. Das, S. Manna, R.K.Singha, A.Ieksei Anopchenko, N. Daldosso, L. Pavesi, A. Dhar, and S. K. Ray, *Phys. Status Solidi A* DOI 10.1002/pssa.201 (2010)
46. Magneto-Transport and Magnetic Properties of Fe Doped Nanometric Polycrystalline La_{0.7}Sr_{0.3}MnO₃ CMR Manganites, By S. Paul and T. K. Nath, *NOVEL MATERIALS AND DEVICES FOR SPINTRONICS*, 1183, 107-113 (2010)

47. Magnetoimpedance Effect in Electrodeposited NiFe/Cu Wire Investigated Using Inductance Spectroscopy By Amaresh Chandra Mishra, Tricholan Sahoo, V. Srinivas & A. K. Thakur *Physica B: Physics of Condensed Matter* 406, 645–651 (2011)
48. Mechanism for Improvement in Mechanical and Thermal Stability in Dispersed Phase Polymer Composites By Awalendra K. Thakur *Ionics* 17(2), 109-120 (2011)
49. Mechanism of Ion Transport in YSZ Dispersed Polymer Nanocomposite Films: An Analysis by Vibrational Spectroscopy Approach By Saumya R. Mohapatra, Awalendra K. Thakur *Ionics* 16(5), 437–445 (2010)
50. Microbial Fuel Cells: Recent Trends By Jatin Khara and Amreesh Chandra *Proceedings of National Academy of Sciences* (in press) (2011)
51. Microstructural characteristics and phonon structures in luminescence from surface oxidized Ge nanocrystals embedded in HfO₂ matrix By S. Das, R. K. Singha, S. Gangopadhyay, A. Dhar, and S. K. Ray, *J. of Applied Physics* 108, 053510 (2010)
52. Microstructural, chemical bonding, stress development and charge storage characteristics of Ge nanocrystals embedded in hafnium oxide By S. Das, R. K. Singha, S. Manna, S. Gangopadhyay, A. Dhar, S. K. Ray *J. Nanopart. Res.* 13, p. 587 (2011)
53. Microstructural, Magnetic and Electrical Properties of Co-Zn Ferrite Nanoparticles Synthesized by Chemical Sol-Gel Method, By P. R. Mandal, S. Sahu and T. K. Nath, *International Journal of Nanoscience*, 10, 1-5 (2011)
54. Microstructure, magnetic and magnetoimpedance properties of electrodeposited NiFe/Cu and CoNiFe/Cu wire: A study on influence of saccharin additive in plating bath By Amaresh Chandra Mishra, Tricholan Sahoo, V. Srinivas & A. K. Thakur *J. Applied Physics* DOI: 10.1063/1.35491 (2011)
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62. Optical property modification of ZnO: Effect of 1.2 MeV Ar irradiation By Soubhik Chattopadhyay, Sreetama Dutta, Palash Pandit, D. Jana, S. Chattopadhyay, A. Sarkar, P. Kumar, D. Kanjilal, D. K. Mishra, and S. K. Ray, *Phys. Status Solidi C* 8, p.512 (2011)
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64. Phase response characterization of semiconductor saturable absorber for applications in nonlinear optical signal processing and phase-modulated signals regeneration By Lokanath Mishra, An Nguyen, Claudio Porzi, Prasanta K. Datta, Antonella Bogoni, and Luca Potárci *Proc. SPIE* 7934, 79340E (2011)
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Papers Presented in Conferences

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3. Appearance of ferromagnetism in nanoparticles of antiferromagnetic Sm_{0.5}Ca_{0.5}MnO₃ and Nd_{0.4}Sr_{0.6}MnO₃., By S. Kundu, S. K. Giri and T. K. Nath,, *International Conference on Fundamental and Applications of Nanoscience & Technology (ICFANT 2010)*, Jadavpur University, Kolkata, (2010)
4. Birefringence, GVD and Cut-off Properties of Elliptical Core Triangular Lattice PCF, By Partha Sona Maji and Partha Roy Chaudhuri, *International Conference on PHOTONICS*, IIT Guwahati, India, (2010)
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7. Detection of glucose using ZnO nanotubes grown by hydrothermal method, By T. Rakshit, S. Mondal, P. Mishra, A. Dhar, I. Manna, and S. K. Ray, *National Conference on Sensors & Actuators: Science to Technology (NCSA-11)*, , (2011)
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10. DFT Analysis of Layered Silicate Structure for Lithium Battery Application, By Shamik Chakraborti and A. K. Thakur, *Recent Trends in Materials and Devices (RTMD-2010)*, Amity University, Uttar Pradesh, Noida, (2010)
11. Dielectric studies of low thermal expansion polymer composite films, By Amreesh Chandra, *4th International Conference on Electroactive Polymers: Materials and Devices*, Surujkund, India, (2010)
12. Dielectric, Electrical and Magnetic Properties of PbZr_{0.53}Ti_{0.47}O₃- Ni_{0.65}Zn_{0.35}Fe₂O₄ Multiferroic Composite,, By Dhiren K. Pradhan, T. K. Nath and R. N. P. Chowdhury,, *XVI - National Seminar on Ferroelectrics & Dielectrics (NSFD-XVI - 2010)*, G. G. Viswavidyalaya , Bilaspur, CG, (2010)
13. Effect of Liquid Concentration on Modal Propagation in Large Air-Cladding Microstructured Fiber Fabricated In-house, By Sourabh Roy, Sudip Kumar Chaterjee, Kajal Mondal, Partha Roy Chaudhuri, *International Conference on PHOTONICS*, IIT Guwahati, India, (2010)
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15. Efficient compensation of thermal birefringence of a flash-lamp pumped Nd:YAG laser by a simple but novel method., By S Mondal, S Datta, S Dey, S Bera, S P Singh and P K Datta,, *Photonics West*, San Francisco, (2011)
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19. Emergence of Ferromagnetism in Nanoparticles of Antiferromagnetic $\text{Sm}_{0.5}\text{Ca}_{0.5}\text{MnO}_3$ and $\text{Nd}_{0.4}\text{Sr}_{0.6}\text{MnO}_3$, By S. Kundu, S. K. Giri and T. K. Nath., *International Conference on Nanomaterials and Nanotechnology (Nano-2010)*, K.S.R. College of Technology, Tamilnadu, (2010)
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21. Fabrication of Intensity Based Fiber-optic pH Sensor, By S. Basak, R. Kumar, P. K. Samanta, *IEEE-INEC-2010*, Hong Kong, (2010)
22. Fabrication of ZnO Nanostructures: Effect of Organic and Inorganic Compounds, By P. K. Samanta, S. Basak, & P. Roy Chaudhuri, *IEEE-INEC-2010*, Hong Kong, (2010)
23. Field dependent dynamics in the metallic regime of the half-filled Hubbard model, By D. Parihari, N. S. Vidhyadhiraja and A. Taraphder, *IACS KS Krishnan meeting*, IACS Kolkata, (2010)
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25. Fused 3dB Fiber Coupler Based Interferometer in Strain and Temperature Measurement, By Sudip Kumar Chatterjee, Sourabh Roy, P. Roy Chaudhuri, *International Conference on PHOTONICS*, IIT Guwahati, India, (2010)
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59. Structural and temperature-dependent photoluminescence properties of ZnO/Zn_{1-x}Mg_xO multilayer, *By* T. Rakshit, I. Manna, S. K. Ray, *International Symposium on Advances in Nanomaterials (ANM2010)*, CGCRI, Kolkata, (2010)
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66. The curious case of 2H-TaSe₂, *By* A. Taraphder, *ICTS International conference on CMP*, Mysore, (2010)
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Materials Science Centre

Head

Prof. Basudam Adhikari

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

Bhattacharya, Debasis

Ph.D.(Calcutta Univ), Synthesis and processing of nanoceramics, Thin film ceramics for electrical and electronic applications, Refractory materials and coatings for thermal barrier and tribology applications, Ceramics for use in energy conversion and renewable energy applications, Ceramic Technology, Bioceramics

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 nanogluers, Films, Optical materials and applications, Biomaterials, Phase transformations and phase transitions, Photonics

Associate Professors

Banerjee, Susanta

Ph.D.(IIT Kharagpur), Polymer Synthesis and Characterization, Membrane based separation, Hyperbranched polymers, Light emitting polymers, High temperature polymers

Banerji, Pallab

Ph.D.(Jadavpur Univ), Thermoelectric & Photovoltaic materials for energy conversion, MOCVD of III-V & II-VI semiconductors, Organic semiconductor

Jacob, Chacko

Ph.D.(Case Western, USA), Materials Science/ Nanomaterials and Nanotechnology

Assistant Professors

Khatua, Bhanu Bhusan

Ph.D.(IIT Kharagpur), Polymer-clay & Polymer-CNT Nanocomposites, Polymer Blends and Composites, Polymer Blend-Clay nanocomposites: Morphology control, Polymeric PTCR composites

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

Pradhan, Debabrata

Ph.D.(IIT Bombay), Nanomaterials, Materials Science, Physical Chemistry, Surface Science

Faculty Appointments

Prof. Debabrata Pradhan

Assistant Professor

Faculty Promotions

Prof. Subhasish Basu Majumder

Associate 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. Adhikari, Basudam, *Life Member* - Biosensor Society of India
2. Adhikari, Basudam, *Member of Regional Advisory Committee* - CIPET, Haldia, West Bengal
3. Adhikari, Basudam, *Life Member* - Materials Research Society of India
4. Adhikari, Basudam, *Life Member* - Society of Biomaterials and Artificial Organs (India)
5. Adhikari, Basudam, *Life Member* - Society of Polymer Science India
6. Banerji, Pallab, *Regular* - MRS, USA
7. Banerji, Pallab, *Member* - IEEE, USA
8. Banerji, Pallab, *Life* - IACS
9. Jacob, Chacko, *Regular* - National Academy of Sciences, India
10. Majumder, Subhasish Basu, *Life Member* - Materials Research Society of India
11. Ram, Shanker, *Regular* - Life member of MRSI (India)
12. Ram, Shanker, *Regular* - Life member of magnetic society of India
13. Ram, Shanker, *Regular* - Life member of society for materials chemistry (SMC), BARC, Mumbai

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)

Member - Editorial Board

1. Adhikari, Basudam (2010) *Member of Editorial Board* - Indian Journal of Chemical Technology, CSIR
2. Banerji, Pallab (2009) *Member, Editorial Board* - The Open Surface Science Journal
3. Das, Chapal Kumar (0) *Member of the Editorial Board* - Advances in Materials Science
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. Khatua, Bhanu Bhusan (2010) *Member of the Editorial Board* - International Journal of Current Trends in Science and Technology
7. Pradhan, Debabrata (0) *Associate Editor* - Materials Express
8. Ram, Shanker (2011) *Editorial Board Member* - ISRN Nanotechnology

Fellowships

1. Banerjee, Susanta (2010) *Alexander von Humboldt Fellowship*
2. Ram, Shanker (2010) *Visiting Scientist at Ulm University, Germany*

Sponsored Research Projects

1. Bulk and surface modified layered-layered and layered-spinel composite cathodes for lithium rechargeable batteries (Alexander von Humboldt Foundation, Rs.8.75 Lakhs)
2. Development and Production of wear Resistance Ceramic tiles from NALCO Fly Ash: An Economic Approach (NALCO, Rs.24.92 Lakhs)
3. Development of a low cost ceramic gas sensor system prototype for monitoring the air quality of automotive cabin (NPMASS, ADA, Rs.50.00 Lakhs)
4. Development of cotton lap/cellulose pad substitute from jute (National Jute Board, Rs.41.08 Lakhs)
5. 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)
6. Development of eco-friendly / biodegradable rigid jute-based composites (JMDC, Kolkata, Rs.69.93 Lakhs)
7. Development of jute based sound proofing composites (JMDC, Kolkata, Rs.32.26 Lakhs)
8. Development of jute fiber reinforced cement concrete composites (JMDC, Kolkata, Rs.75.60 Lakhs)
9. 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)
10. 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)
11. Development of Novel Polyphosphazene based High Performance Polymeric Composites For Wide Temperature Range Application (DNP) (DRDO, New Delhi, Completed, Rs.48.08 Lakhs)
12. Development of Phase Morphology in Incompatible Polymer Blends by using Nanoclay (DST, New Delhi, Rs.16.68 Lakhs)
13. Development of Suitable Production System for Natural Rubber Coated Jute Fabrics for Novel End Uses (JMDC, Kolkata, Rs.0.00 Lakhs)
14. Development of volatile compound based biosensor for pest control (DST, New Delhi, Rs.8.65 Lakhs)
15. Development of ERP system (IIT KGP SRIC, Rs.37.00 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. High coercivity magnetic AFe₁₂O₁₉ (A: Ba and/or Sr) nanofibrils of controlled shape anisotropy for radar and other high frequency applications (CSIR, New Delhi, Rs.15.00 Lakhs)
18. High strength polyimide-siloxane films with low heat shrinkage (Defence Research & Development Establishment, Gwalior, Rs.9.98 Lakhs)
19. Indo-US Centre for Research Excellence in Science and Engineering (CRESE) on Fabronics (Indo-US Science and Technology Forum, Rs.0.00 Lakhs)
20. MOCVD growth and characterization of InGaP/GaAs & InGaP quantum dot solar cell (DST, New Delhi, Rs.38.00 Lakhs)
21. Molecularly engineered novel membrane precursors and preparation of novel polymer nano-composite membranes for selective separation of gas mixtures (S (DST, Rs.50.95 Lakhs)
22. New chemical methods in synthesis of noble-metal nanopowders & porous metal/ceramic composites for hydrogen energy storage, combustion and other (Department of Atomic Energy, Mumbai, Rs.19.00 Lakhs)
23. Novel Nano-structured Ceramics for Gas Sensing Applications (Department of Information Technology, Rs.30.78 Lakhs)
24. Phase stability and intergranular giant-magneto-resistance properties in (La_{1-x}Eux)_{0.67}Ca_{0.33}MnO₃ in a hybrid nanocomposite structure (UGC-DAE Consortium for Scientific Research (Indore), Rs.1.00 Lakhs)
25. Preparation of poly(imide siloxane) in bulk quantity for analytical sample inlet (MMB) (Defence Research & Development Establishment, Gwalior, Rs.8.52 Lakhs)
26. Silicon Carbide sensors as high temperature MEMS & MOSFET devices. (ISRO (KCSTC), Rs.0.00 Lakhs)

27. Synthesis and characterization of novel light emitting poly(arylene)s and poly(arylene ether)s and derivative thereof (NLE) (CSIR, Rs.9.06 Lakhs)
28. Synthesis and multiferroic properties of AFe₂O₁₉ (A = Ba, Sr) nanoparticles reinforced nanocomposites for space applications (CSIR, New Delhi, Rs.14.56 Lakhs)
29. Synthesis by Suspension Polymerization and Characterization of PMMA/clay and PS/clay Nanocomposites (SRIC, IIT Kharagpur, Rs.3.40 Lakhs)
30. Synthesis of mixed metal oxide, and porous oxide nanostructured materials by using hydrothermal technique (ISIRD-Kharagpur, Rs.5.00 Lakhs)
31. Use of Nanocomposites for Efficient Welding of Thermoplastics (DST, New Delhi, Rs.0.00 Lakhs)
32. Wet chemical synthesis of novel cathode materials for lithium ion rechargeable batteries (Council of Scientific and Industrial Research, Rs.10.46 Lakhs)

Consultancy Projects

1. Development of FRP materials for BCNHL roof prototype (FRPM) (TEXMACO Limited, Kolkata, Rs.2.00 Lakhs)
2. Thermoset polymer based meter boxes & distribution boxes: An ecological disaster (Ester Industries Limited, Gurgaon, Rs.4.96 Lakhs)

Patents (filed / granted)

1. Biodegradable and rigid natural resin matrix jute fiber reinforced composites
2. Casting of concrete pipe reinforced with chemically modified jute fiber and method of casting such fiber reinforced concrete pipe
3. Chemically modified jute fiber reinforced high strength concrete and process thereof
4. Durability enhancement of lignocellulosic fibers by vegetable oil treatment
5. Microbial transformation of lignocellulosic fibers using ecofriendly reagents for strength and durability enhancement

Visits Abroad by Faculty Members

1. Banerji, Pallab - for presenting a paper in the 6th International Workshop on Zinc Oxide and related Materials (Changchun, China,) August 4-10, 2010
2. Banerjee, Susanta - Alexander von Humboldt Fellowship (Marburg, Germany,) 02 Months (May 2010 to July 2010)
3. Das, Chapal Kumar - Project Work DST-DFG (Germany,) June-July 2010
4. Das, Chapal Kumar - ICAMMM Conference (Muscat,) Dec 2010
5. Banerjee, Susanta - To present a research paper in the conference Fluoropolymer 2010 (Meze, France,) 13-16 June, 2010
6. Das, Chapal Kumar - Workshop (Taiwan,) Jan. 2010
7. Das, Chapal Kumar - For Humbolt Committee meeting and Polychar-19 (Nepal,) Nov. 2010 and March 2011
8. Jacob, Chacko - Conference and invited lectures in Suzhou, Beijing and Qingdao (China,) October 10-20, 2010
9. Das, Chapal Kumar - th Int. Conf. of Chemical Industries Research Division Conference (Cairo, Egypt,) Nov. 2010
10. Ram, Shanker - Visiting scientist (Ulm University, Germany,) May - July, 2010
11. Majumder, Subhasish Basu - Invited Speaker at Taiwan-India Bilateral Workshop on Energy Storage Devices (National Central University, Jhongli, Taiwan,) Nov 27 to December 1, 2010
12. Adhikari, Basudam - To deliver an invited talk (National Research Centre, Cairo, Egypt,) Nov 30 - Dec 2, 2010
13. Jacob, Chacko - 2nd Indo-German Frontiers of Engineering Symp. (session organizer) (Potsdam, Germany,) June 24-28, 2010

Invited Lectures by Faculty Members

1. Multifunctional nanomaterials and applications *by* Ram, Shanker (Department of Physics, Banaras Hindu University, Varanasi)
2. Surface stabilized multifunctional properties in nanostructured metals and oxides with a graphene *su by* Ram, Shanker (Department of Physics, Banaras Hindu University, Varanasi)
3. Functional nanomaterials-a spectroscopic approach *by* Ram, Shanker (Department of Physics, Banaras Hindu University, Varanasi)
4. Soft chemistry of one-dimensional nanostructures for different sensors *by* Ram, Shanker (Lucknow University, Lucknow)
5. Nucleation Enhancement and Electron Field Emission Properties of Diamond Thin Films *by* Pradhan, Debabrata (I.I.T. Kanpur)
6. ZnO Nanostructured Materials for Sunlight-Driven Hydrogen Generation using Water Photoelectrolysis *by* Pradhan, Debabrata (North Orissa University, Baripada, Orissa)
7. Semifluorinated high performance polymers: their scope *by* Banerjee, Susanta (IACS, Kolkata)
8. Hyperbranched poly(arylene ether)s by AB₂ and an unusual AB₂+A₂ polymerization approach *by* Banerjee, Susanta (Delhi)
9. Synthesis and Characterization of New Semifluorinated Aromatic Poly(ether amide)s for Pervaporation *by* Banerjee, Susanta (Philipps-Universität Marburg, Germany)
10. Synthesis and Characterization of New Semifluorinated Aromatic Poly(ether amide)s for Pervaporation *by* Banerjee, Susanta (Leibniz-Institut für Polymerforschung Dresden, Germany)
11. Semi-fluorinated poly(arylene ether)s and poly(ether imide)s: Synthesis, characterization and proper *by* Banerjee, Susanta (University of Dusseldorf, Germany)
12. Nanotechnology and nanomaterials *by* Jacob, Chacko (Indo-German Winter Academy, Yashada, Pune)
13. Modulating magnetic, electronic and optical properties in nanostructured materials with a surface *la by* Ram, Shanker (Amity University, Lucknow)

14. Functional magnetoelectric nanomaterials with a graphene surface layer by Ram, Shanker (S. N. Bose National Centre for Basic Sciences, Kolkata)
15. Synthesis of novel magneto-electric nanomaterials with a surface layer: Different kinds of sensor materials by Ram, Shanker (Central Glass & Ceramic Research Institute, Kolkata)
16. Synthesis and characterization of org. Inorg. Hybrid polymeric nanocomp. For energy application by Das, Chapal Kumar (Taiwan)
17. Nanoscience for the development of high dielectric constant hybrid composites by Das, Chapal Kumar (Nepal)
18. Compatibilizing ability of polyphosphazene and SiC coated MWCNTs for the PEI/LCP nanocomposites by Das, Chapal Kumar (Balasore orissa)
19. Use of MWCNT and Modified MWCNT in Polymer Blend Nanocomposites by Das, Chapal Kumar (Durgapur, West Bengal)
20. Soft-solution synthesis of nano-structured ceramics: An economic approach by Majumder, Subhasish Basu (National Institute of Technology, Hamirpur, H.P)
21. Our experience in working with high energy density composite cathodes for Li rechargeable batteries by Majumder, Subhasish Basu (Central Glass and Ceramic Research Institute)
22. Environ friendly nano-structured gas sensors: From laboratory research to prototype development by Majumder, Subhasish Basu (Hotel Taj Bengal, Kolkata)
23. Analyses of the conductance transients of oxide gas sensors by Majumder, Subhasish Basu (Central Glass and Ceramic Research Institute, Kolkata)
24. Waste heat recovery: concept, materials and state-of-the art in thermoelectricity by Banerji, Pallab (Osmania University, Hyderabad, International Conference on Applications of Renewable and Sustainable Energy for Industry and Society)
25. Jute Reinforced Biodegradable Composite Using Novel Ecofriendly Resin by Adhikari, Basudam (National Research Centre, Cairo, Egypt)
26. Materials Education at IIT Kharagpur by Adhikari, Basudam (Indian Institute of Science Education and Research, Pune)
27. Materials for Ballistic Applications by Adhikari, Basudam (Applied Physics and Ballistics, Fakir Mohan University, Balasore, Orissa)
28. Nanostructures for Electronics by Jacob, Chacko (Tsinghua University (Dept. of Materials Science), China)
29. Nanostructures for Electronics by Jacob, Chacko (Nano Technology Institute, Chinese Academy of Sciences, Suzhou, China)
30. Nanostructures for Electronics by Jacob, Chacko (QD Jason Electric Co., Qingdao, China)

Papers Published in Journals

1. A novel green chemical route for synthesis of silver nanoparticles using *Camellia Sinensis* By S. S. K. Kamal, P. K. Sahoo, M. Premkumar, J. Vimala, S. Ram, and L. Durai *Acta Chim. Slov.* 57, 808-812 (2010)
2. A study of gas transport properties of semifluorinated poly (ether imide) membranes containing cardo diphenylfluorene moieties By B. Dasgupta, S. Banerjee *J. Membr. Sci.* Vol. 362, pp 58-67 (2010)
3. A study on the properties of PC/LCP/MWCNT with and without compatibilizers By M. Mukherjee, S. Bose, G. C. Nayak and C. K. Das *Journal of Polymer Research* 17, 265-272 (2010)
4. Ammonia sensing by hydrochloric acid doped poly(m-aminophenol)-silver nanocomposite By Pradip Kar, Narayan C. Pradhan, Basudam Adhikari *Journal of Materials Science* 46, 2905-2913 (2011)
5. Antibacterial effect of lanthanum calcium manganate (La_{0.67}Ca_{0.33}MnO₃) nanoparticles against *Pseudomonas aeruginosa* ATCC 27853 By D. De, S. M. Mandal, S. S. Gauri, R. Bhattacharya, S. Ram, and S. K. Roy *J. Biomed. Nanotech.* 6, 138-144 (2010)
6. Artificial Neural Network-based Approach for Detection and Classification of Defects in Polymeric Composites using Machine Vision in SEM study By S. Bose, D. Shome and C.K. Das, *International Journal of Materials and Product Technology* Vol. 38, pp. 337-361 (2010)
7. Biodegradation of Polyethylene Glycol-Based Polyether Urethanes By Suparna Sarkar Piyali Basak Basudam Adhikari *Polymer-Plastics Technology and Engineering* 50, 80-88 (2011)
8. Co-Continuous Phase Morphology of Asymmetric Compositions of Polypropylene/High-density Polyethylene Blend by the addition of Clay By Anup K. Dhibar, Jin Kon Kim, Bhanu B. Khatua *Journal of Applied Polymer Science* 119, 3080-3092 (2011)
9. Combustible gas sensing characteristics of chemical solution synthesized nano-crystalline magnesium ferrite spinel particles (Invited paper) By K. Mukherjee, D.C. Bharati, and S.B. Majumder *Trasaction of Indian Ceramic Society* 69, 187-192 (2010)
10. Compatibilizing effect of functionalized polyphosphazene on the properties of poly(phenylene oxide)/Vectra A blend system By S. Bose, C. K. Das, A. K. Saxena, A. Ranjan *Journal of applied polymer science* DOI: 10.1002/app.329 (2010)
11. Controlled growth of monodisperse nanocrystallites in tin (IV) oxide nano-films. By S. Bazargan, N. Neinig, D. Pradhan, K. T. Leung *Crystal Growth & Design* Vol-11, P-247-255 (2011)
12. Development of butyl rubber nanocomposites in presence and absence of compatibilizer. By R. Rajasekar and C. K. Das *Rubber, Plastics and Composites Macromolecular Engineering* DOI 10.1179/17432898 (2010)
13. Development of compatibilized butyl rubber nanocomposites containing dual filler system By R. Rajasekar and C. K. Das *Elastomery Journal* No.6,85, pp.15-22 (2010)
14. Development of core-shell structure aided by SiC-coated MWNT in ABS/LCP blend By S. Bose, M. Mukherjee, K. Pal, G. C. Nayak, C. K. Das *Polymers for Advanced Technologies* V. 21, 272-278 (2010)
15. Development of EPDM nanocomposites in presence of compatibilizer By R. Rajasekar, G. C. Nayak, C. K. Das *Rubber, Plastics and Composites Macromolecular Engineering* 40, 146-150 (2011)
16. Effect of Co-efficient of Thermal Expansion (CTE) on Positive Temperature Co-Efficient of Resistivity (PTCR) Behavior of HDPE-Cu Composites By Prativa Kar and B. B. Khatua *Journal of Applied Polymer Science* 118, 950-959 (2010)
17. Effect of fillers on natural rubber/high styrene rubber blends with nano silica: Morphology and wear By Kaushik Pal, R. Rajasekar, Dong Jin Kang, Zhen Xiu Zhang, Samir K. Pal, Chapal K. Das, Jin Kuk Kim *Materials & Design* 31, 677-686 (2010)
18. Effect of growth temperature on the CVD grown Fe filled multi-walled carbon nanotubes using a modified photoresist By 83. J. Sengupta, A. Jana, N.D. Pradeep Singh and C. Jacob *Materials Research Bulletin* 45(9), 1189 (2010)
19. Effect of Nanoclay and SEBS-g-MA on the Morphology and Properties of Immiscible PMMA/PS Blend By Sumana Mallick and B. B. Khatua *Journal of Nanoscience and Nanotechnology* 11(2), 979-986 (2011)
20. Effect of nanoclay on vibration welding of LLDPE nanocomposites in presence and absence of compatibilizer By C. K. Das, R. Rajasekar, M. Gehe, S. Friedrich *Science and Technology of Welding and Joining* 16,199-203 (2011)

21. Effect on Structure, Processability, and Conductivity of Poly(maminophenol)of the Initial Acidity/Basicity of the Polymerization Medium By Pradip Kar, Narayan C. Pradhan, Basudam Adhikari *Journal of Macromolecular Science, Part B: Physics* 49,669â€“679 (2010)
22. Electrochemical Pd Nanodeposits on a Au Nanoisland Template Supported on Si(100): Formation of Pd-Au Alloy and Interfacial Electronic Structures By Y. Sohn, D. Pradhan, K. T. Leung *ACS Nano* Vol-4, P-5111-5120 (2010)
23. Embedded Ag-rich nanodots in PbTe: enhancement of thermoelectric properties through energy filtering of the carriers By Biplab Paul, Ajay Kumar V and P. Banerji *Journal of Applied Physics* 108, 064322 (2010)
24. Enhanced Fibrillation of LCP in presence of Modified MWCNTs and its effect on the thermal and mechanical properties of PEI/LCP blend By G.C. Nayak, R. Rajasekar and C.K. Das *Composite Part A* 41,1662â€“1667 (2010)
25. Ester Sensing with Poly (Aniline-co-m-aminobenzoic Acid) Deposited on Poly (Vinyl Alcohol) By S. Adhikari, J. Singh, R. Banerjee and P. Banerji *Sensors & Transducers Journal* 125, 177 (2011)
26. Fabrication and characterization of polyaniline/porous silicon heterojunction By P. Kumar, S. Adhikari and P. Banerji *Synthetic Metals* 160, 1507 (2010)
27. First order structural transformation and inverse magnetocaloric effect in melt-spun Ni-Mn-Sn ribbons By I. Babita, S. I. Patil, and S. Ram *J. Phys. D: Appl. Phys.* 43, 205002 (2010)
28. Fluorinated high-performance polymers: synthesis of poly(arylene ether)s and aromatic polyimides By M. D. Ganguly, S. Banerjee *Prog. Polym. Sci.* Vol. 35, pp1022-1077 (2010)
29. GaAs metal-oxide-semiconductor device with titanium dioxide as dielectric layer: effect of oxide thickness on the device performance By Souvik Kundu, Sandip Kumar Roy, P. Banerji *Journal of Physics D: Applied Physics* 44, 155104 (2011)
30. High-Performance, Flexible Enzymatic Glucose Biosensor Based on ZnO Nanowires Supported on a Gold-Coated Polyester Substrate. By D. Pradhan, F. Niroui, K. T. Leung *ACS Applied Materials & Interfaces* Vol-2, P-2409-2412 (2010)
31. Highly fluorescent silver nanofluids with ferroelectric molecules By S. Ram, A. D. Phule, and A. K. Tyagi *Phil. Magn. Lett.* 90, 781-791 (2010)
32. Highly Reversible and Repeatable PTCR Characteristics of PMMA/Ag-coated Glass Bead Composites Based on CTE Mismatch Phenomena By Prativa Kar, B. B. Khatua *Polymer Engineering and Science* In Press (2011)
33. Hydrogen sensing characteristics of wet chemical synthesized tailored Mg0.5Zn0.5Fe2O4 nanostructures By K. Mukherjee, and S.B. Majumder *Nanotechnology* 21 255504-255509 (2010)
34. Improved dielectric properties and their temperature insensitivity in multilayered Ba0.8Sr0.2TiO3/ZrO2 thin films By S.K. Sahoo, D. Misra, M. Sahoo, C.A. MacDonald, H. Bakhru, D.C. Agrawal, Y.N. Mohapatra, S.B. Majumder, and R.S. Katiyar *Journal of Applied Physics* 109, 064108-13 (2011)
35. InAs/GaAs quantum dot intermediate band solar cells By Arunava Chaudhuri and Pallab Banerji *Nanostructured Materials for Electronics, Energy and Environmental Applications* 295 (2010)
36. Induced doping by sodium ion in poly(m-aminophenol) through the functional groups By Pradip Kar, Narayan C. Pradhan, Basudam Adhikari *Synthetic Metals* 160, 1524-1529 (2010)
37. Influence of carbon blacks on butadiene rubber/high styrene rubber/natural rubber with nanosilica: Morphology and wear By Kaushik Pal, R. Rajasekar, Dong Jin Kang, Zhen Xiu Zhang, Samir K. Pal, Chapal K. Das, Jin Kuk Kim *Materials & Design* 31, 1156-1164 (2010)
38. Influence of Fillers on NR/SBR Blends Containing ENR-Organoclay Nanocomposites: Morphology and Wear By Samir Kumar Pal, Jin Kuk Kim, Chapal Kumar Das, Kaushik Pal, R. Rajasekar *Journal of Nanoscience and Nanotechnology* Vol. 10, Page - 1-12 (2010)
39. Influence of fillers on NR/SBR/XNBR blends. Morphology and wear By Kaushik Pal, Samir K. Pal, Chapal K. Das, Jin Kuk Kim *Tribology International* 43,8,1542-1550 (2010)
40. Leakage mechanism of Ba0.8Sr0.2TiO3/ZrO2 multilayer thin films By S.K. Sahoo, D. Misra, D.C. Agrawal, Y.N. Mohapatra, S.B. Majumder, and R.S. Katiyar *Journal of Applied Physics* 108 074112-5 (2010)
41. Magnetic properties of chemically synthesized (La1-xEux)0.67Ca0.33MnO3 nanoplates By D. De, S. Ram, and S. K. Roy *Adv. Mater. Res.* 117, 75-79 (2010)
42. Morphology and Properties of Nylon 6 and High Density Polyethylene (HDPE) Blends in Presence of Nanoclay and PE-g-MA By Sumana Mallick, Prativa Kar and B. B. Khatua *Journal of Applied Polymer Science* Accepted (2011)
43. Morphology and properties of nylon6 and high density polyethylene blends in absence and presence of nanoclay By Sumana Mallick and B. B. Khatua *Journal of Applied Polymer Science* doi: 10.1002/app.335 (2011)
44. Nanocomposite thin films for miniaturized multilayer ceramic capacitors prepared from barium titanate nanoparticle based hybrid solutions By *Journal of Materials Chemistry* DOI:10.1039/C1JM1060 (2011)
45. Nanoscale shape and size control of cubic, cuboctahedral and octahedral Cu-Cu2O core-shell nanoparticles on Si(100) by one-step, templateless, capping-agent-free electrodeposition. By A. Radi, D. Pradhan, Y. Shon, K. T. Leung *ACS Nano* Vol-4, P-1553-1560 (2010)
46. New semifluorinated siloxane grafted copolyimides and comparison of properties with linear analogues By A. Ghosh, S. Banerjee, H. Komber, L. HÃ¼rler, K. Schneider, B. Voit *Macromol. Mater. Eng.* DOI: 10.1002/mame.20 (2010)
47. New silicone grafted copoly(ether imide) from 4,4â€“(hexafluoro-isopropylidene)diphthalic anhydride By A. Ghosh, S. Banerjee, B. Voit *J.M.S.-Pure Appl. Chem* Vol. 47, pages 1-6. (2010)
48. Optical and electron paramagnetic resonance properties of native Cr2O3 surface over CrO2 By G. P. Singh and S. Ram *J. Mag. Mag. Mater.* 322, 1484-1487 (2010)
49. Parametric study on dimensional control of ZnO nanowalls and nanowires by electrochemical deposition. By D. Pradhan, S. Sindhvani, K. T. Leung *Nanoscale Research Letters* Vol-5, P-1727-1736 (2010)
50. Percolative dielectric behavior of wet chemical synthesized lead lanthanum titanate-cobalt iron oxide composite thin films By Subhasis Roy and S.B. Majumder *Physics Letters A* 375 1538-1542 (2011)
51. Preparation and characterization of In-situ polymerized nanocomposites based on polyaniline in presence of MWCNTs By Md. Moniruzzaman and C. K. Das *Macromolecular Symposia* 298, 34-42 (2010)
52. Preparation and Comparison of Hydrophobic Cotton Fabric Obtained by Direct Fluorination and Admicellar Polymerization of Fluoromonomers By J. Maity, P. Kothary, E. A. Oâ€™Rear and C. Jacob *Industrial & Engineering Chemistry Research* 49(13), 6075 (2010)
53. Preparation by Suspension Polymerization and Characterization of Polystyrene (PS)-Poly(methyl methacrylate), PMMA, Core-Shell Nanocomposites By Dibyendu Debnath and B. B. Khatua *Macromolecular Research* In Press (2011)
54. PTCR Characteristics of Polycarbonate/Nickel-coated graphite based Conducting Polymeric Composites in Presence of Poly (caprolactone) By Prativa Kar and B. B. Khatua *Polymer Composites* In Press (2011)

55. Role of Nanoclay on the Morphology and Properties of Nylon6 and Poly(methyl methacrylate) (PMMA) Blends By Sumana Mallick and B. B. Khatua *Journal of Macromolecular Science: Part B: Physics* In Press (2011)
56. Site-selective synthesis of in situ Ni-filled multi-walled carbon nanotubes using Ni(salen) as a catalyst source By J. Sengupta, A. Jana, N. D. Pradeep Singh, C. Mitra and C. Jacob *Nanotechnology* 21(41), 415605/1 (2010)
57. Soft chemistry of one-dimensional nanostructures for different sensors By S. Ram *Lucknow J. of Science* 8, 16-26 (2011)
58. Spiro-biindane containing fluorinated poly(ether imide)s: Synthesis, characterization and gas separation properties By S.K. Sen, S. Banerjee *J. Membr. Sci.* Vol. 365, pp 329-340 (2010)
59. Stearate modification of Layered Double Hydroxide (LDH) for Polyurethane Elastomeric Nanocomposites By Sandeep Kumar and C. K. Das *Elastomery Journal* No 4,83,pp.15 (2010)
60. Structural and impedance spectroscopy of pseudo-co-ablated (SrBi₂Ta₂O₉) (1-x) $\delta\epsilon$ (La_{0.67}Sr_{0.33}MnO₃) x composite By S. Maity, D. Bhattacharya, S. K. Ray *J. Phys. D: Appl. Phys.*, 44, 095403 (2011)
61. Structural and magnetic properties of polymer stabilized tetragonal Ni nanoparticles By V. Singh, V. Srinivas, and S. Ram *Phil. Magn.* 90, 1401-1414 (2010)
62. Studies on the Morphology and Properties of PMMA Organoclay Nanocomposites with Reference to the Manufacturing Techniques By Dibyendu Debnath, Anup K. Dhibar, and B. B. Khatua *Polymer-Plastics Technology and Engineering* 49: 1087-1094 (2010)
63. Study of Fe-rich FePt nanoparticles synthesized by a single step reverse micelle route By S. S. K. Kamal, P. K. Sahoo, L. Durai, P. Ghosal, S. Ram, and M. Raja *J. Alloys Compd.* 501, 297-300 (2010)
64. Synthesis and characterization of fluorene based π -conjugated ter-copolymers By S. Chatterjee, S. Banerjee, P. Banerji *Synth. Metal* Vol.161, pp 263-270 (2010)
65. Synthesis and characterization of new hyperbranched poly(arylene ether phosphine oxide)s from a novel semifluorinated AB₂ monomer and comparison of properties with linear analogues By H. Satpathi, A. Ghosh, S. Banerjee, H. Komber, B. Voit *Eur. Polym. J.* Vol. 47, pages 196- (2010)
66. Synthesis and electrochemical characterization of xLi(Ni_{0.8}Co_{0.15}Mg_{0.05})O₂-(1-x)Li(Li_{1/3}Mn_{2/3})O₂ (0.0x1.0) cathodes for Li rechargeable batteries By A. Pramanik, C. Ghanty and S.B. Majumder *Solid State Science* 12 1797-1802 (2010)
67. Synthesis of Highly Exfoliated PS/Na⁺-MMT Nanocomposites by Suspension Polymerization Using Na⁺-MMT Clay Platelets as Suspension Stabilizer By Sunanda Sain and B. B. Khatua *Macromolecular Research* 19(1), 44-52 (2011)
68. Synthesis of norbergite Fe₃B₆O₆ of single crystallites from a borate glass By S. Ram, K. Kumari, and R. K. Kotnala *Trans. Ind. Ceram. Soc.* 69, 1-6 (2010)
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Chakraborty, Madhusudan	<i>Ph.D.(IIT Kharagpur)</i> , Solidification Processing, Scanning Electron Microscopy, Failure Analysis, Metal Matrix Composites
Chatterjee, Uday Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Corrosion
Das, Karabi	<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
Godkhindi, Mahadev Malhar	<i>Ph.D.(IIT Bombay)</i> , powder metallurgy Ceramics
Manna, Indranil	<i>Ph.D.(IIT Kharagpur)</i> , Physical Metallurgy, Phase transition, Nanostructured materials, Thermodynamic modeling, Surface engineering by laser and plasma
Mitra, Rahul	<i>Ph.D.(Northwestern Univ., USA)</i> , Mechanical Behaviour of Materials, Transmission electron microscopy and materials characterization, Materials for high temperature applications, Composite Materials, Nanocrystalline materials, Thin Film Processing and Characterization
Pabi, Shyamal Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Nanostructured materials Phase transformations Composites Modelling and simulation
Panigrahi, Sarat Chandra	<i>Dr.Tech.Sc.(Krakow, Poland)</i> , Metal casting, Composites, Energy cons.
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 Ironmaking, Numerical Simulation of Welding Processes, Injection Metallurgy in Secondary Steelmaking
Roy, Sanat Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Mineral Processing, Extractive Metallurgy, Environmental Degradation of Materials, Laser Processing of Materials, Nano-ceramics

Associate Professors

Acharya, Narendra Nath	<i>Ph.D.(IIT Kharagpur)</i> , Artificial Intelligence, Powder Metallurgical Applications, Multi-Media, Educational Technology, Photography
Dutta Majumdar, Jyotsna	<i>Ph.D.(IIT Kharagpur)</i> , Surface Engineering, Corrosion and Environmental Degradation, Laser Materials Processing, Biomaterials, Advanced Processing of Materials
Ghosh, Sudipto	<i>Ph.D (IIT Kanpur)</i> , 1. Mathematical Modeling of Material processes, 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
Singh, Shiv Brat	<i>Ph.D.(Cambridge Univ,UK)</i> , Physical metallurgy of steel

Assistant Professors

Aich, Shampa	<i>Ph.D.(Univ.of Nabraska, USA)</i> , Rapid Solidification, Magnetic Materials, Shape Memory Alloys, Surface Modifications, Biomaterials
Bhaduri, Amit	<i>M.Tech.(IIT Kharagpur)</i> , STRUCTURE-PROPERTY RELATIONSHIP

Biswas, Koushik	<i>Ph.D. (Univ. of Stuttgart, Germany)</i> , Zirconia and alumina based Bio-ceramics, 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
Datta, Bidyut Kanti	<i>Ph.D. (IIT Kharagpur)</i> ,
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 Boron modified steels
Kundu, Tarun Kumar	<i>Ph.D. (Lulea Univ of Tech, Sweden)</i> , Atomistic Simulation, 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

Faculty Appointments

Sujoy Kumar Kar	Assistant Professor
Jayanta Das	Assistant Professor

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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Faculty Retirement

Sarat Chandra Panigrahi	Professor
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New Academic Programmes

M. Tech in Steel technology – 2 years

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. LEICA DM2500M Trinocular Laboratory Metallurgical Microscope 2. Electrically Heated Vertical PIT Type Furnace 3. Instrumented Impact Testing Machine, Instron-A Division of Illinois Tool Works Inc. USA

International Collaborations

1. International collaboration between Professor Nirupam Chakraborti, Dept of MME, IIT Kharagpur and Åbo Akademi University, Finland

Lectures by Visiting Experts

1. Development of research-backed welding and hard facing technology for Indias fast reactor programme *by* Dr. Arun Kumar Bhaduri (Professor at Homi Bhabha National Institute, Head of Materials Technology Division, Indira Gandhi Center for Atomic Research, Kalpakkam-603102, Tamilnadu)
2. Nanoindentation for Nanomechanical Testing: A review of Quantitative Materials Characterization *by* Dr. Srikanth G. Vengasandra (Hysitron Inc, Minneapolis, USA)
3. Materials Science and Engineering at Grenoble Institute of Technology *by* Dr. Michel Pons (Research Director at the French National Center for Scientific Research (CNRS), and Director of the laboratory)
4. Solidification of Metal Foams *by* Dr. Manas Mukherjee (Helmholtz Centre Berlin for Materials and Energy, Institute of Applied Materials, Berlin, Germany)
5. Bioceramic Coatings for Load Bearing Applications: Processing and Properties *by* Dr. Mangal Roy (Research Associate, W.M. Kech Biomedical Materials Research Laboratory, School of Mechanical and Materials ENgineering, Washington State University, Pullman, WA 99164, USA)

Doctoral and MS Degrees Awarded

1. Madan Mohan Ghosh : A Model of Thermal Conductivity of Nanofluids and its Experimental Validation(Ph.D.)
2. Nandigam Padmawathi : Synthesis of Carbon Fiber Reinforced Silicon Carbide Composites by Soft-Solution Approach(Ph.D)
3. Aditya Kr. Lohar : Processing and Characterization of Aluminium and Scandium Alloys and Composites(Ph.D)
4. Satyajit Chatterjee : Development of Aluminium Oxide-Titanium Boride-Titanium Nitride Composite Coating By Self-Propagating High Temperature Synthesis and Laser Surface Alloying(Ph.D.)
5. Arijit Biswas : Optimization of Hydrometallurgical Processing of Lean Manganese Resources(Ph.D)
6. Sharma Paswan : Non-isothermal, Isothermal and Cyclic Oxidation Behavior of Mo-Si-B and Mo-Si-B-Al Alloys(Ph.D.)
7. Sharmilee Pal : Creep Behavior of Hot Rolled Powder Metallurgy Processed Al-SiCp Composites(Ph.D.)
8. Sudip Kr. Samanta : Multiphase Flow Numerical Modeling for Simulation of the Injection Stage of Powder Injection Moulding (PIM)(Ph.D)
9. S. N. Alam : Development of Tungsten Heavy Alloys Through Mechanical Alloying Route(Ph.D.)
10. Gautam Mukhopadhyay : Strength and Fracture Behaviour of Spot Welds on Interstitial Free Steel Sheets(Ph.D)
11. Gayatri Paul : Thermo-Physical Properties of Nanofluids Prepared by Single- and Two-Step Methods(M.S.)

Member - Professional Bodies

1. Aich, Shampa, *Life Member* - Indian Institute of Metals
2. Aich, Shampa, *Regular* - Institute of Biological Engineers (IBE)
3. Aich, Shampa, *Regular* - Materials Research Society (MRS), USA
4. Aich, Shampa, *Regular* - The Minerals, Metals & Materials Society (TMS), USA
5. Biswas, Koushik, *Life Member* - The Indian Institute of Metals
6. Biswas, Koushik, *Life Member* - The Indian Ceramic Society
7. Biswas, Koushik, *Life Member* - The India Science Congress Association
8. Chakrabarti, D, *Life Member* - Indian Institute of Metals
9. Chakrabarti, D, *Member* - Institute of Minerals, Materials and Mining (IOM3)
10. Chakraborty, Madhusudan, *Member* - Institute of Indian Foundrymen
11. Chakraborty, Madhusudan, *Life Member* - Indian Institute of Metals
12. Chakraborty, Madhusudan, *Life Member* - Materials Research Society of India
13. Das, Jayanta, *Member* - Deutsche Gesellschaft für Materialkunde e.V. (German Society for Materials Research)
14. Das, Jayanta, *Life Member* - Indian Institute of Metals
15. Das, Karabi, *Life member* - Materials research society, India
16. Das, Karabi, *Life member* - Indian Institute of Metals
17. Das, Siddhartha, *Life Member* - Materials Research Society of India
18. Das, Siddhartha, *Life Member* - Powder Metallurgy Association of India
19. Das, Siddhartha, *Life Member* - Tau Beta Pi, a national engineering honour society, USA
20. Das, Siddhartha, *Life Member* - Sigma Xi, a national scientific research society, USA
21. Das, Siddhartha, *Life Member* - Indian Institute of Metals
22. Dutta Majumdar, Jyotsna, *Life Member* - National Academy of Science, Allahabad
23. Ghosh, R N, *Life Member* - Indian institute of Metals
24. Ghosh, R N, *Life Member* - Indian Society for Non Destructive Testing (ISNT)
25. Ghosh, R N, *Life Member* - Indian Institute of Welding
26. Kar, Sujoy Kumar, *Member* - Indian Institute of Metals
27. Kar, Sujoy Kumar, *Committee member of two different technical groups of* - The Minerals, Metals & Materials Society (TMS)
28. Kar, Sujoy Kumar, *Member* - Alpha Sigma Mu (the International Professional Honour Society for Materials Science & Engineering)
29. Kar, Sujoy Kumar, *Member* - ASM International
30. Kundu, Tarun Kumar, *regular* - Indian Institute of Metal
31. Laha, Tapas, *Life Membership* - The Indian Science Congress Association (ISCA)
32. Laha, Tapas, *Professional Membership* - The Materials Research Society (MRS)
33. Laha, Tapas, *Professional Membership* - The Minerals Metals & Materials Society (TMS)
34. Laha, Tapas, *Life Membership* - The Indian Institute of Metals (IIM)
35. Mitra, Rahul, *Member* - The Minerals, Metals and Materials Society
36. Mitra, Rahul, *Member* - American Society of Materials
37. Mitra, Rahul, *Member* - American Institute of Science and Technology
38. Mitra, Rahul, *Life Member* - Indian Institute of Metals
39. Mitra, Rahul, *Life Member* - Indian Ceramic Society
40. Mitra, Rahul, *Life Member* - Materials Research Society of India
41. Ray, Kalyan Kumar, *Life member* - Indian group of International Stereological Society
42. Ray, Kalyan Kumar, *Fellow* - Indian Institute of Metals
43. Ray, Kalyan Kumar, *Life Member* - Material Research Society of India
44. Ray, Kalyan Kumar, *Life Member* - Powder Metallurgical Association of India
45. Roy, Sanat Kumar, *Regular Member* - Corrosion Society of India
46. Roy, Sanat Kumar, *Life Member* - Materials Research Society of India
47. Roy, Sanat Kumar, *Life Member* - The Indian Institute of Mineral Engineers
48. Roy, Sanat Kumar, *Regular Member* - The Mining, Geological and Metallurgical Institute of India
49. Sant, Sudhindra B, *Member* - Materials Research Society
50. Sen, Prodip Kumar, *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 (2009) *Editorial Board Member* - International Journal of Emerging Technologies and Applications in Engineering
6. Dutta Majumdar, Jyotsna (2010) *Chief Editor* - Advances in Metallic Materials Processing a special issue under Advanced Processing of Materials
7. Dutta Majumdar, Jyotsna (2010) *Member, Editorial Board* - Lasers in Engineering
8. Mitra, Rahul (2010) *Member* - Transactions of the Indian Institute of Metals
9. Ray, Kalyan Kumar (2007) *Advisory Member* - Transactions of the Indian Institute of Metals
10. Roy, Gour Gopal (2010) *Member of Editorial board* - Science and Technology of Welding & Joining

Awards & Honours

1. Singh, Shiv Brat (2011) *2011 Endeavour Executive Award*
2. Chakraborti, Nirupam (0) *Adjunct Professorship, Graduate Institute of Ferrous Technology, POSTECH, Korea*
3. Ghosh, R N (2010) *Altekar Award (NML Foundation Day)*
4. Das, Jayanta (2010) *Best Oral Presentation in the section Environmental Degradation Session during NMD-ATM 2010 at IISC Bangalore*
5. Chakraborti, Nirupam (0) *Docent (Honorary Professorship), Åbo Akademi University, Finland*
6. Laha, Tapas (2010) *IEI Young Engineers Award*
7. Das, Karabi (2009) *MRSI Medal by the Materials Research Society of India*
8. Mitra, Rahul (2011) *Outstanding Reviewer for Metallurgical and Materials Engineering, A: Rated in top 20%*

Sponsored Research Projects

1. A bridge project aimed at the expansion of Lithium Ion Battery Research (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
2. Achieving uniformly fine ferrite grain structures in Nb-microalloyed steels. (ISIRD, SRIC, I.I.T. Kharagpur, Rs.4.20 Lakhs)
3. Advanced control and failure prognosis and diagnosis of industrial processes using data fusion (Department of Information Technology, New Delhi, Rs.0.00 Lakhs)
4. Atomistic Simulation of Gas Hydrates and Stabilizer/Inhibitor Design (MINISTRY OF EARTH SCIENCES, Rs.31.92 Lakhs)
5. Carbon Abatement In Ironmaking Blast Furnace (Ministry of Steel, Rs.0.00 Lakhs)
6. Development and effect of bimodal grain structures in HSLA steels (DST, New Delhi, Rs.15.30 Lakhs)
7. Development of Coating on Marine Propeller for Improving Cavitation Erosion and Corrosion Resistance under Simulated Hydrodynamic Condition (Naval Research Board, N. Delhi, Rs.38.48 Lakhs)
8. Development of Compositionally and Microstructurally Graded Thermal Barrier Coating by Plasma Spraying (Department of Science and Technology, N. Delhi, Rs.39.55 Lakhs)
9. Development of ductile cast iron for spent fuel sub-assembly cask for PFBR (IGCAR, Kalpakkam, Rs.32.68 Lakhs)
10. Development of high temperature oxidation resistant tungsten based bulk refractory alloys (Defence Research and Development Organization, Rs.27.30 Lakhs)
11. Development of high temperature oxidation resistant tungsten based bulk refractory alloys through mechanical alloying route (DRDO, Rs.28.00 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 niobium silicide based alloys & composites for elevated temperature applications (NSB) (DRDO, Rs.32.41 Lakhs)
14. Effect of Rare Earth Additions on Oxidation Behaviour of Molybdenum and Niobium Silicide (Defence Research and Development Organization, Rs.14.31 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. Forming and Coating Behaviour of TRIP Aided Steels (Department of Science and Technology, Rs.8.44 Lakhs)
21. Generation of semi-solid slurries through one step processing of liquid metal for rheocasting (Naval Materials Research Laboratory (DRDO), Ambarnath, Rs.9.92 Lakhs)
22. Grain Boundary Segregation, Precipitates Morphology and Surface Modification in Case of Complete and Incomplete Grain Boundary Wetting by a Second Sol (Department of Science and Technology, N. Delhi, Rs.0.00 Lakhs)
23. High Strength TRIP-aided Steel for Automobiles (Tata Steel, Rs.11.68 Lakhs)
24. Innovative heat treatment of cast microalloyed steels for improving the properties. (Funded by: CSIR, New Delhi. (HTS), Rs.15.00 Lakhs)
25. Life estimation and microstructural damage of irradiated and unirradiated Cu-Cr-Zr alloy (NFP-BRFST, Ahmedabad, Rs.30.38 Lakhs)
26. Machinery Development in Tea Processing Industry (Tea Board, Rs.360.00 Lakhs)
27. Mechano-synthesis and mechanical thermal synthesis of in-situ aluminium based nanocomposites and their characterization (DST, Rs.43.15 Lakhs)
28. Microstructure-Texture-Toughness relations in High Strength Automotive Steel. (Funded by: DST, New Delhi. (HAS), Rs.28.00 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. Physico-Chemical Analysis of Metal Based Ayurvedic Bhasma Drugs by Sophisticated Modern Instrumental Methods (DST, Rs.20.35 Lakhs)
32. Picometer displacements in piezoelectric thin film membranes for resonators (DST, Indo-Portuguese Joint Research project, Rs.3.70 Lakhs)
33. Processing, characterization and deformation behavior of Ti-Fe-(Sn) ultrafine eutectic composites (ISIRD, SRIC, I.I.T. Kharagpur, Rs.5.00 Lakhs)
34. Silicon Carbide sensors as high temperature power electronic devices. (ISRO-KCSC, Rs.5.00 Lakhs)
35. Solvent Extraction using Ionic Liquids for High Value Metal (IIT, Rs.4.70 Lakhs)
36. Steel Technology Centre (Ministry of Steel and Department of Science and Technology, Rs.2025.86 Lakhs)
37. 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)
38. Study of correlation between Processing & Microstructure & Property in a beta Titanium alloy Ti-5553 (IIT Kharagpur (ISIRD Project), Rs.5.00 Lakhs)
39. Synthesis and properties of electrodeposited Nickel/Ceria nano composites (IREL, Rs.27.81 Lakhs)
40. Synthesis and properties of electrodeposited nickel/zirconia nanocomposites (NRB, Rs.48.28 Lakhs)
41. Synthesis and Thermo-mechanical characterization of MoSi₂-SiC-ZrO₂ nano-composites (ISIRD, IIT Kharagpur, Rs.5.00 Lakhs)
42. Synthesis, development and in-vitro characterization of bio-inert Yttrium/Ceria coated/stabilized Zirconia toughened Alumina composites for Biomedical (Department of Bio-technology, Ministry of Science, New Delhi, Rs.29.60 Lakhs)
43. Ti/TiB₂ Bi-layered and Multi-layered Coating on Steel Substrate by Pulsed Laser Deposition (PLD) Technique to Improve Tribological Properties (CSIR, Rs.3.00 Lakhs)
44. Versatile nano Zirconia production at Indian Rare Earths Limited, OSCOM (IRELTDC, Indian Rare-earths, Limited, Kerala, Rs.52.36 Lakhs)

Consultancy Projects

1. 14. Structure property correlation in near eutectoid steels. (Tata Steel., Rs.05.01 Lakhs)
2. Charpy testing of TMT Rebar from Tata Steel (TMTR). Consultancy project (Tata Steel, Jamshedpur, Rs.2.00 Lakhs)
3. Consultancy project on extractive metallurgy of polymetallic nodules (Ministry of Earth Science, New Delhi, Rs.40.53 Lakhs)
4. Development in process design to achieve improved structural integrity of gun barrel (Metal & Steel Factory, Ishapore, Rs.24.27 Lakhs)
5. Development of air cooled microalloyed steel with improved toughness for forging applications (Ashok Leyland, Rs.12.00 Lakhs)
6. Development of New Grade of Advanced High Strength Steel With Mixed Grain Structure (Tata Steel, Jamshedpur, Rs.5.90 Lakhs)
7. Elimination of defects from Lead Casting for Plante Batteries (Exide Industries Ltd, Shyamnagar, 24-parganas, W.B, Rs.1.48 Lakhs)
8. Genetic Algorithms in Blast Furnace (Åbo Akademi University, Finland, Rs.0.00 Lakhs)
9. Improvement of Adhesion between Bead Wire and Rubber Material inside Radial Tires (Tata Steel, Rs.39.00 Lakhs)
10. Optimization of moulding materials for a roll foundry (Gontermann-Peipers (India) Limited, 24-pgs, West Bengal, Rs.1.51 Lakhs)
11. Optimizing the properties of galvanized steel (TATA Steel, Rs.0.00 Lakhs)
12. Process Optimization of Polymetallic Nodules (Consulting for Extractive Metallurgy) (Ministry of Earth Sciences, Rs.0.00 Lakhs)
13. Quality improvement of silver medallion obtained from Kolkata mint (India Govt. Mint, Kolkata, Rs.4.74 Lakhs)
14. SEM and TEM Examination of Cold Rolled Stainless steels (Salem Steel Plant, Tamil Nadu, Rs.1.00 Lakhs)
15. Setting up of a research and development centre for Damodar Valley Corporation, Kolkata(DCD) (Damodar Valley Corporation, Kolkata-700054, Rs.2132.70 Lakhs)
16. Strength and fracture behaviour of spot-welds in automotive steel sheets (Tata Steel, Rs.17.83 Lakhs)
17. Study of structure-property relations of wire ropes for achieving improved service performance (Usha Martin Ltd., Rs.19.05 Lakhs)
18. Testing of Tungsten Carbide Tips (Office of the Commissioner of Customs, Govt. of India, Rs.66.00 Lakhs)

Patents (filed / granted)

1. A method for producing cold rolled transformation induced plasticity aided steel
2. Synthesis of Bulk nanocomposites by non contact cavitation method

Visits Abroad by Faculty Members

1. Chakraborti, Nirupam - Research Interaction (Åbo Akademi University, Finland,) Summer 2010
2. Roy, Sanat Kumar - Member of the Academic Delegation (GIFT and Postech at South Korea,) 7th to 12th, April, 2010
3. Singh, Shiv Brat - collaboration with GIFT (GIFT, POSTECH, South Korea,) April 6-13
4. Dutta Majumdar, Jyotsna - To attend international Conference on Lasers in Manufacturing and collaborative research (Erlangen, Germany and Karlsruhe Germany,) 6 days
5. Dutta Majumdar, Jyotsna - To attend conference and deliver lecture (Beijing, China,) 5 days
6. Dutta Majumdar, Jyotsna - To attend international conference on laser and Plasma Application in Materials Science (Algiers, Algeria,) 4 days
7. Ray, Kalyan Kumar - To attend an International conference (Prague, Czech Republic, Europe,) June 6 - 11, 2010
8. Ray, Kalyan Kumar - To attend an International conference (Paris, France,) October 24- 27, 2010
9. Aich, Shampa - To attend a conference (San Diego, California, USA,) 7 days

10. Laha, Tapas - Presenting a technical paper in TMS 2011 and meeting research colleagues (San Diego (TMS 2011),) One week
11. Sen, Prodip Kumar - Review of future collaborative activities between GIFT and South Korea (Graduate Institute of Ferrous Technology, South Korea,) April 7-12, 2010
12. Mitra, Rahul - 2010 MRS Fall Meeting (Boston, Massachussetes, USA,) November 29 - December 03
13. Aich, Shampa - Summer Research Activity (Collaboration) (University of Nebraska, Lincoln, NE, USA,) Two months
14. Ray, Kalyan Kumar - To deliver an invited lectute at the University of Beyreuth (Bayreuth, Germany,) June16-17, 2010
15. Ray, Kalyan Kumar - To deliver an invited lectute at the Brno University of Technology (Brno, Czech Republic,) June 10, 2010
16. Ray, Kalyan Kumar - To deliver an invited lectute at the Technische Universitat Wien (Vienna, Austria,) June11, 2010

Invited Lectures by Faculty Members

1. Steel Product Quality: Emerging Trends *by* Ghosh, R N (RINL,Vishakhapattanam)
2. Characterisation of Creep Behaviour of Engineering Materials: Problems & Prospects *by* Ghosh, R N (BHU, Varanasi)
3. Age-hardening and Tensile Deformation Behavior of Mushy State Rolled Al-4.5Cu Alloy and In-Situ Al-4 *by* Mitra, Rahul (NFTDC, Hyderabad)
4. Exergy analysis of mineral processing flow sheets:implications in process design *by* Sen, Prodip Kumar (Jamshedpur)
5. Materials Study through the eyes of Simulation and Characterization *by* Kar, Sujoy Kumar (Defence Metallurgical Research Lab (DMRL), Hyderabad)
6. Micostructure based property modeling and Microstrcuture evolution study in Ti alloys *by* Kar, Sujoy Kumar (Indian Space Research Organization (ISRO), Trivandrum)
7. Characterization and modeling based study in Ti alloys and Ni based superalloys *by* Kar, Sujoy Kumar (National Metallurgical Research Lab (NML), Jamshepur)
8. Data Driven Genetic Algorithms in Materials Science *by* Chakraborti, Nirupam (AGH University, Krakow)
9. Prediction of grain size variation during thermo-mechanical controlled rolling of HSLA steels *by* Chakrabarti, D (2nd Indian Gleeble User Workshop Physical Simulation through Gleeble Thermo-Mechanical Simulator during March 16-17, 2010 at RDCIS, SAIL Ranchi.)
10. Developing ultra-fine grained HSLA steel by thermo-mechanical simulation *by* Chakrabarti, D (Application of thermo-mechanical simulation in advanced materials research. Sponsored by DST. IIT Roorkey)
11. Mixed grain structures in HSLA steels *by* Chakrabarti, D (Workshop on "Microstructural Engineering (Microstructure 2010): IIT Bombay)
12. Mechanical Properties of Ceramics and Ceramic Matrix Composites *by* Mitra, Rahul (IISc Bangalore)
13. Role of twins & internal interfaces on structural & biological properties of advanced materials *by* Sant, Sudhindra B (Institute of Mineral and Materials Technology (CSIR), Bhubaneswar)
14. Microstructure and Magnetic Properties of Rapidly Solidified Heusler Type Ferromagnetic Shape Memory *by* Aich, Shampa (University of Nebraska, Lincoln, USA)
15. Surface Designing of Ti-based Alloys for Bio-implant Application *by* Dutta Majumdar, Jyotsna (Karlsruhe Institute of Technology, Karlsruhe, Germany)
16. Surface Oxidizing and Nitriding of Ti-6Al-4V for Bio-implant Application *by* Dutta Majumdar, Jyotsna (Institute of Nano-Technology, Chinese Academy of Science, Beijing, China)
17. Laser Assisted Micro and Nano-structuring of Ti-6Al-4V for bio-implant Application *by* Dutta Majumdar, Jyotsna (Indore)
18. Tribological Study of Alumina and Zirconia Based Bioceramics *by* Biswas, Koushik (Bengal Engineering and Sciece University)
19. Assessment of fracture toughness of materials using small volume specimens *by* Ray, Kalyan Kumar (Brno, Czech Republic)
20. Assessment of fracture toughness in structural and advanced materials *by* Ray, Kalyan Kumar (BHU, Varanasi , India)
21. Fracture Toughness and Fracture Behaviour of AISI 4335 Steel *by* Ray, Kalyan Kumar (Ishapore , West-Bengal, India)
22. Role of microstructural constituents on wear resistance of steels *by* Ray, Kalyan Kumar (Bengal Engineering and Science University, Howrah , India)
23. Structure-property correlation of Cryotreated AISI D2 Steel *by* Ray, Kalyan Kumar (Bayreuth, Germany)
24. Fatigue and Fracture behaviour of thin sheets : Some recent results on IF steel *by* Ray, Kalyan Kumar (Vienna, Austria)
25. Improvement of Adhesion in Polymer-Metal Interface *by* Laha, Tapas (Tata Steel, Jamshedpur)

Books Published

1. K. Deb, A. Bhattacharya, N. Chakraborti et al.: Simulated Evolution and Learning *published by* Springer-Verlag, Berlin (2010)
2. S. K. Bose and S. K. Roy: Principles of Metallurgical Thermodynamics *published by* University press in India and CRC in USA. (0)

Seminars, Conferences and Workshops Organised

1. COMPOSIT 2011

Papers Published in Journals

1. Analysis of Mechanically Induced Reactivity of Boehmite using Kinetics of Boehmite to $\hat{\text{I}}^{\text{s}}$ -Al₂O₃ Transformation. *By* Thomas C Alex, C Kumar, A Kailath, R. Kumar, S. K. Roy, and S. P. Mehrotra *Metallurgical and Materials Transactions B* DOI: 10.1007/S11663 (2011)
2. An approach for Simulation of Corex Process Smelter Gasifier for Prediction of Coal Rate and Silicon in Hot Metal. *By* B Srivastava, S. K. Roy and P K Sen *Metallurgical and Materials Transactions B* 41 B, 935-939 (2010)

3. Anomalous Reduction in Surface Area During Mechanical Activation of Boehmite Synthesized by Thermal Decomposition of Gibbsite. By T.C Alex, Rakesh Kumar, S K Roy and S.P. Mehrotra. *Powder Technology* 208 (1),128-136 (2011)
4. Magnetic Properties of Chemically Synthesized (La_{1-x}Eu_x)_{0.67}Ca_{0.33}MnO₃ Nanoplates. By D. De, S. Ram and S. K. Roy *Advanced Materials Research* 117, 75-79 (2010)
5. A molecular dynamics-stochastic model for thermal conductivity of nanofluids and its experimental validation By Madan Mohan Ghosh, Someshwar Roy, Shyamal Kumar Pabi and Sudipto Ghosh *Journal of Nanoscience and Nanotechnology* (In Press) (0)
6. A stochastic model for evolution of creep damage in engineering materials By N. Roy, R. N. Ghosh and S. C. Bose *Trans Indian Institute of Metals* Vol 63 pp 665 - 669 (2010)
7. An Approach for Simulation of Corex Process Smelter Gasifier for Prediction of Coal Rate and Silicon in Hot Metal By B.Srivastava, S. K. Roy, P. K. Sen *Metallurgical and Materials Transactions -B* 41B,935 (2010)
8. An Investigation on Phase Formations and Microstructures of Ni-rich Ni-Ti Shape Memory Alloy Thin Films By B. Geetha Priyadarshini, S. Aich, and M. Chakraborty *Metallurgical & Materials Transaction A* online 19th October (2010)
9. Analysing blast furnace data using evolutionary neural network and multiobjective genetic algorithms By A. Agarwal, U. Tewary, F. Pettersson, S. Das, H. Saxena, N. Chakraborti *Ironmaking and Steelmaking* 37, 353 (2010)
10. Analyzing the fluid flow in continuous casting through evolutionary neural nets and multi-objective genetic algorithms By D. Govindan, S. Chakraborty, N. Chakraborti *Steel Research International* 80, 197 (2010)
11. Antibacterial Effect of Lanthanum Calcium Manganate (La_{0.67}Ca_{0.33}MnO₃) Nanoparticles against *Pseudomonas Aeruginosa* ATCC 27853. By Debasis De, Santi M Mandal, Samiran S. Gauri, Rabindranath Bhattacharya, S. Ram and S. K. Roy *Journal of Biomedical Nanotechnology* 6 (2), 138-144 (2010)
12. Artificial Neural Networks for Blast Furnace By N. Rajesh, M. R. Khare and S. K. Pabi *J. Modeling and Simulation* Vol. 13. pp 15-19 (2010)
13. Assessment of creep and rupture behavior of 2.25Cr-1Mo steel – A strain based approach and its limitation By S. Chaudhuri, N. Roy and R. N. Ghosh *Trans Indian Institute of Metals* Vol 63 pp 406-409 (2010)
14. Biaxial Stretching Behavior of a Copper-Alloyed Interstitial Free Steel by Bulge Test, By R. Rana, S. B. Singh, W. Bleck and O. N. Mohanty, *Metallurgical and Materials Transactions A* vol 41A, pp1483-1492 (2010)
15. Characteristics of Forming Limit Diagram of a Copper-Alloyed Interstitial Free Steel, By R. Rana, S. B. Singh, W. Bleck, O. N. Mohanty *Materials Science and Technology* vol 26 pp 707-713 (2010)
16. Models for Austenite to Martensite Transformation in TRIP Aided Steels: A Comparative Study, By M. Mukherjee, T. Bhattacharyya, S. B. Singh *Materials and Manufacturing Processes*, vol 25 pp 206, 210 (2010)
17. Capping Agent Assisted and Ag-Catalyzed Growth of Ni Nanoflowers By S. Senapati, S. K. Srivastava, S. B. Singh, K. Biswas *Crystal Growth and Design* 10, 4068-4075 (2010)
18. Comparison between the process-structure-property relationships of silica foams prepared through two different processing routes By Sarika Mishra and R. Mitra *Journal of Materials Science* Vol. 45, 4115-41 (2010)
19. Cooling rate in 800 to 500oC range from dimensional analysis By A. Arora, G. G. Roy and T. DebRoy *Science and Technology for Welding & Joining* 15(5), 423-427 (2010)
20. Corrosion and pitting behaviour of ultrafine eutectic Ti-Fe-Sn alloys By R. Sueptitz, J. Das, S. Baunack, A. Gebert, J. Eckert, L. Schultz *Journal of Alloys and Compounds* Vol. 503, pp. 19-24 (2010)
21. Crack tip damage mechanism under monotonic and cyclic loading conditions By H. Roy, S. Sivaprasad, S. Tarafder and K. K. Ray *Key Engineering Materials* 417-418, 105-108 (2010)
22. Cu-Zn Separation by Supported Liquid Membrane Analyzed through Multi-objective Genetic Algorithms By D. N. Mondal, K. Sarangi, F. Pettersson, P. K. Sen, H. Saxena, N. Chakraborti *Hydrometallurgy* 107, 112 (2011)
23. Data-Driven Multiobjective Analysis of Manganese Leaching from Low Grade Sources Using Genetic Algorithms, Genetic Programming, and Other Allied Strategies By A Biswas, Ogier Maitre, D. N. Mondal, Syamal Kanti Das, P.K.Sen, Pierre Collet, and N.Chakraborti *Materials and Manufacturing Processes* 26: 1-16 (2011)
24. Dehydration of aqueous acetonitrile solution by pervaporation using PVA-iron oxide nanocomposite membrane By M. K. Mandal, S. B. Sant, P. K. Bhattacharya *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 373, 11 (2011)
25. Development of In-situ composite surface on mild steel by laser surface alloying with silicon and its remelting By Dutta Majumdar J. *Surface and Coating Technology* doi:10.1016/j.surfco (2010)
26. Development of rapidly solidified 6.5 wt% silicon steel for magnetic applications By R. K. Roy, M. Ghosh, A. K. Panda, R. N. Ghosh and A. Mitra *Trans Indian Institute of Metals* Vol 63 pp 745 - 750 (2010)
27. Development of Titanium Boride (TiB) Dispersed Titanium (Ti) Matrix Composite by Direct Laser Cladding By Dutta Majumdar, J. and Li, L. *Materials Letter* 64, 1010-1012 (2010)
28. DFT based Simulation of Methane Occupancy in 5-12 Water Clathrate By T. K. Kundu and Snehanshu Pal *Chemical Physics Letter* submitted (2011)
29. Dry sliding wear behaviour of medium carbon steel against an alumina disk By Shiv Kumar, Ashish Bhattacharyya, Dipak Kumar Mondal, Koushik Biswas, Joydeep Maity *Wear* 270 413-421 (2011)
30. Effect of Baking on Spot Welds of a Prestrained Ultra-Low Carbon Bake Hardening Steel Sheet By Goutam Mukhopadhyay Sandip Bhattacharya Kalyan Kumar Ray *Materials and Manufacturing Processes* 25, 1324-1332 (2010)
31. Effect of Ce addition on the oxidation behaviour of Mo-Si-B-Al ultrafine composites at 1100C By J. Das, R. Mitra, S. K. Roy *Scripta Materialia* 64, pp. 486-489 (2011)
32. Effect of dysprosia doping on structural and electrical property of stabilized zirconia for intermediate-temperature SOFCs By M. Pastor, S. Maiti, A. Pandey, K. Biswas, I. Manna *Materials Chemistry and Physics* 125 202-209 (2011)
33. Effect of grain size on strain rate sensitivity of cryomilled Al-Mg alloy By 9. Byungmin Ahn, Rahul Mitra, Enrique J. Lavernia, Steve R. Nutt *Journal of Materials Science* 45, 4790-4795 (2010)
34. Effect of h-BN addition on the properties of nanostructured Al₂O₃-TiB₂-TiN based coatings developed by combined SHS and laser surface alloying By Chatterjee, S., Ganesh. P., Palai, R., Wu, J.A., Kaul, R., Dutta Majumdar, J. and Roy Choudhury, A *Surface and Coating Technology* 204, 1702-1709 (2010)
35. Effect of Mn on Sn-Ag-Cu ternary lead free solder alloy-Cu assembly: A comparative study By Ghosh, M., Gunjan M.K., Das S.K., Kar A., Ghosh R.N., Ray, A.K. *Materials Science and Technology* Vol 26 pp 610-614 (2010)
36. Effect of mushy state rolling on age-hardening and tensile behavior of Al-4.5Cu alloy and in-situ Al-4.5Cu-5TiB₂ composite By I.G. Siddhalingeswar, M.A. Herbert, M. Chakraborty, R. Mitra *Materials Science and Engineering, A* 528, 1787-98 (2011)
37. Effect of nano-crystallization on the plasticity in Cu-Zr amorphous binary alloys By Natraj Yelda, M. Srinivas, Sudipto Ghosh, Bhaskar Majumdar *Intermetallics* (0)
38. Effect of particulate volume fraction on mechanical properties of Pressure-less sintered ZrB₂-SiC ultra-high temperature ceramic Composites By Manab Mallik, Rahul Mitra and Kalyan Kumar Ray *Ceramic Transactions* 220, 77-90 (2010)

39. Effect of prestraining on the deformation and fracture behavior of Zr44Ti11Cu9.8Ni10.2Be25 By M. H. Lee, J. Das, K. S. Lee, U. KÄ½hn, J. Eckert *Intermetallics* Vol.18, pp.1902-1907 (2010)
40. Effect of Sn on microstructure and mechanical properties of Ti-Fe-(Sn) ultrafine eutectic composites By J. Das, R. Theissmann, W. LÄ½ser, J. Eckert *Journal of Materials Research* Vol. 25, pp. 943-956 (2010)
41. Effect of stirring rate on the microstructure and microhardness of Ni-CeO₂ nanocomposite coating and investigation of the corrosion property By Ranjan Sen, Siddhartha Das and Karabi Das *Surface and Coatings Technology* 205 3847-3855 (2011)
42. Effect of Tempering on Mechanical Properties of V-added AISI 4335 Steel By Raghu Nandan Jha, Krishna Dutta and Kalyan Kumar Ray *ISIJ International* 50(4), 607Ä½612 (2010)
43. Effect of Wheel Speed on the Microstructures and Magnetic Properties of Rapidly Solidified Sm-Co Alloys By S. Aich and J.E. Shield *Journal of Alloys and Compounds* 502, 63-67 (2010)
44. Exergy analysis of mineral processing flow sheets: implications in process design By P.K.Sen *Proceedings of the XI International seminar on Mineral Processing Technology (IMPT-2010)* 1239-1237 (2010)
45. Fatigue Behaviour of in situ TiB Reinforced β -Titanium Alloy Composite, By P. Majumdar, S.B. Singh and M. Chakraborty, *Materials Letter* vol 64 pp 274, 27 (2010)
46. Feed Forward Neural Network for Prediction of End-Blow Oxygen in LD Converter steel making By Narra Rajesh, Malaya Ranjan Khare and Shyamal Kumar Pabi *Materials Research* Vol. 13, 15-19 (2010)
47. Ferrite grain size distributions in ultra-fine grained HSLA steel after controlled thermo-mechanical deformation (Accepted Paper) By S. Patra, S. Roy, Vinod Kumar, A. Haldar, D. Chakrabarti *Metallurgical and Materials Transactions A (Accepted DOI: 10.1007/s11661-011-0668-1)* Available Online (2011)
48. Fluid Flow Behavior of Top Blown LD Converter Using Different β - μ Turbulence Models. By T. K. Kundu and Snehanshu Pal *Metal News* submitted (2011)
49. Friction and wear behavior of Cu-CeO₂ nanocomposite coatings synthesized by pulsed electrodeposition By Venu Mangam, Sumit Bhattacharya, Karabi Das and Siddhartha Das *Surface and Coatings Technology* 205, 801-805 (2010)
50. Frictional shear induced modification of the mechanical properties of TiAl(Nb) intermetallics near the surface By N. Deyneka-Dupriez, A.P.M. Iqbal, S. Das, R. Wunderlich, H.-J. Fecht *J. of Alloys and Compounds* 508, 446-452 (2010)
51. Health assessment of 22 years service-exposed radiant tube from an oil refinery By Ray A. K., Tiwari Y.N., Krishna G., Gunjan M., Bose S.C., Ghosh R.N. *Engineering Failure Analysis* 18 pp 1067 - 1075 (2011)
52. Improved plasticity of bulk metallic glasses upon cold rolling By M. H. Lee, K. S. Lee, J. Das, J. Thomas, U. KÄ½hn, J. Eckert *Scripta Materialia* Vol. 62, pp.678-681 (2010)
53. Influence of RF Power on the Electrical and Mechanical Properties of Nanostructured Carbon Nitride Thin Films Deposited by RF Magnetron Sputtering By P. K. Barhai, Neelam Kumari, I. Banerjee, S. K. Pabi and S. K. Mahapatra *Thin Solid Films, Special Issue* Vol 518, 7240-7244 (2010)
54. Influence of sintering parameters on tribological properties of ceria stabilized zirconia bio-ceramics By Ajoy Kumar Pandey, Koushik Biswas *Ceramics International* 37, 257-264 (2011)
55. Influence of sub-zero treatments on fracture toughness of AISI D2 steel By Debdulal Das, Rajdeep Sarkar, Apurba Kishore Dutta, Kalyan Kumar Ray *Materials Science and Engineering A* 528, 589Ä½603 (2010)
56. Isopropanol as an air-liquid interface reformer in the processing of cellular silica By Sarika Mishra and R. Mitra *Journal of Alloys and Compounds* 506, 308-312 (2010)
57. Laser Assisted Composite Surfacing of Metals for Improved Wear Resistance By Dutta Majumdar J. *Physics Procedia* 5, 425-430 (2010)
58. Laser Surface Cladding of EN19 Steel with Stellite 6 for Improved Wear Resistance By Gupta D., Mordike, B. L., Shariff, S., Padmanabhan, G., Manna, I. and Dutta Majumdar, J. *Lasers in Engineering* 19, 317-330. (2010)
59. Low cycle fatigue behaviour of duplex stainless steel: effect of isothermal aging treatment By J K Sahu, R N Ghosh and H -J Christ *Fatigue & Fracture of Engineering Materials & Structures* Vol 33, pp 77-86 (2010)
60. Mathematical Model for Prediction on Carbon Block Wear Profile in the Hearth of Blast Furnace at JSPL, Raigarh By Abhilash Agnihotri and Gour Gopal Roy *IIM Metal News* 13(6), 17-21 (2010)
61. Mechanical properties of a laser-surface-alloyed magnesium-based alloy (AZ91) with nickel By Dutta Majumdar, J. and Manna, I. *Scripta Materialia* 62, 579Ä½581 (2010)
62. Mechanical response of metallic glasses: Insights from in-situ high energy x-ray diffraction By M. Stoica, J. Das, J. Bednarcik, G. Wang, G. Vaughan, W. H. Wang, J. Eckert *JOM* Vol. 62, pp. 76-82 (2010)
63. Mechanism of fatigue failure in interstitial-free and interstitial-free high-strength steel sheets By Shrabani Majumdar, D. Bhattacharjee and K. K. Ray *Scripta Materialia* 64, 288Ä½291 (2011)
64. Metals and materials from deep sea nodules: an outlook for the future By P.K.Sen *International Materials Reviews* 55(6),364 (2010)
65. Microstructural characterization of nano-sized ceria powders by X-Ray Diffraction analysis By Ranjan Sen, Siddhartha Das and Karabi Das *Met & Mat Trans A* 42, 1409-1417 (2011)
66. Microstructure and creep behavior of DMS4-type nickel based superalloy single crystals with orientations near 001 and 011 By D. Chatterjee, N. Hajari, N. Das, R. Mitra *Materials Science and Engineering A* 528, 604-613 (2010)
67. Microstructure and mechanical properties of tungsten heavy alloys By Jiten Das, G. Apparao and S. K. Pabi *Materials Science and Engineering, A* Vol. A527, 7841-7847 (2010)
68. Modeling of Dispersion and Settling of Micron-sized Dust Particles in Pressure Regulator Used in Oxygen-enriched Environment By A. Oza, S. Ghosh and K. Chowdhury *Journal of ASTM International* (0)
69. Monotonic and cyclic damage in metallic sheets By K. K. Ray, S. Majumdar and D. Chakraborty *Transactions of the Indian Institute of Metals* Vol. 63, pp. 225-233 (2010)
70. Morphological Changes During Annealing of Electrodeposited Ni-Cr Coating on Steel and Their Effect on Corrosion in 3% of NaCl Solution By Manpreet Singh Marwah, Vajjala Srinivas, Ajoy Kumar Pandey, Shyam Ranjan Kumar, Koushik Biswas, Joydeep Maity *Journal of Iron and Steel Research, International* 18, 72-78 (2011)
71. Multistage thermodynamic model for high silicon iron production By C.A.Kumar, S.K.Roy and P.K.Sen *Journal of The Inst. Of Engrs* 91, October,3 (2010)
72. On mechanism of fatigue fracture in interstitial free steel sheet By S. Majumdar, D. Bhattacharjee and K. K. Ray *Materials Science and Technology* 26(4), 493-500 (2010)
73. Oxidation behavior of hot-pressed ZrB₂-SiC and HfB₂-SiC composites By Manab Mallik, K.K. Ray, R. Mitra *Journal of the European Ceramic Society* 31(1-2), 199-215 (2011)
74. Oxidation behaviour of Mo-Si-B-(Al, Ce) ultrafine-eutectic dendrite composites in the temperature range of 500-700C By J. Das, R. Mitra, S. K. Roy *Intermetallics* 19, pp. 1-8 (2011)

75. Reinforcement of Ball Shaped MoS₂ Nanoparticles in Epoxy Resin By Suneel Kumar Srivastava, Ashish Kumar Sahoo, Kartick Bindumadhavan, Saraswathi Kesavapillai Manu, Bijan Bihari Nayak, Koushik Biswas, Arvind Kumar Saxena, and Rajendra Singh *Journal of Nanoscience and Nanotechnology* 10, 1-9 (2010)
76. Room temperature mechanical properties and tensile creep behavior of powder metallurgy processed and hot rolled Al and Al-SiCp composites By Sharmilee Pal, K.K. Ray, R. Mitra *Materials Science and Engineering A* 527, 6831-6837 (2010)
77. Simulation of Cooling of Double Layered Splat and its Experimental Validation Using Jackson-Hunt Theory By A. Kumar, S. Ghosh* and B. K. Dhindaw *Metall. Mater. Trans. B* (0)
78. Some Studies to Establish the Reaction Mechanism for the Reduction of Iron Ore-Graphite Composite Pellets in a Packed Bed Reactor By G. M. Chowdhury, C. S. Murmu, S. K. Roy, and G. G. Roy *Steel Research* 81(11), 925-931 (2010)
79. Stochastic aspects of evolution of creep damage in austenitic steel By N Roy, S C Bose and R N Ghosh *Materials Science and Engineering A* 527 PP 4810 - 4817 (2010)
80. Structural and morphological investigations on DC-magnetron sputtered nickel films deposited on Si (100) By B. Geetha Priyadarshini, S. Aich, and M. Chakraborty *Journal of Materials Science* 46, 2860-2873 (2011)
81. Structure and Mechanical Properties of Al-Ni-Ti Amorphous Powder Consolidated by Pressure-less, Pressure-assisted and Spark Plasma Sintering By Suhrit Mula, Sudipto Ghosh, Kallol Mondal and Shyamal K. Pabi *Materials Science and Engineering, A* 527, pp 3757-3763 (2010)
82. Structure-property correlation in cellular silica processed through hydrophobized fused silica powder for aerospace application By Sarika Mishra, R. Mitra, M. Vijayakumar *Journal of Alloys and Compounds* 504, 76-82 (2010)
83. Study on the effect of laser post-treatment on the properties of nanostructured Al₂O₃-TiB₂-TiN based coatings developed by combined SHS and laser surface alloying By Chatterjee, S., Shariff, S. M., Padmanabham, G., Dutta Majumdar, J. and Roy Choudhury, A. *Surface and Coating Technology* 205, 131-138 (2010)
84. Sub-zero treatments of AISI D2 steel: Part I. Microstructure and hardness By Debdulal Das, Apurba Kishore Dutta, Kalyan Kumar Ray *Materials Science and Engineering A* 527, 2182-2193 (2010)
85. Sub-zero treatments of AISI D2 steel: Part II. Wear behavior By Debdulal Das, Apurba Kishore Dutta, Kalyan Kumar Ray *Materials Science and Engineering A* 527, 2194-2206 (2010)
86. Synthesis of TiO₂ scaffold by a 2 step bi-layer process using a molten salt synthesis technique By B. Roy, P.A. Fuierer, S. Aich *Powder Technology* 208, 657-662 (2011)
87. Tensile properties of as cast and mushy state rolled Al-4.5Cu alloy and in-situ Al-4.5Cu-5TiB₂ composite By 7. Mervin A. Herbert, G. Das, R. Maiti, M. Chakraborty, R. Mitra *International Journal of Cast Metals Research* 23(4), 216-224 (2010)
88. The effect of bath temperature on the crystallite size and microstructure of Ni-CeO₂ nanocomposite coating By Ranjan Sen, Siddhartha Das and Karabi Das *Materials Characterization* 62, 257-262 (2011)
89. Tribo-electrification of Metallic Dust Particles: Experiment and Modeling By A. Oza, S. Ghosh and K. Chowdhury *Journal of ASTM International* (0)

Papers Presented in Conferences

1. Influence of flocculant overdosing on solid/liquid separation properties, By L.Besra, D.K. Sengupta and S.K.Roy, *XIth International Seminar on Mineral Processing and Technology (MPT-2010)*, NML, Jamshedpur, (2010)
2. Multi-objective genetic algorithm based evolutionary neural network and its material applications, By N. Chakraborti, *KomPlasTech 2011*, Zakopane, Poland, (2011)
3. Physico-Chemical Changes during mechanical activation of boehmite, By T.C. Alex, R. Kumar, A.J. Kailath, S.K. Roy and S.P. Mehrotra, *XIth International Seminar on Mineral Processing and Technology (MPT-2010)*, NML, Jamshedpur, (2010)
4. Dissolution of mechanically activated boehmite in caustic solution, By T.C. Alex, Rakesh Kumar, S.K. Roy, S.P. Mehrotra, *64th ATM of Indian Institute of Metals*, IISc Bangalore, (2010)
5. A Comparative Assessment of Wear Behaviour of Annealed and Deformed Hypoeutectoid Steels, By V. Toppo, A. Das, and K. K. Ray, *64th Annual Technical Meeting of the Indian Institute of Metals, NMD-ATM (2010)*, Indian Institute of Science, Bangalore, (2010)
6. Aerospace Metals and Processes - Current Research and Future Perspectives, By Sujoy Kar, *Aerospace Metals and Processes Symposium*, Bangalore, (2010)
7. Age-hardening and Tensile Deformation Behavior of Mushy State Rolled Al-4.5Cu Alloy and In-Situ Al-4.5Cu-5TiB₂ Composite, By Siddhalingeshwar, I.G., K. Pavitra, M. Chakraborty, R. Mitra, *Indo-Austrian Symposium 2010: Advanced Materials Engineering*, Hyderabad, (2010)
8. ANN Modeling for Prediction of Phosphorus, Carbon and Temperature in LD Converter, By T. K. Kundu, Snehanshu Pal, Himangshu Sekhar Mandal, Ananta Narayan Behera, *NMD-ATM, BANGALORE*, (2010)
9. CFD Modeling of Bath Surface Deformation in LD Converter using Volume of Fluid Method, By Snehanshu Pal, Tarun Kr. Kundu, *NMD-ATM, BANGALORE*, (2010)
10. Cleavage initiation in steel: competition between large grains and large particles, By Arunim Ray, D. Chakraborti, *Annual Technical Meeting, National Metallurgist Day*, Bangalore, India., (2010)
11. CNT reinforced Nanocomposite Synthesized by Novel Consolidation Technique, By Anway Maiti, Lakshmikanth Reddy M, Tapas Laha, *National Metallurgists Day - 2010, IIM*, Bangalore, (2010)
12. Compressive Deformation Behavior of Hypoeutectic and Hypereutectic Nb-Si-Mo Alloys, By K. Chattopadhyay, K.K. Ray, R. Mitra, *2010 MRS Fall Meeting*, Boston, USA, (2010)
13. Crystal Structures, Phase Transformations and Microstructures of Rapidly Solidified Heusler Type CoNiGa(Al) Ferromagnetic Shape Memory Alloys for Micro-Actuator Applications, By S. Aich, *TMS-2011*, San Diego, California, USA, (2011)
14. Developing ultra-fine grained HSLA steel by thermo-mechanical simulation, By S. Patra, D. Chakraborti, A. Haldar, V. Kumar, *Application of thermo-mechanical simulation in advanced materials research. Sponsored by DST.*, IIT Roorkey, (2011)
15. Development of ultra-fine grained HSLA steel by controlled thermo-mechanical deformation, By S. Patra, S. Roy, V. Kumar, A. Haldar, D. Chakraborti, *Conference Proceedings, NMD ATM, 2010.*, Bangalore, India., (2010)
16. Effect of Al and Ce additions on the high temperature oxidation behaviour of Mo-Si-B alloys, By J.Das, R. Mitra. S. K. Roy, *CORCON 2010 Conference & Expo on Corrosion (Talk)*, Hotel The Lalit, Canacona, Goa, (2010)
17. Effect of mushy state rolling on age-hardening behavior of Al-4.5Cu alloy and in-situ Al-4.5Cu-5TiB₂ composite, By Siddhalingeshwar I.G., M. Chakraborty and R. Mitra, *Annual Technical Meeting of the Indian Institute of metals*, Bangalore, India, (2011)

18. Effect of Sheet Thickness on the Strength of Spot Weld on Extra Interstitial Free Steel Sheets, By Srijan Acharya, G. Mukhopadhyay, S. Bhattacharya and K. K. Ray, *64th Annual Technical Meeting of the Indian Institute of Metals, NMD-ATM (2010)*, Indian Institute of Science, Bangalore, (2010)
19. Effect of Third Element on Microstructures and Mechanical Properties of Ternary Niobium-Silicide-Based Composites, By Poulami Maji, K. Chattopadhyay, R. Mitra and K. K. Ray, *64th Annual Technical Meeting of the Indian Institute of Metals, NMD-ATM (2010)*, Indian Institute of Science, Bangalore, (2010)
20. Electrochemical Characteristics of Dysprosia and Lanthana-Scandia Doped Zirconia Based Electrolytes for IT-SOFC, By Mukul Pastor, Koushik Biswas, *NMD-ATM 2010*, Bangalore, (2010)
21. Exergy analysis of mineral processing flow sheets: implications in process design, By P.K.Sen, *Proceedings of the XI International seminar on Mineral Processing Technology (IMPT-2010)*, Jamshedpur, (2010)
22. Fatigue damage of AISI 304 LN stainless steel: Role of mean stress, By K. K. Ray, K. Dutta, S. Sivaprasad, and S. Tarafder, *10th International Fatigue Congress FATIGUE 2010*, Prague, Czech Republic, Europe, (2010)
23. Fatigue Thresholds of Low-Carbon Ferrite-Bainite Steels, By A. Kumar, S. B. Singh and K. K. Ray, *64th Annual Technical Meeting of the Indian Institute of Metals, NMD-ATM (2010)*, Indian Institute of Science, Bangalore, (2010)
24. Fractal Characterization of Fatigue Fractured Surfaces Generated at Different σ/σ_K and R Ratios, By K. Barat, M. Tarafder, S. Tarafder, and K. K. Ray, *64th Annual Technical Meeting of the Indian Institute of Metals, NMD-ATM (2010)*, Indian Institute of Science, Bangalore, (2010)
25. Impact Tensile toughness of Spot Welds on Interstitial Free Steels, By G. Mukhopadhyay S. Bhattacharya and K. K. Ray, *64th Annual Technical Meeting of the Indian Institute of Metals, NMD-ATM (2010)*, Indian Institute of Science, Bangalore, (2010)
26. In-situ composite surfacing by direct laser cladding, By J. Dutta Majumdar, *Laser and Plasma Application in Materials Science-2010*, Algiers, Algeria, (2010)
27. Influence of Cleanliness on the Product Quality of Medium Carbon Alloy Steels, By R.N. Jha, S. Patil and K. K. Ray, *64th Annual Technical Meeting of the Indian Institute of Metals, NMD-ATM (2010)*, Indian Institute of Science, Bangalore, (2010)
28. Influence of Deposition Parameters on the Structural Properties of RF-Magnetron Sputtered Ti Thin Films grown on Si (100), By B. Geetha Priyadarshini, Shampa Aich, Madhusudan Chakraborty, *International Symposium for Research Scholars (ISRS)*, (2010)
29. Influence of Symmetric And Asymmetric Cyclic Loading on the Tensile Properties of Aluminium, By Krishna Dutta and K. K. Ray, *64th Annual Technical Meeting of the Indian Institute of Metals, NMD-ATM (2010)*, Indian Institute of Science, Bangalore, (2010)
30. Investigation of Structural and Electric Properties of Ba₂DyNbO₆, By Suharto Chatterjee, Mukul Pastor, Koushik Biswas, *NMD-ATM 2010*, Bangalore, (2010)
31. Investigation on Solubility of Ag in ZnO Nanoparticle, By K. Ganguly, R. K. Sahu, T. Mishra, L. C. Pathak and S. K. Roy, *International Symposium on Materials Education*, IISER-Pune, (2011)
32. Investigations of co-sputter deposited NiTi shape memory films on Silicon and Quartz substrates, By Esakkiraja. N, B. Geetha Priyadarshini, S. Aich, M. Chakraborty, *NMD-ATM-2010*, Indian Institute of Technology - Bangalor, (2010)
33. Isothermal oxidation behaviour of alpha-Mo dendrite and eutectic Mo₅SiB₂ (T₂) - Mo₃Si matrix composites, By J. Das, R. Mitra, S. K. Roy, *NMD-ATM 2010 (Talk)*, IISc Bangalore, India, (2010)
34. Laser Assisted Composite Surfacing of Metals for Improved Wear Resistance, By J. Dutta Majumdar, *Workshop on Application of Laser in Materials Processing*, Kolkata, (2010)
35. Laser – A Clean Source of Energy for Materials Processing, By J. Dutta Majumdar, *4th International Convention and General Assembly of Third World Academy of Women in Science*, Beijing, China, (2010)
36. Magnetite-Silica Core-Shell Nanoparticles for Biomedical Applications, By Shampa Aich, *NMD-ATM-2010*, Indian Institute of Science, Bangalore, (2010)
37. Microstructural and compositional properties of co-sputtered Ni-Ti shape memory alloy films, By B. Geetha Priyadarshini, S. Aich, M. Chakraborty, *98th Indian Science Congress*, (0)
38. Microstructural Characterization of 1.5 Wt% CNT Reinforced Ti Composite, By R. Sarkar, P. Ghosal, A. Kumar, G. Appa Rao, T. K. Nandy, K. Muraleedharan and K. K. Ray, *64th Annual Technical Meeting of the Indian Institute of Metals, NMD-ATM (2010)*, Indian Institute of Science, Bangalore, (2010)
39. microstructural modification of Ti-6Al-4V for bioimplant application, By J. Dutta Majumdar, A. Biswas, Lin Li, U.K. Chatterjee and I. Manna, *national laser symposium*, indore, (2010)
40. Microstructure and Wear Behaviour of Varied Sub-zero Treated Cold Work Die Steel, By D. Das, A. K. Dutta and K. K. Ray, *64th Annual Technical Meeting of the Indian Institute of Metals, NMD-ATM (2010)*, Indian Institute of Science, Bangalore, (2010)
41. Microstructure based constitutive modeling of a Nickel based superalloy (Ren[®]-104) as a function of temperature, By Sujoy Kar, Sanjay Sondhi, Dan Wei, Dave Mourer, *NMD-ATM 2010*, Bangalore, (2010)
42. Minimisation of Exergy Losses in Corex Process, By Ameya Kadrolkar, P.K. Sen, S.K.Roy, *64th ATM of Indian Institute of Metals*, IISc Bangalore, (2010)
43. Oxidation behaviour of Mo-Si-B-(Al, Ce) ultrafine composites, By J. Das, R. Mitra, S. K. Roy, *MRS Fall Meeting (Talk)*, Boston, Massachusetts, USA, (2010)
44. Phase formation, Microstructure and Magnetic Properties of Rapidly Solidified SmCo alloys modified with Hf and C, By S. Aich and J.E. Shield, *TMS-2011*, San Diego, California, USA, (2011)
45. Phases in the Zn-coated Fe Analyzed through an Evolutionary Meta-model and Multi-objective Genetic Algorithms, By P. Rajak, U. Tewary, S. Das, B. Bhattacharya, N. Chakraborti, *KomPlasTech 2011*, Zakopane, Poland, (2011)
46. Processing vis-à-vis Product Quality of medium carbon alloy steel subjected to conventional and radial forging, By K. K. Ray and R. N. Jha, *AMPT 2010*, Paris, France, (2010)
47. Rapidly solidified Sm-Co-TM-C/B Melt-Spun Alloys, By S. Aich and J.E. Shield, *NMD-ATM-2010*, Indian Institute of Science, Bangalore, (2010)
48. Role of Nanocrystallinity, twins and silver-oxygen complex species for biological efficacy of novel antimicrobial silver films as therapeutic agents for burn wound dressings, By S. B. Sant & R. E. Burrell, *World Congress on Biotechnology-2011*, Hyderabad, (2011)
49. Structural and dielectric properties of columbite niobates and their corresponding lead/non-lead based complex perovskite ceramics, By Mukul Pastor and Koushik Biswas, *NMD-ATM 2010*, Bangalore, (2010)
50. Structural characterization of magnetron sputtered Nickel and Titanium thin films for functional applications, By B. Geetha Priyadarshini, Shampa Aich, Madhusudan Chakraborty, *NMD-ATM-2010*, Indian Institute of Technology - Bangalor, (2010)
51. Studies on Ni-Ti Thin Films grown by Bias Assisted Magnetron Sputtering, By B. Geetha Priyadarshini, Shampa Aich, Madhusudan Chakraborty, *140th TMS 2011 Annual Technical Meeting*, (2011)

52. Study of Microwave assisted sintered yttria stabilized zirconia toughened alumina (YSZ-TA) composite for biomedical application, *By Naba Kumar Mahata and Koushik Biswas, NMD-ATM 2010, Bangalore, (2010)*
53. Surface Engineering of Magnesium Alloy for Bio-implant Application, *By Dutta Majumdar, J., Mukherjee, S. And Manna, I., Proceedings of International Conference on Surface Modification Technologies "2010, Dresden, (2010)*
54. Synthesis of MWCNT reinforced Al based Nanocomposite via Spark Plasma Sintering, *By Tapas Laha, Lakshmikanth Reddy, Anup Keshri, Devrupa Lahiri, Anway Maiti, 2011 TMS Annual Meeting & Exhibition, San Diego, (2011)*
55. Synthesis, Mechanical Properties, In-vitro Ageing and Tribological Behaviour of Zirconia and Alumina Based Bioceramics, *By Ajoy Kumar Pandey and Koushik Biswas, NMD-ATM 2010, Bangalore, (2010)*
56. Thermophysical Behavior of Ultra-high Temperature Ceramic Composites, *By Manab Mallik, Ansu. J. Kailath, R. Mitra and K. K. Ray, Annual Technical Meeting of the Indian Institute of metals, Bangalore, India, (2011)*

Centre for Oceans, Rivers, Atmosphere and Land Sciences

Head

Prof. Debabrata Sen

Assistant Professors

Behera, Mukunda Dev	<i>Ph.D.(IIRS, DehraDun)</i> , Land/ Vegetation Cover/ River Basin Dynamics, Biodiversity Monitoring and Modeling, Forest Biomass and Carbon Sequestration, Remote Sensing and Geoinformation Technology
Chakraborty, Arun	<i>Ph.D (IIT Delhi)</i> , Numerical Modeling of Oil Spill, Ocean Dynamics and Ocean Circulation Modeling, Data Assimilation
Dash, Mihir Kumar	<i>Ph.D. (Gujarat University)</i> , Satellite Oceanography, Mesoscale Ocean Modeling, Cryospheric Studies
Mandal, Manabottam	<i>Ph.D.(IIT Delhi)</i> , Observations and Modeling of Thunderstorm, Modeling of Extreme Weather Events, Regional Climate Modeling, Cloud Microphysics, Mesoscale Data Assimilation
Satyanarayana, Achanta Naga Venkata	<i>Ph.D (BHU)</i> , Observations and Modeling of PBL dynamics and Thunderstorms, Parameterization of Land Surface Processes, Air-Sea Interactions
Shaji, C	<i>Ph.D. (IIT Delhi)</i> , Ocean Modeling and Analysis, Coastal Processes, Monsoon Oceanography

Emeritus Professor

Pandey, Prem Chand	<i>Ph.D.(Allahabad Univ.)</i> , Atmospheric and Ocean Dynamics Satellite Oceanography, Climate Change and Polar Research
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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. Chakraborty, Arun, *Life Member* - Indian Meteorological Society
2. Chakraborty, Arun, *Life Member* - The Indian Science Congress Association
3. Chakraborty, Arun, *Life Member* - Indian Geophysical Union
4. Chakraborty, Arun, *Life member* - Ocean Society of India
5. Dash, Mihir Kumar, *Member* - American Geo-physical Union
6. Mandal, Manabottam, *Life Member* - Indian Meteorological Society
7. Mandal, Manabottam, *Member* - Asia Oceania Geophysical Society
8. Pandey, Prem Chand, *Member*, *ISRO-CNES Joint Working Group* - Indian Space Research Organisation, Bangalore
9. Pandey, Prem Chand, *Chairman*, *National Advisory Committee, to set up School of Earth Ocean and Climate Sciences* - IIT Bhubaneswar
10. Pandey, Prem Chand, *IIT Kharagpur Nominee* - Ocean Atmospheric Science and Technology Cell of MoES
11. Pandey, Prem Chand, *Advisory Board Member*, *Text Books for Higher Education* - The Energy Research Institute, New Delhi
12. Pandey, Prem Chand, *Member of the Working Group on Promotion of Radar Meteorology, in Kolkata* - India Meteorological Department, New Delhi
13. Satyanarayana, Achanta Naga Venkata, *Life Member* - India Meteorological Society, New Delhi
14. Satyanarayana, Achanta Naga Venkata, *Member* - International Association of Urban Climate (IAUC), USA
15. Shaji, C, - *Life Member*: Ocean Society of India
16. Shaji, C, - *Life Member*: American Geophysical Union, USA
17. Shaji, C, - *Member*: Japan Oceanographic Society, Japan
18. Shaji, C, - *Life Member*: Indian Society of Theoretical and Applied Mathematics

Member - Editorial Board

1. Behera, Mukunda Dev (2011) *Guest Editor (Special Issue on Climate Change)* - Biodiversity and Conservation
2. Behera, Mukunda Dev (2011) *Guest Editor (Special Section on Biodiversity and Geospatial Technology)* - Current Science
3. Chakraborty, Arun (2011) *Reviewer* - Journal of Shipping and Ocean Engineering
4. Chakraborty, Arun (2011) *Associate Editor* - Geoscience Research
5. Pandey, Prem Chand (2010) *Associate Editor* - Marine Geodesy
6. Pandey, Prem Chand (2011) *Member Editorial Board-Subject Specialist* - Mausam
7. Pandey, Prem Chand (2010) *Member Editorial Board* - Indian J Remote Sensing
8. Pandey, Prem Chand (2009) *Joint Chief Editor* - Indian J. Polar Science

Awards & Honours

1. Pandey, Prem Chand (2010) *Rekha Nandi and Bhupesh Nandi Prize*
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. 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)
2. Biodiversity Characterisation at Landscape Level in UP state (except Vindhyan Hills) using remote sensing and GIS (National Remote Sensing Center, Hyderabad, Rs.20.00 Lakhs)
3. Climate Change Programme Proposals (CCP-DST)(under process) (DST, Govt. of India, Rs.10.00 Lakhs)
4. Developing Ganga Basin Management Plan-Biodiversity and Ecology Theme (Ministry of Environment and Forests, New Delhi, Rs.32.00 Lakhs)
5. 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)
6. Development of Data Assimilative Coastal Circulation Model Over Bay of Bengal (SAC, ISRO, Ahmedabad, Rs.22.80 Lakhs)
7. Development of Operational Ocean model for Bay of Bengal (INCOIS, Hyderabad, Rs.54.00 Lakhs)
8. 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 Atmom, Rs.3.52 Lakhs)
9. Feature based study of Indian Ocean Circulation Using Saral Altika Observations (Indian Space Research Organization, Rs.15.42 Lakhs)

10. High resolution mesoscale prediction of land-falling Bay of Bengal cyclones for coastal disaster preparedness (MoES, Govt. of India, Rs.16.20 Lakhs)
11. Land Use Land Cover Dynamics in Relation to Human Dimensions and climate change in Mahanadi River Basin (National Remote Sensing Center, Hyderabad, Rs.11.00 Lakhs)
12. Minimum E-Flow Modelling (IBM-SUR, Rs.20.00 Lakhs)
13. Monitoring of sea ice using oceanat - 2 scatterometer data for determination of climatic trend (Space Applications Centre (ISRO), Ahmedabad, Rs.22.80 Lakhs)
14. Sea ice monitoring in the Arctic and the Antractic (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 (SAC, ISRO, Ahmedabad, Rs.17.40 Lakhs)
16. Smarter water resource management, Disaster Mitigation and Diabetic retinopathy (IBM, Rs.17.60 Lakhs)
17. Study of Bay of Bengle features and its impacts on the air-sea interaction using FORMS (Indian National Centre for Ocean Information Services, Hyderabad, Rs.33.90 Lakhs)
18. Study of Boundary Layer Characteristics at Kharagpur during occurrence of severe thunderstorms (Department of Science and Technology, Govt. of India, Rs.46.70 Lakhs)
19. 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)
20. 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)
21. Study of the surface and upper ocean Mesoscae features of North Indian Ocean from observation and Model (Ministry of Earth Sciences Through OASTC cell, IIT Kharagpur, Rs.31.36 Lakhs)
22. To Develop long term multidisciplinary programme in the area of Marine Resource Development and Management (MRDM) (Ministry of Earth sciences, Rs.409.24 Lakhs)

Consultancy Projects

1. Biodiversity Conservation in relation to trans-boundary water regimes (India-Bangladesh geographical focus) (International Union for Conservation of Nature (IUCN), Delhi, Rs.2.00 Lakhs)

Visits Abroad by Faculty Members

1. Chakraborty, Arun - Visiting Professor (School for Marine Science and Technology, University of Massachusetts, Dartmouth, USA,) Two months and Seventeen Days (01 May - 17 July, 2009)
2. Behera, Mukunda Dev - To attend a Project Meeting (Visited Bangkok, Thailand,) 6-9 December
3. Chakraborty, Arun - Visiting Professor (School for Marine Science and Technology, University of Massachusetts, Dartmouth, USA,) (14 May - 16 July, 2010)

Invited Lectures by Faculty Members

1. Science and Geopolitics of Polar Regions *by* Pandey, Prem Chand (Invited by IT,BHU to Deliver Guest Lecture During TECHNEX-11)
2. Polar Science and Climate Change *by* Pandey, Prem Chand (o deliver a lecture at KIIT, Bhubaneswar under INSPIRE Prgramme of DST)
3. Polar Science *by* Pandey, Prem Chand (New Delhi)
4. Foundation Day lecure *by* Pandey, Prem Chand (IITM, Pune)
5. SARAL Altika worksop, Member Science Working Group *by* Pandey, Prem Chand (SAC, Ahmedabad)
6. Discussion with IMD and leadtalk on Polar science Brain storming *by* Pandey, Prem Chand (New Delhi)
7. Tropical Cyclone disaster and the aspects of hazard reduction *by* Mandal, Manabottam (Jadavpur University, Kolkata)
8. Basic Concepts of Numerical Weather Prediction *by* Satyanarayana, Achanta Naga Venkata (Meteorology Section of Air Force Kalaikunda)
9. Air-Sea Interaction Processes *by* Satyanarayana, Achanta Naga Venkata (I.I.T. Kharagpur)
10. Ocean-Atmosphere Observational Techniques *by* Satyanarayana, Achanta Naga Venkata (I.I.T. Kharagpur)
11. Marine Boundary Layer and Air-sea interaction processes *by* Satyanarayana, Achanta Naga Venkata (I.I.T. Kharagpur)
12. Use of Technology in Biodiversity and Climate Change Studies *by* Behera, Mukunda Dev ((British Council) Bhubaneswar)

Papers Published in Journals

1. Assessment and Validation of Biological Richness at Landscape Level in part of the Himalayas and Indo-Burma Hotspots using Geospatial Modeling approach *By* MD Behera and PS Roy *Journal of Indian Society of Remote Sensing* 38 (2010)
2. Comparison of Bay of Bengal circulations simulation with OCEANSAT-II and COADS winds *By* A. chakraborty, Sourav Sil, Saswati Deb, P. C. Pandey and Sujit Kumar Basu *Proceeding of the Oceansat -2 International AO Science meeting, March 23 - 25, 2011.* (2011)
3. Development of High Resolution Climatology for the Bay of Bengal using ARGO Observations *By* 5. Sudip Jana, Sourav Sil, Arun Chakraborty and M. Ravichandran *Adv. GeoSci.* (24) 105-116 (2010)
4. High Plant Diversity in Sub-tropical forests of Subansiri region, Eastern Himalaya (Accepted) *By* MD Behera and SPS Kushwaha *Tropical Ecology* (0)

5. Impact of land use changes on temperature trends over Western India By S. Nayak and M. Mandal *Current Science* under review (2011)
6. Influences of Fragmentation on Plant Diversity: An observation in Eastern Himalayan Tropical Forest By MD Behera *Journal of Indian Society of Remote Sensing* 38 (2010)
7. Numerical Simulation of Surface Circulation Features Over the Bay of Bengal using Regional Ocean Modeling System By Sourav Sil, Arun Chakraborty and M. Ravichandran *Adv. GeoSci.* (24) 117-130 (2010)
8. On the seasonal and international variability of the upwelling and downwelling regions of the Bay of Bengal By Sourav Sil, A. Chakraborty, Bishnu Kumar, P. C. Pandey, M. Ravichandran, Sujit Kumar Basu and Debabrata Sen *CSR (in review)* (2011)
9. 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* Accepted (2010)
10. Seasonal Variations of Dissolved Oxygen in the Bay of Bengal By Saswati Deb and Arun Chakraborty *Ind. J. of Polar Science* II, 11-30 (2010)
11. Seasonal Variations of Dissolved Oxygen in the Weddell Sea By Saswati Deb and Arun Chakraborty *Ind. J. of Polar Science* II, 75-92 (2010)
12. Simulation of severe land-falling Bay of Bengal cyclones during 1995-1999 using mesoscale model MM5 By M. Mandal and U.C. Mohanty *Marine Geodesy* 33, 4, 315-337 (2010)
13. Study of thermodynamic Indices in Forecasting Pre-monsoon thunderstorms over Kolkata during STORM pilot phase 2006-2008 By Bhisma Tyagi, Naresh Krishna V., A.N. V. Satyanarayana *Natural Hazards* 56:681-698 (2011)
14. Surface energy exchanges during pre-monsoon thunderstorm activity over a tropical station By 2. B. Tyagi, ANV Satyanarayana, RK Rajvanshi and M. Mandal *Meteorology and Atmospheric Physics* under review (2010)
15. The mechanism of the 20C isotherm depth oscillation for the Bay of Bengal By Sourav Sil and Arun Chakraborty *Marine Geodesy* Accepted (2011)
16. Variability in the ENSO-Induced Southern Hemispheric Circulation and Antarctic Sea Ice Extent By Mihir K. Dash P. C. Pandey N. K. Vyas J. Turner *International Journal of Climatology* Revised (2011)
17. Variability in the ENSO-Induced Southern Hemispheric Circulation and Antarctic Sea Ice Extent By Mihir K. Dash P. C. Pandey N. K. Vyas J. Turner *International Journal of Climatology* (revision) (2011)
18. Wetland Monitoring Serving as an Index of Climate Change-a Study in Samaspur Wetlands, Uttar Pradesh, India By MD Behera, VS Chitale, A Shaw, PS Roy and MSR Murthy *Journal of Indian Society of Remote Sensing* (2011)

Papers Presented in Conferences

1. A Comparative study of Mixed Layer Depth and Barrier Layer Thickness using two different Climatologies, By Naresh Krishna V., Satyanarayana A.N.V., Prasad Kumar B., *International workshop on the India Ocean: Challenges in Meteorology and Oceanography*, Nancun Environ. Research Centre Cochin, (2010)
2. Analysis of Salinity and Sea Surface height near the River, By Tarumoy Ghoshal, Sudip Jana and Arun Chakraborty, *International Workshop on Biodiversity and Climate Change*, IIT Kharagpur, (2010)
3. Anomalous Atmospheric Pattern During the Extreme Period of Indian Summer Monsoon in 2002 and 2009, By Dhruvajyoti Samanta, M. K. Dash and P. C. Pandey, *International Workshop on Biodiversity and Climate Change*, IIT Kharagpur, (2010)
4. Barrier Layer Thickness using two different climatology atlas for the Bay of Bengal, By Naresh Krishna V., Satyanarayana A.N.V., Prasad Kumar B., *National Conference TROPMET 2010:: Advances in Weather and Climate Services*, India Meteorological Department, Kolkata, (2010)
5. Characteristics of surface meteorological parameters at Kharagpur during occurrence of thunderstorms, By Soma Dawn, M. Mandal and H.P. Nayak, *TROPMET 2010*, Kolkata, (2010)
6. Community level Sal forest classification and characterization for micro-level monitoring in Himalayan foothills of UP, By VS Chitale, S. Matin, MD Behera and SK Dutta, *Biodiversity and Climate Change*, IIT Kharagpur, (2010)
7. Geospatial Modeling of Biodiversity in Uttar Pradesh state, By S. Matin, VS Chitale, MD Behera and PS Roy, *Plants and Environmental Pollution*, NBRI, Lucknow, (2010)
8. High Resolution Temperature and Salinity Data for the Bay of Bengal using ARGO Observation, By Sudip Jana, Sourav Sil, Arun Chakraborty, M. Ravichandran and Avijit Gangopadhyay, *AOGS 2010 (Asia Oceania Geosciences Society) - 7th Annual General Meeting*, Hyderabad Int.l Convention Centre, (2010)
9. Impact of Land Use and Land Cover Change on Bio-diversity and regional climate, By S. Nayak and M. Mandal, *Bio-diversity and Climate Change*, IIT Kharagpur, (2010)
10. Impact of Parameterization of Physical Processes on Simulation of Severe thunderstorms over Gangetic West Bengal using triple nested WRF model, By M. Mandal, C. Jena and S. Dawn, *AOGS 2010*, Hyderabad, India, (2010)
11. Influence of Malacca Strait Throughflow on the Bay of Bengal, By Sudip Jana and Arun Chakraborty, *The ninth International Conference on Hydro-Science and Engineering (ICHE 2010)*, IIT Madras, India, (2010)
12. Interannual Variability of Sea Surface in the Bay of Bengal, By C. Shaji, M. P. Sudev and M. V. Martin, *International Conference on Climate Change and Environment*, CUSAT, Kochi, (2010)
13. Mesoscale Studies in the Northern Indian Ocean During Extreme Summer Monsoon Years, By Mihir K Dash, Dhruvajyoti Samanta, R. Sharma, R. M. Gairola and P. C. Pandey, *2nd ISRO-CNES SARAL-Altika Science and Application Meet*, Space Applications Centre (ISRO), Ahmeda, (2011)
14. Numerical Simulation of Surface Circulation Features Over the Bay of Bengal using Regional Ocean Modeling System, By Sourav Sil, Arun Chakraborty, M. Ravichandran and Avijit Gangopadhyay, *AOGS 2010 (Asia Oceania Geosciences Society) - 7th Annual General Meeting*, Hyderabad Int. Convention Centre, (2010)
15. Observational Analysis of few Biogeochemical Parameters Responsible for the Productive Zones in the Bay of Bengal, By Saswati Deb, Bishnu Kumar, Sourav Sil and Arun Chakraborty, *International Workshop on Biodiversity and Climate Change*, IIT Kharagpur, (2010)
16. On the variation of Barrier layer in the Southern Indian Ocean: A case study, By Deb Pranab, M. K. Dash and P. C. Pandey, *International Workshop on Biodiversity and Climate Change*, IIT Kharagpur, (2010)
17. Recent Climate Trend and its Impact on Water Resources, By Sarmistha Singh, Sourav Sil and Arun Chakraborty, *The ninth International Conference on Hydro-Science and Engineering (ICHE 2010)*, IIT Madras, India, (2010)
18. Regional warming or cooling over India due to land use and land cover changes, By M. Mandal, S. Nayak and S. Bhanja, *TROPMET 2010*, Kolkata, (2010)

19. Relationship between plant Diversity and productivity in North-East India, *By* MD Behera, M Zhao and PS Roy, *Biodiversity and Climate Change*, IIT Kharagpur, (2010)
20. Remote Sensing based land and vegetation cover change detection as an indicator of climate change in part of western Himalayas, *By* VS Chitale, S Matin and MD Behera, *Benefiting from Earth Observation: Bridging the Data Gap for Adaptation to Climate Change in the Hindu Kush-Himalayan Region*, ICIMOD, Kathmandu, Nepal, (2010)
21. Seasonal variation of thermo dynamical structure of atmospheric boundary layer over a semi-arid region of NW India, *By* Surender Reddy L. and A.N.V. Satyanarayana, *National Conference TROPMET 2010:: Advances in Weather and Climate Services*, India Meteorological Department, Kolkata, (2010)
22. Seasonality of chlorophyll concentration at various local regions in the Bay of Bengal, *By* M. V. Martin and C. Shaji, *International Conference on Biodiversity and Climate Change*, IIT, Kharagpur, (2010)
23. Sensitivity of Plankton Dynamics in the Hooghly Estuary using a High Resolution Biophysical Model: A Case Study, *By* Saswati Deb, Abhijit Mitra and Arun Chakraborty, *International Conference on Tropical Island Ecosystem and Sustainable Development*, CARI, Port Blair, Andaman and Nicobar, (2011)
24. Simulating LULCC in Mahanadi and adjoining river basins in India using Remote Sensing and GIS tools-Decadal perspective, *By* PR Behera, MD Behera, T Dash, P Kumar, VK Srivastava and PS Roy, *Biodiversity and Climate Change*, IIT Kharagpur, (2010)
25. Simulation of East India Coastal Features using Regional Ocean Modeling System, *By* Sourav Sil and Arun Chakraborty, *The ninth International Conference on Hydro-Science and Engineering (ICHE 2010)*, IIT Madras, India, (2010)
26. The Annual Cycle of Sea Surface Temperature in the Arabian Sea, *By* C. Shaji, *International Conference on Biodiversity and Climate Change*, IIT, Kharagpur, (2010)
27. Thermo-dynamical structure of Atmospheric Boundary Layer associated with pre-monsoon thunderstorms over Kolkata, *By* H. P. Nayak, M. Mandal and Soma Dawn, *ARWPCC*, Tirupathi, India, (2011)
28. Understanding Climate Change and Adaptation of Species Complexes in Tropical Forest, *By* MD Behera and SK Behera, *Indian Science Congress*, Chennai, (2011)
29. Variation of atmospheric surface layer processes during thunderstorm and non-thunderstorm over Ranchi - A case study, *By* Tyagi B, Satyanarayana ANV, Kumar M, Mahanti NC, *National Conference TROPMET 2010:: Advances in Weather and Climate Services*, India Meteorological Department, Kolkata, (2010)
30. Variation of surface meteorological parameters associated with local, transported and squall-line thunderstorms at Kharagpur, *By* Soma Dawn, M. Mandal and H.P. Nayak, *ARWPCC*, Tirupathi, India, (2011)
31. Vertical Thermodynamical structure of atmosphere during active and weak phases of summer monsoon over Kharagpur as revealed by CTCZ Pilot Campaign 2009, *By* Satyanarayana ANV, Tyagi B, Naresh Krishna V, *Workshop on Continental Tropical Convergence Zone (CTCZ)-Pilot: Initial Results*, IITM, Pune, (2010)

Department of Ocean Engineering & Naval Architecture

Head

Prof. N. R. Mandal Up to 30.09.2010
Prof. Om Prakash Sha From 01.10.2010

Professors

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

Associate Professor

Bhaskaran, Prasad K *Ph.D (Kurukshetra)*, Wind-Wave Modeling, Marine Acoustics, Coastal Processes, Coastal Sediment Dynamics, Physical & Dynamical Oceanography

Assistant Professors

Bhar, Ashoke *Ph.D.(IIT Kharagpur)*, Marine Structural Engineering
Vishwanath, Nagarajan *Ph.D.(Osaka Univ. Japan)*, Ship motions, Rudder systems, Mathematical modelling
Warrior, Hari V , turbulence modeling, Ocean modeling

Visiting Faculty

Datta, Nabanita *Ph.D.(Univ. of Michigan, USA)*,

Faculty Appointments

VISHWANATH NAGARAJAN ASSISTANT PROFESSOR
Dr. NABANITA DATTA VISITING FACULTY
Dr. SREEKANTA DAS VISITING FACULTY

Faculty Promotions

PRASAD KUMAR BHASKARAN ASSOCIATE PROFESSOR

Brief Description of on-going activities

The Department is very actively involved in various projects listed below: 1) Wave effects on ships and offshore structures, hydro elasticity of large flexible structures, marine structural analysis using steel and composite materials, marine design and production, structural reliability, ocean circulation, ocean wave modeling, wave attenuation muddy bottoms, settling velocity marine sediments, wave attenuation by mangrove vegetations. 2) Wave effects on Ships and Offshore Structures, Hydro elasticity of large flexible structures, Marine Structural Analysis using steel and composite materials, Marine Design and Production, Structural reliability, Fishing Cage Hydrodynamics, Ship Motions. 3) Ocean Circulation Modeling, Numerical Modeling of Ocean Waves, Parameterization of Air-Sea Fluxes, Development of Coastal Wave Run-up Model, soft computing tools in ocean parameter retrieval, mechanics of coastal sediment transport, Coastal Protection.

Thrust Areas

1. CFD, Coastal Marine Hazards, Marine and Ocean Hydrodynamics, Numerical Hydrodynamics, Ocean Structures, Marine structural analysis, Ocean Wave & Circulation Modeling, Marine Design, Coastal Processes, Storm Surge Prediction & Tsunamis, Suspended Sediment Dynamics, Marine Acoustics.

New Acquisitions

1. (i) 2D Wave Maker (ii) 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.

Lectures by Visiting Experts

1. discussion on proposed conference ICoSOT 2009 by Mr. Trevor Blakeley (CEO, Royal Institution of Naval Architects, U.K.)
2. Dynamics of Gulf Stream by Avijit Gangopadhyay (Professor)
3. Research activities pursued in Center for Marine Technology and Engineering, Portugal by Professor Carlos Guedes Soares (Professor, Instituto Superior Technico, Lisboa, Portugal)

Doctoral and MS Degrees Awarded

1. Pankaj Biswas : (Ph.D)
2. Rajiv Sharma : (Ph.D)
3. Sanjay Pratap Singh : (Ph.D)
4. Mihir Kumar Pandit : An improved plate model for static, vibration and buckling response of sandwich laminates having random material properties(Ph.D)
5. Anandarup Bhattacharjee : An investigation into the hydrodynamic characteristics of all-movable and Flap rudders(MS)
6. Debabrata Karmakar : Fourier Analysis and allied methods in the hydroelastic analysis of floating structures(Ph.D)
7. R. Rajesh Kumar : An Improved Energy Balance Parameterization and its application in a third generation ocean wave prediction model(Ph.D)

Member - Professional Bodies

1. Bhaskaran, Prasad K, *Life Member* - Ocean Society of India
2. Bhaskaran, Prasad K, *Life Member* - Indian Society of Theoretical & Applied Mechanics
3. Sahoo, Trilochan, *Life Member* - Indian Society of Theoretical and Applied Mechanics(ISTAM)
4. Satsangi, Subir Kumar, *Member* - Institution of Marine Technologists
5. Satsangi, Subir Kumar, *Member* - Indian Society of Technical Education
6. Satsangi, Subir Kumar, *Member* - Indian Society of Theoretical and Applied Mechanics
7. Sen, Debabrata, *Life Member* - Ocean Society of India
8. Sha, Om Prakash, *Member* - Royal Institution of Naval Architects, UK
9. Vishwanath, Nagarajan, *Member* - The Japan Society of Naval Architects and Ocean 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 Ship and Ocean Technology
3. Sen, Debabrata (2009) *Member, Editorial Board* - International Journal of Vehicle Structures and Systems
4. Sen, Debabrata (2009) *Member, Editorial Board* - Journal of Ship Technology
5. Sen, Debabrata (2009) *Member, Editorial Board* - Journal of Engineering for the Maritime Environment
6. Sha, Om Prakash (2011) *Reviewer* - Computer Aided Design
7. Sha, Om Prakash (2010) *Reviewer* - Defence Science Journal
8. Sha, Om Prakash (2009) *Editorial Board Member* - International Journal of Naval Architecture and Ocean Engineering (JNAOE), Korea

Sponsored Research Projects

1. 1. Weld Induced Distortion Analysis of 3-D Large Ship Structures (DST, New Delhi, Rs.13.44 Lakhs)
2. 2. Development of Friction Stir Welding Process for Shipbuilding (NRB, New Delhi, Rs.16.90 Lakhs)
3. 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)
4. Application of Oceansat-II data for development of a ship weather routing and safe navigation system (SAC, ISRO, Rs.18.00 Lakhs)
5. Coastal Protection in the Mahakalpara area of Kenraparah District, ORISSA (Ministry of Earth Sciences, Govt. of India, New Delhi, Rs.42.32 Lakhs)
6. Control of Ballast Water Problems in Ships through Design Development (Ministry of Shipping, Rs.50.00 Lakhs)
7. Development of a compositionally graded coating on marine propeller for improving cavitation corrosion resistance (Naval Research Board, Rs.35.56 Lakhs)
8. Development of a Hybrid Co-ordinate Ocean Model (HYCOM) for the Bay of Bengal (INCOIS, Hyderabad, Rs.43.00 Lakhs)
9. Development of an autonomous underwater vehicle (MoES, Govt. of India, Rs.734.00 Lakhs)
10. Development of an Integrated Ocean Wave Forecasting System and Study its impact on Coastal Structures (INCOIS, Hyderabad, Rs.47.00 Lakhs)
11. Development of Cage for Mariculture through Numerical and Physical Modeling (Ministry of Earth Sciences, New Delhi, Rs.0.00 Lakhs)
12. Development of Friction Stir Welding Process for (Naval Research Board, Rs.16.68 Lakhs)
13. Development of Integrated Ocean Wave Forecasting System (INCOIS, Rs.47.00 Lakhs)
14. Experimental validation of theoretical models on sediment settling velocity and suspended sediment concentration using OCEANSAT data (NRB, New Delhi, Rs.8.80 Lakhs)
15. Hydroelastic analysis of floating and submerged flexible structures (Naval Research Board, Rs.18.04 Lakhs)
16. Hydroelastic Analysis of floating and Submerged Structures (Naval Research Board, New Delhi, Rs.18.04 Lakhs)
17. Implementation of an integrated nested wave-current surge model with improved air-sea coupling parameterization for Kalpakkam region (IGCAR, Kalpakkam, Govt. of India, Rs.33.91 Lakhs)
18. Implementation of an Integrated Nested Wave-Current-Surge Model with improved Air-Sea coupling parameterization for Kalpakkam region (IGCAR, Kalpakkam, Rs.32.33 Lakhs)
19. Monitoring Thermodynamical structure of Atmospheric Boundary Layer during pre-monsoon convective activity over Kharagpur (DST, New Delhi, Rs.110.00 Lakhs)
20. National Program in Marine Hydrodynamics (Naval Research Board, New Delhi, Rs.255.00 Lakhs)
21. National Programme in Marine Hydrodynamics (Naval research board, Rs.255.00 Lakhs)
22. Ocean and Atmospheric Science Technology Cell (OASTC), IIT, Kharagpur (Ministry of Earth Sciences, Rs.6.66 Lakhs)
23. Real-time modeling of ocean dispersion (IGCAR, Kalpakkam, Rs.32.00 Lakhs)
24. Weld Induced Distortion Analysis of 3-D Large Ship Structures (DST, New Delhi, Rs.13.44 Lakhs)

Consultancy Projects

1. Advice on Preparation of Course Module on Ship Production (IMU Vizag, Rs.1.09 Lakhs)
2. Consultant for Project `Indigo (Tata Consultancy Services, Rs.43.56 Lakhs)
3. Design of a mini bucket dredger (Manaksia Shipping, Rs.1.98 Lakhs)
4. Design of bucket dredger (Maeksin Shipping Co. Pvt. Ltd., Rs.2.00 Lakhs)
5. Development of software for computing added wave resistance (Indian Register of Shipping, Rs.7.50 Lakhs)
6. Feasibility Study and Design of Shallow Draft Ore Carriers for Goa - completed (National Ship Design & Research Centre, Ministry of Shipping, GOI, Visakhapatnam, Rs.8.50 Lakhs)
7. Hydrodynamic Design & Design of Control Surfaces for AUV (Naval Science and Technological Laboratory, Visakhapatnam, Rs.13.50 Lakhs)
8. Hydrodynamic Design & Development of Trimarans and Delta Hull Forms (NSTL Vizag, Rs.21.15 Lakhs)
9. Hydrodynamic design of high speed light weight torpedo (NSTL, DRDO, India, Rs.22.25 Lakhs)
10. Impact of Storm Surge, Wind Waves and Seiches on the design of proposed Kalpasar Dam (Government of Gujarat, Rs.10.00 Lakhs)
11. Modeling of half moon bay (AI Wasset, Rs.2.50 Lakhs)
12. Sea keeping model test for vessel ORV Sagar Manjusha (IMU, Visakhapatnam, Rs.1.98 Lakhs)

Patents (filed / granted)

1. Design and Fabrication of Stiffened Plate Panel of AA5083 by Friction Stir Welding

Invited Lectures by Faculty Members

1. Contemporary Approaches on Wave Structure Interaction Problems by Sahoo, Trilochan (Jadavpur University, Kolkatta)
2. Expansion formulae on Wave Structure Interaction problems by Sahoo, Trilochan (IIT, Bhubaneswar)
3. Contemporary Approaches on Wave Structure Interaction Problems by Sahoo, Trilochan (Institute of Mathematics and Applications, Bhubaneswar)
4. Laser assisted FSW of steel by Mandal, Nisith Ranjan (IIT Guwahati)
5. Effect of residual stress on buckling strength of stiffened panels by Mandal, Nisith Ranjan (Cochin shipyard)
6. Finite Element for Structural Analysis by Satsangi, Subir Kumar (Guru Jambeswar University)
7. Higher Technical Education by Satsangi, Subir Kumar (Kurukshetra University)
8. Natural Vibration Analysis of laminated Composite Stiffened Annular Sectorial Plate by Satsangi, Subir Kumar (NIT Hamirpur)
9. Expansion formulae in Wave Structure Interaction Problems by Sahoo, Trilochan (NIT, Calicut, Kerala)

10. Product Lifecycle Management (PLM) System for Shipbuilding Industry by Sha, Om Prakash (4th Executive PLM Summit in Mumbai _ Dassault Systemes)

Seminars, Conferences and Workshops Organised

1. ICTACEM Conference -2010
2. SHIPFLOW for CFD design

Short-Term Courses, Training Programmes and Workshops organised

1. Practical shipbuilding for Mazagon Dock Ltd. Officers (13-25 Dec.2010)

Papers Published in Journals

1. A bubble population density spectrum model for the central Arabian Sea By Uphar Saxena and B. Prasad Kumar *Journal of Ship Technology* 6(2) (2010)
2. A Comparative study of Mixed Layer Depth and Barrier Layer Thickness using two different climatology atlas for the Indian Ocean By V. Naresh, A.N.V.Satyanarayana and B. Prasad Kumar *International Journal of Climatology* Accepted (0)
3. A study on port plug distortion caused by narrow gap combined GTAW & SMAW and Electron Beam Welding By Pankaj Biswas, N.R. Mandal, Parameswaran Vasu, Shrishail B. Padasalag *Fusion Engineering and Design* Vol. 86, pp99â€¹105 (2011)
4. Accurate transverse stress evaluation in composite/sandwich thick laminates using a Co HSDT and a novel post processing techniques By A Bhar S K Satsangi *Mechanics and Solids* Vol 30 No 1 pp 46-5 (2011)
5. Analysis of thermoelastic plates based on Reissners mixed variation theorem By S S Phoenix B N Singh & S K Satsangi *Composites and Structures* Vol 93 No 2 pp 590-5 (2011)
6. Analysis of welding distortion due to narrow-gap welding of upper port plug By 3. Pankaj Biswas, N.R.Mandal, ParameswaranVasu, Shrishail B.Padasalag *Fusion Engineering and Design* Vol. 85, pp780â€¹788 (2011)
7. Computing Solutions of Systems of Nonlinear Polynomial Inequalities and Equations By R. Sharma, Tae-wan Kim and O. P. Sha *International Journal of Advanced Computing (IJAC)* Vol. 2, pp 51-59 (2010)
8. Issues in offshore platform research - Part 1: Semi-submersibles By R. Sharma, Tae-wan Kim, O. P. Sha and S. C. Misra *International Journal of Naval Architecture and Ocean Engineering (IJNOE)* Vol. 2, pp. 155-70 (2010)
9. Numerical and Dimensional Analysis for Prediction of Line Heating Residual Deformations By Pankaj Biswas, N R Mandal and Om Prakash Sha *Journal of Marine Science and Application* Vol 9, pp14-21 (2010)
10. On capillary gravity wave motion in two layer fluids By S. C. Mohapatra, D. Karmakar and T. Sahoo *J. Engineering Mathematics* (available online) (2011)
11. Optimal ship tracking on a navigation route between two ports : a hydrodynamic approach By Panigrahi, J.K., Padhy, C.P., Sen, D., swain, J and Larsen, O *J. of Marine Science and Technology* on-line, 9p. (2011)
12. Optimum conceptual design of an ultra-low motion semi-submersible floating oil and gas production system By R. Sharma, Tae-wan Kim and O. P. Sha *Journal of Ocean and Ship Technology, (JOST)*, Vol1, pp.83-100 (2010)
13. Prediction of Welding Deformations of Large Stiffened Panels using Average Plastic Strain Method By 1. Pankaj Biswas1, N. R. Mandal and Sreekanta Das *Science and Technology of Welding and Joining* (2011)
14. Quantification Of Uncertainty In Manoeuvring Characteristics for Design Of Underwater Vehicles By Ray, A., Sen, D., Singh, S N and Seshadri, V *Transactions of the Royal Institution of Naval Architects, UK* online (2010)
15. Reliability based design method for coastal structures in shallow seas By B. Prasad Kumar *Indian Journal of Geo-Marine Sciences* 39(4) (2010)
16. Retrieval of Ocean Parameter using Genetic Algorithm By S.Koteswar Rao and B. Prasad Kumar *Journal of Ship Technology* Accepted (0)
17. Subdivision Algorithms and Convexity Analysis for Rational Bernstein-Bezier Triangular Patche By R. Sharma and O. P. Sha *International Journal of Computational Mathematics and Numerical Simulation (IJCMNS)* ISSN: 0973-581X (2011)
18. Surface gravity wave interaction with elastic bottom By S. C. Mohapatra and T. Sahoo *Applied Ocean Research* 33(1), 31-40 (2011)

Papers Presented in Conferences

1. ,An Expansion Formula for Wave Structure Interaction Problems in Three Dimensions, By R. Mondal, S. K. Mohanty, T. Sahoo, *Intl congress of Mathematicians*, Hyderabad, INDIA, (2010)
2. A Fourier type expansion formulae for problems in Hydroelasticity, By S. K. Mohanty, R. Mondal, T. Sahoo, *Intl congress of Mathematicians*, Hyderabad, INDIA, (2010)
3. A study on laser assisted friction stir welding of C-Mn steel plates, By Pankaj Biswas & N. R. Mandal, *International conference on Marine Structures*, Hamburg University of Technology, (2011)
4. An investigation into the maneuvering performance of ships in shallow navigation canal, By Rahul S. Dixit, Vishwanath Nagarajan, *International Conference on Mathematical Modelling and applications to industrial problems (MMIP 2011)*, National Institute of Technology Calicut, (2011)
5. Analysis of multilayered composite plates based on Reissners mixed variation theorem, By S S Phoenix B N Singh and S K Satsangi, *ICTACEM 2010*, I I T Kharagpur, (2010)
6. Damage stability, By Hari Warrior, *INA meeting*, Mumbai, (2010)
7. Development of a ship weather routing algorithm for specific application in north Indian Ocean region, By Sen, D., and Padhy, C.P., *International Conference on Marine Technology*, Dhaka, Bangladesh, (2010)

8. Finite element analysis of stiffened functionally graded annular sector plates, *By* A Bhar S K Satsangi and S K Bhattacharya, *ICTACEM 2010*, IIT Kharagpur, (2010)
9. GOA BARGES – A NEW DESIGN, *By* O P Sha and Satish Paliencar, *Workshop on Goa River barge Transportation System*, Vaso-da-Gama, Goa, (2010)
10. Goa River Systems and Trading pattern, *By* Satish Paliencar and O P Sha, *Workshop on Goa River barge Transportation System*, Vaso-da-Gama, Goa, (2010)
11. Integration of Cad and CFD for Hydrodynamic Design of Ships, *By* A Bhattacharyya and O. P. Sha, *International Maritime Technology Conference*, Mumbai, (2010)
12. Role of bottom friction in a tidal estuary under combined action of waves and currents and its validation, *By* Chitra Arora and B. Prasad Kumar, *OSICON 2011*, Chennai, (2011)
13. Sensitivity Study of Near-shore Wave induced Setup during an Extreme Event in the Bay of Bengal, *By* Prajeesh, A.G. and B. Prasad Kumar, *OSICON 2011*, Chennai, (2011)
14. Single-propeller twin-rudder system – some design and operational aspects, *By* Vishwanath Nagarajan, Sahbi Khanfir, Kazuhiko Hasegawa, Seung Keon Lee, *INMARCO-INAvation 2010*, Mumbai, (2010)
15. Twin-rudder systems – Rudder-hull interaction effect on the maneuverability of twin rudder ships, *By* S Khanfir, K Hasegawa, V Nagarajan, K Shouji, SK Lee, *Report number 1-10, New maneuvering group meeting of JTTC*, Hiroshima University, Japan, (2010)

Rural Development Centre

Head

Prof. P B Singh Bhadoria

Associate Professors

Bhowmick, Pradip Kumar	<i>Ph.D.,D.Litt.</i> , Tribal & Rural Development
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, 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. Bhowmick, Pradip Kumar, *Regular* - The Institute of Social Research and Applied Anthropology
2. Bhowmick, Pradip Kumar, *Regular* - Indian Political Economic Association
3. Lahiri, Debabrata, *Regular* - International Institute of Fisheries Economics and Trade (IIFET)
4. Lahiri, Debabrata, *Life Member* - Indian Society of Agricultural Marketing
5. Lahiri, Debabrata, *Annual* - Indian Society of Agricultural Economics
6. Lahiri, Debabrata, *Life Member* - Agricultural Economics Research Association
7. Lahiri, Debabrata, *Life Member* - Indian Academy of Social Sciences
8. Lahiri, Debabrata, *Regular* - American Agricultural Economics 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

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. 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 Gol, Rs.25.00 Lakhs)
3. 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)

Visits Abroad by Faculty Members

1. Bhowmick, Pradip Kumar - For Conducting Ph.D. Viva (Department of Anthropology, University of Dhaka, Bangladesh,) 3 days

Invited Lectures by Faculty Members

1. Social Audit as a tool of Monitoring *by* Bhowmick, Pradip Kumar (Govt. Girls College, Asansol)
2. Status of Primitive Tribal Groups in West Medinipur District, West Bengal. *by* Bhowmick, Pradip Kumar (Department of Anthropology, Ranchi University)
3. Dynamics of Leadership Role in changing scenario of Higher Education *by* Bhowmick, Pradip Kumar (Tinsukia Commerce College, Assam)

Short-Term Courses, Training Programmes and Workshops organised

1. Training on Operation and Maintenance of 2 devices for processing of Agricultural products (1 day, 7.6.2009)

Papers Published in Journals

1. Impact of Biogas Micro Turbine Based Electricity Generation on Sustainable Rural Development *By* Gokul Acharjee, Dr D. Iahiri *Journal of Economic Development and Social Development* Vol. V, No: 1 & 2, p (2009)
2. Infulence of Soil Ameliorants, Manures and Fertilizers on Bacterial Populations, Enzyme Activities and P Solubilization in Peanut Rhizosphere under Lateritic Soil *By* M. Basu, P.B.S. Bhadoria and S. C. Mahapatra *British Microbiology Research Journal* 1(1): 11-25, 2011 (2011)

Papers Presented in Conferences

1. A Study of Pregnant Mothers of Rural Areas- A Comparison of villages in West Bengal, *By* debabrata Lahiri, *National Seminar on Integrated Rural Development and Mangement: Issues, Strategies and Polict Options*, Ramakrishna Vivekanada University, Naren, (2010)
2. Tribal Women and MNREGA, *By* Pradip K. Bhowmick, *Tribal Women in Transition*, Bidisa, Narayangarh, (0)
3. Utilisation of Credit among Self Help Groups in West Bengal-An Empirical Study, *By* debabrata Lahiri, *Conference on Inclusive Growth and Microfinance Access*, Department of Managment Studies, BHU, (2011)

Reliability Engineering Centre

Head

Prof. V N Achutha Naikan

Professors

Misra, Ravindra Babu

Ph.D.(IIT Roorkee), Reliability & Safety Engg

Naikan, V N Achutha

Ph.D.(IIT Kharagpur), Reliability and Quality Engineering, Condition Monitoring, System Simulation

Assistant Professor

Chaturvedi, Sanjay Kumar

Ph.D., Reliability Modelling and Analysis, Reliability Data Analysis

Senior Lecturer

Goyal, Neeraj Kumar

Ph.D.(IIT Kharagpur), Software Reliability, System Reliability Analysis, Probabilistic Safety Assessment, Network Reliability, Accelerated Life Testing

Faculty Appointments

Neeraj Kumar Goyal

Assistant Professor

Faculty Promotions

V.N. Achutha naikan

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)

Doctoral and MS Degrees Awarded

1. Meesala Srinivasa rao : A Markov System Dynamics Simulation based System Reliability and Availability Modeling(PhD)

Member - Professional Bodies

1. Chaturvedi, Sanjay Kumar, *Annual* - IEEE
2. Chaturvedi, Sanjay Kumar, *Life* - ISTE
3. Chaturvedi, Sanjay Kumar, *Member* - IEEE
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. Misra, Ravindra Babu, *Senior Member* - IEEE, USA
8. Naikan, V N Achutha, *Regular* - Institution of Engineers (India)
9. Naikan, V N Achutha, *Regular* - IEEE Reliability Society
10. Naikan, V N Achutha, *Member* - System Society of India
11. Naikan, V N Achutha, *Member* - IEEE Society

Member - Editorial Board

1. Chaturvedi, Sanjay Kumar (0) *Associate Editor* - International Journal of Performability Engineering
2. Misra, Ravindra Babu (2009) *Member of Editorial Board* - Journal of Mathematics & System Sciences
3. Naikan, V N Achutha (2010) *Reviewer* - Society for Mining, Metallurgy, and Exploration, Inc
4. Naikan, V N Achutha (2009) *Reviewer* - International Journal of Quality and Reliability Management
5. Naikan, V N Achutha (2010) *Reveiwer* - International Journal of Production Research
6. Naikan, V N Achutha (2010) *Reviewer* - Journal of Loss Prevention in the Process Industries
7. Naikan, V N Achutha (2009) *Reviewer* - Computers and Industrial Engineering
8. Naikan, V N Achutha (2010) *Reviewer* - Defence Science Journal
9. Naikan, V N Achutha (2009) *Reviewer* - International Journal of Performability

Sponsored Research Projects

1. Design of Minimal Cost Backbone Network Layout for Given Capacity and Reliability Requirements (VEICET, IIT Kharagpur, Rs.16.00 Lakhs)
2. Reliability Assessment of The Large Complex Computer Code (Atomic Energy Regulatory Board (AERB), Mumbai, Rs.6.86 Lakhs)
3. Reliability modeling, Analysis and Prediction of 21 NA (Absolute) Pressure Transducers (ISRO, Rs.8.40 Lakhs)
4. Rotating Machinery fault Simulation lab (MHRD, Rs.52.00 Lakhs)

Consultancy Projects

1. Flood Probabilistic Safety Assessment of Kakrapara Nuclear Power Plant (Nuclear Power Corporation of India Limited (NPCIL), Mumbai, Rs.15.68 Lakhs)
2. RAMS for Garuda (DRDL Hyderabad, Rs.14.00 Lakhs)
3. Reliability Modelling and Analysis of Integrated Test Range (ITR, Chandipur, Rs.9.18 Lakhs)
4. Reliability and Maintenance Work Package for Generators/motors (RCI, Rs.6.00 Lakhs)
5. Reliability Improvement of Metering Products (Larsen& Toubro, Mysore, Rs.10.00 Lakhs)
6. Reliability Prediction, FMEA/FMECA, Modeling of LSS of Fighter Aircraft (Defense Bio-Engineering and Electromedical Lab, Bangalore, Rs.8.90 Lakhs)
7. Reliability Work Package for Missile Project: Phase II (DRDL, Hyderabad, Rs.12.50 Lakhs)
8. 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. Chaturvedi, Sanjay Kumar - To Attend RAMS 2011 Conference (Orlando, USA,) Jan 23-28, 2011 (5 days)
2. Naikan, V N Achutha - To chair a session and present paper in conference (Kuala Lumpur, Malaysia,) January 21-24, 2011

Invited Lectures by Faculty Members

1. Accelerated Life Test for Reliability and Life Estimation by Naikan, V N Achutha (BARC, Mumbai)
2. Reliability Engineering for Defence Applications by Naikan, V N Achutha (ITR Chandipur)
3. Reliability for Defence applications by Naikan, V N Achutha (MCEME, Hyderabad)

Short-Term Courses, Training Programmes and Workshops organised

1. Recent Advances in Reliability Prediction, Estimation & Testing (June 22-25 (4-days))
2. Reliability Measurement and Demonstration Methods (November 08-12, 2010)

Papers Published in Journals

1. An Approach To Evaluate Multiple Node Pair Reliability For Simultaneous Capacity Requirements By T. Chandrasheker and N.K. Goyal *IEEE Transactions on Reliability* Submitted (0)
2. Criticality Assessment Models for Failure Mode Effect and Criticality Analysis Using Fuzzy Logic By Heeralal Gargama *IEEE Transactions on Reliability* 60 102-110 (2011)
3. Fault Prediction Model by Fuzzy Profile Development of Reliability Relevant Software Metrics By A. K. Pandey and N. K.Goyal *International Journal of Computer Applications* 11(6)34-41 (2010)
4. Imperfect Repair Proportional Intensity Models for Maintained Systems By Syamsundar A and Naikan V.N.A *IEEE Transactions on Reliability* Accepted (2011)
5. Multistage Fault Prediction Model Using Process Level Software Metrics By A. K. Pandey and N. K.Goyal *International Journal of Communications in Dependability and Quality Management* 13(1)54-66 (2010)
6. Predicting Fault-prone Software Module Using Data Mining Technique and Fuzzy Logic By A. K. Pandey and N. K.Goyal *International Journal of Computer and Communication Technology (Special Issue)* 2(2-4)56-63 (2010)
7. Prediction and Ranking of Fault-prone Software Module By A. K. Pandey and N. K.Goyal *International Journal of Reliability, Quality and Safety Engineering* Communicated (0)
8. Software System Reliability and Safety Assessment: An Extended FMEA Approach By S. Relbello and N.K. Goyal *International Journal of Reliability and Safety* 4(4)366-380 (2010)

Papers Presented in Conferences

1. A hybrid Markov system dynamics approach for availability analysis of degraded systems, By M.S. Rao and V.N.A. Naikan, *Intl. Conf. on Industrial Engineering & Operations Management*, Kuala Lumpur, Malaysia, (2011)
2. A system thinking approach for time dependent availability analysis of multicomponent systems, By M.S.Rao, V.N.A. Naikan, *Second International Conference on Reliability, Safety & Hazard*, Mumbai, (2010)
3. Equipment Degradation Monitoring for Sustained Reliability, By Edwin V Kumar, Shyamsunder A. and S. K. Chaturvedi, *RAMS 2011*, Orlando, USA, (2011)
4. Equipment Health Management through Information Fusion for Reliability, By Edwin V Kumar and S. K. Chaturvedi, *RAMS 2011*, Orlando, USA, (2011)
5. Imperfect repair accelerated failure time models with time varying covariates for maintained systems, By Syamsundar, A., Kumar, D. E. V., Naikan VNA, *the 7th International Conference on Modelling in Industrial Maintenance and Reliability, MIMAR 2011*, University of Cambridge, UK, (2011)
6. Imperfect repair accelerated failure time processes for maintained systems, By A.Syamsundar, E.Vijay Kumar, V.N.A. Naikan, *Second International conference on reliability, safety and hazard*, Mumbai, (2010)
7. Reliability and life prediction for electronic connectors for control applications, By Varde PV, Agarwal M, Marathe PP, Mohapatra U, Sharma RC, Naikan VNA, *Second International Conference on Reliability, Safety and Hazard*, Mumbai, (2010)
8. Test Effort Optimization by Prediction and Ranking of Fault-prone Software Module, By A. K. Pandey and N. K.Goyal, *2nd IEEE International Conference on Reliability, Safety and Hazard*, Mumbai (India), (2010)

Rajiv Gandhi School of Intellectual Property Law

Head

Prof. Indrajit Dube

Assistant Professors

Bandyopadhyay, Tapas Kumar	, 1.Geographical Indication 2.Database Protection 3. Nano-material and Toxicity
Basu, Arindam	<i>L.L.M.(NALSAR)</i> , Ecological Economics, Social Ecology, Green Patent, Carbon Trading
Chugh, Archana	<i>Ph.D.(Univ. of Delhi)</i> , Nanobiotechnology, Plant Molecular Biology, Intellectual Property Rights
Dube, Dipa	<i>Ph.D.(Calcutta University)</i> , Victimization of Women, Police Investigation and reforms
Dube, Indrajit	<i>Ph.D.(Calcutta University)</i> , Corporate Law & Governance, Environmental Governance
M. Padmavati	<i>Ph.D.(Central Univ. Hyderabad)</i> , Plant Metabolic Pathways Recombinant Drug regulation TK and Biodiversity Agriculture Inventions
Raju, K. D.	<i>Ph.D.(JNU)</i> , WTO, International Law, Intellectual Property Law, Water Law
Shankar, Uday	<i>L.L.M.(Univ. of Delhi)</i> , 1.Constitutional Law 2.Human Rights (Social and Economic Rights) 3.Energy Law
Shreya, Matilal	<i>LL.M.(Case Western)</i> , Economics of Basic Structure Doctrine
Subramanian	<i>LLM, Euro-Master (Germany)</i> , 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 University)
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. Dube, Dipa, *Regular* - International Society of Victimology
2. Dube, Dipa, *Life* - Indian Society of Criminology
3. Dube, Indrajit, *Academic Member* - European Corporate Governance Institute, London
4. Dube, Indrajit, *Member* - Corporate Law Teachers Association, Sydney
5. M. Padmavati, *Member* - Scientific Committee Member , Food Safety Standards Authority India
6. M. Padmavati, *Life Member* - Biotech Research Society of India
7. M. Padmavati, *Member* - International Patent Information User Group
8. M. Padmavati, *Member* - Biotech Consortium India Limited
9. Raju, K. D., *Life Member* - Indian Society of International Law
10. Subramanian, *Associate Member* - Indian Society of International Law
11. Subramanian, *Member* - Society for International Economic Law

Member - Editorial Board

1. Dube, Indrajit (2009) *Editor* - International Journal on Corporate Governance
2. M. Padmavati (2010) *Editorial Member* - Biopharmaceuticals
3. Subramanian (2010) *Reviewer* - International Journal of Peace and Development Studies

Fellowships

1. Raju, K. D. (0) *Microsoft Young Faculty Fellowship - Continuing*
2. Subramanian (2010) *University Postgraduate Fellowship, University of Hong Kong*

Sponsored Research Projects

1. Agriculture Biotech Invention Resource (ISIRD, IIT Kharagpur, Rs.3.00 Lakhs)
2. Creation of Intellectual Property Resource with respect to Traditional Knowledge in India (Microsoft India Limited, Rs.2.70 Lakhs)
3. Creation of Multimedia based Courseware for E&IT students to be implemented by IIT Kharagpur (Dept. of Information Technology, Rs.115.00 Lakhs)
4. Disability and Victimization (Ministry of Social justice & Empowerment, Rs.8.04 Lakhs)
5. Evaluation of Beedi Workers Central Hospital Dhuliyyan (Ministry of Labour & Employment, Rs.2.80 Lakhs)
6. Ganga River Basin Management Plan - Policy, Law & Governance (Ministry of Environment, Rs.30.00 Lakhs)
7. IICA Hub (Ministry of Corporate Affair, Rs.40.00 Lakhs)
8. Intellectual Property and Criminal Law (Ministry of Human Resource Development, Rs.8.50 Lakhs)
9. Study of drug price control mechanism in select countries (Department of Pharmaceuticals, Ministry of Chemicals, Rs.6.00 Lakhs)
10. Traditional handicrafts in West Bengal and IP Protection (Ministry of Textiles, Rs.9.08 Lakhs)

Consultancy Projects

1. Analyzing European and US patent cases (Longbow Legal Ltd., Rs.4.00 Lakhs)
2. copyright registration of Fitness card for School Children (Sequoia Management Services Pvt. Ltd, Rs.0.59 Lakhs)
3. Develop Knowledge Management for IICA (Ministry of Corporate Affair, Rs.6.48 Lakhs)
4. GI Registration of Traditional Handloom Textiles from Orissa (Department of Textiles, Government of Orissa, Rs.19.00 Lakhs)
5. Registration of Geographical Indication (Ministry of Textile, Govt of Orissa, Rs.20.00 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)

Visits Abroad by Faculty Members

1. Shankar, Uday - To Present a Paper (School of Law, University of Reading, UK,) 3 Days
2. Shankar, Uday - To Deliver a Talk (School of Law, University of Leipzig, Germany,) 4 Days
3. Dube, Indrajit - Attending Conference (Brisbane,) 7days

Invited Lectures by Faculty Members

1. Trade Secret Protection in Biotechnology Industry by Raju, K. D. (Kolkata)
2. Women and Law by Dube, Dipa (Vidyasagar University)
3. Implementation of the TK provisions of the Biological Diversity Act of India: A perspective. by M. Padmavati (IIT Kharagpur. Session-VIII. Biodiversity and Climate Change Conference 21st December.)
4. Access and use of genetic and natural resources and benefit sharing through IP guidelines by M. Padmavati (Science City, Kolkata, September 16-17.)
5. Traditional Knowledge, Collective Marks and Plant Variety Protection and MSMEs. by M. Padmavati (Kolkata)
6. IP of Recombinant vaccines in India by M. Padmavati (DST-TIFAC orientation Program for 2010. New Delhi,)
7. Law relating to Women in India by Dube, Dipa (Vidyasagar University)
8. Introduction to the Constitution of India by Shankar, Uday (West Bengal Judicial Academy)
9. Protection of Geographical Indication by Bandyopadhyay, Tapas Kumar (Kolkata)
10. Copyright and Trademark Basics by Shreya, Matilal (Bangalore)
11. Corporate Governance of SMEs by Dube, Indrajit (38th National convention of Company Secretaries, Kolkata)

Seminars, Conferences and Workshops Organised

1. DST TIFAC Workshop on Patent Drafting

Short-Term Courses, Training Programmes and Workshops organised

1. Intellectual Property Protection in MSME Sector (4 days)

Papers Published in Journals

1. Agriculture Machinery in India: IPR potential By Padmavati M., Sengupta M.: *Journal of Intellectual Property Rights* (2011)
2. Climate Change Litigation in India: Seeking New Approach through the Application of Common Law Principles By Arindam Basu *NALSAR Law Review* Vol.5 (2010)
3. Current state of Intellectual Property of recombinant vaccines in India By Preethi Govindas M. Padmavati *Journal of Generic Medicine* 7 (3)262-269 (2010)
4. Do Developing Countries Need A Pharmaceutical Data Exclusivity Regime? By Shreya Matilal *European Intellectual Property Review* 32(6), 268-276 (2010)
5. Environmental Governance - Future Directions By Dr. Indrajit Dube *Chartered Secretary* October (2010)
6. Recombinant drug development, regulation and commercialization: An Indian Industry perspective. By Niharika Sahoo, M. Padmavati. *BioDrugs* 25(2) 105-113 (2011)

Papers Presented in Conferences

1. Competition Issues in Indian Airline Industry, By Dr. KD Raju and Ravikant Bharadwaj, *Air Law and Space Law Conference*, National Law School, Delhi, (2010)
2. Conservationism in India: Need for more Democratic Green Jurisprudence, By Arindam Basu, *17th International Interdisciplinary Conference on the Environment*, Kona, Hawaii, (2011)
3. Indecent Representation of Women : A Socio- Legal Impact Assessment, By Dipa Dube, Bhagwan R. Gawali, *National Seminar on Law Impact Assessment*, Gujrat India, (2011)
4. Is Corporate Governance the answer to Corporate Structure Failure, By Dr. Indrajit Dube, *Corporate Law Teachers Associations*, Brisbane, (2011)
5. Laws Relating to Women in India, By Dipa Dube, *UGC National Orientation Programme on Perspectives on Women Studies: Contemporary Issues and Curriculum Development*, Vidyasagar University, Midnapur, (2011)
6. Utilising Compulsory Licenses as a means to access Platform Technologies in the Health care Sector, By Raju KD and Roopa KL, *IDRC conference on Public Health*, New Delhi, (2010)
7. Victimization fo Disabled WOMen in India: An Empirical Study, By Dipa Dube, Bhagwan R. Gawali, *3rd International and 7th Biennial conference of the Indian Society of Victimology*, Bhubaneshwar India, (2011)
8. Women and Law in India, By Dipa Dube, *Protecting the Rights of the Marginalized Women: Modes and Challenges*, Vidyasagar University Midnapur, (2011)

Rajendra Mishra School of Engineering Entrepreneurship

Head

Prof Dhruves Biswas

Professors

Biswas, Dhruves

Ph.D(Illinois, USA), Research in III-V semiconductor devices technology, RF/ Ultra high speed GaAs/InP on Si for High Performance (Power, Linearity, Frequency) Electronics, Optimization of wide band gap compound semiconductor heterostructure based RF front end devices, High efficiency optical devices using GaN/InGaN multijunction heterostructures, Research in entrepreneurship management theory and practice, The Education-Enterprise model for economic development, Technology interventions in Growth Ventures, Health Exchange Systems, enterprise and impact

Adjunct Professors

Guin, Kalyan Kumar

B.Tech (IIT Kharagpur), Marketing Research, Quant Modeling of Business Strategy, Entrepreneurship

Thrust Areas

1. Education-Enterprise models
2. Technology Interventions for Growth Ventures
3. Strategic Delivery Models for healthcare based business
4. Technology Design of Healthcare Communication
5. Architecture of Growth Ventures

Brief Description of on-going activities

IIT Kharagpur has revamped its entire entrepreneurial ecosystem and has integrated the academic and practice aspects of entrepreneurship education and the result of this integration is Rajendra Mishra School of Engineering Entrepreneurship (RMSoEE) This is for the first time that a Higher Education Institution of technology has established such a kind of school in India where the output will be an entrepreneur and a potential world class enterprise. In addition to establishing a core of academic resources in entrepreneurial management, the School leverages the academic engineering departments of the Indian Institute of Technology Kharagpur , School of Management, School of Intellectual Property Law, School of Medical Sciences and the Science and Technology Entrepreneurs' Park (STEP).

Students Intake - Thirteen student from several branches of engineering are already pursuing their 4th departmental semester at the RMSoEE . Fifteen students have already opted for RMSoEE and we are expecting full strength of 20 students in the upcoming autumn semester

Dual degree in entrepreneurship (B.Tech+ M.S) - Students admitted through JEE to this School will be awarded two degrees: (1) B. Tech degree in any branch of engineering and (2) Master degree in entrepreneurship, in a period of five years. Each student will be attached to an innovation laboratory from 2nd year onwards.

RMSoEE Student Activities –Students from RMSoEE participated in the GSM mobile application based Mobile World Congress in Barcelona, Spain February 14-17, 2011. This competition was sponsored under GVL & RMSoEE collaborations.

Students of RMSoEE took part in a Countrywide Innovation mapping projects at Higher education Institutions and Research institutions under the stewardship of Dr A S Rao, Director, CIE, IIM-Ahmedabad.

GVL participants visit RMSoEE, IIT-Kharagpur-Global Venture Lab,Finland Partners headed by Marko Seppa, Christian Aspergen, Merie Joseph, Leni Kurviolli visited RMSoEE campus and

addressed the students of RMsOE on entrepreneurship and innovation scenario a Finland. They discussed about various international collaborative research.

Academic Performances

Awards & Honours	1
Member-Professional Bodies	3
Member-Editorial Board	2
Visits Abroad by Faculty Members	4
Lectures by Visiting Experts	5
Short term Course and Training Programs Organized	1

Rubber Technology Centre

Head

Prof. T. K. Chaki Up to 30.09.2010
Prof. Golok Behari Nando From 01.10.2010

Professors

Bhowmick, Anil Kumar *Ph.D.(IIT Kharagpur)*, Rubber Technology, Thermoplastic Elastomers and TPVs, Composites, Polymer Blends and Alloys, Nanocomposites, Electron beam processing, Adhesion, Polymer Modification

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 Insulation for High Voltage application, Polymer and Composites for Electrical and Electronic applications, Textile Technology for Rubber Product

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

Tripathy, Deba Kumar *Ph.D.(IIT Kharagpur)*, Material Technology, Rubber Engineering, Production Engineering, Metal Forming, Micro Cellular Rubber, Nano composite

Associate Professor

Singha, Nikhil Kumar *Ph.D (IIT Bombay)*, Tailor-made new polymers & rubbers via Controlled Polymerization like ATRP & RAFT, 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

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

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

Faculty Appointments

Nil

Nil

Nil

Faculty Promotions

Singha, Nikhil Kumar Associate Professor

Faculty Retirement

Nil

Faculty Re-employment (Upto 65 years age)

Nil

Faculty Resignation

Nil

New Academic Programmes

Nil

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. Chaki, Tapan Kumar, *Life* - Plasma Science Society of India
2. Chaki, Tapan Kumar, *Life* - Society of Polymer Science
3. Chaki, Tapan Kumar, *Life* - Indian Thermal analysis Society, India
4. Chaki, Tapan Kumar, *Life* - Materials Research Society of India
5. Chaki, Tapan Kumar, *Life* - Indian Rubber Institute, India
6. Chakraborty, Kalyan Kumar, *Life member* - Institution of Engineers
7. Chakraborty, Kalyan Kumar, *Life Member* - Phi Lambda upsilon, USA
8. Chakraborty, Kalyan Kumar, *Life Member* - Indian Institute of Chemical Engineers
9. Chakraborty, Kalyan Kumar, *Life Member* - Asiatic Society
10. Chattopadhyay, Santanu, *Member* - Materials Manufacturing Ontario (Ontario, Canada)
11. Chattopadhyay, Santanu, *Life Member* - Society for Polymer Science, India
12. Khastgir, Dipak, *Member* - American Chemical Society, Rubber Division.
13. Khastgir, Dipak, *Life Member* - Indian Thermal Analysis Society
14. Khastgir, Dipak, *Life Member* - Polymer Society of India
15. Nando, Golok Behari, *Regular* - American Chemical Society, Rubber Division, Akron, Ohio, USA
16. Nando, Golok Behari, *Life* - Materials Research Society of India,
17. Nando, Golok Behari, *Life* - Society for Polymer science , India
18. Nando, Golok Behari, *Regular member* - Indian Rubber Institute
19. Nando, Golok Behari, *Life* - Indian Association for Radiation Protection
20. Singha, Nikhil Kumar, *Regular* - Member of Society of Polymer Science of India
21. Singha, Nikhil Kumar, *Regular* - Member of Materials Research Society of India (MRSI)
22. Singha, Nikhil Kumar, *Regular* - Member of American Chemical Society (ACS), Rubber Division, USA

Member - Editorial Board

1. Nando, Golok Behari (2010) *Associate Editor* - International Journal of Current Chemistry

Sponsored Research Projects

1. Block and Graft Copolymers in Emulsion (BGC) (Asian Paints Limited, Rs.10.00 Lakhs)
2. Development of Advanced Polymer Materials for Improved electrical/ ESD properties using nana additives for space application (KCSTC, IIT Kharagpur, Rs.7.50 Lakhs)
3. Development of Electron Beam Irradiated Composites based on Multiwalled Carbon Nanotubes in polymer Matrices (DAE Mumbai, Rs.14.60 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. Electron Beam Curing of Functional Elastomers; A Novel Approach (EBC) (BRNS, DAE, Mumbai, Rs.14.48 Lakhs)
9. Failure analysis of outdoor high voltage insulators from Silicone rubber and Silicone rubber blends used by Indian Railways(to be started) (Indian Railways, Rs.67.00 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, Govt. of 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 Microporous polymeric membrabnes for medical applications (Department of BioTechnology , Ministry of Science and Technology, Govt of India, Rs.34.44 Lakhs)
14. Novel Polymers by Controlled Radical Ring Opening Polymerization (CRROP) of Vinyl Cycloalkane (NVC) (DST, New Delhi, Rs.23.08 Lakhs)
15. Segmented Polyurethane Laponite clay nano composites for fire and flammability (ISRO, Bangalore, Rs.10.52 Lakhs)
16. Study on Improvement of Adhesion of EPDM based Nanocomposites in Solid Rocket Thermal Insulation Application (KCSTC, IIT Kharagpur, Rs.14.26 Lakhs)
17. Tailor-made graft copolymerization on elastomers using controlled radical polymerization (CRP) (CSIR, New Delhi, Rs.11.30 Lakhs)
18. The Influence of Magnetic Nanoparticles to Enhance Thermomechanical Properties of SMPs (DRDO, Kanpur, Rs.9.90 Lakhs)

Consultancy Projects

1. Analysis of Polymer Emulsion (EMPL) (Asian Paints Limited, Rs.0.50 Lakhs)

2. Characterization of Emulsion samples (CESP) (Asian Paints Limited, Rs.0.80 Lakhs)
3. Development of Bondor compound without lead oxide (Phoenix Yule Limited, Kalyani, West Bengal, Rs.2.80 Lakhs)
4. Development of Elastomeric Bearings (Hindustan Aeronautics Limited(HAL), Foundry and Forge Division, Bangalore India, Rs.2.25 Lakhs)
5. Development of Two Part Compound for conveyor belt (Phoenix Yule, Kalyani, Rs.3.20 Lakhs)
6. Testing of PVC Airblown Samples (Banik Rubber Industries, Rs.0.30 Lakhs)

Visits Abroad by Faculty Members

1. Chattopadhyay, Santanu - Attending International Conference, Oral, 3rd MFMS and Delivering lecture at the University (Chonbuk National University, Jeonju, South Korea,) Seven Days
2. Nando, Golok Behari - To participate in the 178th Technical Meeting of the Rubber Division , ACS and Visit University of A (Milwaukee Wisconsin and Akron, Ohio , USA,) 10th October, to 17th October, 2010
3. Nando, Golok Behari - To Participate in the International Conference on Environmental Science and Technology and visit Indu (Houston, Texas, USA,) 7th June to 16th July,2010
4. Chattopadhyay, Santanu - Attending international Conference, Oral Presentation PFAM-19, January 2011 (The University of Auckland,) Seven Days
5. Singha, Nikhil Kumar - To deliver an Invited talk in the International Conference (Kathmandu, Nepal,) 4 days in November, 2010
6. Khastgir, Dipak - To deliver invited talk on Polymer Blends Chonbuk National University (Jeonju Korea,) Sept,3-5, 2010
7. Khastgir, Dipak - To deliver Keynote Lecture in 3rd International Conference on Multifunctional Materials & Structure (Jeonju, Korea,) September,14-18, 2010
8. Chaki, Tapan Kumar - To present paper in the XIX International Symposium on Processing and fabrication of advanced Mater (University of Auckland, New Zealand,) 14-17 January,2011

Invited Lectures by Faculty Members

1. Polymer Blends, Science and Technology by Khastgir, Dipak (Chonbuk National University Korea)
2. Electron beam crosslinking of ethylene alkyl acrylate copolymers by Chaki, Tapan Kumar (Mumbai)
3. Novel Thermoplastic Elastomer from LLDPE/EMA Blends by Chaki, Tapan Kumar (Mumbai)
4. Influence of electron beam crosslinking of ethylene alkyl acrylate copolymers for cable application by Chaki, Tapan Kumar (Delhi)
5. Effect of electron beam radiation and sensitizer (TMPTMA) level on by Chaki, Tapan Kumar (Delhi)
6. Studies on Nanotube Networks in Polymer Nanocomposites by Chaki, Tapan Kumar (Auckland, New Zealand)
7. Thermoplastic Polyurethane Laponite Clay Nanocomposites by Nando, Golok Behari (Dow Chemicals , Freeport, Houston, USA)
8. Structure-Property relationship on the Thermoplastic Polyurethane -modified Laponite Clay Nanocomposites by Nando, Golok Behari (University of Akron, Akron, Ohio, USA)
9. Macromolecular Engineering via Controlled Radical Polymerization by Singha, Nikhil Kumar (National Chemical Laboratory, Pune)
10. Controlled Radical Polymerization in Polymer Chemistry by Singha, Nikhil Kumar (Kathmandu, Nepal)
11. All Acrylate Block Copolymers by Atom Transfer Radical Polymerization (ATRP) by Singha, Nikhil Kumar (Indian Institute of Technology, Delhi)
12. Rubbers Used in Conveyor Belts by Chattopadhyay, Santanu (Phoenix Yule Ltd., Kalyani)
13. High energy materials based on TPE by Chattopadhyay, Santanu (HEMRL, Pune)

Papers Published in Journals

1. Copolymerization of styrene with an olefin via atom transfer radical polymerization By Kavitha A. Amalin, Singh Ajay, Singha Nikhil K. *Polymer International* DOI: 10.1002/PI.3040 (2011)
2. Melt viscoelastic properties of peroxide cured polypropylene-ethylene octene copolymer thermoplastic vulcanizates By Babu, R. R. Singha, N. K. Naskar, K. *Polymer Engineering & Science* 50(3), 455-467 (2010)
3. Polyaniline based anticorrosive and anti-molding coating By Bhadra, Sambhu Singha, Nikhil K. Khastgir, Dipak *Journal of Chemical Engineering and Materials Science* 2(1), 1-11 (2011)
4. Smart All Acrylate ABA Triblock Copolymer bearing Reactive Functionality via Atom Transfer Radical Polymerization (ATRP) Demonstration of a Click Reaction in Thermoreversible Property By Kavitha, A. and Singha*, Nikhil K. *Macromolecules* 43(7), 3193-3205 (2010)
5. A study on dynamic rheological characterization of electron beam crosslinked high vinyl styrene-butadiene-styrene block copolymer By S. Dutta, Y. K. Bhardwaj and S. Sabharwal and K. Naskar* *Polymer Bulletin* 66, 637 (2011)
6. Application of new generation carbon silica dual phase filler in passenger car tyre tread compounds By P. Kumar, N. N. Kunti, A. K. Chandra and K. Naskar* *Gummi Fasern Kunststoffe* 63, 460 (2010)
7. Characterization of electron beam irradiated ethylene methyl acrylate copolymer By Mongal, Nilambar Chakrabarty, Debabrata Bhattacharyya, Rupa Chaki, Tapan Kumar Bhattacharya, Pinaki *Ind. Eng. Chem Res.* 49(16), pp 711 (2010)
8. Covulcanization of LLDPE/EMA blends using dicumyl peroxide By J. S. Borah, K. Naskar and T. K. Chaki *Journal of Applied Polymer Science* Accepted (2011)
9. Development of high performance EMI shielding material from EVA, NBR, and their blends: effect of carbon black structure By Rahaman M. Chaki T.K. Khastgir D. *Journal of Materials Science* 46:3989-3999 (2011)
10. Dielectric properties of LDPE/EVA Based TPE System: Effect of Nano Silica and Electron Beam Irradiation By S. Hui, S. Chattopadhyay and T. K. Chaki *Polymer Engineering and Science* DOI: 10.1002/pen.215 (2010)
11. Dynamic and Capillary Rheological Studies of Nano Silica Filled LDPE-EVA Based Thermoplastic Elastomer (TPE): Effect of Electron Beam Irradiation By Shalmali Hui, Tapan Kumar Chaki and Santanu Chattopadhyay *Journal of Applied Polymer Science* 119 (2011)

12. Dynamic Mechanical Analysis of Electron beam Irradiated waste Polythene and its blends with virgin high density and low density polyethylene By S.Satapathy, A.Nag and G.B.nando *Journal of Elastomers and Plastics* 43,33-48 (2011)
13. Dynamic mechanical, thermal, physico-mechanical and morphological properties of LLDPE/EMA blends By Jyoti S. Borah, T. K. Chaki *J. Polym Res* DOI: 10.1007/s10965 (2010)
14. Dynamic rheological, morphology and mechanical By Jyoti S. Borah, T. K. Chaki *J. Polym Res* DOI (2010)
15. Dynamic Stress Relaxation Behavior of Nanogel Filled Elastomers By S. Mitra, S. Chattopadhyay and A. K. Bhowmick *Journal of Polymer Research* DOI 10.1007/s 10965- (2010)
16. Dynamically Vulcanized Blends of Polypropylene and Ethylene Octene Copolymer: Influence of Various Coagents on Thermal and Rheological Characteristics By R. R. Babu, N. K. Singha and K. Naskar* *Journal of Applied Polymer Science* 117, 1578 (2010)
17. Effect of Cloisite and modified Laponite clays on the rheological behavior of TPU-clay nanocomposites By A.K. Mishra, S. Mushtaq, G.B. Nando and S. Chattopadhyay *Rheologica Acta* 49 (2010)
18. Effect of controlled electron beam irradiation on the rheological properties of nanosilica-filled LDPE-EVA based thermoplastic elastomer By (92) S. Hui, S. Mushtaq, T. K. Chaki and S. Chattopadhyay *J Appl Polym Sci* ol.119,4,2153-2166 (2011)
19. Effect of Organoclay Platelets on Morphology and Properties of LLDPE/EMA Blends By Jyoti Sankar Borah, Niranjan Karak, Tapan Kumar Chaki *Material Science and Engineering* doi:10.1016/j.msea (2010)
20. Effect of polar modifications on cure characteristics, solvent resistance and thermo-mechanical properties of metallocene-based polyolefinic elastomers By Biswas, Anjan Singha, Nikhil K. Bhowmick, Anil K. *European Polymer Journal* 46(2), 364-373 (2010)
21. Effect of Recycled EVA as Modifier on the various Properties of Bituminous Binder for Road Application By M. Naskar, T.K. Chaki, K.S. Reddy *Advanced Materials Research* 214, 339-343, (2011)
22. Effect of Tethering on structure-property relationship of TPU-dual modified Laponite clay nanocomposites by Ex-situ and In-situ techniques By A. K. Mishra, S. Chattopadhyay, P.R. Rajamohan and G.B. Nando *Polymer* 52 (2011)
23. Effect of waste plastic as modifier on thermal stability and degradation kinetics of bitumen/waste plastics blend By M. Naskar, T.K. Chaki, K.S. Reddy *Thermochimica Acta* 509, pp.128-134. (2010)
24. Effects of covalent and dual modification of clays on the structure and property of TPU-Laponite clay nanocomposites By Ananta K. Mishra, Rajamohan P. R., Golok B. Nando and Santanu Chattopadhyay *Advanced Science Letters* 4 (2010)
25. Electron beam irradiation of waste polyethylene , virgin Polyethylene and their blends reinforced with short PET fibres By S.Satapathy, A.Nag and G.B.nando *Journal Of Thermoplastic Composite materials* 24 (2011)
26. Electron Beam Modification of Chlorinated Polyethylene By Mandal, K Mongal, N. R. Singha, Nikhil K., *Rubber Chemistry and Technology* (In press) (2011)
27. Engineering Properties of Electron Beam Cross Linked Ethylene Methyl Acrylate Copolymer By Mongal, Nilambar Chakrabarty, Debabrata Bhattacharyya, Rupa Chaki, Tapan Kumar Bhattacharya, Pinaki Engineering *J Appl. Polym. Sci* 117, 1, pp. 75-83 (2010)
28. Halogen-free flame retardant PUF: Effect of melamine compounds on mechanical, thermal and flame retardant properties By Thirumal, M. Khastgir, Dipak Nando, G. B. Naik, Y. P. Singha, Nikhil K. *Polymer Degradation and Stability* 95(6), 1138-1145 (2010)
29. Halogen-free flame-retardant rigid polyurethane foams: Effect of alumina trihydrate and triphenylphosphate on the properties of polyurethane foams By Thirumal, M. Singha, Nikhil K. Khastgir, Dipak Manjunath, B. S. Naik, Y. P., *Journal of Applied Polymer Science* 116(4), 2260-2268 (2010)
30. Influence of electron beam radiation on mechanical and thermal properties of styrene-butadiene-styrene block copolymer By Datta, Sanjoy Singha, Nikhil K. Naskar, Kinsuk Bhardwaj, Y. K. Sabharwal, Sunil *Journal of Applied Polymer Science* 115(5), 2573-2581 (2010)
31. Influence of silica and electron beam radiation on the properties of a high vinyl styrene-butadiene-styrene block copolymer By S. Dutta, N. K. Singha, Y. K. Bhardwaj and S. Sabharwal and K. Naskar* *Journal of Polymer Research* DOI:10.1007/s10965 (2010)
32. Influence of surface modified nanoclay in self-organized nanostructure of segmented polyurethane composites By M. Mondal, P. K. Chattopadhyay, D.K. Setua, N.C. Das, S. Chattopadhyay *Polymer International* In Press (2011)
33. Interrelationships of morphology, thermal and mechanical properties in uncrosslinked and dynamically crosslinked PP/EOC and PP/EPDM blends By Babu, R. R. Singha, N. K. Naskar, K., *eXPRESS Polymer Letters* 4(4), 197-209. (2010)
34. Modification of Chlorinated Poly(propylene) via Atom Transfer Radical Graft Copolymerization of 2-Ethylhexyl Acrylate: A Brush-like Graft Copolymer By Haloi, Dhruba J. Naskar, Kinsuk Singha, Nikhil K *Macromolecular Chemistry and Physics* 212(5), 478-484 (2011)
35. Optimization of Mechanical Properties of Photo-Crosslinked Styrene Butadiene Styrene (S-B-S) block copolymers using statistical experimental design By S.Datta, R.R.Babu, Y.K.Bhardwaj, S.Sabharwal and K. Naskar* *Materials Sciences and Applications* Accepted (2011)
36. Phase morphology and melt rheological behaviour of uncrosslinked and dynamically crosslinked polyolefin blends: role of macromolecular structure By R. R. Babu, N. K. Singha and K. Naskar* *Polymer Bulletin* 66, 95-118 (2011)
37. Polyaniline based anticorrosive and anti-molding By Sambhu Bhadra, Nikhil K. Singha and Dipak Khastgir *Journal of Chemical Engineering and Materials Science* Vol. 2(1), pp. 1-11 (2011)
38. Prediction of swelling in ternary particulate rubber-nanocomposites: Development of modified Kraus equation By Pijus K. Chattopadhyay and Santanu Chattopadhyay *Rubber Chemistry and Technology* 84 (2011)
39. Preparation and Characterization of Elastomer Based Nanocomposite Gels using a Unique Latex Blending Technique By S. Mitra, S. Chattopadhyay and A. K. Bhowmick *Journal of Applied Polymer Science* 118 (2010)
40. Preparation and characterization of TPEs and TPVs from Waste Polypropylene and Acrylonitrile Butadiene Rubber By S.Satapathy, A.Nag, G.B.Nando *Journal Of Polymers and Environment* 18, 155-166 (2010)
41. Reactive EB processing of polymer compounds By U. Gohs A. Leuteritz, K. Naskar, S. Volke, S. Wiessner and G. Heinrich *Macromolecular Symposia* 296, 589 (2010)
42. Recent developments on thermoplastic elastomers by dynamic vulcanization By R. R. Babu and K. Naskar* *Advances in Polymer Science* DOI10.1007/12-2010 (2010)
43. Recycled EVA/ Bitumen Blends: An Advanced Technology for Road Construction By Moumita Naskar, K Sudhakar Reddy and Tapan Kumar Chaki *Rubber Chem Review* Vol.XXXX, 2 (2010)
44. Rheological signatures of ethylene methacrylate-multwall carbon nanotube nanocomposites By Utpal Basuli, Tapan Kumar Chaki and Santanu Chattopadhyay *Polymers for Advanced Technologies* 21 (2010)
45. Self organization of macromolecules in novel TPU-clay nanocomposites By M. Mondal, P.K. Chattopadhyay, D.K. Setua, N.C. Das and S. Chattopadhyay *Advanced Materials Research* 31 (2010)

46. Structure-Property of TPU-Clay Nano composite based on covalent and dual modified Laponite By A.K.Mishra, P.R.Rajmohan, G.B.Nando and S.Chattopadhyay *Advanced Science Letters* Volume 4, Pages 1-9 (2011)
47. Studies of Reinforcement Behavior of Unique Elastomer Based Nanocomposite Gels By S. Mitra, S. Chattopadhyay and A. K. Bhowmick *Polymer Composites* 52 (2011)
48. Synthesis of conductive adhesives based on epoxy resin and polyaniline. DBSA using the in situ polymerization and physical mixing procedures By 2. Bluma G. Soares, Micheli L. Celestino, Matheus Magioli, Viviane X. Moreira, Dipak Khastgir *Synthetic Metals* 160, 1981 (2010)
49. Synthesis of poly(2-ethylhexyl acrylate)/clay nanocomposites by in situ living radical polymerization By Haloi, Dhruva J. Singha, Nikhil K. *Journal of Polymer Science, Part A: Polymer Chemistry* 49(7), 1564-1571 (2011)
50. Temperature dependent electrical properties of Conductive Composites (Behavior at cryogenic temperature and high temperatures) By Rahaman, T. K. Chaki & D Khastgir *Advanced Materials Research* 123-125, 447-450. (2010)
51. The effect of different carbon fillers on the electrical conductivity of ethylene vinyl acetate copolymer-based composites and the applicability of different conductivity By Sohi N.S.J., Bhadra S., Khastgir. D *Carbon* 49,1349 (2011)
52. Thermal and Morphological Analysis of Thermoplastic Polyurethane-clay Nanocomposites: Comparison of efficacy of dual modified Laponite vs. commercial Montmorillonites By M. Mondal, Pijus K. Chattopadhyay, S. Chattopadhyay and Dipak Kumar Setua *Thermochimica Acta* 510 (2010)
53. Thermo-mechanical and Rheological Behavior of Polymer Nanocomposites Based on Ethylene-Methyl Acrylate (EMA) and Multiwalled Carbon Nanotube (MWNT) By U. Basuli, T. K. Chaki, S. Chattopadhyay *Plastics, Rubber and Composites: Macromolecular Engineering* DOI 10.1179/1743289 (2011)
54. Thermogravimetric and dynamic mechanical analysis of LLDPE/EMA blends By Jyoti S Borah, Tapan Kumar Chaki *Journal of Thermal Analysis and Calorimetry* (2010)

Papers Presented in Conferences

1. AC Impedance Analysis and Dielectric Studies of Polyether Sulfone/Multiwalled Carbon Nanotube Nanocomposites, By Lalatendu Nayak, D Khastgir and T K Chaki, *International conference on Advances in Polymer Science and Rubber Technology (APSRT)*, IIT Kharagpur, (2011)
2. Application of new generation carbon silica dual phase filler in passenger tyre tread compounds, By P. Kumar, N. N. Kunti, A. K. Chandra and K. Naskar, *IRC-2010 International Rubber Conference*, Mumbai, India, (2010)
3. Conductive Polymer Composites for Multifunctional Applications, By Dipak Khastgir (Keynote Speaker), *3rd International Conference on Multifunctional Materials and Structures*, Jeonju, South Korea, (2010)
4. Controlled Radical Polymerization of an Acrylate Bearing a Bicyclic Ring in its Pendant Group, By Prithwiraj Mandal, Nikhil K. Singha*, *International Conference on Advances in Polymer Science and Rubber Technology (APSRT)*, Indian Institute of Technology Kharagpur, (2011)
5. Copolymerization of Styrene and 2-Ethylhexylacrylate via Atom Transfer Radical Polymerization (ATRP), By Bishnu P. Koiry, Nikhil K. Singha, *Macro-2010*, Indian Institute of Technology, Delhi, (2010)
6. Development of Rubber Composite having both Fire and Oil Resistance Characteristics for Industrial Applications, By A. Guha, C. Saha and T K Chaki, *International conference on Advances in Polymer Science and Rubber Technology (APSRT)*, IIT Kharagpur, (2011)
7. Development of thermoplastic vulcanizates (TPVs) using electron induced reactive processing, By M. Mondal, V. Thakur, S. Rooj, U. Gohs, K. Naskar, U. Wagenknecht and G. Heinrich, *APSRT 2011 International Conference*, IIT Kharagpur, (2011)
8. Effect of Electron Beam Crosslinking of Ethylene Alkyl Acrylate Copolymers for Cable Application, By Tapan Kumar Chaki, Nilambar Mongal and Subhendu Bhandari, *International Conference on Radiation Processing*, Delhi, India, (2010)
9. Effect of electron beam irradiation on the mechanical and dielectric properties of LDPE and PDMS rubber blends, By R. Giri, K. Naskar and Golok. B. Nando, *NAARRI 2010*, BARC, Mumbai, India, (2010)
10. Effect of Electron Beam on Ethylene Methyl, Ethyl and Butyl Acrylate Copolymers, By Rupa Bhattacharyya, Nilambar Mongal, Debabrata Chakraborty, Tapan Kumar Chaki, Pinaki Bhattacharyya, *International conference on Advances in Polymer Science and Rubber Technology (APSRT)*, IIT Kharagpur, (2011)
11. Effect of electron beam radiation and sensitizer(TMPTMA) level on ethylene methyl acrylate (EMA), By T K Chaki and S Bhandari, *Macro 2010*, New Delhi, India, (2010)
12. Effect of Nanosilica on Mechanical Properties of Rigid Polyurethane Foam, International Conference on Advances in Electron Microscopy and Related Techniques, By Y. P. Naik, B. S. Manjunath, M. Thirumal, D. Khastgir, N. K. Singha, , BARC, Mumbai, (2010)
13. Effect of polyol structure on coating properties of the water-based polyurethane dispersion (PUDs),. By N. C. Swain, M. Nate, M. Parab, M. Digar, N. K. Singha*, *International Conference on Advances in Polymer Science and Rubber Technology (APSRT)*, Indian Institute of Technology Kharagpur, (2011)
14. Effect of processing condition of Electrochemical synthesis of Polyaniline on its structure and properties, By S.Bhandari, N.K.Singha, D Khastgir, *International Conference on Advances in Polymer Science and Rubber Technology (APSRT)*, Indian Institute of Technology Kharagpur, (2011)
15. Effect of Processing Condition of Electrochemical Synthesis of Polyaniline on its Structure and Properties, By S Bhandari, N.K. Singha, D Khastgir, *International Conference on Advances in Polymer Science and Rubber Technology(APSRT)*, IIT Kharagpur, (2011)
16. Electrical properties of ethylene acrylic elastomer loaded with conducting carbon black, By B. P. Sahoo, K. Naskar and D. K. Tripathy, *55th DAE- Solid State Physics Symposium*, Manipal, India, (2010)
17. Electron Beam Crosslinking of Ethylene Alkyl Acrylate Copolymers, By T K Chaki and S Bhandari, *NAARRI International Conference-2010*, Mumbai, India, (2010)
18. Electron induced reactive processing of polymers, their blends and composites, By U. Gohs, S. Rooj, V. Thakur, K. Naskar, S. Volke, U. Wagenknecht and G. Heinrich, *Austrian-Slovenian Polymer meeting 2010*, Leoben, Austria, (2010)
19. High Performance Bituminous binder Modified with Various Waste Plastics, By M. Naskar, K S Reddy and T K Chaki, *International conference on Advances in Polymer Science and Rubber Technology (APSRT)*, IIT Kharagpur, (2011)
20. Impedance Analysis of and Dielectric studies of Polyethersulphone multiwall carbon nanotubes nano composites, By L. Nayak, D. Khastgir, T. K. Chaki, *Advances in Polymer Science and Rubber Technology(APSRT-2011)*, IIT Kharagpur, (2011)

21. Investigation of the hybrid filler microstructure in the performance property development within epoxidized natural rubber based ternary particulate nanocomposites, By P.K. Chattopadhyay and S. Chattopadhyay, *International Rubber Conference and Exhibition-2010*, Mumbai, India, (2010)
22. Investigations on the use of Nano structured Fly Ash as a Novel Reinforcing Filler in Styrene Butadiene Rubber: A comparison with Conventional Reinforcing Fillers, By Thomas Paul k, K.K.Chakraborty and G.B.Nando, *International Rubber Conferenc and Exhibition IRCO-2010*, Mumbai, India, (2010)
23. LLDPE/EMA/Organoclay Nanocomposites: Effect of Peroxide Curing, By J S Borah and T K Chaki, *International conference on Advances in Polymer Science and Rubber Technology (APSRT)*, IIT Kharagpur, (2011)
24. Mechanical,Electrical and Electromagnetic Interference Shielding Effectiveness of Carbon Fibre Filled Ethylene VinylAcetate and Acrylonitrile Butadiene Co polymer and their blends, By M. Rahaman,T.K. Chaki, D. Khastgir, *International Conference on Advances in Polymer Science and Rubber Technology(APSRT 2011)*, IIT, Kharagpur, (2011)
25. Morphology, Thermal and Mechanical Properties of a Novel Insulation Compound based on Polyimide filled EPDM Nanocomposites for Space Applications, By P K Guchhait, Sangita Singh and T K Chaki, *International conference on Advances in Polymer Science and Rubber Technology (APSRT)*, IIT Kharagpur, (2011)
26. Natural Rubber –the mother of all Polymers, By Golok B Nando, Radhashyama Giri, K.Naskar, *National Workshop in Recent Advances in Thermal Analysis of Polymers and Composites*, IIT Kharagpur, India, (2011)
27. Novel avenue to develop thermoplastic elastomers with excellent performance properties, By K. Naskar, U. Gohs, U. Wagenknecht and G. Heinrich, *IRC-2010 International Rubber Conference*, Mumbai, India, (2010)
28. Novel dynamically crosslinked thermoplastic elastomers based on PP/EOC blends for automotive applications, By R. Rajseh Babu, N. K. Singha and K. Naskar, *PFAM-19 International Conference*, Auckland, New Zealand, (2011)
29. Novel morphology development of TPU-clay nanocomposites based on single & dual modified Laponite, By A.K. Mishra, G.B. Nando and S. Chattopadhyay, *PFAM-19*, Auckland, New Zealand, (2011)
30. Novel Self-healing Material via Controlled Radical Polymerization, By Nikhil K. Singha, A. Kavitha, *International Symposium in Material Education*, Pune, (2011)
31. Novel Thermoplastic Elastomers from LLDPE/EMA blends, By Jyoti S Borah and Tapan K Chaki, *International Rubber Conference and Exhibition 2010*, Mumbai, India, (2010)
32. Optimization of mechanical properties of UV-crosslinked SBS Block copolymer using statistical experimental design, By S. Dutta, R. R. Babu, Y. K. Bhardwaj, S. Sabharwal and K. Naskar, *APSRT 2011 International Conference*, IIT Kharagpur, (2011)
33. Polymerâ€“Nanosilicaâ€“Carbon Nanotube Nanocomposites: Unique Nanofiller Synergistic Effect, By U. Basuli, T.K. Chaki, and S. Chattopadhyay, *International conference on Advances in Polymer Science and Rubber Technology (APSRT)*, IIT Kharagpur, India., (2011)
34. PP-EPDM thermoplastic elastomers by electron induced reactive processing, By M. Mondal, V. Thakur, K. Naskar, U. Gohs, U. Wagenknecht and G. Heinrich, *Polywheel 2010 International Symposium*, Dresden, Germany, (2010)
35. PP-EPDM thermoplastic elastomers by electron induced reactive processing, By K. Naskar, U. Gohs, U. Wagenknecht and G. Heinrich, *ECCM 14 International Conference*, Budapest, Hungary, (2010)
36. Probing the Effect of Compounding Ingrediends on the Degradation of Polyester Tyre Cords, By S Nayer,V Purohit, A.V. Iyer, T.K.Thomas, D Khastgir, *International Rubber Conference (IRC-2010)*, Mumbai,India, (2010)
37. Random and Block Copolymers of 2- Ethylhexylacrylate and Styrene via Atom Transfer Radical Polymerization (ATRP), By Bishnu P. Koiry, S. Ata, Nikhil K. Singha, *International Conference on Advances in Polymer Science and Rubber Technology (APSRT)*, Indian Institute of Technology Kharagpur, (2011)
38. Role of electron beam radiation in compatibilizing immiscible blends of LLDPE and PDMS rubber, By R. Giri, K. Naskar, S. Sabharwal and Golok. B. Nando, *MACRO 2010*, New Delhi, India, (2010)
39. Role Of Electron Beam Radiation on LLDPE- Silicone Rubber Blends, By Radhashyama Giri, K.Nanskar and Golok B Nando, *International Conference on Radiation Processing*, New Delhi, India, (2010)
40. Self organization of macromolecules in novel TPU-clay Nanocomposites, By Manas Mondal, Pijus Chattopadhyay, D.K. Setua, Narayan C Das and Santanu Chattopadhyay, *3rd International Conference on Multi-Functional Materials and Structures*, Jeonju, South Korea, (2010)
41. Silicone rubber Titania(TiO₂) Macro Composite for Dielectric application, By S Nayak M. Rahaman,A.K. Pandey T.K. Chaki & D Khastgir, *International Conference on Advances in Polymer Science and Rubber Technology(APSRT-2011)*, IIT Kharagpur, (2011)
42. Structure - Property relationship of Liner Low density Polyethylene and Polydimethyl Siloxane RubberBlends on Electron Beam Irradiation., By Golok B Nando, Radhashyama Giri, K.Naskar, *Fall 178th Technical Meeting of the Rubber Division, American Chemical Society*, Milwaukee, Wisconsin, USA, (2010)
43. Studies on Nanotube Networks in Polymer Nanocomposites by Dynamic and Steady Shear Rheology, By U. Basuli, T.K. Chaki, and S. Chattopadhyay, *Processing and Fabrication of Advanced Materials XIX (PFAM- XIX)*, University of Auckland, New Zealand, (2011)
44. Study of Dynamic Rheology of Electron Beam Cross linkedLLDPE and PDMS Rubber Blends, By Radhashyama Giri, K.Naskar and G.B.Nando, *Inteernational Conference on Advances in Polymer Science andf Rubber technology APSRT-2011*, IIT Kharagpur, India, (2011)
45. Synthesis and Characterization of Caprolactone-L-Lactide Copolymers for the Preparation of Drug delivery Micro-spheres for Inhibition of Bone Resorption Phenomenon., By T. Mondal M.C. Sunnyb, D. Khastgir, H.K. Verma P Ramesh, *Advances in Polymer Science and Rubber Technology(APSRT 2011)*, IIT Kharagpur,India, (2011)
46. Synthesis and characterization of PEHA-b-PMMA star block copolymers:, By Dhruba J. Haloi, Souvik Ata, Nikhil K. Singha*, *International Conference on Advances in Polymer Science and Rubber Technology (APSRT)*, Indian Institute of Technology Kharagpur, (2011)
47. Tailor-made graft copolymerization on chlorinated polypropylene, By D. J. Haloi, K. Naskar and Nikhil K Singha, *IRC-2010 International Rubber Conference*, Mumbai, India, (2010)
48. Temperature Dependent Electrical Propertes of Composites (Behaviour at Cryogenic Temperature and High Temperatures, By M Rahaman, T.K. Chaki, D Khastgir, *3rd International Conference on Multifunctional Materials and Sructures*, Jenoju, South Korea, (2010)
49. The Effects of New Chemicals on the Age Resistance Behaviour of Tyre tread Compounds, By D Khastgir,P Sachdeva, S Dasgupta,S Banejee, R Mukhopadhyay, *International Rubber Conference (IRC-2010)*, Mumbai, India, (2010)
50. Thermo-mechanical, Electrical and Morphological Characteristics of Ethylene Methyl Acrylate (EMA)/CNT Nanocomposites, By U. Basuli, T.K. Chaki, and S. Chattopadhyay, *2nd Indo Swiss Bonding International Symposium 2010*, Sikkim Manipal University, (2010)

51. TPEs and TPVs derived from Waste Polypropylene and Natural Rubber, *By* G.B.Nando, A.nag and Jobin Jose, *5th Intl. Conference on Environmental Science and Technology ICEST-2010*, Houston, Texas, USA, (2010)
52. Transition metal catalyzed controlled ring opening Co-polymerization of a vinyl cyclopropane, *By* Souvik Ata, Nikhil K Singha, *International Conference on Advances in Polymer Science and Rubber Technology (APSRT)*, Indian Institute of Technology, Kharagpu, (2011)
53. Use of Electron Beam Radiation in Controlling Plastic Pollution, *By* Golok B Nando, *NAARI International Conference, NIC-2010*, Mumbai, India, (2010)
54. Vibration damping and energy loss in bromobutyl rubber – Effect of filler size and shape, *By* Praveen S., B.K. Chattopadhyay and S. Chattopadhyay, *International Rubber Conference and Exhibition-2010*, Mumbai, India, (0)

Vinod Gupta School of Management

Head

Prof. Arabinda Tripathy

Professors

Bagchi, Tapan P	<i>Ph.D.(Univ. of Toronto)</i> , Extreme Value Theory Applications in Operations Scheduling
Ghosh, Ranjan	<i>D.Sc.(Columbia Univ.)</i> ,
Guin, Kalyan Kumar	<i>B.Tech.(IIT Kharagpur)</i> , Marketing Research, Quant Modelling of Business Strategy, Entrepreneurship
Mukerjee, Prithwis	<i>Ph.D.(Texas)</i> ,
Sinha, Gautam	<i>Ph.D.(IIT Kharagpur)</i> , Operations Management/ SCM

Associate Professors

De, Sadhan Kumar	<i>Ph.D.(UK)</i> , Information Systems, E-Business/E-Commerce, Management of Technology
Rajib, Prabina	<i>Ph.D.(IIT Kharagpur)</i> , Derivatives (Financial & Commodity), Indian Capital Market, Corporate Finance

Assistant Professors

Arunprasad, P	<i>Ph.D.(IIT Madras)</i> ,
Bhattacharya, Sujoy	<i>Ph.D.(IIT&Mgt, Gualior)</i> ,
Datta, Biplob	<i>Ph.D (IIT Delhi)</i> , Marketing Management, Leadership and Teamwork
Madhavan, Vinodh	<i>D.B.A.(USA)</i> , Credit Default Swap Indices, Long-Term Dependence, Nonlinear Time Series Analysis
Malik, Aradhna	<i>Ph.D.(Univ of Denver)</i> , Communication Disorders, Intercultural Communication, Human Technology Interaction, Management of Public Health
Mishra, Chandra Sekhar	<i>Ph.D.(Utkal University)</i> , Financial Reporting and Analysis, Mergers and Acquisitions, Business Valuation, Financial Markets
Misra, Arun Kumar	<i>Ph.D.(IIT,Mumbai)</i> , Financial Markets, Commercial Banking, Corporate Finance, International Finance, Risk Management, Financial Economics
Mukhopadhyay, Susmita	<i>Ph.D.(Calcutta Univ.)</i> , Organizational Health and spiritual health, Human Resource Management, Business Ethics, Microfinance, Competency Mapping
Pradhan, Rudra Prakash	<i>Ph.D.(IIT Kharagpur)</i> , Financial Markets, Infrastructure Finance, Econometric Modelling
Sahney, Sangeeta	<i>Ph.D.(IIT Delhi)</i> , Marketing Management, Consumer Behavior, Services Marketing, Sales and Distribution Management, Organizational Behavior, Services Quality, Quality in Education
Sarkar, Ashutosh	<i>Ph.D.(IIT Kharagpur)</i> ,

Visiting Facultys

Chattopadhyay, Siddhartha	<i>Ph.D.(Univ. at Albany, SUNY)</i> ,
Ghosh, Kunal Kanti	<i>M.Tech.(IIT Kharagpur)</i> , Supply chain management

Faculty Resignation

P. Arunprasad	Assistant Professor
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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. Bagchi, Tapan P, *Fellow* - Institution of Engineers (India)
2. Bagchi, Tapan P, *Registered Professional Engineer (P Eng)* - Association of Professional Engineers, Ontario, Canada
3. Bagchi, Tapan P, *Member of Board* - Academic Advisory Group, PMI (India)
4. Datta, Biplab, *Regular* - Council of Architecture
5. Malik, Aradhna, *Regular* - Academy of Management
6. Malik, Aradhna, *Mentor* - National Mentoring Network
7. Malik, Aradhna, *Life Member* - Indian National Portage Association
8. Malik, Aradhna, *Regular* - International Communication Association
9. Malik, Aradhna, *Member* - Asian Society Against Dementia

10. Mishra, Chandra Sekhar, *Life Member* - Indian Accounting Association
11. Mukerjee, Prithwis, *Founder* - ACM India Council - official India affiliate of the Association of Computing Machinery, US
12. Pradhan, Rudra Prakash, *Member* - Indian Society for Probability and Statistics
13. Pradhan, Rudra Prakash, *Member* - Operational Research Society of India
14. Pradhan, Rudra Prakash, *Member* - Indian Econometric Society
15. Pradhan, Rudra Prakash, *Member* - Regional Science Association, India
16. Pradhan, Rudra Prakash, *Member* - Multiple Criteria Decision Making, USA
17. Pradhan, Rudra Prakash, *Member* - Indian Institute of Banking & Finance
18. Sahney, Sangeeta, *Member Category* - All India Management Association
19. Sahney, Sangeeta, *Member* - Indian Society for Quality (ISQ) (Asian Network for Quality)
20. Sarkar, Ashutosh, *Life Member* - Indian Institute of Industrial Engineering
21. Sarkar, Ashutosh, *Life Member* - Society of Operations Management
22. Tripathy, Arabinda, *Senior* - Operational Research Society of India

Member - Editorial Board

1. Bagchi, Tapan P (2009) *Editorial Board* - International Journal of Advanced Operations Management
2. Datta, Biplab (2011) *Reviewer* - Globsyn Management Journal
3. Malik, Aradhna (2009) *Associate Copy Editor* - Asian English as a Foreign Language Journal
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. Mukhopadhyay, Susmita (2009) *Member* - Pragyaan : Journal of Management
8. Pradhan, Rudra Prakash (0) *Editorial Board Member* - Australian Journal of Business and Management Research
9. Pradhan, Rudra Prakash (2009) *Reviewer* - Kindler
10. Pradhan, Rudra Prakash (0) *Reviewer* - Kindler
11. Pradhan, Rudra Prakash (0) *Reviewer* - Review of Economics and Finance
12. Pradhan, Rudra Prakash (0) *Reviewer* - Journal of Social Sciences
13. Pradhan, Rudra Prakash (2009) *Reviewer* - Journal of Developing Areas
14. Pradhan, Rudra Prakash (0) *Editorial Board Member* - International Journal of Financial Research
15. Pradhan, Rudra Prakash (0) *Reviewer* - Review of Urban and Regional Development Studies
16. Pradhan, Rudra Prakash (2009) *Reviewer* - International Journal of Peace and Development Studies
17. Pradhan, Rudra Prakash (0) *Editorial Board Member* - Pragyaan
18. Pradhan, Rudra Prakash (0) *Reviewer* - Malaysian Journal of Economic Studies
19. Pradhan, Rudra Prakash (2009) *Reviewer* - Journal of Economics and International Finance
20. Pradhan, Rudra Prakash (0) *Editorial Board Member* - Journal of Management and Strategy
21. Pradhan, Rudra Prakash (0) *Editorial Board Member* - ARASH
22. Pradhan, Rudra Prakash (0) *Reviewer* - Journal of Economics and International Finance
23. Pradhan, Rudra Prakash (2009) *Reviewer* - Journal of Management and Technology
24. Pradhan, Rudra Prakash (0) *Reviewer* - Energy Systems
25. Pradhan, Rudra Prakash (0) *Reviewer* - Journal of Management and Technology
26. Pradhan, Rudra Prakash (0) *Reviewer* - International Journal of Peace and Development Studies
27. Pradhan, Rudra Prakash (0) *Reviewer* - Journal of Developing Areas
28. Pradhan, Rudra Prakash (0) *Reviewer* - International Journal of Educational Research
29. Sahney, Sangeeta (2010) *Member of Review Committee* - Quality Assurance in Education
30. Sahney, Sangeeta (2010) *Member of Review Committee* - The TQM Journal
31. Sahney, Sangeeta (2010) *Member of Review Committee* - The International Journal of Business and Information
32. Sahney, Sangeeta (2010) *Member of Editorial Advisory Board* - Emerald Emerging Markets Case Studies
33. Sahney, Sangeeta (2010) *Member of Editorial Board* - The International Journal of Engineering, Science and Technology
34. Sahney, Sangeeta (2010) *Member of Editorial Board* - The International Journal of Business, Management and Social Sciences
35. Sahney, Sangeeta (2010) *Member of Review Committee* - Globsyn Management Journal
36. Sahney, Sangeeta (2010) *Guest editor (Co-editor), Special issue, Human Resource Management: Practices, Issues & Trends in Modern Organizations* - The International Journal of Business, Management and Social Sciences
37. Sahney, Sangeeta (2010) *Member of Review Committee* - The International Journal of Organizational Analysis
38. Sarkar, Ashutosh (2009) *International Editorial Review Board* - International Journal of Applied Industrial Engineering

Awards & Honours

1. Madhavan, Vinodh (2010) *2009-2010 Outstanding Graduate Student "æ" Doctor of Business Administration Program, Golden Gate University, San Francisco*

Fellowships

1. Madhavan, Vinodh (2010) *Malcolm S.M. Watts III Research Fellow, Technical Securities Analysts Association of San Francisco (TSAASF)*

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. A study of SHGs in West Bengal (IFMR, Rs.0.00 Lakhs)
3. Money management Issues and Practices of the Ultra Poor Populations in West Bengal (SRIC, Rs.0.00 Lakhs)
4. Risk Management in Supply Chain: A Study from the Perspective of Indian Industry (ISIRD, IIT Kharagpur, Rs.5.00 Lakhs)
5. Socio Economic Development in India (, Rs.0.00 Lakhs)

Consultancy Projects

1. Operations Gurukul Workshop (Tata Management Training Centre [TMTTC] Pune, Rs.3.00 Lakhs)
2. Performance Evaluation of Continuous Surface Miner at Panchpatmali Bauxite Mines (NALCO, Rs.0.00 Lakhs)
3. Project Management for Coal India Executives (Indian Institute of Coal Management [IICM], Ranchi, Rs.2.50 Lakhs)
4. 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 (Sydney,) 16-19 December, 2009
2. Pradhan, Rudra Prakash - Conference (Singapore,) August 6-8, 2009
3. Pradhan, Rudra Prakash - Conference (USA,) 2010
4. Pradhan, Rudra Prakash - Conference (Japan,) 2010
5. Pradhan, Rudra Prakash - Conference (Egypt,) 2011
6. Misra, Arun Kumar - International Conference Organised by IEEE (Singapore,) 3 days

Invited Lectures by Faculty Members

1. motivation for young leaders *by* Mukhopadhyay, Susmita (Rotary youth International leadership program)
2. Environmental scanning *by* Mukhopadhyay, Susmita (McNally Bharat)
3. The Importance of Intercultural Communication for Business Students *by* Malik, Aradhna (Government College, Dharamsala, H.P.)
4. Intercultural Communication *by* Malik, Aradhna (Department of Humanities and Social Sciences, IIT Kharagpur)
5. Valuation of ESOP and Its Impact on Financial Performance *by* Rajib, Prabina (ICAI Kolkata)
6. Strategy on Regression Modelling *by* Pradhan, Rudra Prakash (Jammu University, Jammu)
7. Modelling Strategy on Multivariate Data Analysis *by* Pradhan, Rudra Prakash (KIT, Bhubaneswar)
8. Warehouse Receipt *by* Rajib, Prabina (University of Pondicherry)
9. Six Sigma, TQM and ISO 9000, *by* Bagchi, Tapan P (Tribhuvan University, Kathmandu Nepal)
10. Extreme Value Theory Applications in Operations Management *by* Bagchi, Tapan P (College of Administration, University of Alabama at Huntsville)
11. Executive MBA *by* Datta, Biplab (Kolkata and Bhubaneswar)
12. Executive MBA *by* Datta, Biplab (Kolkata and Bhubaneswar)

Books Published

1. Rudra P. Pradhan: Strategy of Infrastructure Finance *published by* Macmillan (2011)
2. Rudra P. Pradhan: Infrastructure Policy and Micro Finance *published by* Macmillan (2011)

Seminars, Conferences and Workshops Organised

1. Samanjasya 2010: Conclave on Sustainability & CSR
2. Statistical Modelling for Data Analysis
3. Statistical Modelling of Systems

Short-Term Courses, Training Programmes and Workshops organised

1. ALM and Transfer Price Mechanism (4 Days)
2. Competency Development for new management faculty (1-14aug 2009)
3. Financial Modeling and Risk Management (4 Days)
4. Leadership and Teamwork (14-9-2009 to 19-9-2009)
5. Management Development Programme for E-2 & E-3 Executives of UCIL (31-03-2011 to 02-04-2011)
6. MDP for E2 & E3 Level Executives of UCIL (31 MArch - 02 April 2011)
7. Project Management (4 days)

8. Purchasing Management (3 days)
9. Risk Management in Commercial Banks (5-days)
10. Risk Management in Commercial Banks (5-days)

Papers Published in Journals

1. A Conceptual Framework for Developing Buyer-Supplier Relationship By Sarkar, A. *Industrial Engineering Journal II* (15) (2010)
2. A Sociotechnical Analysis through SAP â€™ LAP Framework in a Power Sector Organization By Ghosh, K. and Sahney, S. *Journal of Applied Manpower Research* Vol.XIV No.1,35-59 (2010)
3. After Market Pricing Performance of Initial Public Offerings (IPOs): Indian IPO Market 2002-2006 By Sesadev Sahoo, Prabina Rajib *Vikalpa* Vol.35, No.4,25-41 (2010)
4. An Investigation of the Finance-Growth Nexus: Study of Asian Developing Countries Using Multivariate VAR Mode By Rudra P. Pradhan and B. Mukhopadhyay *International Research Journal of Finance and Economics* 134-140 (2010)
5. Benefits of Globalization: With Special Reference to India By Rudra P. Pradhan *Journal of Economics and International Finance* 76-84 (2010)
6. Defect Reduction Justification by Quantifying Hidden Costs in Bearing Production By Tapan P Bagchi *IJOQM USA* Accepted (2011)
7. Developing a Marketing Strategy for Leading Agrochemical Company: A Case Study on the Distribution Network in the Bankura District of West Bengal. By Sahney, S. and Shrivastava A. *Globsyn Management Journal* Vol.3 Issue 2, 25-40 (2009)
8. Energy Consumption- Growth Nexus in SAARC Countries: Using Cointegration and Error Correction Model By *Modern Applied Science* 74-90 (2010)
9. Forecasting Exchange Rate in India: An Application of Artificial Neural Network Model By Rudra P. Pradhan *Journal of Mathematical Research* 111-117 (2010)
10. Hexad Structural Diagnosis of Organizational Sociotechnical System as an Antecedent to Managerial Retention: A Meta-Analytical Approach By Ghosh, K. and Sahney, S. *International Journal of Business, Management and Social Sciences* Vol. 1 No. 1 (2010)
11. Implications for Risk Management and Regulation: A study of long-term dependence in Credit Default Swap (CDS) Indices market By Vinodh Madhavan and Henry(Hank) Pruden *International Federation of Technical Analysts (IFTA) Journal* (2011)
12. Interdependence of FDI between India and ASEAN-5: Evidence from Causality Approach By Rudra P. Pradhan *International Business Research* 156-166 (2010)
13. Intraday Price Discovery Process and Volatility Dynamics in Stock Index and Stock Index Futures: Empirical Evidence from NSE S&P CNX Nifty By Pratap Pati, Prabina Rajib *Applied Economics Letter* Vol.18, No.6,567-574 (2011)
14. Organizational Sociotechnical Diagnosis of Managerial Retention in an IT Organization: SAP-LAP Framework By Ghosh, K. and Sahney, S. *International Journal of Organizational Analysis* Vol. 18 No.1,151-166 (2010)
15. Organizational Sociotechnical Diagnosis of Managerial Retention: SAP â€™ LAP Framework By Ghosh, K. and Sahney, S. *Global Journal of Flexible Systems Management: Glogift Journal* Vol.11 No.1&2, 75-88 (2010)
16. Perpetual Asset Management of Customer Based Brand Equity - The PAM Evaluator By Mishra, P. and Datta, B. *Current Research Journal of Social Sciences* 3 (1), pp. 34-43 (2011)
17. Sourcing Decisions under Risks of Catastrophic Events Disruption By Meena, P.L., Sarmah, S. P., and Sarkar, A. *Transportation Research Part E* accepted (0)
18. Structural Breaks in Finance Growth Nexus: The Study of Indonesia By Rudra P. Pradhan and B. Mukhopadhyay *Journal of Behavioral Studies* 1-6 (2010)
19. Testing Price Volume Relationship for Indian Commodity Futures By Shibhasis Biswas , Prabina Rajib *Journal of Indian Business Research* Vol. 3, Issue 2 (2011)
20. The Nexus of Finance, Growth and Poverty in India: The Cointegration and Causality Approach By Rudra P. Pradhan *Asian Social Science* 114-122 (2010)
21. Transport Infrastructure, Energy Consumption and economic Growth Triangle in India: Cointegration and Causality Analysis By Rudra P. Pradhan *Journal of Sustainable Development* 167-173 (2010)
22. Volatility Persistence and Trading Volume in Emerging Futures Market: Empirical Evidence from NSE S&P CNX Nifty Stock Index Futures By Pratap Pati, Prabina Rajib *Journal of Risk Finance* Vol.11, No.3, pp.296 (2010)

Papers Presented in Conferences

1. Competition in Commercial Banking, By Arun Kumar Misra, *IEEE Conference*, Singapore, (2011)
2. Finance Development and Economic Growth: Are They Cointegrated, By Rudra P. Pradhan, *International Finance Conference*, Indian Institute of Management, Calcutta, (2011)
3. Forecasting Economic Growth: Using Artificial Neural Network Modelling, By Rudra P. Pradhan, *International Conference on Entrepreneurship & International Business*â€™™, Egypt, (2011)
4. Forecasting Inflation with Artificial Neural Networks, By Rudra P. Pradhan, *International Conference on Advanced Data Analysis, Business Analytics and Intelligence*, Indian Institute of Management Ahmedabad, (2011)
5. Forecasting Stock Price: An Application of Artificial Neural Networks, By Rudra P. Pradhan, *Conference on Theoretical and Mathematical Foundations of Computer Science*â€™™, USA, (2010)
6. How inter-related is American and European Credit Default Swap Indices market? : A Search for Transatlantic Kinship, By Vinodh Madhavan, *Financial Services Regulation: Impact on Accounting, Management, and Marketing organized by Financial Services Institute, St. Johns University*, St. Johns University New York City, USA, (2010)
7. Inflation and Economic Growth: The ECM Approach, By Rudra P. Pradhan, *International Conference on Development and Applications of Statistics in Emerging Areas of Science & Technology*, University of Jammu, Jammu, (2010)
8. Modelling the Nexus between Transport and Energy Consumption: The Cointegration Analysis, By Rudra P. Pradhan and S. K. Pandey, *Infrastructure, Sustainable Transportation and Urban Planning*, Indian Institute of Science, Bangalore, (2010)

9. Multivariate Panel VAR Model and FDI-Growth Nexus, *By Rudra P. Pradhan, Conference on Computational Statistics and Data Analysis, Japan, (2010)*
10. Non-Linearity in Investment- Grade Credit Default Swap (CDS) Indices of North America and Europe: Evidence from BDS and Close>Returns Tests, *By Vinodh Madhavan, Global Finance Association Conference, Bangkok, (2011)*
11. Panel VAR Model and Export- Growth Nexus, *By Rudra P. Pradhan, International Congress on Productivity, Quality, Reliability, Optimization and Modelling, ISI, Delhi, (2011)*
12. Prioritization of Consumer Psychographics in Online Buying Behavior, *By Sahney, S., International Conference on E-Commerce held in Tokyo, eCASE 201, Tokyo, Japan, (2011)*
13. Quality Components for the Educational System: Application of the Kano Model, *By Sahney, S. and Banwet, D.K., Asian Network for Quality (ANQ) Congress 2010, Delhi, (2010)*

School of Water Resources

Head

Prof. Sudhindra Nath Panda

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 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 Agricultural Water Management. 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

Under the chairmanship of Prof. Asit Kumar Biswas, 1st Water Advisory Committee meeting was held on December 24, 2010. The other members of the water advisory committee present in the meeting were Dr. Ch. Sivaji, Shri S C Mahapatra, Dr. Avinash Tyagi, Dr. A K Singh, Dr. J S Samra and Dr. U N Panjiyar.

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. 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.

International Collaborations

Third World Centre for Water Management, Mexico

Under collaborative research project with the Department of Geoinformatics, Hydrology and Modeling, Friedrich-Schiller- University Jena, Germany, Prof. S. N. Panda, Head, School of Water Resources visited Jena, Germany from February (7 -11), 2011 to attend InnoAsia Kick-off Workshop.

Lectures by Visiting Experts

1. Overview about research focus of the faculty of Architecture & Landscape Sciences at Leibniz Univ. Hannover and about potential areas for cooperation *by* Prof. Sylvia Herrmann (Institute of Environmental Planning, Leibniz University, Hannover, Germany)
2. The CLUE-s land change model and the NabanFramework modeling framework for decision support in land-use planning. *by* Dr. Karin Berkhoff (Institute of Environmental Planning, Leibniz University, Hannover, Germany)

Department of Agricultural & Food Engineering

Head

Prof. Rajendra Singh

Professors

Banerjee, Rintu	<i>Ph.D.(IIT Kharagpur)</i> , Food Biotechnology, Bioenergy, Enzyology & its Biotechnological applications, Protein Chemistry
Bhadoria, P B Singh	<i>Ph.D.(IIT Kharagpur)</i> , Development and transfer of rural technnlogy, Soil Science &Plant nutrition
Das, Susanta Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Mechanized Food processing 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
Jha, Madan Kumar	<i>Ph.D.(Ehime Univ Japan)</i> , Groundwater Management using RS and GIS, Basin-wide Groundwater Modeling, Inverse Modeling for Aquifer Parameter Estimation, Rainwater Harvesting and Artificial Recharge
Mal, Bimal Chandra	<i>Ph.D.(IIT Kharagpur)</i> , Soil and Water Conservation Engineering, Watershed Management
Mallick, Nirupama	<i>Ph.D.(BHU, Varanasi)</i> , Microalgal Biofuel, Biodegradable Polymers (Polyhydroxyalkanoates), Bioremediation, Bioactives from Microalgae
Mishra, Hari Niwas	<i>Ph.D.(IIT Kharagpur)</i> , 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> , Water Resources 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.(AIT Bangkok)</i> , Development of farm Implements, Biofuel production and hybrid power generation
Singh, Rajendra	<i>Ph.D.(IIT Kharagpur)</i> , Hydrological Modelling, Irrigation System Mangement
Tewari, Virendra Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Farm Machinery & Power, Ergonomics & Safety
Tiwari, Kamlesh Narayan	<i>Ph.D.(IARI Delhi)</i> , Micro Irrigation Greenhouse Technology Remote sensing & GIS application in Watershed Mgt

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> , Metabolic Phytochemistry & Molecular Biology, Plant Natural Products Biotechnology
Mitra, Arunabha	<i>Ph.D.(Calcutta Univ)</i> , Waste utilization in aquaculture, Ecology and environmental pollution, Chemical-free farming, Mind and consciousness, Stress management and control, Value based education
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
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 (SIT New Jersey)</i> , Cage for mariculture
Shrivastava, Shanker Lal	<i>Ph.D.(IIT Kharagpur)</i> , Dairy & Food Process Engineering, Development of low cost - farm level processing equipment
Srinivasa Rao, Pavuluri	<i>Ph.D.(IIT Kharagpur)</i> , Aquacultural Engineering, Post Harvest & Food Engineering, High Pressure Processing
Srivastav, Prem Prakash	<i>Ph.D.(IIT Kharagpur)</i> , Food Science and Technology
Swain, Dillip Kumar	<i>Ph.D.(IIT Kharagpur)</i> , Crop simulation, Climate change impact assessment on crops, Agronomy for sustainable agriculture

Senior Lecturer

Moulick, Sanjib	<i>Ph.D.(IIT Kharagpur)</i> , Aeration Technology, Water quality modelling and management, Biofiltration Technology
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Senior Scientific Officer

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

Pandey, Manorath	<i>Ph.D.(IIT Kharagpur)</i> ,
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Faculty Promotions

C. Chatterjee	Asso. Professor
H. Raheman	Professor
M.K. Jha	Professor
N. Mallick	Professor
S. Dutta Gupta	Professor

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 jacketed 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. High Pressure Food Processing System, Stansted Fluid Power Ltd.
2. Oxidation Stability Analyzer, Metrohm AG, Switzerland
3. Rapid Fat Analyzer (Spectra analyzer), Zeutek Opto Elektronik GmbH, Germany
4. SCF System (Base Unit), Crescent Scientific Pvt. Ltd., Mumbai
5. Electronic Nose (Smell / Odour Analyzer), Alpha MOS SA, France
6. Fluorescence Spectrophotometer, Perkin Elmer, Singapore
7. Control Atmospheric Storage Chamber, Labultima, Mumbai

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

Lectures by Visiting Experts

1. Making processed food healthier - A study on incorporation of fiber in extruded products *by* Dr. Sajid Alavi (Kansas State University, USA)
2. An overview of cellulose and algal biofuels *by* Dr. G. S. Murthy (Oregon State University, USA)
3. Learnings from engagement with employer partnership groups in teaching *by* Ms. Merran Davis (Dean of Faculty, Wintec, Hamilton, New Zealand)
4. Environmental fate of pesticides on different scales *by* Prof. Thilo Streck (University of Hohenheim, Germany)

Doctoral and MS Degrees Awarded

1. S.K. Bag : Development of process technology for preparation of Bael (Aegle marmelos) pulp powder(Ph.D)
2. Krishna Pratap Singh : Development of a dehuller for barnyard millet (Echinochloa frumentacea) and formulation of millet-wheat composite flour(Ph.D)
3. C.T. Ramachandra : Development of Aloe vera gel filleting machine and dehydration of aloe vera gel(Ph.D)
4. Satyasai Behera : Modelling hydrologic processes and non-point source pollution of water resources in agricultural watersheds(Ph.D)
5. R.K. Singh : Development of vegetative and structural management strategies for eastern himalayan hilly watersheds using field measurements and a physically based model(Ph.D)
6. Niranjana Pramanik : Flood inundation study for the deltaic region of Brahmani river basin using hydrodynamic modelling(Ph.D)

7. C.V. Singh : Integrated weed management in rainfed upland Rice(Ph.D)
8. P.K. Pranav : Development of slip sensing and control system for two wheel drive tractors(Ph.D)
9. Arabinda Sharma : Terrain uncertainty and hydrologic analysis of Maithan catchment(Ph.D)
10. Shovan Mondal : Exploring biodiesel production from a green microalga *Scenedesmus obliquus*(Ph.D)
11. Basanta Kumar Singh : Design characteristics of circular stepped cascade pump aeration system(Ph.D)
12. Soumitra Banerjee : Conditioning and peeling of Cashew kernels(MS)
13. Bharat Chandra Sahoo : Root-zone water balance simulation for optimal sizing of on-farm pond for rice substitution in rainfed uplands(Ph.D)
14. K. Sreenivasa Kumar : Evaluations and simulations of greenhouse microclimate for subtropics(Ph.D)
15. Minati Mahapatra : Mechanical pre-conditioning of rice and its microwave puffing(Ph.D)
16. M.K. Hazarika : Artificial neural network modelling for estimation of instantaneous diffusivity in drying of agricultural produce(Ph.D)
17. Anish Kumar : Development of a physically based distributed hydrological modelling system(Ph.D)
18. Jayeeta Mitra : Vacuum drying of onion slices: Process optimization and numerical modelling(Ph.D)
19. L.N. Sethi : Water balance simulation for sizing of on-farm reservoir in integrated rainfed farming system(Ph.D)
20. Suryamani Rout : Exploration of pharmacological properties of pomegranate and strategies for enrichment of antioxidants in pomegranate(Ph.D)
21. Gaddam Chandra Mouli : Performance assessment of a major irrigation project using remote sensing and geographical information system(Ph.D)

Member - Professional Bodies

1. Bhadoria, P B Singh, *Annual Member* - German Society of plant nutrition and soil science
2. Bhadoria, P B Singh, *Life member* - Indian Society of Soil science
3. Bhadoria, P B Singh, *senior* - Agril. Engg soicety, IIT kharagpur
4. Das, Bhabani Sankar, *Member* - Indian Society of Soil Science
5. Das, Madhusweta, *Regular* - American Society of Agricultural and Biological Engineers
6. Das, Susanta Kumar, *Regular* - American Society of Agricultural and Biological Engineers, USA
7. Datta, Ashis Kumar, *Ordinary* - Indian Dairy Association
8. Datta, Ashis Kumar, *Member - Engineering* - American Society of Agricultural and Biological Engineers
9. Datta, Ashis Kumar, *Life* - All India Council for Technical Education
10. Dutta Gupta, Snehasish, *Regular* - Floriculture and Ornamental Biotechnology
11. Dutta Gupta, Snehasish, *Regular* - Society for In Vitro Biology, USA
12. Dutta Gupta, Snehasish, *Regular* - European Federation of Biotechnology
13. Dutta Gupta, Snehasish, *Life* - Indian Society for Plant Physiology
14. Dutta Gupta, Snehasish, *Fellow Member* - Plant Tissue Culture Association (India)
15. Ghosh, Bijoy Chandra, *Life Member* - Indian Society of Agronomy
16. Ghosh, Bijoy Chandra, *Life Member* - Indian Society of Weed Science
17. Goswami, Tridib Kumar, *Life* - Indian Society of Cryogenic Engineers
18. Goswami, Tridib Kumar, *Life* - Association of Food Scientists and Technologists (AFST)
19. Goswami, Tridib Kumar, *Regular* - American Society of Agricultural and Biological Engineers (ASABE)
20. Goswami, Tridib Kumar, *Life* - Indian Association of Chemical Engineers (AIChE)
21. Guha, Proshanta, *Life member* - Indian Science Congress Association
22. Guha, Proshanta, *Life member* - Indian Society of Weed Science
23. Guha, Proshanta, *Regular* - Association of food scientists and technologists (India)
24. Jha, Madan Kumar, *Regular Member* - International Association of Hydrogeologists (IAH), U.K.
25. Mallick, Nirupama, *Regular* - Life Member: Biotech Research Society of India
26. Mishra, Ashok, *Member* - Environmental & Water Resources Institute (EWRI), American Society of Civil Engineers (ASCE)
27. Mishra, Ashok, *Life Member* - Indian Society of Agricultural Engineers.
28. Mishra, Ashok, *Life Member* - Indian Water resources Society (IWRS)
29. Mishra, Hari Niwas, *President* - Association of Food Scientist & Technologists (Kharagpur Chapter)
30. Mishra, Hari Niwas, *Past President & Life Member* - Association of Food Scientists & Technologists (India)
31. Mishra, Hari Niwas, *Member* - All India Food Processors Association
32. Mishra, Hari Niwas, *Member* - Indian Society of Agricultural Engineers
33. Mitra, Adinpunya, *Member* - Japanese Society for Plant Cell and Molecular Bology
34. Mitra, Adinpunya, *Life Member* - Society for Plant Biochemistry and Biotechnology (India)
35. Mitra, Adinpunya, *Life member* - Association of Microbiologists of India
36. Mitra, Adinpunya, *Life Member* - Biotech Research Society of India
37. Mitra, Arunabha, *Life Member* - Zoological Society of India
38. Mitra, Arunabha, *Regular* - World Aquaculture Society, USA
39. Mitra, Arunabha, *Life Member* - Inland Fisheries Society of India
40. Mitra, Arunabha, *Full Founding Member* - Asian Fisheries Society, Philippines
41. Mitra, Arunabha, *Life Member* - Indian Science Congress
42. Mukherjee, Chanchal Kumar, *regular* - Institution of Engineers India
43. Mukherjee, Chanchal Kumar, *Member* - World Aquaculture Society
44. Mukherjee, Chanchal Kumar, *Regular* - Society of Naval Architects & marine Engineers USA
45. Mukherjee, Chanchal Kumar, *regular* - Society of Fisheries technologists of India
46. Panda, Rabindra Kumar, *Life Member* - Indian Society of Agro-meteorologist
47. Panda, Rabindra Kumar, *Associate Member* - American Society of Agricultural and Biological Engineers
48. Panda, Rabindra Kumar, *Life Member* - Indian Society of Agricultural Engineers
49. Panda, Rabindra Kumar, *Life Member* - Indian Society of Water Managment
50. Panda, Rabindra Kumar, *Life Member* - Asia Pacific Association of Hydrology and Water Resources

51. Pandey, Keshaw Prasad, *Member* - The Institution of Engineers (India)
52. Pandey, Keshaw Prasad, *Member* - American Society of Agricultural and Biological Engineers
53. Pandey, Keshaw Prasad, *Life Member* - Indian Society of Agricultural Engineers
54. Raheman, Hifjur, *Life Member* - Indian Society of Agricultural Engineers
55. Raheman, Hifjur, *Fellow* - Institution of Engineers India
56. Raheman, Hifjur, *Member* - Member of the American Society of Agricultural & biological Engineers
57. Shrivastava, Shanker Lal, *Life Member* - Association of Food Scientists and Technologists (India)
58. Shrivastava, Shanker Lal, *Member* - Agricultural Engineering Society, Kharagpur
59. Singh, Manindra Nath, *Senior Member* - Bioved research society Allahabad
60. Singh, Rajendra, *Life Member* - ISAE
61. Srinivasa Rao, Pavuluri, *Life member* - Association of Food Scientists and Technologists
62. Srinivasa Rao, Pavuluri, *Member* - American Society of Agricultural and Biological Engineers
63. Srinivasa Rao, Pavuluri, *Regular member* - Indian Science Congress Association
64. Srinivasa Rao, Pavuluri, *Life Member* - Andhra Agricultural Association
65. Srinivasa Rao, Pavuluri, *Member* - Institution of Engineers (India)
66. Srinivasa Rao, Pavuluri, *Life member* - Indian Society of Agricultural Engineers
67. Srivastav, Prem Prakash, *Life Member* - ISTE
68. Srivastav, Prem Prakash, *Life Member* - IDA
69. Srivastav, Prem Prakash, *Life Member* - AFST(I)
70. Srivastav, Prem Prakash, *MTIE* - Institution of Engineers
71. Swain, Dillip Kumar, *Life member* - Indian Society of Agronomy
72. Swain, Dillip Kumar, *Regular* - Fertilizer Association of India
73. Swain, Dillip Kumar, *Member* - American Society of Agronomy
74. Swain, Dillip Kumar, *Member* - International Society for Environmental Information Sciences
75. Tewari, Virendra Kumar, *Regular* - Indian Society of Ergonomics
76. Tewari, Virendra Kumar, *Regular* - Indian Society for Technical Education
77. Tewari, Virendra Kumar, *Regular* - American Society of Agricultural and Biological Engineers
78. Tewari, Virendra Kumar, *Regular* - Indian Society of Weed Science
79. Tewari, Virendra Kumar, *Regular* - Association of Food Scientists and Technology (India)
80. Thomas, E V, *Regular Member* - American Society of Agricultural and Biological Engineers
81. Thomas, E V, *Associate Member* - Institution of Engineers (India)
82. Thomas, E V, *Regular Member* - Indian Society of Agricultural Engineers
83. Tiwari, Kamlesh Narayan, *Regular Member* - American Society of Agricultural and Biological Engineers
84. Tiwari, Kamlesh Narayan, *Life Member* - Indian Society Of Agricultural Engineers
85. Tiwari, Kamlesh Narayan, *Life Member* - Indian Society of Remote Sensing

Member - Editorial Board

1. Dutta Gupta, Snehasish (2010) *Editorial board member* - Functional Plant Science and Biotechnology
2. Dutta Gupta, Snehasish (2011) *Associate Editor* - Journal of Plant Genomics
3. Dutta Gupta, Snehasish (2010) *Editorial board member* - Asian and Australian Journal of Plant Science and Biotechnology
4. Dutta Gupta, Snehasish (2011) *Associate Editor* - Journal of Crop Science
5. Jha, Madan Kumar (2010) *Editor* - Journal of Environmental Protection
6. Jha, Madan Kumar (2010) *Editor* - Journal of Water Resource and Protection
7. Jha, Madan Kumar (2010) *Associate Editor* - Journal of Agricultural Engineering
8. Jha, Madan Kumar (2010) *Assistant Managing Editor* - Journal of Spatial Hydrology
9. Mishra, Hari Niwas (0) *Member, Editorial Board* - Indian Food Packer
10. Mishra, Hari Niwas (0) *Member, Editorial Board* - Journal of Food Science & Technology
11. Mishra, Hari Niwas (2011) *Member* - LWT - Food Science & technology
12. Mishra, Hari Niwas (0) *Member, Editorial Board* - Fresh Produce
13. Mishra, Hari Niwas (0) *Member, Editorial Board* - Food
14. Mishra, Hari Niwas (0) *Member, Editorial Board* - Indian Food Industry
15. Mitra, Arunabha (2010) *Chief Editor* - Journal of Aquaculture in the Tropics
16. Raghuvanshi, Narendra Singh (2002) *Advisory Editorial Board* - Irrigation Science

Awards & Honours

1. Mallick, Nirupama (1997) *â€œ Alexander von Humboldt Fellowship,exander von Humboldt Stiftung, Germany*
2. Mallick, Nirupama (2005) *â€œ Woman Scientist Medal, Biotech Research Society of India*
3. Mishra, Hari Niwas (2011) *Best paper presentation award (2 papers) during FoQSAT2011*
4. Goswami, Tridib Kumar (1999) *Best paper was adjudged in 34th Annual Convention of ISAE, held at CCHAU, Hisar, India, Dec. 16-18, 1999.*
5. Datta, Ashis Kumar (2011) *Best Poster (Processing and Products) - XXXIX Dairy Industry Conference, Kolkata*
6. Goswami, Tridib Kumar (2009) *Best poster award ISAE*
7. Srivastav, Prem Prakash (2010) *Best poster paper award in International Conference on Traditional Foods held during 1-3 December 2010 for the paper Microencapsulation of food ingredient - A novel technology in food processing by Kshirsagar DN, More DR and Srivastav PP*

8. Srivastav, Prem Prakash (2011) *Best poster paper award in National Symposium on Emerging Innovative Technologies for Assurance of Quality and Safety in Processing Foods held during 24-25 February 2011 at Kharagpur for the paper - Active packaging of banana ...*
9. Srivastav, Prem Prakash (2011) *Best poster paper award in National Symposium on Emerging Innovative Technologies for Assurance of Quality and Safety in Processing Foods held during 24-25 February 2011 at Kharagpur for the paper -Effect of extrusion process ...*
10. Goswami, Tridib Kumar (2010) *Conferred with best poster presentation award for the paper entitled "Modeling of modified atmosphere packaging system for fruits using enzyme kinetics based respiration model" by S.Mangaraj and T.K.Goswami in the 44th Indian Society of Agriculture*
11. Goswami, Tridib Kumar (2000) *Doctoral thesis under my supervision was awarded Jawaharlal Nehru Award offered by ICAR in July 2000.*
12. Mishra, Hari Niwas (2010) *Expert Member, Approval Committee on Task Force on Food and Nutritional Security, Department of Biotechnology, Govt. of India,*
13. Mishra, Hari Niwas (2011) *Expert Member, Techno Scrutiny Committee, Ministry of Food Processing Industries, Government of India*
14. Banerjee, Rintu (2010) *Received Recognition Award from the National Academy of Agricultural Sciences, New Delhi for outstanding contribution in the area of Agricultural Engineering & Technology*
15. Raheman, Hifjur (2010) *Jyoti Award by ICAR for outstanding research in the field of seeding equipments*
16. Raghuwanshi, Narendra Singh (2010) *Late Dr. P. S. Khankhoje Memorial Gold Medal*
17. Mishra, Hari Niwas (2010) *Member, Specialized Products Sectional Committee, Bureau of Indian Standards, New Delhi, India.,*
18. Mishra, Hari Niwas (2010) *Member of the Scientific Panel on Additives, Flavours, Processing Aids and Materials in Contact with Food of the Food Safety & Standards Authority*
19. Mishra, Hari Niwas (2010) *Member, Board of Studies in Food Science & Technology, Benaras Hindu University, Varanasi, India.,*
20. Mishra, Hari Niwas (2010) *Member, Board of Studies in Food Technology, University of Allahabad, Allahabad, India.,*
21. Mishra, Hari Niwas (2010) *Member, Research Advisory Committee, National Dairy Research Institute (NDRI), Karnal*
22. Goswami, Tridib Kumar (2011) *N.N. Mohan Memorial Award for 2009 for best research paper conferred by All India Food Processors' Association, New Delhi - 16*
23. Mishra, Hari Niwas (2010) *RMC Member, Mission REACH (TIFAC, DST) in Food Technology at Techno India, Kolkata,*
24. Mishra, Hari Niwas (2010) *Expert Member, UGC Committee for the consideration of application of NIFTEM for grant of Deemed University status.*
25. Mishra, Hari Niwas (2010) *Member, Core Committee constituted for the development of the B Tech & M Tech Curriculum of the NIFTEM, Kundli, Haryana*
26. Mishra, Hari Niwas (2010) *Member, Expert Committee on Post Harvest Technology and Value Addition, Indian Council of Agricultural Research, New Delhi.*
27. Mishra, Hari Niwas (2010) *Member, Scientific Advisory Committee, Institute of Bioresources and Sustainable Development (IBSD, DBT, GOI), Imphal.*

Fellowships

1. Banerjee, Rintu (2011) *Bioved Research Institute of Agriculture & Technology . Fellowship award, Allahabad*
2. Bhadoria, P B Singh (2010) *Alexander Humboldt fellowship,*
3. Raghuwanshi, Narendra Singh (2010) *Fulbright Nehru Senior Research Fellowship*

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. 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)
7. Assessment of Non-point Source Pollution of Soil & Water resources in Agricultural Watersheds in Eastern India using AVSWAT model (Dept. of Science & Technology, Govt. of India and DFG Germany, Rs.4.70 Lakhs)
8. BioCO₂: An integrated multidisciplinary project using solar energy for production of renewable hydrogen combined with CO₂ capture, to address global w (Indo-Norwegian-Swedish Collaborative Research Project, Rs.0.00 Lakhs)
9. Biodepolymerization of low grade lignite to Biomethane and Humic acid (ONGC, New Delhi, Rs.248.00 Lakhs)
10. cDNA cloning and functional expression of a p-hydroxybenzaldehyde dehydrogenase from hairy roots of *Daucus carota* (CSIR, New Delhi, Rs.15.50 Lakhs)
11. 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)
12. 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.15.72 Lakhs)
13. Design & Development of a Novel Low Cost Gravity Aerator (DST, New Delhi, Rs.23.88 Lakhs)
14. Design optimum size of rainwater harvesting and recycling structure for diversified cropping system in rainfed upland ecosystem of eastern India (CSIR, Rs.17.76 Lakhs)
15. Dev. of Solar Dryer for multipurpose drying, NRDC (NRDC, Rs.1.00 Lakhs)

16. Development of an automatic vegetable transplanter with technology for paper pot seedlings (Council of Scientific and Industrial Research, Rs.12.94 Lakhs)
17. Development of cage for mariculture through numerical & physical modeling (MOES, New Delhi, Rs.47.00 Lakhs)
18. Development of criteria and indications for sustainable forest management in Sunderbans mangrove forest under joint forest management ((CSIR, New Delhi), Rs.3.00 Lakhs)
19. Development of Recirculatory Aquaculture System Based on Bioremediation and Integrated Bioplastic Production (DBT New Delhi, Rs.26.00 Lakhs)
20. 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)
21. Distributed Hydrological Modelling to Analyse Sediment and Nutrient Status of Brahmani-Baitarani Delta (Space Applications Centre, Ahmedabad, Rs.10.46 Lakhs)
22. Elucidating fragrant methoxybenzaldehyde biosynthesis in hairy roots/normal root cultures of *Hemidesmus indicus* (DAE-BRNS, Mumbai, Rs.25.00 Lakhs)
23. 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)
24. Flood inundation zoning for different return periods in Mahanadi river basin (Indian National Committee on Hydrology (INCOH), Ministry of Water Resources (MoWR), Rs.36.00 Lakhs)
25. Fully biodegradable starch based film for making carry bags (Ministry of forest and environment, Govt. of India, Rs.10.07 Lakhs)
26. Groundwater modelling in selected basins between Farakka and Ganga Sagar (Ministry of Environment and Forest, Govt. of India, Rs.25.00 Lakhs)
27. HighNoon: Adaptation to changing water resources availability in northern India with Himalayan glacier retreat and changing monsoon pattern (European Commission, Rs.155.00 Lakhs)
28. 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)
29. Impact Analysis of NREGA in Two Districts of West Bengal (Ministry of Rural Development, Rs.14.00 Lakhs)
30. Impact assessment of MGNREGA in one district of MP (Mandla) & WB (Paschim Medinipur) IAM (Min of Rural Development, Rs.19.00 Lakhs)
31. 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)
32. Indo-Denmark Collaborative research project on High rate algal biomass for food, feed and bioenergy (DBT, GOI, Rs.0.00 Lakhs)
33. Integrated Agromet Advisory Services (Ministry of Earth Sciences, Govt. of India, Rs.0.00 Lakhs)
34. Interdisciplinary network for holistic environment system analysis, eco-system services, integrated modelling and sustainable resources management (IN (German Federal Ministry of Education and Research (BMBF), Rs.0.00 Lakhs)
35. Land use land cover dynamics in relation to human dimension and climate in Mahanadi river basin, Orissa (NRSC, Hyderabad, Rs.12.80 Lakhs)
36. Low-cost production of [P(3HB-co-3HV)] co-polymer from cyanobacteria and exploring its Biomedical Applications (CSIR, Rs.11.50 Lakhs)
37. 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.38.77 Lakhs)
38. NAIP project entitled "Precision Farming Technologies in Production Agriculture" (ICAR, New Delhi, Rs.46.49 Lakhs)
39. National Vegetation Carbon Pool Assessment (CPA) (IIRS, Dept of Space, Dehradun, Rs.3.00 Lakhs)
40. Operational Research Project on Agro-processing centre (ICAR, New Delhi, Rs.5.54 Lakhs)
41. Post Harvest Technology (Indian Council of Agricultural Research, Rs.150.00 Lakhs)
42. Power generation with reduced emissions using de-oiled cake and biodiesel from non-edible oil seeds (Department of Science & Technology, Rs.33.07 Lakhs)
43. Precision Farming Development Centre (National Committee on Plastics Application in Horticulture, Min. of Agriculture, Govt. of India, Rs.250.00 Lakhs)
44. Production and performance evaluation of biodiesel from tree based oils (with high free fatty acids) and their mixtures (Petroleum Conservation Research Association, Rs.11.62 Lakhs)
45. Rapid soil carbon mapping using soil reflectance in the visible and near-infrared region (NRDMS, DST, New Delhi, Rs.60.00 Lakhs)
46. Rural Technology Action Group-EI (PSA, Gol, Rs.90.00 Lakhs)
47. Simulation of the Impact of Climate Change on Rice-based Cropping System in Parts of Indo-gangetic Plains (Space Application Centre (ISRO), Ahmedabad, Rs.6.10 Lakhs)
48. Standardization of process parameters in withering, maceration, rolling, fermentation and drying of tea (Tea Board, Govt. of India, Kolkata, Rs.366.96 Lakhs)
49. 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)
50. Studies on High Pressure Processing (HPP) of High Value Perishable Commodities (National Agricultural Innovation Project, ICAR, New Delhi, Rs.464.87 Lakhs)
51. Studies on Microalgal Triacylglycerols (TAGs) as a Source of Biodiesel (ICAR, New Delhi, Rs.170.29 Lakhs)
52. Study of Boundary Layer Characteristics during occurrence of Severe Thunderstorm (Dept. of Science & Technology, Govt. of India, Rs.46.00 Lakhs)
53. Technology Dissemination for Fuel Saving of Small Diesel Engine Operated Centrifugal Pumpsets (OCP) (NABARD, Mumbai, Rs.4.98 Lakhs)

Consultancy Projects

1. Agriculture Farming System and Management (HVM Laboratory, Panskura, Rs.3.50 Lakhs)
2. Construction of periphery road in the BRBNMPL campus (Bharatiya Reserve Bank Note Mudran Ltd., Salboni, Rs.10.00 Lakhs)
3. Design of Irrigation Projects for Binpur-I and Binpur-II Blocks (DM, Paschim Medinipur, Rs.3.50 Lakhs)
4. Design/ Development of Model Farm / Community Level Storage Structures (Central Ware House Corporation, Rs.0.68 Lakhs)
5. Educational and Design Software (State and Central Govt Agencies, Rs.0.00 Lakhs)

6. Evaluation of agricultural application efficiency of biological strains isolated and developed in MSV biotechnology R&D laboratory (MSV laboratories Pvt. Ltd., Purba Medinipur, Rs.3.87 Lakhs)
7. Evaluation of capacity of Rice Mill at Midnapur (Rice Millersâ€™ Association, Rs.0.00 Lakhs)
8. Evaluation of Probable Maximum Flood for Nagarjun Sagar Dam (Irrigation and CAD Department, Govt. of Andhra Pradesh, Rs.29.00 Lakhs)
9. Evaluation Study on the Activities of Soil Conservation (Damodar Valley Corporation, Rs.31.50 Lakhs)
10. Intervention Analysis of the IGB Basin Focal Project (International Water Management Institute, Sri Lanka, Rs.6.00 Lakhs)
11. Performance evaluation of ploughs (prototype) (National Bank for Agricultural & Rural Development (NABARD), Rs.0.14 Lakhs)
12. Performance Evaluation of power weeder and vertical conveyor reaper (Bengal Tools Ltd., Rs.0.52 Lakhs)
13. Performance of a bio-ply tyre (PBPT) (TVS Tyres Ltd, Madurai, Rs.5.52 Lakhs)
14. 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)
15. Probable maximum flood estimation for Nagarjunasagar Dam (SE, N.S. Dam Circle, Govt. of Andhra Pradesh, Rs.29.10 Lakhs)
16. Rainwater Harvesting at Alumina Refinery, Damanjodi (National Aluminium Company Lt. (NALCO), Rs.4.30 Lakhs)
17. Rainwater Harvesting in Guali Iron Ore Mines (Triveni Industries, Rs.2.81 Lakhs)
18. Rainwater Harvesting in the UAL Bengal Campus (UAL Bengal, Rs.2.00 Lakhs)
19. Rooftop rainwater harvesting in Nuagaon Iron Ore Mines (Triveni Industries, Rs.1.69 Lakhs)
20. Study of effect of mining activities on water quality in surrounding areas (Tata Steel, Noamundi, Rs.15.00 Lakhs)
21. Testing of Rice Mills (TORM) (Rice Millers, Rs.1.00 Lakhs)
22. Tractive performance of bias-ply and radial-ply tyres (Apollo Tyres Ltd, Vadodara, Rs.19.85 Lakhs)
23. Vermicomposting (Greenfield Agrotech, Rs.0.25 Lakhs)

Technology Transferred

1. Midnapore Cultural and Welfare Association, Midnapore, 2010. - Enzymatic debittering of cashew apple juice : Rs. 0.00 Lakh
2. RKM Nimpeeth - Biomgas production technology : Rs. 00.00 Lakh
3. Mid. Dev. society, and Access NGO, Orissa - Cashew apple juice technology and preservation of sugarcane juice : Rs. 0.00 Lakh
4. Farmers of Jetia Pahar Village in Mallarpur Block of Birbhum District (WB) - Design of Rainwater Conservation and Reuse Structures : Rs. 0.00 Lakh
5. Satyabhama Youth Club, Khurda, Odisha, 2011. - Enzymatic debittering of cashew apple juice : Rs. 0.00 Lakh
6. MSV Laboratory Pansukura (West Bengal) - Front line demonstration on application of Biopesticides against insect pests of stored grain : Rs. 1.00 Lakh
7. Sengupta Industries, Gopali - Industrial earthworm separator for separating earthworm from vermicompost : Rs. 0.00 Lakh
8. RKM Narendrapur - Low cost agril technology : Rs. 000.00 Lakh
9. MCWA, Medinipur - Manufacturing technology for aloe vera based fruit beverages : Rs. -0.00 Lakh
10. Progressive growers, Officers of State Dept. of Agri Irrigation, Horticulture & NGO - Micro irrigation & greenhouse technology : Rs. 0.00 Lakh
11. SODA Orissa, Suchetana, Midnapore. - Paddle operated sabai grass rope making machine : Rs. 0.00 Lakh
12. KVIC, Mushidabad - Silk reeling machine : Rs. 0.00 Lakh
13. Mid. Dev., Society. - Sisal fibre extraction machine : Rs. 0.00 Lakh
14. Chaplin Club (NGO) - Transfer Jute rope making machine : Rs. 0.00 Lakh
15. NGO Lodasuli, Midnapore - Transfer kick driven potter wheel : Rs. 0.00 Lakh

Patents (filed / granted)

1. A process for preparation of gallic acid by co-culture
2. A process technology for production of soluble black tea
3. Biodepolymerization of humic acid from lignite
4. Flow-regulated Drip Emitter
5. Mechanical loading-unloading and uniform spreading system for tea leaf on withering trough
6. Sweat Irrigation System

Visits Abroad by Faculty Members

1. Panda, Rabindra Kumar - To chair a session and make an oral presentation (National University of Singapore, Singapore,) 4-6 January 2011
2. Singh, Rajendra - Conference (Singapore,) Jan 3-7, 2011
3. Panda, Rabindra Kumar - To carry out activities related to a collaborative research project funded by DST-DFG (University of Hohenheim, Stuttgart, Germany,) one month during June 2010
4. Bhadoria, P B Singh - Research work (Univ. of Goettingen, Germany,) 3 weeks
5. Mishra, Ashok - Project Research Work (Wageningen University, The Netherlands,) 17 May 2010 to 12 June 2010
6. Mishra, Hari Niwas - Preshipment inspection and training on operation of HPP system (Horlow, London, UK,) 14 - 21 July 2010
7. Panda, Sudhindra Nath - To chair technical session and paper presentation in IPWE-2011 International Conference of EWRI (NUS, Singapore,) January (4-6), 2011
8. Panda, Sudhindra Nath - Collaborative research project visit sponsored by DST-DAAD (Department of Geoinformatics Hydrology and Modelling, Institute of Geography, Friedrich-Schiller University, Jena, Germany,) May (11-31), 2010
9. Raheman, Hifjur - For attending conference (University of Pittsburg, USA,) 20-23rd June, 2010
10. Mishra, Hari Niwas - To attend EFFoST Annual Meeting & Conference (Dublin, Ireland,) 14 - 17 November 2010

11. Panda, Sudhindra Nath - To present paper in BALWOIS international conference (Ohrid, Republic of Macedonia,) May (25-29), 2010
12. Goswami, Tridib Kumar - To deliver lecture (Reno, Nevada, USA,) 21-14 June
13. Goswami, Tridib Kumar - To deliver invited lecture (Jeonbuk National University, Jeonju, Korea.,) October 23-24
14. Srinivasa Rao, Pavuluri - To attend Annual International Meeting of ASABE 2010 (Pittsburg, Penselvanya, USA,) 4 days
15. Banerjee, Rintu - Visiting Professor (Sup Agro, France,) Nov-Dec
16. Srinivasa Rao, Pavuluri - Training on high pressure food processing system at Stansted Fluid Power Ltd. (Harlow, Essex, UK,) One week, 23-29 March 2011)
17. Chatterjee, Chandranath - Present paper in International Conference on Agricultural Engineering (Pattaya, Thailand,) 31 March - 1 April, 2011
18. Chatterjee, Chandranath - Present paper in International Conference on Water Resources and the Environment (IPWE 2011) (Singapore,) 4-6 January, 2011
19. Raghuvanshi, Narendra Singh - To attend conference (National University of Singapore,) Jan 04-06, 2011
20. Swain, Dillip Kumar - To present paper in conference (Montpellier, France,) 28 August to 4 September 2010
21. Bhadoria, P B Singh - Alexandr humboldt colloquium (T U, Kathmandu, Nepal,) 3 days
22. Raheman, Hifjur - Exposure to manufacturing of thermal equipments (NETZSCH, Selb Germany,) 16-18th June, 2010
23. Ghosh, Bijoy Chandra - Attending International conference (Belarus,) 7-10 June, 2010
24. Goswami, Tridib Kumar - To present paper (Pittsburgh, USA,) 19 - 23 June, 2010
25. Singh, Rajendra - Conference (Pattaya, Thailand,) 30 March - 3 April 2011
26. Mishra, Hari Niwas - Interactive meeting at Manchester University (Manchester, UK,) 12-13 November 2010
27. Panda, Sudhindra Nath - To attend BMBF sponsored collaborative network project (Department of Geoinformatics Hydrology and Modelling, Institute of Geography, Friedrich-Schiller University, Jena, Germany,) February (6-11), 2011
28. Srivastav, Prem Prakash - To present a paper in EFFoST-2010 (University College of Dublin, Ireland,) 10-12 November 2010
29. Mishra, Hari Niwas - To attend ISTEP Canada - DBT India meeting (Saskatoon, Canada,) 13 - 15 February 2011
30. Mishra, Ashok - to present paper in International Conference on Agricultural Engineering (Pattaya, Thailand,) 31 March 2011 - 1 April, 2011
31. Mishra, Ashok - to present paper in International Conference on Water Resources and the Environment (IPWE 2011) (Singapore,) 4-6 January, 2011

Invited Lectures by Faculty Members

1. Imaging photosynthesis of micropropagated plants *by* Dutta Gupta, Snehasish (Asansol Girls College)
2. Suitable biodiesel blend for Diesel Engine *by* Raheman, Hifjur (Fakir Mohan University, Balasore, Orissa)
3. Application of AVSWAT for Simulating Impact of Climate Variability on Non-point Source Pollutants *by* Panda, Rabindra Kumar (Agro Climate Research Centre, Tamil Nadu Agricultural University, Coimbatore)
4. Knowledge Sharing Workshop on Artificial Recharge of Groundwater in the Industrial Sectors *by* Panda, Rabindra Kumar (Sambalpur, Odisha)
5. Mathematical Modeling and Simulation in Food Process Engineering *by* Datta, Ashis Kumar (Jadavpur University)
6. Benefits and Potential of Micro Irrigation and other Plasticulture Technologies in Uttar Pradesh *by* Tiwari, Kamlesh Narayan (Central Institute for Sub tropical Horticulture, Lucknow)
7. Precision Farming Technologies in Horticultural Development *by* Tiwari, Kamlesh Narayan (Biduyt Bhaban, Dept. of FPI & H, Govt. of West Bengal, Salt lake, Kolkata)
8. Present Status and Future Development of Horticulture in West Bengal *by* Tiwari, Kamlesh Narayan (Dept. of FPI & H, Govt. of West Bengal)
9. Sustainable Aquaculture *by* Mitra, Arunabha (IIT, Kharagpur)
10. Sustainable Aquaculture *by* Mitra, Arunabha (IIT, Kharagpur)
11. Integrated Agromet Advisory Services at IIT Kharagpur *by* Panda, Rabindra Kumar (PFDC National Workshop at IIT Kharagpur)
12. Dynamics of Seawater Intrusion in Coastal Aquifer Systems *by* Jha, Madan Kumar (SWID, Kolkata)
13. Management Strategies for Seawater Intrusion Control *by* Jha, Madan Kumar (SWID, Kolkata)
14. Post-harvest technology of Betel leaf & Chaired technical session in Workshop on Betel vine *by* Guha, Proshanta (BAMETI, Patna, Bihar)
15. Value Addition and By-product Utilization in Rice milling Industry *by* Srinivasa Rao, Pavuluri (Rice Tech Expo, Kolkata)
16. Disinfestations of insect pests of stored food grains by application of fluidized bed dryer *by* Singh, Manindra Nath (BHU Varanasi)
17. Novel technologies for processing and packaging of RTE health foods, *by* Mishra, Hari Niwas (Anand, Gujrat)
18. Post harvest management and processing of fruits and vegetables, *by* Mishra, Hari Niwas (Anand, Gujrat)
19. Recent trends R D in Food Science & Technology *by* Mishra, Hari Niwas (Mohali, Punjab)
20. Trends in R & D in Food Science & Technology *by* Mishra, Hari Niwas (Manchester, UK)
21. R & D trends probable areas of research collaboration *by* Mishra, Hari Niwas (Saskatoon, Canada)
22. Post harvest handling and management of fruits and vegetables *by* Mishra, Hari Niwas (New Delhi)
23. Technology for dahi powder and dahi powder based health drink *by* Mishra, Hari Niwas (Kolkata)
24. Novel technologies for processing and packaging of RTE health foods and beverages *by* Mishra, Hari Niwas (Karnal)
25. Optimum sizing of on-farm reservoir for various cropping systems in rainfed uplands of eastern India *by* Panda, Sudhindra Nath (AICTE/QIP Short Term Course on Green Infrastructure, Dept. of Civil Engg., IIT Kharagpur)
26. Rainwater Management for Sustainable Natural Resources *by* Panda, Sudhindra Nath (IBM Research Day, IIT Kharagpur)
27. Study and Research Opportunity for Agricultural Engineering Students in NIT, IIT and Abroad *by* Panda, Sudhindra Nath (CAET, OUAT, Bhubaneswar)
28. Role of water harvesting structures & farm ponds lined with plastic films in providing critical irr. *by* Panda, Sudhindra Nath (Workshop on Micro Irrigation and other Plasticulture Tech.: Potential & Promotional Strategies in West Bengal, IIT Kharagpur)
29. Management of Water Resources for Sustainable Agriculture in an Irrigated Semi-arid Region of India *by* Panda, Sudhindra Nath (Department of Geoinformatics Hydrology and Modelling, Institute of Geography, Friedrich-Schiller University, Jena, Germany)
30. Modern Trend in refrigeration of Agriculture and Horticulture products & Marketing of Potato *by* Goswami, Tridib Kumar (Park Hotel, Kolkata.)
31. Use of liquid nitrogen for individually Quick Freezing of Foods *by* Goswami, Tridib Kumar (ICFoST)

32. Cryogrinding of Spices in Seminar cum Exhibition on Opportunities by Goswami, Tridib Kumar (Hotel Oberoi Grand, Calcutta)
33. Indian Institute of Technology as a leading technology resource centre: the technologies developed by Goswami, Tridib Kumar (Indian Institute of Social Welfare & Business Management, College Square Kolkata.)
34. Cryogrinding of Spices by Goswami, Tridib Kumar (Hotel Oberoi Grand, Calcutta, organized by Confederation of Indian Industry (CII))
35. Indian Institute of Technology as a leading technology resource centre: the technologies developed f by Goswami, Tridib Kumar (Technology Resourcing at Indian Institute of Social Welfare & Business Management, College Square Kolkata.)
36. Role of cryogenics in food processing and preservation by Goswami, Tridib Kumar (Jeonbuk National Univrsity, Jeonju, Korea.)
37. Controlled and Modified Atmosphere Storage of Fruits and Vegetables by Goswami, Tridib Kumar (44th ISAE convention held at IARI campus, New Delhi.)
38. MA and CA for storage of fruits and vegatables by Goswami, Tridib Kumar (Department of Agricultural Engineering under School of Technology in Assam University, Silchar.)
39. Rural Technologies for livelyhood by Bhadoria, P B Singh (Kathmundu Nepal)
40. 1.Traction Theory, 2.Design and selection of tyres for agricultural tractors by Pandey, Keshaw Prasad (TVS Srichakra Ltd ,Madurai)
41. 1. Tractor-Implement Matching 2.Tillage Mechanics, 3.Traction Theory by Pandey, Keshaw Prasad (Eicher Tractors Ltd Bhopal)

Books Published

1. K. N. Tiwari: Research achievements of Precision Farming Development Center Project *published by* N.C.P.A.H., Min. Of Agri., Govt. Of India (2010)
2. N. K. Gontia & K. N. Tiwari: Crop water stress indices and evapotranspiration estimation for irrigation scheduling and yield modelling of wheat crop using remote sensing and GIS *published by* LAP LAMBERT Academic Publishing AG & Co. KG, Saarbrücken Germany (2010)
3. S. Dutta Gupta: Reactive oxygen species and antioxidants in higher plants *published by* CRC Press & Science Pub., USA (2010)

Seminars, Conferences and Workshops Organised

1. 1st Indo-German Workshop on HydroRiceTech
2. Annual wokshop and review of progress of NGOs on RuTAG
3. Micro Irrigation and other Plasticsulture Technologies: Potential and Promotional Strategies in West
4. Seminar (Awareness Programme) on the use of Integrated Agromet Advisory to cope with climate change
5. Workshops on vermicomposting soil nutrient management

Short-Term Courses, Training Programmes and Workshops organised

1. A 9-Week Duration Course on Industrial Safety Engineering for Tata Steel Officials (May 24th to July 23rd 2010)
2. Advanced programme on Micro irrigation and Greenhouse Technology (May 20-21, 2010)
3. Engineering & Management in Fisheries and Aquaculture (08-16 Dec 2010)
4. Engineering & Management in Fisheries & Aquaculture for Govt of Bihar (2 -9 Feb 11)
5. Engineering and Management in Fisheries and Aquaculture (8 days (2/2/2011 - 9/2/2011))
6. Engineering and Management in Fisheries and Aquaculture (9 days (8/12/2010 - 16/12/2010))
7. Micro irrigation for Horticultural crops (January 27-28, 2011)
8. Micro-irrigation and greenhouse technology (November 29 to 30, 2010)
9. Plasticsulture application in Fruits, Vegetables and Flowers crop (September 21-22, 2010)
10. Precision Farming in Horticulture (June 17-18, 2010)
11. Precision Farming in Horticulture (March 10-11, 2011)
12. Precision Farming Technology (December 20-21, 2010)
13. Protected Cultivation Technology (July 22-23, 2010)
14. Protected Cultivation Technology for Horticultural crops (February 24-25, 2011)
15. Refresher Course in Food Technology - I (September 13 - 17, 2010)
16. Refresher Course in Food Technology (13 to 17 September 2010)
17. Refresher Course In Food Technology - II (January 31 - February 4, 2011)
18. Refresher Course in Food Technology-II (31 January to 4 February 2011)
19. Sprinkler and Micro Irrigation (August 17 to 18, 2010)
20. Use of plasticsulture in Horticultural crops (January 6-7, 2011)
21. Vermicompost Short Term Courses of RuTAG-EI (15 days)
22. Vermicopost and soil nutrient management Short Term Courses at Barasat (2 days)
23. Vermicopost Short Term Courses at Sundarban (2 days)

Papers Published in Journals

1. Application of Response Surface Methodology (RSM) for Optimization of Physico-chemical Parameters for the Production of Endoglucanase by *Trichoderma reesei* Rut C-30 using Agro-residue, By Kapoor V, Singh R, Banerjee R, Kumar V *Dynamic Biochemistry, Process Biotechnology and Molecular Biology* (2011)

2. A new Wavelet-Bootstrap-ANN hybrid model for daily discharge forecasting By Tiwari, M. K. and Chatterjee, C *Journal of Hydroinformatics* doi: 10.2166/hydro.2 (2011)
3. A simple bund plugging technique for improving water productivity in wetland rice. By Patil, M. D., B. S. Das, P. B. S. Bhadoria. *Soil Tillage Research* 112: 66-75 (2011)
4. An alternative rotational delivery schedule for improved performance of reservoir based canal irrigation system By Bhadra, A., Bandyopadhyay, A., Singh, R., Raghuvanshi, N.S. *Water Resour. Mgmt.* 24: 3679-3700. (2010)
5. Application of Criteria and Indicators in Community Based Sustainable Mangrove Management in the Sunderbans, India By D. Datta, P. Guha and Chattopadhyay, R.N. *Ocean and coastal management* 53: 468-477 (2010)
6. Aquaculture waste water "an irrigation source" By Ray, L.I.P, Mal, B.C., Das, B.S., Moulick, S., Panigrahi, P.K. and Bag, N. *International Journal of Science and Nature* 1(2), 148-155 (2010)
7. Artificial neural networks approach in evapotranspiration modeling: a review By Kumar, M., Raghuvanshi, N. S., and Singh R. *Irrigation Science* 29(1):11-25 (2010)
8. Assessment of groundwater potential in a semi-arid region of India using remote sensing, GIS and MCDM techniques By Machiwal, D., Jha, M.K. and Mal, B.C. *Water Resources Management* 25(5): 1359-1386 (2011)
9. Biodiesel production from mixture of mahua and simarouba oils with high free fatty acids. By Jena, P. C., Raheman H., Prsanna Kumar, G. V. and Machavaram R. *Journal of Biomass & Bioenergy* 34(2): 1108-1116 (2010)
10. BlaCri - A simplified software/DSS to ease the water management in agriculture with minimum meteorological observations By Pandey, A.C., A. Mishra, V.K. Pandey, S.S. Kumar *Ecology Environment and Conservation* 16 (2): 301-305 (2010)
11. Climate Change Impact Assessment and Evaluation of Agro-Adaptation Measures for Rice Production in Eastern India By Swain D. K. and Thomas D *Journal of Environmental Informatics* 16(2):94-101 (2010)
12. Climatic Parameter-based Simulation of Runoff and Sediment Yield from a Small Agricultural Watershed By Nandgude, S., Panda, R.K., Streck, T., and Lamers, M *International Journal of Climate Change: Impact and Responses* 2 (2):1-24 (2010)
13. Closure to "A quick method for estimating furrow infiltration" By Mailpal, D. R., Wallender, W. W., Raghuvanshi, N. S., Singh, R. *J. Irrigation & Drainage. Eng.* 136, 75 (2010)
14. Cosmetic attributes of Aloe vera L. gel. By S Dutta Gupta *Medicinal & Aromatic Plant Science & Biotechnology* 4: 10-18 (2010)
15. CRYOGENIC GRINDING OF SPICES IS A NOVEL APPROACH WHEREAS AMBIENT GRINDING By Murlidhar Meghwal *Continental J. Food Science and Technology* 4: 24 " 37 (2010)
16. Daily River Flow Forecasting Using Wavelet ANN hybrid models By Pramanik, N., Panda, R. K., Singh, A *Journal of Hydroinformatics* doi:10.2166/hydro.20 (2010)
17. Damping characteristics of seat cushion materials for tractor ride comfort By C.R. Mehta and V. K. Tewari *Journal of Terramechanics* vol. 47, pp: 401-406 (2010)
18. Deflection and contact characteristics of animal drawn vehicle tyres By G.Tiwari and K.P.Pandey *IE(I) Journal-AG* 91:7-10 (2010)
19. Delineation of hydrologically similar units in a watershed based on fuzzy classification of soil hydraulic properties By Santra, P., B. S. Das, D. Chakravarty *Hydrologic Processes* 25:64-79 (2011)
20. Design, development and optimization of machine and process variables of millet dehuller. By Singh KP, Mishra HN and Saha S. *Journal of Agricultural Engineering*, (Accepted, In press) (2010)
21. Design, development, testing and comparative evaluation of betel leaf oil extractor By P. Guha *Agricultural Mechanization in Asia, Africa and Latin America* 41 (4):28-35 (2010)
22. Determining the optimum cell size of digital elevation model for hydrologic application By Sharma, A., Tiwari, K.N. and Bhadoria, P.B.S. *Earth System Science* MS ID: JESS-S-09-002 (2010)
23. Development of a rainfall-runoff model: Comparison of two approaches with different data requirements By Bhadra, A., Bandyopadhyay, A., Singh, R., Raghuvanshi, N.S. *Water Resour. Mgmt* 24 37-62 (2010)
24. Development of a transgenic hairy root system in jute (*Corchorus capsularis* L.) with gusA reporter gene through Agrobacterium rhizogenes mediated co-transformation By Tirthartha Chattopadhyay, Sheuli Roy, Adinpunya Mitra and Mrinal K. Maiti *Plant Cell Reports* 30: 485-493 (2011)
25. Development of an accurate and reliable hourly flood forecasting model using Wavelet-Bootstrap-ANN hybrid approach By Tiwari, M. K. and Chatterjee, C *Journal of Hydrology* 394, 458-470 (2010)
26. Development of SPAD values of medium- and long-duration rice variety for site-specific nitrogen management By Swain D. K. and Sandip S. Jagtap *Journal of Agronomy* 9(2):38-44 (2010)
27. Digital slip meter for agricultural 2WD tractors By P.K.Pranav, K.P.Pandey and V.K.Tewari *Computers and Electronics in Agriculture* 73 (2):188-193 (2010)
28. Digital Wheel Slipmeter for Agricultural 2WD Tractors By P.K. Pranav, K.P.Pandey, V.K.Tewari *Computers and Electronics in Agriculture* vol.73, pp:188-193 (2010)
29. Discussion of Evaluation of preaeration with V-notch weir and cascade structures in clarifiers by Tamer Bagatur March 2009, Vol. 135, No. 3, 176-184 By Moulick, S. *Journal of Environmental Engineering* 136(5), 560-560 (2010)
30. Effect of Concentration of Sodium Chloride, temperature and pH on Solubility of Myosin Extracted from Fresh Water Fish, Labeo rohita By Madhusweta Das *International Journal of Food Engineering* 7 (2011)
31. Effect of Land-use Land cover Change on Soil Erosion Potential in an Agricultural Watershed By Sharma, A., Tiwari, K.N. and Bhadoria, P.B.S. *Environmental Monitoring and Assessment* DOI-10.1007/s10661-0 (2010)
32. Ester Sensing with Poly (Aniline-co-m-aminobenzoic Acid) Deposited on Poly (Vinyl Alcohol) By Adhikari S, Singh J, Banerjee R and Banerji P *Sensors and Transducers* 125(2), 177-186 (2011)
33. Estimation of annual spatial and volumetric precipitation in the Klamath basin By Roscoe, K. L., Wallender, W. W., Carlson, H., and Raghuvanshi, N. S. *Indian. Water Resourc. Soc.* 30(2):1-11 (2010)
34. Estimation of spatially and temporally distributed crop coefficient and evapotranspiration of wheat (*Triticum aestivum*) in an irrigation command using remote sensing and GIS By Gontia N.K. and Tiwari K.N. *Water Resources Management* 24 (7): 1399-1414 (2010)
35. Evaluation of climate change impacts and adaptation measures for rice cultivation in Northeast Thailand By Babel M.S., Agarwal A., Swain, D.K., and Herath, S. *Climate research* 46:137-146 (2011)
36. Evaluation of HEC-HMS and WEPP for simulating watershed runoff using remote sensing and geographical information system By Verma, A.K., Jha, M.K. and Mahana, R.K. *Paddy and Water Environment* 8(2): 131-144 (2010)
37. Evapotranspiration estimation of Aloe Vera (*Aloe Barbadosensis*) using field measurements By Kumar, M., A. Mishra, N.S. Raghuvanshi *J. of Indian Water Resources Society* Accepted (2010)
38. Fermented milks and milk products as functional products: a review. By Shiby VK and Mishra HN *Critical reviews in Food Science and Nutrition*, Accepted, In press (2010)

39. Forecasting of rainfall using ocean-atmospheric indices with a fuzzy neural technique By Srivastava, G., S. N Panda, P. Mondal, and J. Liu *Journal of Hydrology* 395(3-4):190-198 (2010)
40. Functional Foods: An Overview By Sumeet kaur and Madhusweta Das *Food Science and Biotechnology* accepted (2011)
41. GIS-based assessment and characterization of groundwater quality in a hard-rock hilly terrain of western India By Machiwal, D., Jha, M.K. and Mal, B.C. *Environmental Monitoring and Assessment* 174(1-4): 645-663 (2011)
42. Groundwater assessment in Salboni Block, West Bengal (India) using remote sensing, GIS and MCDA techniques By Jha, M.K., Chowdary, V.M. and Chowdhury, A. *Hydrogeology Journal* 18: 1713-1728 (2010)
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Institutional Development (ID) Program

IIT Kharagpur has initiated the Institutional Development (ID) program to leverage the alumni and corporate relations for the growth 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
- R&D Campaign
- KGP brand building
- Recruitment and Retaining

Activities

A new alumni **web portal** www.iitkgp.org was launched on January 7, 2011.

Publications

- KGP Connection E-Newsletter
- KGPian
- Yearnings of Yore

Organized Institute Awards

Nina Saxena Excellence in Technology Award; Presented to Dr. Jagannath Nayak of Research Centre Imarat (RCI), Hyderabad, and his team.

Distinguished Alumnus Award: Recipients - Mr. Subrata Biswas, Mr. Amit Chatterjee, Prof. Mihir K Chaudhuri, Prof. Sujoy K Guha, Mr. Ranbir Singh Gupta, Mr. Uttam C Jain, Prof. Narendra Kumar, Mr. Malay Mukherjee, Mr. R. N. Mukhija, Dr. K. Radhakrishnan, Prof. Kailas C Sahu, Dr. Prabhakant Sinha

Distinguished Service Award: Recipients - Murmu Sundar Mohan, Ramnath S Mani, Dr. Arvind Jain, Dr. Hitendra Ghosh, Puran Dang

The New Year brought together the alumni of the Institute again for the seventh time to IIT in the form of **8th Annual Alumni Meet 2010** held during January 7-9 2011. The Meet was, dedicated to those who graduated in the years 1961 and 1986. Many alumni came with their spouses and some with children. To commemorate the occasion a Souvenir, "Yearnings of Yore – Volume VIII" was published. The programme consisted of Inauguration & Award Ceremony, Sports events, Hall Reunion, Cultural Programme and a musical evening. A small memento was presented to all participants belonging to the Silver Jubilee and Golden Jubilee Batches.

The event was conducted and organized by the student members of the Alumni CELL along with the Office of AA& IR and TAA, Kharagpur.

PAN IIT 2011 was held at Noida, UP during October 29-31 2011. Prof. Damodar Acharya, Director and Prof. Amit Patra, Dean (AA&IR) attended the event along with office representatives and student volunteers.

Fundraising Campaigns

- My Imprint Campaign – for final year students and fresh graduates; 23 students signed up for the programme; the campaign will formally be launched during the 2011 convocation through an oath taking ceremony.
- Endowment Campaigns – Chair Professorship, Scholarship, R&D, General

Other Programmes

- **Mentorship programme** for 2nd year and 3rd year students - The mentorship program aims at a healthy interaction between an interested mentor and an eager protégé. This program matches the profiles of the applicant and the alumni based on common goals and career interest. The mentors would advice the protégé on any sort of problems faced by them and would be able to provide information related to professional and career development. Issues related to career path, resumes, course selection, international perspectives and work/family could be discussed with the mentors. The students have the opportunity to remain in contact with the mentors even after graduating.
- **Outstanding Young Faculty Fellowship Program** - The main objective of the Program is to encourage faculty at IIT Kharagpur. Under the Program, the Institute, through a committee constituted for this purpose, known as the Outstanding Young Faculty Committee would select the faculty annually. The Faculty thus selected would be eligible for – a Citation, a Rolling Trophy and financial incentive to be decided by the OYFC jointly with TAA-BLR on a yearly basis. The faculty should be below the age of 35 years to be eligible under the program. **Recipient** - In 2010-2011 the fellowship has been conferred on Dr. Debdeep Mukhopadhyay of Computer Science Engineering.

Interactive Panel Discussion: *Relevance of Gandhi Today in the Economic Development of the Country*

Speakers

Smt. Kumod Joshi, Chairperson Khadi and Village Industries Commission

Shri S.K. Bandyopadhyay, Padma Bhusan, Member, Khadi and Village Industries Commission

Prof. D. Acharya, Director, IIIT Kharagpur.

Moderator: Prof. C. Chakraborty, Dept. of Humanities & Social sciences, IIT Kharagpur.

Institute Lectures

- **Speaker: Prof. Stefan Bengtson**, Professor and Head, Department of Paleobiology Swedish Natural History Museum Stockholm, Sweden. **Topic:** “Early Life on Earth”
- **Speaker: Swami Paramanand Giri Ji Maharaj**, Vedant Shiromani Yug Purush Maha Mandaleswar, Brahm Gyani **Topic:** “Vedanta Darshan”
- **Speaker: Prof. David Blair**, Winthrop Professor and Director Australian International Gravitational Research Centre, University of Western Australia, Australia. **Topic:** “Exploring the Dark Side of the Universe with Gravitational Waves”
- **Speaker: Prof. Bidyendu Mohan Deb**, D.Phil (Oxon, 1969), FNA, FASc, FTWAS Theoretical chemistry, chemical Physics, Atomic and Molecular Physics - IISER Kolkata, **Topic:** “Glimpses into Indian Heritage in Science and Mathematics.”
- **Speaker: Dr. Anil K Rajvanshi**, Director Nimbkar Agricultural Research Institute (NARI), Maharashtra. **Topic:** “Nation Building, ITians and Happiness”
- **Speaker:** Prof. S. Krishnaswami, Department of Chemistry Physical Research Laboratory, Ahmedabad. **Topic:** “Natural Radionuclides in Aqueous Systems: Tracing and Timing Biogeochemical processes and particle Dynamics”
- **Speaker: Acharya Saumendra Nath Brahmachari**, Alumnus of IIT Kharagpur (B.Tech, ME, 1968) Dr. B.C. Roy Gold Medalist, President Dev Sangha Seva Pratisthan Deoghar, **Topic:** “Value Education”
- **Speaker:** Prof. Ajay K. Sood, Departments of Physics, IISc Bangalore, **Topic:** Graphene: The Rising Star of 2D Nanomaterials
- **Speaker:** Prof. David L Kaplan, Professor and Chair Department of Biomedical Engineering Tufts University, USA – Director: NIH Tissue Engg. Resource Centre. **Topic:** “New Strategies for Tissue Engineering”
- **Speaker:** Prof. Bruce Ellingwood, Georgia Institute of Technology, Atlanta USA.
- **Topic:** “Assessment and mitigation of risk from competing low- probability, high-consequence events”
- **Speaker: Prof. Kumbakonam Rajagopal** - Distinguished Professor, Regents Professor, Forsyth Chair in Mechanical Engineering, Professor of Mathematics Texas A & M University, USA, **Topic:** “Continuum Mechanics: The Eternal Well – spring”

Visiting Alumni

- Mr. Shail Kumar, Senior Director, External Relations, College of letters & Science (L&S), University of California, Berkeley,
- Mr. Shyamal Roy, Founder of GEOMATE, USA,
- Prof. Kalyan Ghosh (B.Tech, 1957, ME, IIT KGP) University of Montreal, Canada,
- Prof. Suresh Nair, Dun and Bradstreet CITI Research Fellow, Department of Operations and Information Management, Executive Director of Accreditation School of Business, Unit 1041, University of Connecticut Storrs,
- Mr. Tilak Sen, ADB Consultant, Manila,
- Prof. Asit Kumar Biswas,
- Prof. Anjan Bose, Regents Professor, Washington State University, USA,
- Dr. Arnab Sarkar, a veteran of the industry, as CEO of AOFS
- Dr. Pratap Khanwilkar, Founder/CEO of Ignition Key LLC
- Dr. Prabha Kant Sinha, Co-Founder and CEO, ZS Associates, USA,
- Mr. Soumitra Biswas, Advisor, DST TIFAC, New Delhi,
- Mr. Amit Ghosh
- Acharya Saumendra Nath Brahmachari, President, Dev Sangha Seva Pratisthan, Deoghar,

MoU Signed for the purpose of faculty and student exchange:

- Dong-A University, Busan, Korea
- University of Western Australia

Visiting Students under MoU

- Sri Avishek Nag, University of California Davis, USA
- Mr. Nicolas Heine, University of Bremen, Germany
- Mr. Ahmed Irathni, Polytech'Lille, France

Distinguished Visitors

- Dr. Chang, Yuan – Huei, Science and Technology Division Taipei Economic and Cultural Center, New Delhi
- Prof. Hema Sharda, Faculty of Engineering, Computing and Mathematics, the University of Western Australia.
- Ms. Rita Sinde, International Officer – responsible for the Incoming mobility students unit and Mr. Raul Santos – responsible for the communication and Media Office, University of Porto.
- Prof. Shyamal Biswas, Vice Chancellor, Chittagong University of Engineering and Technology, Bangladesh.
- Prof. Raj R. Rao and Prof. James McLeskey of Virginia Commonwealth University USA.
- Delegation from the University of South Pacific.
- Delegation from Warwick Manufacturing Group, University of Warwick, UK.
- Prof. Hema Sharda, Winthrop Professor, Director South Asia Relations, & Vice Chancellery, and Prof. Robyn A Owens, Deputy Vice – Chancellor (Research), University of Western Australia.
- Associate Provost Alex Fowler and Dr. Shankha Bhowmick, University of Massachusetts Dartmouth.
- Delegation from Ministry of Northern Development, Mines and Forestry of the Ontario province, Canada.
- Dr. Jorge Beltramini and Dr. Akshat Tanksale, ARC Centre of Excellence for Functional Nanomaterials, University of Queensland, Australia.
- Mr. Nidup Dorjit, Pro Vice- Chancellor of RUB and Director of CST and his delegation from College of Science and Technology of Royal University of Bhutan.
- Dr. Shuji Fujii, Professor, Graduate school of Information Science and Engineering, Mechanical and Environmental Informatics and Head of the Fujii Research lab & Mr. Mohan Mohanogopal, alumnus, Tokyo Institute of Technology.

Advanced Technology Development Centre

Head

Prof. P.P. Chakrabarti

Associated Faculty

Professor

Prof. P.P. Chakrabarti, CSE	<i>Ph.D.</i> , Artificial Intelligence, CAD for VLSI Design of Algorithms, Formal Verification
Prof. S.K. Lahiri, Advisor, SRIC	<i>Ph.D.</i> , Microelectronics, VLSI, MEMS, Integrated optics
Prof. S.K. Sen, Advisor SRIC	<i>Ph.D.</i> , Advanced Plant Genetics.
Prof. S. Sengupta, E & ECE	<i>Ph.D.</i> , Computer vision, Multimedia
Prof. D. Biswas, E & ECE	<i>Ph.D.</i> , III-V Semiconductor Device Technology
Prof. A. Patra, EE	<i>Ph.D.</i> , VLSI Design of Power Converters, Industrial Information Technology
Prof. A. Basu, CSE	<i>Ph.D.</i> , Embedded Systems, Artificial Intelligence application
Prof. S. K. Roy, Physics	<i>Ph.D.</i> , Solid State Physics, thin film, nanotechnology
Prof. S. P. Pal, CSE	<i>Ph.D.</i> , Computational geometry, Design and analysis of algorithms
Prof. B. Bhattacharya, CE	<i>Ph.D.</i> , Structural Engineering, Reliability
Prof. A. Ghosh, BT	<i>Ph.D.</i> , Virology and Molecular Biology
Prof. Pallab Dasgupta, CSE	<i>Ph.D.</i> , VLSI CAD & Electronic Design Automation
Prof. S. Chakraborty, ME	<i>Ph.D.</i> , Micro fluidics
Prof. R. Banerjee, AFE	<i>Ph.D.</i> , Food Biotechnology, Bioenergy, Enzyology and its biotechnological applications, Protein Chemistry
Prof. S. Mukhopadhyay, EE	<i>Ph.D.</i> , Failure Diagnostic and Prognostics and Tolerance for Vehicular Systems, Industrial Instrumentation and Control Systems.
Prof. P. K. Chattraj, Chem	<i>Ph.D.</i> , Density functional theory, Chemical reactivity, ab initio calculations, Quantum chaos, Aromaticity in metal clusters.
Prof. S. DasGupta, ChE	<i>Ph.D.</i> , Microscale Transport Process and Microfluidics

Associate Professor

Dr. T.K.Bhattacharyya, E&ECE	<i>Ph.D.</i> , Microelectronics, VLSI, MEMS
Dr. Chacko Jacob, Mat. Sc.	<i>Ph.D.</i> , Wide Bandgap Semiconductors/ Nanomaterials/ Direct Fluorination of Materials/Oxide semiconductors
Dr. Pallab Banerjee, Mat. Sc.	<i>Ph.D.</i> , Semiconducting materials, Materials for energy conversion: Photovoltaic and Thermoelectric, III-V and II-VI MOCVD, Organic semiconductor
Dr. A. Dhar, Physics	<i>Ph.D.</i> , Condensed matter Physics, nanotechnology
Dr. S. Das, SMST & ATDC	<i>Ph.D.</i> , Microsystem Technology, BIOMEMS, Electro-physiological characterisation of biospecies, Medical electronics.
Dr. P. Mandal, E & ECE	<i>Ph.D.</i> , Design Automation of CMOS Analog circuits and Systems, Analog Circuit Design.

Senior Scientific Officer

Dr. Pranabendu Gangopadhyay	<i>Ph.D.</i> , Microphotonics, Integrated Optics, Fiber Optics, MOEMS, Microelectronics.
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Laboratories Involved in ATDC

- MEMS and Microelectronics Laboratory
- MEMS Design Centre
- Micro-fluidics Laboratory

- Kalpana Chawla Space Technology Cell
- Microscience Laboratory
- Advanced VLSI Laboratory
- Advanced Laboratory for Plant and Genetic Engineering
- Communication Empowerment Laboratory
- Optel-IIT Fiber-Optic Center
- General Motors Collaborative Research Laboratory
- P.K. Sinha Centre for Bio-energy
- Centre for Railway Research
- Centre for theoretical Studies

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, Semiconductor devices, Nanotechnology, Lithium niobate integrated optics, Microstructuring of SU-8, Astrophysics, Cosmology, Nonlinear Sciences, Theoretical condensed matter physics, Wireless communication and Baseband processing, Analog and RF circuits, Plant biotechnology.

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. Fabrication and characterization of titanium indiffused lithium niobate waveguides, directional couplers, power splitters, switches for fiber-optic communication networks have been performed. 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.

New Acquisitions

MEMS vaporising liquid microthruster, Microflow for microvalve, micropump, MEMS flow sensors, Integrated-optic switch, MEMS accelerometer for aircraft motion sensing. Tunneling accelerometer and Capacitive accelerometer, SU-8 microneedles.

Academic Performance

Visits Abroad by Faculty Members	7
Invited lectures by faculty members	10
Lectures by Visiting Experts	2
Sponsored Research Projects	43
Seminar Conference Workshop Organized	2
Consultancy Projects	5
Patents (filed / granted)	1
Books Published	5
Papers Published in Journals	48
Papers Presented in Conferences	22

Facilities new addition

(a) Recently IIT Kharagpur has installed a new novel custom made MBE (Molecular Beam Epitaxy) machine, Riber France made. The versatile MBE system is Compact, flexible and affordable with features carefully designed to meet the highest specifications for the research of all III-V compound semiconductor materials. This is a "Vertical Reactor" technology, with 3-inch wafer diameter

integrated system. The MBE has Arsenide and Nitride growth facilities with 6 cells. Out of the 6 cells, one is Arsenic valved cracker which allows evaporating As_2 and As_4 both the allotropes. The presence of cracker cell gives us the flexibility to maintain $As_2:As_4$ ratio for optimizing the Gallium Arsenide growth along with reloading of As without disturbing the chamber vacuum. Also the machine has both Ammonia (NH_3) and plasma N_2 sources for Gallium Nitride growth. Ammonia will be used for thick film growth and plasma N_2 for very fine structures. Besides, the MBE has double dopant (Si and Mg) cell for acceptor and donor impurities. The cryogenic pump is used for 10^{-11} Torr vacuum and the pump is water cooled. So, uninterrupted water supply to the pump is essential to maintain the vacuum system. The uninterrupted power supply to the system is at the same time important to power the cryo-pump, turbo-molecular pump, computer, HMI and all the cells. For that a custom designed UPS & generator system has been successfully installed.

(b) Recently a Network Analyser, N5242A, 10 MHz-26.5 GHz has been installed and functional.

Collaborative efforts

- a) A joint collaboration research project on *Development of micromechanical inertial and flow sensors for environmental / biomedical application* sponsored by DST, Govt. of India in going on under an Indo-Italian research programme. (ITPAR). Collaborating Institute - ITC - IIST, Trento, Italy.
- b) 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.
- c) A joint collaborative research project on *Rapid prototyping technique to write photonic structures using femtosecond laser* is submitted to EPSRC along with ORC, University of Southampton, U.K.

Computer and Informatics Centre

Head

Prof. Prabir Kumar Biswas

Faculty / Officers

Nanda, Dilip Kumar	<i>PhD (IIT Kharagpur)</i> , IT Infrastructure Management and Operations, Application Software & Numerical Techniques
Goswami, Partha	<i>M.Tech (IIT Kharagpur)</i> , Enterprise & Optical transport network
Roy, Devshri	<i>PhD (IIT Kharagpur)</i> , Artificial Intelligence, DBMS
Dutta, Bimal Kanti	<i>M.Sc, PGDCS (Roorkee Univ.)</i> , DBMS, OS, Algorithms, Computer Networks, Distributed DBMS & Graphics Programming.
Das, Surid Kumar	<i>M.Tech (Rajasthan Vidyapith Deemed University)</i> , Hardware, Compute Network
Chattopadhyay, A.	<i>M.S (IIT Kharagpur)</i> , Hardware, OS, Network Security & Applications
Das, Sudipto	<i>M.Tech (Rajasthan Vidyapith Deemed University)</i> , OS, Network Applications and Security

Academic Performance

Papers Published in Journals	1
Papers Presented in Conferences	1

Facilities

Networking Facilities in the Institute

Currently the institute has two independent networks: Telephone network (for voice) and data network (for computer networking). The telephone network is spread over copper cables. The data network in the academic campus and in students' hostels are over optical fiber backbone and locally distributed over copper wires; where as for residential campus the data network is extended using ADSL modem via telephone network to limited family. The academic area of institute has limited Wi-Fi connectivity at a few hot spots. In view of huge construction, which is under way and planned in future to accommodate increased number of students and faculty, it is often necessary to expand the network domain (both telephone network and data network) to the newly constructed buildings. The upgradation of the existing network infrastructure is getting carried out to cater the network demands of the Institute for the next ten years. It is envisaged that upon implementation of the project as per the plan chalked out by CIC, the upgraded network will have the following features:

- All distribution switches will be connected to dual core switches through 10 Gbps link.
- Access link will be 10/100/1000 Mbps to support the present network interface card of the computers.
- A Wi-Fi network will be overlaid in all Hostels and all departments (locations mentioned above) to avoid any further adhoc UTP cable laying.
- All network switches located at various locations will be housed in a structured fashion.
- Additional fiber and copper cable will be laid wherever required.

Apart from the above said upgradation Institute is implementing a modern quadruple play network in all areas of the campus, which will support data, audio and video distribution and also Wi-Fi connectivity.

Salient Features:

- The Network requirements will span the **entire campus**
- This will implement a state of the art "**Quadruple Play**" services integrating Data, Voice, Video and Wireless.
- The system will be designed keeping in mind not only the present population and their activities but will take into account the **Overall Master Plan of the Institute**.

4. The old quarters, which are planned to be demolished, **will be covered only by wireless services**. However fiber will be taken to each sub zone.
5. 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**.
6. The **Wireless Coverage** in the campus will have the following features:
 - a. The wireless service will expand from the current state of a few hot spots in the academic area to the entire campus.
 - b. Some of the access points will be fed from the CIC through fiber while others will be fed through a Wi-Mesh. Wi-Mesh will be 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 will be hosted on the Lamp post and its DC power will be fed from the lamp post.
7. The new **Voice Services** will encompass the following:
 - a. There will be provision of at least 5000 new lines.
 - b. The current PBX, 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 will be coming mainly from the new system and there will be a seamless integration between the two using appropriate gateways.
 - d. Minimal up-gradation will be done on the existing PBX for this integration.
 - e. The integration components will be chosen in a fashion so that they continue to work even if the existing PBX is replaced in future.
 - f. New telephone connections should minimize the requirement of digging in the campus to lay new telephone cables.
 - g. New telephone connections will be a mix and match solution with possibility of giving services through analog POTS, IP Phones or Wi Fi enabled handsets.
8. The **Data Services** will involve the following:
 - a. Data services at hostels and academic areas will continue and be upgraded as necessary.
 - b. Data services will also be extended to the new Laboratory complexes.
 - c. Wireless data services will be available everywhere in the campus.
 - d. Ethernet data services will be available in the academic areas, hostels, flats and other important buildings like guesthouses.
 - e. Ethernet services to the bungalow/duplex type quarters will be on a selective basis.
 - f. Each zone in the campus will have a minimum 1Gbps link.
9. The **Video services** will have the following features:
 - a. IP Video will be available at all Ethernet points.
 - b. RF Video will be available all over the campus through a hybrid Fiber-coaxial infrastructure.
 - c. There will be a facility to take RF Video feed from more than one service provider.
 - d. Radio over fiber will be integrated with IP streams over the same fiber using WDM.
10. The **Backbone Fiber Plant** has been planned as follows:
 - a. The existing fiber plant in the Hostel and Academic area will be used. Some of the dark fibers in this area will be used for the quadruple play.
 - b. The rest of the campus will be divided into **12 zones**
 - c. One 48 core fiber will be taken to each zone and terminated in a hut.
 - d. Passive splitting using PON technology will be used where FTTx is implemented.
 - e. EDFA amplifiers will be used for managing the optical power.
 - f. Each zone will be divided into 4 to 6 sub-zones and the roads will be taken as sub-zone boundaries. Fiber will be taken to each sub-zone from the zonal huts.

- g. Fiber will be taken to the base of the few access points which are fed from the CIC for the Wireless networks.
- h. Each residence with FTTH will have an ONT unit.
- i. Sub-zones where hybrid fiber coax technology is used will also have an ONT
- J The units (huts), which are placed outside, will contain only passive elements so that maintenance requirement is the minimum.

Laboratory Facility

The laboratories as in the earlier years are being utilized to the fullest by engaging them to support the Institute Training & Placement activities, various short term courses as well as IT related festivals organized by different Department/Centers/Schools. In addition to this the laboratories are also being utilized for the techno fest Kshitij and online registration of UG and PG students every semester.

Software Facility

- Institute has procured 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 has also been procured for the 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

Short Term Courses Organized

	Short term courses organized under	No. of Courses	No. of participants	Remarks
1.	QIP (AICTE) Short Term Courses	12	402	14 Weeks
2.	Sponsored/Self finance Short term courses	80	3692	
	Total =	92	4094	

M. Tech Programme organised by the Unit

	Name of the Subject	No. of Students	Remarks
1.	Electrical Engineering	31	3 Years
2.	Electronics and Electrical Communication Engineering	47	3 Years
3.	Information and Communication Technology	18	3 years

Facilities

Transit Hostel Accommodation for 40 Beds Capacity.

Three Studios at Kolkata, Bhubaneswar and Kharagpur Seating Capacity (40 + 40 + 60).

Seminars/Workshops/Conferences Organized by the Unit

1. Total No. of Workshops/Conferences Organized : 16
2. Total No. of participants attended : 412 +

Particulars of M.Tech and Ph.D scholars joined/completed

- A. No. of Teachers completed Ph.D degree : 16
- B. No. of Teachers completed M.Tech programme : 22
- C. No. of Teachers joined Ph.D programme : 10
- D. No. of Teachers taking advance admission to Ph.D programme : 23
- E. No. of Teachers joined M.Tech. programme : 16

CD Cell activities

1. Manuscripts for text books completed : 01
2. No. of Text books approved : 01

Central Research Facility

Chairman

Prof. Rahul Mitra, MME Materials Sc. Division (w.e.f. 1.12.09)

Prof. Ananta Kumar Ghosh, BT, Life Sc. Division (w.e.f. 1.12.09)

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. I. Manna	- In charge, FESEM, XRD, HRXRD (up to 30.11.09)
Prof. S. K. Pabi	- In charge, XRD, HRXRD (w.e.f. 1.12.09)
Prof. J. Dutta Majumder	- In charge, FE-SEM (w.e.f. 1.12.09)
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. T. Pathak	- In charge, Mass Spectrometer
Prof. S.B. Singh	- In charge, OES
Prof. J. Dutta Majumder	
Prof. K. Biswas	- In charge, Optical Microscopy (w.e.f. 1.12.09)
Prof. B. K. Dhindaw	- In charge, Optical Microscopy (up to 30.11.09)
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

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 used 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.
- Materials Science Division**
- (VIII) **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.
- (IX) **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.
- (X) **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.
- (XI) **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 detects 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.
- (XII) **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 it's quantitative analysis (form the intensity of spectrum).
- (XIII) **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.
- (XIV) **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.

- (XV) **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.
- (XVI) **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.
- (XVII) **Thermal Analysis Laboratory:** The thermal analysis laboratory I equipped with Differential Scanning Calorimeter (DSC), Thermo-gravimetric and Differential Thermal Analyzer (TE-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.
- (XVIII) **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.
- (XIX) **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
- (XX) **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.
- (XXI) **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.

New Acquisitions

1. **MPMS SQUID VSM** EverCool system with an integrated pulse-tube cryocooler-dewar system.
System Model No: - SVSM-EC from Quantum Design Inc. USA.
2. **Transmission Electron Microscope** Model: - FEI-TECNAI G2 20S- TWIN. FEI Inc. USA.
3. **Triple Raman Spectrometer** Model:- **T64000** from Jobin Yvon, Horiba, France, equipped with Ar-Kr ion laser (with 10 laser lines) as an excitation source, a triple monochromator and a CCD detector (1024×256 pixels).

Central Library

Chairman

Professor NR. Mandal

Librarian

Sutradhar, B.

Ph.D., M.Sc., M.Lib.I.Sc., C.C.A.

i

Assistant Librarian

Uma Shankar

M.Lib.I.Sc., M.A.

Mazumdar, Kamal

Ph.D., M.Lib.I.Sc., B.Com, CPDA

Pathak, Sandeep K

Ph.D, M.Sc., M.Lib.I.Sc., M.A., B.Sc., D.C.A.

Nandi, Atin

M.Lib.I.Sc., M.Sc.

Print Documents Added During the Year 2010-2011

The Central Library acquired 698 general books and 923 text books. It also added 2744 bound volumes of periodicals, 340 Theses, besides reprints and annual reports of other universities.

New E-Resources Added During the Year 2010-2011

600 e- journals from different publishers

300 print journals from different publishers

New Library Services introduced

1. Online Document Delivery Service
2. Weekly current arrival list of PhD theses submitted by the students of the Institute

Circulation

The books circulation activities are fully automated and serve the users consisting of the faculty, research scholars, students and staff. The books circulation service is kept open for 50 hours a week. On the average, the monthly circulation transactions are about 10100, About 40 copies of documents were obtained through Inter-Library Loan.

Digital Library

The Digital Library provides access to the following e-resources:

Full-text databases: Access to 10000 full-text journals from the following databases.

Elsevier Science Direct, Springer Link, Proquest, ABI/INFORM, Applied Science & Technology Plus online, 1EL (IEEE & IEE electronic library), ACM Digital Library, ASME, ASCE, EBSCO Databases', Emerald, Nature Journal, ASTM Standard, Capitaline, ACS Journals, JSTOR, Project Muse, 27 Nature group journals, 27 Annual Review Journals.

Bibliographic Databases

SciFinder Scholar, ISI Web of Science, MathSciNet, J-Gate Custom Content for Consortia and SCOPUS

E-books

Central Library has access to 4000 CRC Press e-books of major science and technology subjects and all Springer e-books collection copy right years from 2005 to 2009.

INDEST-AICTE Consortium Databases:

The Central Library IIT, Kharagpur is a member of the INDEST Consortium. INDEST membership facilitates the users to access the full text of about 10000 online journals and 5 bibliographic databases,

Institutional Digital Repository

Central Library, IIT Kharagpur has setup an Institutional Repository using open source software 'D-Space'. At present the Institutional Repository has articles; several question papers, books and institute PhD theses.

The digital library also provides access to Video-Courses which contain the lectures delivered by out faculty members. Twice a week the Digital Library organizes User Education Programme so as to train the students (o use our digital resources effectively).

Renovation work

Hall no. 6 and basement of the Central Library of IIT Kharagpur have been renovated (civil and electrical work).

New equipment and furniture

The following equipment and furniture have been acquired for the users

- 50 reading chairs made by the CWIS department of IIT Kharagpur
- 80 Thin Client terminals and one server

Invited Lectures	3
Research Publication	2

Central Workshop and Instruments Service Section

Chairman
Prof. P. K. Das

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

1.1. Mechanical Fabrication Section

It is equipped with various types of machines like 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, and Pantograph Machine, Power Saw, Shearing Machine, Polishing, Press, Arc Welding, Brazing and Soldering, etc.. We have recently purchased one table mounted CNC Lathe and this 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 as per design.

In CNC Machines we use different types of software for drawings like AutoCAD, 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 2010-11 the Mechanical Section has performed jobs of about 85 work orders. We are also fabricating 100 numbers of special mementos for our Diamond Jubilee celebration.

Comprising of

- 1) Fabrication of Vibration absorber.
- 2) Fabrication of different types of Wave Guides.
- 3) Fabrication of Die and Extruder.
- 4) Fabrication of Die-Punches of different sizes.
- 5) Fabrication of different sizes tensile, Charpy specimens of different materials.
- 6) Fabrication Valentine Antenna.
- 7) Fabrication of Rack, Pinion & Gears.
- 8) Fabrication of Moulds with different type of metals.
- 9) Fabrication of Venturimeter.
- 10) Fabrication of Propeller
- 11) Fabrication of Micro- channel.
- 12) Fabrication of different types of adopters.
- 13) Fabrication of servo hinges.

- 14) Flat Panel Bio-reactor.
- 15) Heat sink.
- 16) Fabrication of fixtures for experiments.
- 17) Fabrication of Impellers.

1.2. Mechanical Instruments Section

Different types of precision mechanical instruments are repaired in this section both mechanical and electro-mechanical items. Some typical examples include different types of stopwatches, gauges, valve regulators, balances, vacuum pumps, gear pumps, husk cutter, water flow meter, gas flow meter, dial indicator, dial gauge, micrometer, gas regulator, pressure gauge, autoclave, viscometer, various types of equipments & machines used in our Hospital, etc. Fabrication of sample holders of SEM & XRD, fabrication of very precision items etc

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 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 of leather painting, writing of name Plates, display board & upholstery jobs as students projects. This year this section has manufactured 56 Nos. special reading computer tables for our central library and 40Nos for CSE Department.

This section also meets the major requirements of furniture of the Institute. During the year 2010-2011, this section has completed 90 Work Orders of various departments of the institute.

Details of some of the Work done during period

1) Faculty Table	--	11 Nos.
2) Office Table	--	10 Nos.
3) Computer Table (Special/Ordinary)	--	64 Nos.
4) Laboratory Table	--	63 Nos.
5) Reading Table (With / Without partition)	--	40 Nos.
6) Book Shelf / File Rack	--	02 Nos.
7) Students' model of different shape	--	02 Nos.
8) Replacement of top of reading table	--	16 Nos.
9) Incumbency Board	--	01 Nos.
10) Wooden Box of different shape	--	08 Nos.
11) Repair of Rack	--	02 Nos.
12) Name Plate	--	47 Nos.
13) Repair of Stool	--	01 Nos.
14) Podium	--	01 Nos.
15) Platform	--	01 Nos.
16) First Aid Box	--	06 Nos.
17) Foot Rest	--	01 Nos.
18) Stool	--	02 Nos.
19) Modification of Lab. Table	--	05 Nos.
20) Notice Board	--	02 Nos.
21) Repair of Notice Board	--	01 No.
22) Lamination of Board	--	01 No.

23) A.C. Window sealing Ply	--	02 Nos.
24) Inclusion of name of different incumbency board	--	06 Nos.
25) Painting of Machine Body / Metallic Sheet	--	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.

List of some of the equipments repaired by the section are:

1. Low Pass Filter	- E & ECE
2. Pharmacia biotech pump	- Biotechnology
3. Spectro Photometer	- Agri. Engg.
4. Ultrasonicator	- Met. & Mat. Engg.
5. Spinot Heater	- Biotechnology[2Nos.]
6. Water circulating bath	- Chemistry
7. Compound Microscope	- AgFE
8. Robot Soccer Circuit board	- Computer Science & Engg.
9. Heater / Magnetic stirrer	- Biotechnology
10. Microwave Oven switch	- Biotechnology
11. System digital technometer	- R.D.C.
12. Overhead projector light system	- Chemistry [2Nos.]
13. Power combiner PCB	- E & ECE
14. Variaie	- Mech. Engg. [6Nos.]
15. Digital Lux Meter	- RDC
16. U. P. S.	- Mech. Engg. [2Nos.]
17. Projector	- Chemistry
18. Waterbath	- Chemistry
19. Thermostat	- Chemistry

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 MM 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 in 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 TSG activity programme are 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 in 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 also. Primary maintenance of these equipments are also maintained by AVCell staff itself.

Centre for Theoretical Studies

Convenor

Prof. Pratim Kumar Chattaraj

Associated Faculty

Sudebkumar Prasant Pal	<i>Ph.D (IISc Bangalore)</i> , Computer Sc. and Engg.(Computational geometry, Design and analysis of algorithms.)
Soumitro Banerjee	<i>Ph.D(IIT Delhi)</i> , Electrical (Nonlinear Dynamics, Chaos / Bifurcation Theory.)
A. Taraphder	<i>Ph.D (IISc Bangalore)</i> , Physics (Theoretical Condensed Matter Physics)
Somnath Bharadwaj	<i>Ph.D (IISc Bangalore)</i> , Physics (Theoretical Astrophysics and Cosmology)
Sayan Kar	<i>Ph.D (IIT Kanpur)</i> , Physics (Relativity and High Energy Physics)
S. Pratik Khastgir	<i>Ph.D (IOP, Bhubaneswar)</i> , Physics (Mathematical Physics and Integral Models)
Anirvan DasGupta	<i>Ph.D (Kanpur)</i> , Mechanical (Dynamics, Control and Robotics.)
P. K. Chattaraj	<i>Ph.D (IIT Bombay)</i> , Chemistry (Theoretical Chemistry, Quantum Chaos)
Sanjoy Bandyopadhyay	<i>Ph.D (IISc Bangalore)</i> , Chemistry (Computational Chemistry, Molecular Modelling)
Somesh Kumar	<i>Ph.D (IIT Kanpur)</i> , Statistical Decision Theory and Inference, Quantum Computing
Suman Chakraborty	<i>Ph.D</i> , Microfluidics and Nanofluidics, Interfacial Phenomena, Transport Phenomena in Materials Processing, Computational Fluid Dynamics (CFD)
G.P.Raja Sekhar	<i>Ph.D.(Hyderabad Univ)</i> , Boundary integral methods for viscous flows, Mass transfer in porous biological pellets
Pratima Panigrahi	<i>Ph.D.(Bangalore)</i> , Combinatorics, Graph Theory

Thrust Areas

1. Astrophysics, Cosmology & Relativity
2. Nonlinear Sciences
3. Mathematics, Mathematical physics and Theoretical Computer Science
4. Theoretical Condensed matter Physics
5. Theoretical Chemistry

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

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

Academic Performance

Visits Abroad by Faculty Members	12
Lectures by visitors	15
Sponsored Research Projects	3
Seminars, Conferences and Workshops Organised	2
Books Published	4
Papers Published in Journals	25

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
 2. Advanced dynamics
 3. Wave propagation in continuous media
 4. Advanced Mathematical techniques
 5. Advanced quantum theory
 6. Quantum mechanics and quantum computing
- CTS is also admitting PhD students through sponsored projects and fellowships (CSIR) under Advanced Technology Development Center. Currently three such students are enrolled.

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 inter-disciplinary 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

India

- 1) Prof. P.K.Chattaraj, Prof. S. K. Ghosh, BARC, Mumbai
- 2) Prof. P.K.Chattaraj, Prof. S. Pal, NCL, Pune
- 3) Prof. P.K.Chattaraj, Dr. V. Subramanian, CLRI, Chennai
- 4) Prof. P.K.Chattaraj, Dr. G. N. Sastry, IICT, Hyderabad
- 5) Prof. P.K.Chattaraj, Prof. P. Venuvanalingam, Bharathidasan University, Trichy

Abroad

- 1) Prof. P.K.Chattaraj, Prof. P. Geerlings, Virje Unersiteit, Brussels, Belgium
- 2) Prof. P.K.Chattaraj, Prof. F. De Proft, Virje Unersiteit, Brussels, Belgium
- 3) Prof. P.K.Chattaraj, Prof. P. Bultinck, Gent University, Belgium
- 4) Prof. P.K.Chattaraj, Prof. P. Ayers, McMaster University, Canada
- 5) Prof. P.K.Chattaraj, Prof. G. Merino, Universidad de Guanajuato, Mexico

S.Datta Majumdar Memorial Lecture

Title: Understanding Nonlinearity and Unravelling Natural Phenomena

Prof. M. Lakshmanan

Professor of Eminence & DST Ramanna Fellow, Centre for Nonlinear Dynamics,
Bharathidasan University

Date: November 29, 2010

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.

In order to implement smart cards for Institute staff, the Cell carried out photo collection and signature scanning work.

Estate Civil Head Office

Chairman

Prof. Nirjhar Dhang

The development programme of the Institute Campus involving infrastructure and new facilities have been taken up in view of the increase in student strength population, faculty strength and staff strength. The programme includes construction of new hostel buildings, extensions of existing students` hall of residence, classroom complex, residential flats for faculty and staff members etc.

Students Accommodation

Construction of additional block of Azad Hall of Residence have already been completed and have been occupied by the students. Apart from this first phase of Lal Bahadur Shastri Hall of Residence has also been completed and already been occupied by the students.

Nalanda Classroom Complex

8 Blocks of rooms (240 capacity – 2 Nos. and 120 capacity – 6 Nos.) will be ready including furniture etc. by end of August, 2011.

J.C. Ghosh Science Block & P.C. Roy Laboratory Block

Piling work is going on in full swing. 9 piling rigs had already been mobilized at site and 100 piles are completed.

Residential Apartments For Faculty And Staff

63 Nos. of A-Type Flats have already been handed over and occupied since last August. 18 Nos. of B-type flats have also been handed over and under process for allotment. Out of balance 63 B-type flats, 36 flats are expected to be completed by end of August, 2011.

Project Staff Accommodation

The extension programme for Vikram Sarabhai Residential Complex is nearing completion and A & B blocks have been handed over and are occupied since last July, 2011. Balance 3 blocks will be completed by end of August, 2011.

Guest House

124 room guest house is presently under use. Apart from this a VIP Guest House adjacent to the Technology Guest House is also been completely renovated with 6 rooms, kitchen, dining etc.

Students Activity Centre

Construction will be completed by end of August, 2011.

Undergraduate Laboratory Complex

Construction of Laboratory Complex will be over by end of August, 2011.

New MGD Water Supply Project

Construction of collector well at river bed and pipe laying by the side of NH6 is going on.

Widening and Development of Campus Roads

11 KM. (approx.) of road work is completed. Job on footpath and drain work is going on.

Estate E & M Works Section

Professor-In-Charge

Prof. Debapriya Das

Executive Engineers (Electrical)

Sabyasachi Ghosh

Mahesh Kumar

Dipak Kumar Chakraborty

Keeping in pace with increased strength of the students, different measures have been taken by this section for augmentation of power supply system and revamping the distribution system.

1. Electrification of the laboratories, hostels, classrooms, Gymkhana with the latest state of the art like green energy efficient lighting and occupancy sensors.
2. Revamping of the roads with better illumination.
3. Fixing of LED based lighting system in the new roads under construction.
4. Keeping in view of diamond jubilee year of IIT, Kharagpur, 250KVA DG Set is installed to cater emergency load of Class Rooms, New Technology Guest House, Auditoriums, Bio-technology department, CSE department, Telecom Centre and other Admn. Offices.
5. Major renovation works of Material Science Centre, MEMS and Micro Electronics Labs of E&ECE Department, EE Department Machine lab, Mining Engineering Department, OE&NA Department and MOCVD lab in CWISS Department etc. done to utilize more space for student activity.
6. Electrical works has been completed newly constructed Tea Engineering Research Centre.
7. Augmentation of electrical distribution system has been completed in the past year in OE&NA Department, EE Department, Bio-technology Department, CRF, Cryogenic Department, Chemical Engg. Department and Mechanical Engg. Department.

Institute Water Works

Professor–In-Charge

Professor Ashok Kumar Gupta

Executive Engineer

Biswas, Shyamal Kumar

On-going works

The following new projects are being implemented:

1. Annual repair and maintenance in connection with plumbing and water supply at Academic Campus for the year 2011-12
2. Annual repair and maintenance in connection with plumbing and water supply at Old Residential Campus for the year 2011-12
3. Annual repair and maintenance in connection with plumbing and water supply at New Residential Campus for the year 2011-12
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 2011-12
5. Annual repair and maintenance in connection with plumbing and water supply at MMM, Patel, Azad, Nehru, HJB, JCB, LLR Halls for the year 2011-12
6. Annual maintenance of main water pipelines from Anicut & Balarampur Pumphouse for the year 2010-11
7. Operation & maintenance of Iron Removal Filters for the year 2011-12
8. Cleaning & washing of water tanks at campus for the year 2011-12
9. Operation & maintenance of Balarampur Pumphouse for the year 2010-11

Kalpana Chawla Space Technology Cell

Head

Prof. Somnath Sengupta

Associated Faculty

Professors

Dr. Somnath Sengupta	Ph.D	Image & Video Processing
Dr. B. K. Sarkar	Ph.D	RF & Microwave Engineering
Dr. S. K. Das	Ph.D	Control System
Dr. S. Sen	Ph.D	MEMS
Dr. S. Sanyal	Ph.D	RF & Microwave Engineering
Dr. S. S. Bandyopadhyay	Ph.D	Cryogenic Engg
Dr. K. Bandyopadhyay	Ph.D	Satellite Communication
Dr. G. Ray	Ph.D	Control System
Dr. D. R. Chowdhury	Ph.D	Audio Encompression
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. Naikan	Ph.D	Reliability and Quality Engineering, Condition Monitoring, System Simulation
Dr. I. Sengupta	Ph.D	Mobile Communication, VLSI

Associate Professor

Dr. G. Saha	Ph.D	Communication
Dr. C. Chakrabarty	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. A. Bhattacharya	Ph.D	RF & Microwave Engineering
Dr. Soumen Das	Ph.D	MEMS & Microsystems
Dr. Raja Datta	Ph.D	Network system

Assistant Professors

Dr. M. Sinha	Ph. D	Aerospace 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. Suvra Sekhar Das	Ph.D	
Dr. T. K. Nandi	Ph.D	Cryogenic Engg
Dr. Debbeep Mukhopadhyay	Ph.D	Cryptography, VLSI, Embedded systems for Cryptographic Systems, Side Channel Analysis
Dr. Karabi Biswas	Ph.D	Sensor Design & Development of Instrumentation system and Study of Fractional Order systems
Dr. D. Chakravarty	Ph.D	Mine Mapping, GeoResource, Mineral Resource, Geotechnical Stability, Hyperspectral Imaging for Mineral Identification
Dr. B. Samanta	Ph.D	Mine planning, <u>Geostatistics</u> , Mine environment and ventilation

Chair Professor

Dr. B. K. Sarkar	Ph.D	RF & Microwave Engineering
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Visiting / Adjunct Faculty

Prof. Kalyan Bandyopadhyay	Ph.D	Satellite Communication
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Officer

Name	Degree	Specialization
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

a) 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 Occurring 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 Supperssion 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

b) AIS Satellite Surveillance System:

We have purchased a board DE70321 in which CMX7032 chip is there .CMX7032 is a Microcontroller. During programming additional PE0002 board is connected . First the Function Image(FI) program is loaded. Then programming is done using machine level language.

c) Design and development of different EMI sensors

With the increased use of high frequency electronic equipment in modern technologies, the electromagnetic interference (EMI) has become an important issue. The measurement and detection of electromagnetic radiation is performed using suitable EMI sensors. As part of different projects, the review of the literature and measurement of radiated emissions using different sensors (e.g. dipole, log periodic antenna) in the laboratory environment have been performed. Work is going on developing the theory for the design and characterization of different conducting and dielectric antennas as EMI sensors using an accurate and efficient numerical technique, e.g. Method of Moments. Also, the design and development of different ultra wideband (3.1 – 10.6 GHz) EMI sensors are in progress. A new band notched ultra wideband monopole antenna has been developed.

d) Test simulator for satellite based AIS

SOTDMA simulation, Satellite footprint generation, Satellite link simulation, Detection of composite signals at the receiver, Enhancement of the detection capability

e) CDMA based Satellite Navigation

Study and implementation of signal simulation for satellite navigation including CDMA spreading codes, modulation techniques, acquisition and tracking schemes and navigation data decoding (pseudo range calculation) for Indian Regional Navigation Satellite System (IRNSS).

f) Microwave Imaging

Microwave imaging is a study of shape reconstruction, location, properties of the object using electromagnetic wave at microwave frequencies. The object under test is illuminated by electromagnetic wave and scattered field is measured with suitable antennas. By applying

suitable algorithms like Linear Sampling Method, Multiple Signal Classification(MUSIC), Gradient methods with regularization, the required goal is achieved.

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 and novel materials
- 8 Power Electronics
- 9 Space Education
- 10 Electronic Devices

c) New Acquisitions

- i) CST Software-Microwave studio, version-5
- ii) IE3D – version – 9 by Zeland Software Inc.
- iii) WIPL-D
- iv) HFSS
- v) LAB View Software
- 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

Academic Performance

Invited Lectures by Faculty	4
Doctoral and MS Degrees Awarded	1
Sponsored Research Projects	34
Short-Term Courses and Training Programmes organised	1
Papers Published in Journals by associated faculty	117
Papers Presented in Conferences by associated faculty	27

3(Bengal) TECH AIR SQN NCC

Concerned Officer

Wg Cdr VK Gupta

Aims & Objectives

- (i) To develop qualities of character, courage, comradeship, discipline, leadership, secular outlook, spirit of adventure & sportsmanship and the ideas of selfless service among the youth to make them useful citizens.
- (ii) To create a human resource of organized, trained and motivated youth, to provide leadership in all walks of life including the Armed Forces and be always available for the service of the nation.
- (iii) To create suitable environment to motivate the youth to take up a career in the Armed Forces.

Major Activities

During the training year 2010-2011, 198 cadets of 1st year of engineering were trained as NCC cadets. One Service Officer, one Associated NCC Officer and 11 service personnel were involved in imparting NCC training to the IIT students. Following social service and social awareness were also undertaken by the NCC cadets.

Social service activities

Date	Activities
31 Jul 10	Tree Plantation
21 Aug 10	Sadbhavana Run
05 Dec 10	Donated dry rations & fresh rations to the Seema Center (Charitable Organisation)

Social awareness activities

Date	Activities
21 Aug 10	Save energy drive
23 Oct 10	Anti Dowry & Anti Female Foeticide Pledge
14 Nov 10	Lecture on Anti Drug
30 Jan 10	National Anti Leprosy Awareness Rally

Lectures by Visiting Experts

Cadets got a chance to visit AF Station Kalaikunda, have an exposure with all military equipments and the Air Force environments. Experts were invited from Air Force Station Kalaikunda to deliver lectures to the cadets regarding Fire Extinguisher & First Aid.

Seminars/Workshops

A Combined Annual Training Camp was conducted for all 1st year NCC cadets at behind Seema Center IIT Campus, Kharagpur from 26 Nov 10 to 05 Dec 10 organized by the unit. The cadets were made to experience the military field conditions. Drill practice, Physical training, Games, Debates, Quiz competition and cultural programs kept the cadets glued with thrill and excitement. Prof. D Acharya, Director IIT Kharagpur & Group Commander of NCC GP HQ Kharagpur also paid visit to the camp.

National Service Scheme (NSS)

The Beginning of the Session

NSS, IIT Kharagpur conducted registration of volunteers of 1st and 2nd year UG students in the 3rd week of July in line with academic calendar of IIT, Kharagpur. This time the students were given a choice list of about 10 activities. Also they enrolled in a web based learning management system for proper dissemination of information. A total of 934 students enrolled into the program. In two consecutive weekends, orientation of these students was held. The students were divided in 12 units looked after by 12 program officers. Each unit again was divided in smaller groups with group leader drawn from the students. Among regular activities there are free coaching centres (total 14 in number), village school network, environment protection and awareness, cultural program to spread socially relevant messages, survey of needs, service in the form of physical labour like library maintenance, content preparation for website and newsletter etc.

Exposure to NREGA

On 28th August, 2010 a team from NSS, IIT Kharagpur was invited by S.D.O., Kharagpur and participated in a day long meet at B.D.O. office, Dantan where S.D.O., B.D.O.s, Deputy Magistrate, District Welfare Officer and a host of Govt. functionaries were present. The NSS team was exposed to welfare initiatives of Govt. and also visited a site where NREGA work was going on at a large scale.

Aranya Saptaha, Independence Day, NSS Day, Republic Day

NSS Team observed 'Aranya Saptaha' with plantation of trees and caressing of them. It observed Independence Day with great enthusiasm, brought out posters, participated in march past and also published a newsletter. NSS Day was observed with a packed 1000 seater auditorium on 24th Sept., 2010 evening where students, teachers, guardians of village schools where NSS volunteers work also participated. Another newsletter was brought out for the occasion. NSS, IIT Kharagpur website was launched on NSS Day by Prof. A. K. Majumdar, Deputy Director, IIT Kharagpur. This is hosted in <http://iitkgp.ac.in/nss/home.html> Besides audience management, food distribution to school children, this year NSS team presented a skit as a part of Republic Day parade. The patriotic theme and underlying social message against 'Sab Chalta Hai' attitude were highly appreciated.

Support to Village Primary Schools

The regular activities of NSS, IIT Kharagpur continued. From OCT., 2010 twenty eight village school students who are good in academics but very needy are given scholarships for one year. This is sponsored by a few final year students of IIT Kharagpur who were part of NSS in their first two years. The students were selected by school teachers and NSS team. All of them are from backward castes and more than fifty percent are girls. In this period, NSS team also arranged to provide education-cum-game pack to 12 of the primary schools and library or study aid materials to 2 high schools.

Distribution of Campus Collection

After Durga Puja festivals NSS team collected old but usable articles from IIT Kharagpur campus community and this was distributed to poor and needy of four adjoining villages. Campus community was duly notified how NSS distributed the articles. A total of 663 persons (283 adults and 380 children) were given clothes and 10 were given footweares. One Balarampur High School comprising mostly of backward students was given 263 books (102 story books and 161 text books) from this collection.

Participation in Rural Health Camp

A team from NSS, IIT Kharagpur participated in health camp on 6th Oct., 2010 at Baradiha village which was organized by West Bengal Industrial Development Corporation (WBIDC) and Indian Red Cross. Another team from NSS participated in Health Camp organized by Kasturba Memorial Trust at Balarampur Village on 10th Oct., 2010. The trust member requested wider participation of NSS, IIT Kharagpur unit in their welfare activities.

NSS Camp

NSS Camp was held in the village Gholgharia, DT. W. Midnapore from 26th Nov., 2010 to 3rd Dec., 2010, both days included with more than 400 participants. It was a great experience for all

the campers to interact with the village community. Besides manual labour, they conducted survey, held awareness programs, had cricket match with local youth. On the penultimate day, Prof. S. Bhattacharya, Dean, Students Affairs, IIT Kharagpur, and Prof. A. Patra, Dean, Alumni Affairs & International Relations, IIT Kharagpur visited the camp site and encouraged NSS team. They welcomed participation of NSS in Institute's Diamond Jubilee program. NSS observed World AIDS Day with an awareness rally and colourful posters. Contributions of great people like Swami Vivekanand, Acharya Prafulla Chandra Roy were remembered.

National Youth Week

National Youth Day and National Youth Week were celebrated with great enthusiasm. It started with participation in institute lecture by Swami Atmapriyananda, Vice Chancellor, RMV University. A five KM rally was organized during Youth Week (15th Januray, 2011, Saturday)where colourful posters on social issues were displayed. Volunteers shouted slogans on patriotic theme and also on environmental issues. During this week an intra and inter village school drawing competition was arranged. The prize winning entries of each school were displayed in the concluding function that was arranged in Kalidas Auditorium. Besides prizes to individual students, teachers representing each village school were felicitated. The concluding evening function also had a panel discussion with eminent NGOs working in the neighbourhood, and a cultural program by NSS volunteers.

Catering to Needs

Inspired by the visit and speech of S.D.O. Kharagpur to NSS volunteers at IIT Kharagpur, one NSS unit provided new shoes to about 300 barefoot students of 3 village schools. The fund was arranged by NSS volunteers themselves out of their pocket allowance. In some other village schools, NSS volunteers donated study materials, bought articles for festival Holi and distributed it among the students.

One unit visited village schools and taught students songs, spoken English. A group of students presented a skit on patriotic theme on Republic Day function and also on National Youth Week function. Forest fire or bush fire often causes panic here. One team conducted an important survey on that. A different NSS unit got five defunct tube well and one deep tube well repaired. The thanks-giving function arranged by villagers was a memorable one.

Save Environment

One unit devoted itself to campaign on environmental awareness. They conducted campaign against use of plastic carry bags that chokes the drain and causes immense nuisance. They prepared paper bag themselves and distributed them to shop-keepers which were more than symbolic. Another group caressed two parks. The unit also looked into savings of water, waste management and related aspects.

Health Service and Blood Donation Camp

A team of NSS volunteers visited local hospital's out-patient department in busy evening hours and helped patients as well as doctors in rendering their services. Another group of NSS volunteers took the initiative to meet doctors of blood bank of sub-divisional hospital. With their guidance and a campaign through website, email, web-based pre-registration etc. a blood donation camp was organized very efficiently. Though the blood donation camp was scheduled in Feb.-March, it was suggested to hold it in April when there is a scarcity of blood in blood bank. Thus, the ground work was done in Feb-March and actual blood donation took place on 3rd April, 2011. A total of 106 units of blood were collected after which the blood bank staffs could not take any more as their limit was reached.

Rajbhasha Vibhag

Chairman

Prof. Parmeshwary Dayal Srivastava
Prof. U. C. Gupta

(Till 30.9.2010)
(From 01.10.2010)

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 Teacher, Hindi Teaching Scheme. During 2010-2011, 36 employees have been trained up to Pragya level.

Hindi Officer Dr. Rajeev Kumar Rawat participated in the Refresher course on Computer Applications at C-DAC, Noida.

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 2010-11 the following events took place:-

During 17-18 June, 2010, a Hindi workshop was organized for the employees. In this Dr. Rajeev Kumar Rawat, Hindi officer briefed the employees about the techniques for doing their day to day official work in Hindi.

Hindi Officer, Dr. Rajeev Kumar Rawat took part in All India Official Language Seminar on 10.1.2011 at Goa organised by Ministry of HRD.

Celebration of HINDI DIVAS

During the month of September, Rajbhasha Vibhag has organized "Hindi Saptah" from 08- 14th Sep 2010. 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 899 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. 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 36 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 31.08.2010 and 25.01.11. 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

Sponsored Research and Industrial Consultancy

Dean

Prof. Partha Pratim Chakrabarti

Associate Dean

Prof. Sunando Das Gupta

Prof. in Charge IPR

Prof. Subhasish Tripathy

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.

During the year 2010-2011 the Institute received from the Government, private and international funding agencies/enterprises 183 research projects for a total value of Rs. 110 crores and 115 consultancy projects worth Rs. 11.70 crores aggregating a total of 298 projects for Rs.121.7 crores.

IIT Kharagpur is entrusted with the development of ASICs for the read out system for CBM experiment at the Facility for Antiproton and Ion Research (FAIR), Darmstadt, Germany, the new international accelerator facility and one of the largest research projects world-wide. IIT Kharagpur has a distinguished track record in the development of specialized softwares such as power management software, telemedicine software, communication empowerment software for physically challenged, software for medical measurements, tools for security and biometric authentication and ocean dynamics based software for storm surge measurements. An advanced research facility in reliability engineering with active participation of top government agencies including BARC, MEMS based components for RF application, development of functional groups for immobilization of functional proteins on MEMS based microsensor surface are examples of research in frontier areas. Our pioneering works on advanced chip design and CAD for VLSI and MEMS continue to attract researchers and funding from the best institutes and well-known companies of the world. Two mission projects for development of Virtual Labs and pedagogy and e-learning involving premier Institutes of the Nation are fully functional now. In the past year we have started setting up of a major research infrastructure for MOCVD and initiated development of MBE cluster tool based epitaxial nano-semiconductor infrastructure and process integration facility.

In the areas of Life Sciences, ongoing interdisciplinary research in non-invasive measurements, advanced image processing, implants, protein structure analysis and drug design, merit special mention. The Institute has sustained activities in artificial heart development program, male contraceptive (RISUG), green technology, insect resistant cotton, enzymatic processes, Aloe Vera processing, and bio depolymerisation of low grade lignite .

The major research initiatives in nanotechnology and nano-materials include work on polymer nano-composites, nano-wires and semiconductors. The area of micro-fluidics and bio-nano-mems has developed new techniques for DNA hybridization, micro-scale cooling for electronic components and digital microfluidics and are examples of research at the cutting-edge. Recently IIT Kharagpur and ISRO are in advanced stages of planning to establish Centre of

Excellence in four thrust areas, namely Communication and Signal Processing, MEMS and Microsensors, Cryogenics for Space Applications and Virtual Reality and 3-D modeling which will significantly contribute India's Space Technology requirements.

In the area of environment, the Institute has taken up a major initiative under the Ganga River Basin Management Plan funded by the Ministry of Environment and Forests to address issues related to environmental water quality, water resources management, ecology and biodiversity as well as socio-economic policy, law and governance. Researchers at IIT Kharagpur are working to find a low-cost solution to the problem of arsenic contamination of groundwater.

In Earth Sciences, a major activity is undertaken for seismic hazard assessment, microzonation and evaluation of vulnerability, risk & socio-economic impacts for the city of Kolkata. IIT Kharagpur has won one of the eleven IBM International Centennial Grants awarded this year for supporting its smarter planet strategies to community service. The funding would go towards supporting student projects on developing a rainfall sensor network for predicting the flooding of Kolkata in real-time.

IIT Kharagpur has continued its long standing research commitment to the Energy Sector through sustained activities in biomass production, biofuels, fuel cells, lithium-ion batteries and energy materials, production of renewable hydrogen combined with CO₂ capture etc. Our newly developed P. K. Sinha Centre for Bioenergy is taking an integrated and collaborative approach to solve energy, climate change and economic challenges, collaborating with internationally renowned Bioenergy Centers such as University of California at Berkeley (UCB) and Energy Biosciences Institute (EBI), Purdue University and University of California at Davis. The development of a solar powered aircraft based on the support and collaboration of a global aerospace company by a team of our students underscores active participation of students in niche areas of research and development.

Students from various departments of IIT Kharagpur worked together under faculty mentorship to develop an Autonomous Underwater Vehicle which had sophisticated control algorithms and intelligent systems to carryout tasks autonomously in water. The team and their vehicle won the national Student's Autonomous Underwater Vehicle (SAVe) competition in India and represented the country for the first time at the 14th Robosub competition of the Association of Unmanned Vehicle Systems International at San Diego, USA this July. Another multi-disciplinary students' team designed, fabricated and assembled a car to participate in the Formula 1 Student's competition at Silverstone in UK during July this year. The vehicle design was short listed for the Airbus Award and scored many points for its design.

A Centre for Railway Research has been established with the support of the Ministry of Railways, Government of India for advanced collaborative research in various aspects of railways technology. Two other major projects have also been received from the Government of India for Virtual Laboratories and Integrated Vehicle Health Management (IVHM) for Automotive Engine Applications.

Industry – academia partnership at IIT Kharagpur is thriving with industries forming partnerships in joint research projects, acquiring technologies developed in the institute and seeking consultancy supports. Some of the major research initiatives in recent years include Steel Technology Center, major R&D Centers in Energy Sector in collaboration with DVC, Tea Engineering Research Center, Vodafone-Essar-IIT Kharagpur Centre of Excellence in Telecommunications, National Program in Marine Hydrodynamics, Centre of Excellence in Information Assurance, National facilities for EPMA, General Motors Collaborative Research Laboratory in Electronics Controls and Software (ECS) and a Regional Center for Rural Technology Action Group (RUTAG) are some of the recent such successful initiatives.

IIT Kharagpur has a long tradition of protecting inventions and has received numerous patents over the years. The Intellectual Property Rights and Industrial Relations (IPR & IR) Cell under SRIC is responsible for the licensing and the transfer of technologies developed by faculty members, students and other researchers at IIT Kharagpur to the commercial sector. The Entrepreneur Cell under SRIC supports a variety of incubation programmes funded by the Government.

Science & Technology Entrepreneurs' Park

Managing Director

Prof Dhrubes Biswas

Major Activities

High end TBI lab with VLSI based equipments has been established to facilitate the entrepreneurs under TBI/STEP incubation.

Infrastructure facilities created

- Entrepreneur infrastructure: Common Computation facilities for the entrepreneurs have been set up. Physical infrastructure like office, workshop space on an affordable basis is made available to the entrepreneurs.
- Multimedia facility: Dedicated multimedia facility for remote board meetings and video conferences is fully running. Regular meetings are held with the GVL partners i.e. JYU, Finland through videoconferencing. This is to keep pace with the developing technologies in other countries.
- Separate cubicles for companies have been created which provide facilities basically of 2 kinds i.e., test/measurement and design. During their prototype development they use our design tool simulation package. Hardware/ prototype developed by them require measurements and for that they use our infrastructure.
- The companies can access these cubicles and avail the facilities for their design and testing.
- Separate administrative complex has been created for the proper functioning of TBI

Winner of **Global Academic Cup** (GAC) Challenge, Finland 2010: Team of Prof. Biswas from IIT-Kharagpur was declared the unanimous winners of the Global Academic Cup 2010 (GAC 2010) challenge conducted during the EBRF 2010 conference from 15-17 September 2010, Finland. 25 Teams from different parts of the globe participated in the challenge.

Companies at STEP

- Sankalp Semiconductor Pvt. Ltd.:Analog Mixed Signal services and solutions specializing in end-to-end solutions for IOs, analog and mixed signal chip design/layout.
- P2 Power solutions :Work in the domain of Power Quality enhancement at distribution level.
- Electro soft consultants
- :Involved in several sponsored and consultancy projects dedicated towards empowerment of physically challenged people.
- Centre for Advanced Communication:Interactive Software Integrated Learning System (ISILS) is the heart beat, nerve centre, brain, driving force of our overall system.
- Nucleodyne computer system Pvt. Ltd.:Software Development and education based consultancy services
- Intellisys Pvt. Ltd.:Video Conferencing Systems, Live collaboration software, Embedded Technologies
- High-tech consultants Pvt. Ltd.:Modeling, simulation, Control, Fault Detection and Isolation
- Focus R&D:Software Research
- Sparsha Learning Technologies Pvt. Ltd.:Education Technology Development, Develop and market software, teaching, learning in different areas.
- Prop. Biswanath Dey:ATM card billing system. The proprietor is a grass-root innovator.
- RISUG:Created a new drug molecule in medical science for male contraception.
- PervCom Consulting Pvt. Ltd.:Developing devices and system solutions for remote tracking and monitoring.
- Aptsource Software Pvt. Ltd:Business workflow automation and integration, business intelligence and decision support, and service-oriented architecture/enterprise.
- Delta Electrical Industries Pvt. Ltd.:Green lighting manufacturing and commercialization have created polymeric mould which makes the led lighting multi-directional.

- Ikure Tech Soft Pvt. Ltd:Health applications to facilitate the patient's data delivery. Create and manage a huge database of patients, doctors and hospitals.
- Meridian Software Technology (P) Ltd.:Development of a software tool for SPICE modeling and parameter extraction
- Aunwesh Knowledge Technologies:The major products of the company have been migrated to the new LearnITy framework.
- Brolly (P) Ltd.:Works on rural technology adoptions, standardization, and appropriations of microfinance. The company has received (UNDP) grants.
- Techsys India. (P) Ltd.:Focused on creating value and trust for our clients in changing business scenarios.
- Glovenvc:Software development & Consultancy
- Communet Infosystems. Pvt Ltd:Software development & Consultancy
- Innovaide System Pvt. Ltd.
- :Advanced hardware based security system for unified threat management Appliances and its related Management software's
- Itobuz Technologies Pvt. Ltd.
- :Integrated real time systems using Web 2.0 for mobile and desktop based solutions.
- People's Advanced Communication Centre Pvt.Ltd.:Communication technologies using VLSI.
- Novellion batteries. Pvt.ltd:Battery and electrical good applications
- SenseNet Technologies Pvt.Ltd.:Advanced hardware based on Health Care security system for unified threat management Appliances and its related Management software's
- Medtel Systems Pvt.Ltd.:Medical Security for Health Management System.
- Electro Thermal Insulation:In the field of Insulation wires and polymer insulations
- Sandhya Glass works:Glass cutting work. Design of glass mirrors
- Gulton Rubber works:Making of Risk husk rollers
- Balaji Mushroom:Engaged in the production of mushrooms
- Raghunath Fertilizer:Vermi-compost and organic vegetables
- Ashtami Enterprise:Manufacturing the rubber works for industrial purpose
- Balaji Enterprise:Manufacturing the ball bearing assembly material for Tata Metallic's.
- Puja Enterprise:Printing and manufacture of eco-friendly bags
- Renuka Polymer:Rubber husk polishers for rice mills
- Shradhanjali nurseries:Horticulture & organic culture
- KE Technical Textile Pvt. Ltd:It is involved in control system design based facilities of weaving, processing and coating of fabric with various Polymers & Resin systems

Other Assistance of Entrepreneurial Activities

- Entrepreneurship support through MSME grant.
- STEP has successfully established the MSME center which supports the local people to avail credit facilities for small industries. 5 companies were approved out of 10 proposals and duly they are funded. During this year 4 proposals were approved out of 6 and the proposals are forwarded to MSME for their final approval.
- Commercialization of prototypes by TREMAP support. TREMAP supports developed innovative prototype commercialization by refinement and industry collaboration. 3 innovative products are presently under technology refinement and marketing stage.
- Conducting Entrepreneurship Awareness camps
- E-Cell has played a very vital role in helping STEP for successfully promoting the benefits of initiating venture creation at various departments to sensitize the student and faculty members for start-up. The result has been huge with many students coming forward to get their companies registered at STEP.
- Seed support is extended from DST fund to the deserving entrepreneurs.

New Initiatives taken

- Alternative incubation facilities for entrepreneurs at STEP- Gopali Campus and creation of a cluster are under process.
- Request for 5 acres of Land has been made by Prof Sujoy Guha, Prof of School of Medical Sciences and Technology (SMST), IIT-Kharagpur for the sterile manufacturing of RISUG,

male contraceptive. This area is also intended to be used for other medical devices like the artificial heart. The request is under consideration by the STEP Governing Body.

Collaborative Efforts

Both national and international partnership has been built keeping IIT KGP's interest in mind.

i. International

- a. Center of Entrepreneurship, 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 Bombay
- c. IIM Calcutta

Lecture by Visiting Expert	5
Seminars/Workshops/Conferences	3

Training & Placement Section

Professor in charge

Prof. S.K. Srivastava

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.

182 companies / organizations visited the campus for recruitment and 15 others preferred to have telephonic interview, videoconference and call the students for interviews to their offices during 2010-2011. 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 30.06.2011 are as follows:

Course/Degree	No. of students registered	No. of students placed
B.Tech. (Hons.)	380	357
B.Arch. (Hons.)	025	025
M.Sc.	207	151
Dual Degree M.Tech.	264	250
M.Tech./MCP	657	438
M.B.M.	080	078
Ph.D./ MS	022	022
Total	1635	1321

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 abroad, for summer training. An emergent trend is that more and more students are seeking summer training abroad.

A total of 1456 companies/organizations in India were contacted for training facilities for the current summer vacations in May-July 2011. Among these 124 in India had offered training facilities, out of which 55 organizations had extended out-of pocket allowances (covering 220 students) and many other extended subsidized transport, subsidized canteen, subsidized accommodation and to-and fro 3AC fare for our students/ The highest out of pocket allowance of Rs. 30,000.00 per month was paid by DE Shaw, Barclays Capital, Deutsche Bank, Google, Qualcomm, Microsoft, Yahoo extended Rs. 25,000.00 per month, ITC, Deloitte, Oracle, Amazon, IBM Limited extended Rs 20,000.00. There are about 15 companies like Bharat Dynamics, ACC Limited, Mentor Graphics, Tega Industries, Reliance India Limited, Infosys, Innopark, Dr. Reddy's Lab, Siemens, Tata Steel, Schlumberger, Goldman Sachs offered stipend in the range Rs. 10,000.00 to 20,000.00 per month and around thirty companies offered below Rs. 10,000.00 per month.

Out of 826 third/fourth year B.Tech/Dual Degree/M. Sc. students, 148 students have taken up summer internship abroad in many Institutes/organizations like DAAD, EPFL, Univ of Warwick, Univ of Twente, Univ of Ottawa, Univ of Houston, Univ of Heidelberg, Univ of Alberta, Univ of Barcelona, Univ of Munich, Max Plank Instt, Finisar, ETH, Zurich etc. during summer May-July, 2011.

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 2010-11 placement saw students participating in running placement process. In fact, through this participation it was possible to run up to TEN/TWELVE companies per day and round the clock. Students take active part in calling up companies and managing the logistics of placement.

Technology Telecom Centre

Prof-in-Charge

Prof. Raja Datta

Engineer

Mr. Pankaj Gupta

Work Carried Out

- A Satellite exchange to the maximum of 640 lines was installed in the new guest house to provide the telephones connection in the new guest house and also new connections in the adjoining area thus minimizing the cable length.
- Telephone cable has been laid to the new NCC building , near DVC from the new guest house and gave the connections as existed in the old building.
- Telephone cable laid to new B type qtrs. , near Tech market from new guest house.
- A 24 port DSLAM has been installed in the new guest house to provide data communication facilities to new B type qtrs., NCC and other future connections.
- A PO has been placed for the 48V/300A power system along with 48V/100AH battery bank to provide the redundancy to the power system thus making it robust as well as increasing the backup time.
- A new ISDN PRI line has been taken and installed in the exchange to provide the redundancy to the external world connectivity as well as increase the DID levels.
- Around 75 new connection were given for the new faculties and to some labs.

Ongoing work

- Almost all the major telephone cable network is being rerouted and the distribution boxes are relocated to facilitate the widening of campus roads.

New Planning

- Technology Telecom Centre is working in conjunction with CIC to implement a campus wide master network that will integrate voice, data & voice.

Technologystudents' Gymkhana

President

Professor Manish Bhattacharjee

Sports Officer In Charge

Mr.Sabyasachi Chaudhuri, B.Sc, B.Ed in Phy.Edn, MPE, Level-I Cricket Coaching Certificate (UK)

Sports Officers

Reddy K.K.C., B.Com, B.P. Ed., M.P.E., M. Phil, TTCY

P.T.I. GR.I

Mondal S., B.A., B.P. Ed. in Phy. Edn., M.P.E., Diploma in Coaching (Basketball) from NSNIS

TA (Physical Education)

Kumar Sudhir, B.Sc. in Phy. Edn., Master's in Phy. Edn. & Sports Sciences

P.T.I

Guchhait R., B.P.Ed., M.P.Ed, NIS in Swimming

Ghosh Ardhendu, B.A., B. P. Ed, NIS in Football

Yadav Satpal, B.P. Ed., M.P. Ed., M. Phil, Specialization in Athletics, AFI Official

Swaroop Gyan, B.P. Ed., M.P. Ed., M. Phil, NIS in Hockey

Pandey Vivek, B.P. Ed., M.P. Ed, NIS in Tennis, ITF (International Tennis Federation) Level I Coach.

Developments

- New Students' Activity Centre (North) has been built. The Centre has one indoor complex having three wooden badminton courts, one squash court, table tennis complex having provision of three tables, one billiard room with a provision of two billiard tables. There are rooms for students office bearers, practice halls, one assembly hall for various functions of gymkhana etc. The old gymkhana building is also given a new look with total renovation.
- Two synthetic tennis courts along with flood light.
- One new Basketball court with flood light. Existing courts are under development
- One Volleyball court with flood light. Existing courts are under development
- Entire Swimming Pool is renovated along with installation of new flood lights.
- New Dressing room in Tata Steel Sports Complex by the courtesy of TATA STEEL.
- One high mast has already been installed in Tata Steel Sports Complex by the courtesy of TATA STEEL. Another high mast, approved by the institute, is under the process of installation
- One Hockey field inside the Jnan Ghosh Stadium is under construction
- The Jnan Ghosh Stadium is further developed along with new flood lights.

Facilities

- Gymnasium with modern equipments
- Billiards
- Athletics Stadium with modern training facilities
- Two Cricket Fields with two turf wickets. One practice net having two turf wickets and one concrete wicket.
- One Hockey and one football fields in the Tata Steel Sports Complex
- One Jogging-cum-walking track inside the Tata Steel Sports Complex.
- Six Tennis Courts including two flood lit courts
- Two flood lit Volleyball Courts
- Two flood lit Basketball Courts
- One wooden Badminton Court
- Table Tennis room with four tables
- Standard Swimming Pool

Activities

Inter IIT Sports Meet

The 46th Inter IIT Sports Meet began with the Inter IIT Aquatic Meet held during in the month of October 2010 at IIT Roorkee. IIT Kharagpur secured over all General Championship in Swimming (Men's) and 2nd position in Water Polo. Once again the brilliant performance of Chirag Fialoke was the highlight of the meet. He won five Gold Medals and became Individual Champion in Swimming

The second phase of the Inter IIT Sports Meet held in the month December 2010 at IIT Delhi. Men's team won the General Championship in Athletics. Badminton (Women's) and Table Tennis (Women's) won Gold. P. Navya, first year UG, and Chaoba Thounaojam, first year M.Tech. won all the matches in Badminton and Table Tennis. Hockey team secured fourth position.

Inter Hall Competitions in Sports & Games

As usual Inter Hall competitions started with the Inter Hall Aquatics competitions. Chirag Fialoke of RP Hall won the Individual Championship. Inter Hall Athletics Meet was held in the month of November, 2010.

In the Spring Semester, the second phase of inter hall competitions in badminton, basketball, cricket, football, hockey, table tennis, tennis, volleyball and weight lifting are held. Meghnad Saha (MS) Hall of Residence won the General Championship in Sports & Games.

The Inter Hall Competitions among the girl's hostels were also conducted in table tennis, badminton, swimming and basketball.

Inter Hall Competitions in Social & Culture Events

As usual the Inter Hall competitions in various social & culture events are organized. The traditional Inter Hall Illumination & Rangoli competition was organized. Judges from Kolkata were invited to judge the event. All the Halls of Residence participated in the competition with a great spirit. Nehru Hall of Residence won the Overall General Championship in the Inter Hall competitions in Social & Culture.

Inter Hall Competitions in Technology

Inter Hall competitions in Technology are held in various categories. Nehru Hall of Residence won the General Championship in Technology.

Major Events Organised

SHAURYA '10

In the year 2010-11, Technology Students' Gymkhana organized SHAURYA'10, an Inter-College Sports Mee. Competitions in Badminton, Basketball, Cricket, Tennis, Volleyball, Hockey Table Tennis, Athletics and Football were organised. Institutes/colleges and universities like Delhi Technology University, CIEM Kolkata, NIIIT Jamshedpur, St. Xaviers Kolkata, Benarasi Das Group of Engineering College Lucknow, B.C. Roy College, Durgapur, Jadavpur University, IISE&R Kolkata, Gandhi Institute of Engineering & Technolgoy Gunupur, BIT Mesra and IIT Kharagpur took part. IIT Kharagpur won gold in Badminton (Boys & Girls) and Volleyball. Silver in Basketball (Boys & Girls), Table Tennis (Girls), Football, Hockey and Tennis.

SPRING FEST '11

The Annual Social Cultural Festival Spring Fest '11 was celebrated in the month of January'11. SF'11 witnessed as usual overwhelming participation from various prestigious institutions and colleges across the country.

KSHITIJ '11

Kshitij – The Annual Techno Management Fest was organised in the month of January 2011. Around 2000 students from various colleges in India and abroad took part in various events like Business Plan, Case Studies to Paper Presentations, Industrial Design Problems, Computer

Programming and Robotics. Prizes worth Rs. 50 Lacs were awarded to participants. Kshitij played host to numerous towering personalities in technical as well as managerial domains.

Outside Participations

The Cricket Team of IIT Kharagpur participated in the Inter University Twenty-20 Cricket tournament organized by the Cricket Association of Bengal.

Annual Prize Distribution ceremony and Farewell programme for final Years.

The Prize distribution ceremony and farewell to final years was held on 15th April, 2010. Director Prof. D. Acharya presided over the function. Thirteen Institute Blues in Sports & Games, Thirteen Order of Merit in Soc. & Cult and Three Order of Merit in Technology are awarded to final years for their outstanding achievements in respective fields. . Mr. Chirag Fialoke, P. Navya and Chaoba Thounaojam are awarded jointly the Alumni Cup in Sports & Games for their outstanding performance. Harihar Sourabh Mohan received the Alumni Cup in Social & Culture for his outstanding achievement in Social & Culture events. Digvijay Gagneja is awarded the Chandiramani Cup for overall outstanding performance in Social & Culture. Arkosnato Neogy and Virani Nurali Nizar jointly won the G.S. Sanyal Trophy for overall brilliant performance in Technology. Ankik Dhar Memorial Trophy is awarded to Vibhav Viswanathan.

Table A-1
ADMISSION TO UNDERGRADUATE (B.TECH./B.ARCH./M.SC./DUAL DEGREE) COURSES IN THE SESSION 2010-2011

Sl. No.	Course	SANCTIONED STRENGTH					ADMISSION OFFERED					ACTUALLY REGISTERED				
		GN	OB	SC	ST	TOTAL (PD)	GN	OB	SC	ST	TOTAL PD	GN	OB	SC	ST	TOTAL PD
(A) B.TECH. 4-YEAR																
1	Aerospace Engg	16	09	05	02	32	17	08	04	04	33+1PD	17	08	04	04	33+1PD
2	Agril. & Food Engg.	17	09	05	03	34	20	05	07	04	36	17	05	07	04	33
3	Biotech. & Bioch. Engg.	14	07	04	02	27	14	07	04	03	28	13	07	02	03	25
4	Chemical Engg.	26	14	08	04	52	25	15	08	07	55+1PD	25	15	08	06	54
5	Civil Engg.	31	17	09	05	62	31	16	09	05	61	31	16	09	05	61
6	Computer Sc. & Engg.	28	15	08	04	55	27	15	08	04	54+2PD	27	15	08	04	54+2PD
7	Electrical Engg.	28	15	08	04	55	29	15	08	04	56	29	15	08	04	56
8	Electronics & ECE	31	17	09	05	62	31	17	08	05	61+1PD	31	17	08	05	61+1PD
9	Industrial Engg.	15	08	04	02	29	15	07	04	03	29+1PD	14	07	04	02	27+1PD
10	Instrumentation Engg.	16	09	05	02	32	16	09	05	03	33	16	09	05	02	32
11	Manuf. Sc. & Engg.	15	08	04	02	29	15	07	04	04	30	15	07	04	03	29
12	Mechanical Engg.	34	18	10	05	67	34	18	10	05	67	34	18	09	05	66
13	Met. & Mat. Engg.	22	12	07	03	44	22	11	07	05	45	22	11	07	05	45
14	Mining Engg.	20	11	06	03	40	22	08	07	05	42+1PD	21	08	07	04	40+1PD
15	Ocean Engg. & N.A.	17	09	05	02	33	17	08	05	04	34	16	07	03	04	30
Total (A)		330	178	97	48	653	335	166	98	65	664(7)	328	165	93	60	646(6)

Table A-1 (Continued)

Sl. No.	Course	SANCTIONED STRENGTH					ADMISSION OFFERED					ACTUALLY REGISTERED				
		GN	OB	SC	ST	TOTAL (PD)	GN	OB	SC	ST	TOTAL	GN	OB	SC	ST	TOTAL

(B) B.ARCH. 5-YEAR

1	Architecture	25	13	08	04	50	38	--	11	01	50	34	-	10	01	45
Total (B)		25	13	08	04	50	38	--	11	01	50	34	--	10	01	45

Sl. No.	Course	SANCTIONED STRENGTH					ADMISSION OFFERED					ACTUALLY REGISTERED				
		GN	OB	SC	ST	TOTAL (PD)	GN	OB	SC	ST	TOTAL	GN	OB	SC	ST	TOTAL

(C) M.Sc. INTEGRATED 5-YEAR

1	Applied Geology	18	10	05	03	36	27	-	09	02	38	20	-	09	02	31
2	Economics	22	12	07	03	44	32	02	07	-	41	27	02	05	-	34
3	Expl. Geophysics	17	09	05	03	34	25	-	09	01	35	21	-	06	01	28
4	Industrial Chemistry	17	09	05	03	34	26	-	04	-	30	15	-	02	-	17
5	Maths. & Computing	24	13	07	04	48	32	04	10	05	51	31	03	08	04	46
6	Physics	18	10	05	03	36	27	01	05	-	33	20	01	05	--	26
7	Statistics & Informatics	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total (C)		116	63	34	19	232	169	7	44	8	228	134	06	35	07	182

Table A-1(Continued)

Sl. No.	Course	SANCTIONED STRENGTH					ADMISSION OFFERED					ACTUALLY REGISTERED				
		GN	OB	SC	ST	TOTAL (PD)	GN	OB	SC	ST	TOTAL (PD)	GN	OB	SC	ST	TOTAL (PD)

(D) DUAL DEGREE 5-YEAR

1	Aerospace Engg.	10	05	03	01	19	09	05	03	02	19+1PD	08	05	03	02	18+1PD
2	AG & F.E./Water Res. Dev. & Management	17	09	05	03	34	24	01	08	01	34	22	01	08	01	32
3	Biotech. & Biochem. Engg.	13	07	04	02	26	18	02	03	03	26	15	02	02	02	21
4	Chemical Engg.	14	07	04	02	27	14	06	04	04	28+1PD	14	06	04	03	27+1PD
5	Civil engg./Struct. Engg.	11	06	03	02	22	12	05	03	04	24	12	05	03	04	24
6	Computer Sc. & Engg.	20	11	06	03	40	20	10	06	03	39	20	10	06	03	39
7	Elect. Engg./Instru. Engg.	13	07	04	02	26	13	07	04	02	26	13	07	04	02	26
8	E&ECE / Auto. & Comp. vision	20	11	06	03	40	21	09	06	04	40+1PD	21	09	06	03	39+1PD
9	Industrial Engg. /IEM	14	07	04	02	27	14	07	03	04	28	14	07	03	04	28
10	Manuf. Sc. & Engg./IEM	10	05	03	01	19	09	05	03	01	18	09	05	03	01	18
11	(i) M.E./M.S.Engg. (ii) M.E./Thermal, Energy & Environ. Engg.	24	13	07	04	48	24	12	07	07	50	24	12	07	06	49
12	Met. & Mat. Engg./Met. Engg.	10	05	03	01	19	11	03	04	01	19	11	03	04	01	19
13	Mining Engg.	10	05	03	01	19	14	--	05	01	20	14	--	05	01	20
14	Mining Engg. / Safety Engg. & Disaster Mgt. in Mines	09	05	03	01	18	13	--	05	--	18	13	--	05	--	18
15	Ocean Engg. & naval Arch.	11	05	04	02	22	11	04	04	04	23+1PD	11	04	04	04	23+1PD

Total (D)	206	108	62	30	406	227	76	68	41	412(4)	221	76	67	37	401(4)
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Total (A + B + C + D)	677	362	201	101	1341	769	249	221	115	1354(11)	717	247	205	105	1274(10)
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* The grand total includes 3% of total seats i.e. 40 seats reserved under PD category

Table A2

ADMISSION TO 2-YEAR M.SC. COURSES, 2010-2011

Sl. No.	Course	OFFERED					REGISTERED					NOT REGISTERED				
		GE	OB	SC	ST	TOTAL (PD)	GE	OB	SC	ST	TOTAL (PD)	GE	OB	SC	ST	TOTAL (PD)
1	Chemistry	23	12	07	02	44	23	09	07	02	41	--	03	--	--	03
2	Geophysics	13	05	04	--	22	10	04	04	--	18	03	01	--	--	04
3	Geological Sciences	15	08	05	02	30	12	05	04	02	23	03	03	01	--	07
4	Mathematics	15	--	05	02	22(8)	14	08	03	02	27	01	--	02	--	03
5	Physics	24	11	07	02	44	23	10	06	02	41	01	01	01	--	03
6	Statistics & Informatics															
TOTAL		90	36	28	08	162(8)	82	36	24	08	150	08	08	04	--	20

Table A-3

DISCIPLINE-WISE BREAK-UP OF STUDENTS AWARDED M.C.M. SCHOLARSHIP 2010-2011
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.	10	05	04	08	-	27
2	Agri. & Food Engg.	07	09	02	04	-	22
3	Biotech. & Bioch. Engg.	11	07	04	-	-	22
4	Civil Engg.	23	11	17	14	-	65
5	Chemical Engg.	15	09	17	13	-	54
6	Computer Sc. & Engg.	26	14	12	06	-	58
7	Electronics & ECE	26	23	20	12	-	81
8	Electrical Engg	19	23	08	09	-	59
9	Industrial Engg.	06	07	04	04	-	21
10	Instrumentation Engg.	11	08	05	07	-	31
11	Mechanical Engg.	22	22	08	09	-	61
12	Manuf. Sc. & Engg	06	09	05	08	-	28
13	Mining Engg.	06	07	05	08	-	26
14	Met. & Mat. Engg.	07	07	06	03	-	23
15	Ocean Engg. & N.A.	13	07	06	03	-	29
(B) B.Arch. 5-Year							
	Architecture	05	10	07	13	04	39
(C) M.Sc. Integrated 5-Year							
1	Industrial Chemistry	01	-	-	-	01	02
2	Expl. Geophysics	02	-	-	-	06	08
3	Applied Geology	-	-	-	-	06	06
4	Economics	07	05	02	05	06	25
5	Maths. & Computing	-	-	-	-	06	06
6	Physics	-	-	-	-	02	02
7	Statistics & Informatics	-	-	-	-	10	10

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	-	01	-	-	-	01
3	Geological Sciences	-	03	-	-	-	03
4	Mathematics	-	-	-	-	-	-
5	Physics	03	-	-	-	-	03
6	Statistics & Informatics	-	-	-	-	-	-
(E) Dual Degree 5-Year							
1	Aerospace Engg.	03	05	02	05	-	15
2	Ag. & F. E./ Water Res. Dev. & Manag.	09	02	04	04	-	19
3	Biotech. & Bioch. Engg.	05	05	-	07	-	17
4	Chemical Engg.	10	07	09	06	-	32
5	Civil Engg./Struct. Engg.	07	04	04	05	-	20
6	Computer Sc. & Engg./Comp. & Information Technology	07	06	09	05	-	27
7	Electrical Engg./Instrumentation Engg.	05	08	04	08	-	25
8	E & ECE/Automation & Comp. Vision	08	18	06	02	-	34
9	Industrial Engg./IEM.	05	06	06	05	-	22
10	Manuf. Sc.& Engg./IEM	03	03	02	05	-	13
11	M.E./M.S. Engg.	08	09	09	10	-	36
12	M.E./Thermal, Energy & Environ. Engg.	-	-	-	-	-	-
13	Met. & Mat. Engg./ Metallurgical Engg.	03	04	04	02	-	13
14	Mining Engineering	08	04	04	04	-	20
15	Mining Engg./Safety Engg. & Disaster Mgt in Mines	-	-	-	-	-	-
16	Ocean Engg. & N.A.	04	04	03	03	-	14
Total:		311	272	198	197	41	1019

Table A-4**STUDENTS AWARDED ONLY FREE TUITIONSHIP 2010-2011**

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.	03	02	-	02	-	07
2	Agri. & Food Engg.	05	04	02	-	-	11
3	Biotech. & Bioch. Engg.	01	01	-	-	-	02
4	Chemical Engg.	04	02	03	-	-	09
5	Civil Engg.	09	06	02	-	-	17
6	Computer Sc. & Engg.	01	01	01	01	-	04
7	Electrical Engg.	05	03	02	03	-	13
8	Electronics & ECE	04	02	01	-	-	07
9	Energy Engg.	-	-	-	-	-	-
10	Industrial Engg.	02	02	02	-	-	06
11	Instrumentation Engg.	02	01	01	-	-	04
12	Manuf. Sc. & Engg.	03	04	-	01	-	08
13	Mechanical Engg.	02	06	06	03	-	17
14	Met. & Mat. Engg.	04	01	02	-	-	07
15	Mining Engg.	06	03	-	-	-	09
16	Ocean Engg. & N.A.	01	06	-	01	-	08
(B) B.Arch. 5-Year							
	Architecture	04	-	02	02	-	08
(C) M.Sc. Integrated 5-Year							
1	Applied Geology	-	-	01	-	03	04
2	Economics	02	04	01	-	01	08
3	Expl. Geophysics	-	-	-	-	01	01
4	Industrial Chemistry	-	-	-	-	01	01
5	Maths. & Computing	-	-	-	-	-	-
6	Physics	-	-	-	-	-	-
7	Statistics & Informatics	-	-	-	-	02	02

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	-	-	-	-	-	-
6	Statistics & Informatics	-	-	-	-	--	-
(E) Dual Degree 5-Year							
1	Aerospace Engg.	03	01	-	-	-	04
2	Ag. & F. E./ Water Res. Dev. & Manag.	04	04	01	-	-	09
3	Biotech. & Bioch. Engg.	-	01	-	-	-	01
4	Chemical Engg.	05	03	-	01	-	09
5	Civil Engg./Struct. Engg.	02	02	01	-	-	05
6	Computer Sc. & Engg./ Comp. & Information Technology	07	-	01	01	-	09
7	Electrical Engg./Instrumentation Engg.	01	01	01	-	-	03
8	E & ECE/Automation & Comp. Vision	01	01	01	02	-	05
9	Industrial Engg./IEM	04	01	01	-	-	06
10	Manuf. Sc.& Engg./IEM	02	-	02	-	-	04
11	M.E./M.S. Engg.	05	01	02	03	-	11
12	M.E./Thermal, Energy & Environ. Engg.	-	-	-	-	-	-
13	Met. & Mat. Engg./ Metallurgical Engg.	02	02	-	-	-	04
14	Mining Engineering	07	01	03	01	-	12
15	Mining Engg./Safety Engg. & Disaster Mgt in Mines	-	-	-	-	-	-
16	Ocean Engg. & N.A.	01	04	01	-	-	06
Total:		102	70	40	21	8	241

TABLE -6
MEDALS AND PRIZES : 2010-2011 : Under-graduate

1. INSTITUTE GOLD MEDALS :

Sl.	Name of Medal/Prize	Name of the winner	Roll No.	CGPA
1.	President Of India Gold Medal	Gautam Kumar	07CS1021	9.91
2.	Dr. Bidhan Chandra Roy Memorial Gold Medal	Chinmay Anand Misra	07ME1047	8.81
3.	Prime Minister Of India Gold Medal	Aurosish Mishra	06CS3027	9.63
4.	Dr. Jnan Chandra Ghosh Memorial Gold Medal	Arkosnato Neogy	06EC3212	9.62
5.	Prof. J. C. Bose Memorial Gold Medal	Sharmila Pandey	09CY4013	9.45

2. ENDOWMENT GOLD MEDALS:

Sl. No.	Name of Medal/Prize	Name of the winner	Instt. Roll No.	CGPA
1.	ANUKUL CHANDRA SARKAR MEMORIAL GOLD MEDAL	Abhinav Anant	07CE1040	9.07
2.	PROF. R. G. CHATTERJEE MEMORIAL GOLD MEDAL	Siddharth Gokuldas Prabhu	06PH2009	8.48

3. SILVER MEDALS :

A. 4-YEAR B. TECH.(HONS.) COURSES :

Sl. No.	DEPARTMENTS	Name of the winner	Instt Roll No.	CGPA
1.	Aerospace Engineering	Poola Chaitanya	07AE1013	8.70
2.	Agricultural & Food Engineering	Anubha Garg	07AG1015	8.60
3.	Biotechnology & Biochemical Engineering	Souparno Ghosh	07BT1020	9.33
4.	Chemical Engineering	S.Shahzad Anjum	07CH1011	9.30
5.	Civil Engineering	Abhinav Anant	07CE1040	9.07
6.	Computer Science & Engineering	Gautam Kumar	07CS1021	9.91
7.	Electrical Engineering	Akash Singh	07EE1040	9.28
8.	Instrumentation Engineering	Priyadarshini Kumari	07IE1022	8.77
9.	Electronics & Electrical Communication Engineering	Avik Dutt	07EC1005	9.70
10.	Industrial Engineering	K.Gayatri	07IM1012	9.42
11.	Mechanical Engineering	Pinaki Pal	07ME1044	9.26
12.	Manufacturing Science & Engineering	Sneha Tulsyan	07MF1007	8.84
13.	Metallurgical & Materials Engineering	Khushboo	07MT1029	9.42
14.	Mining Engineering	Piyush Paritosh Panigrahi	07MI1015	8.68
15.	Ocean Engineering & Naval Architecture	Sarajeet Kanungo	07NA1004	8.74

Table -6 contd.

B. 5-YEAR B. ARCH.(HONS.) COURSE :

Sl. No.	DEPARTMENTS	Name of the winner	Instt Roll No.	CGPA
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1.	Architecture	Ranjitha S	06AR1004	8.84
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C. 5-YEAR DUAL DEGREE COURSES :

Sl. No.	DEPARTMENTS	Name of the winner	Instt Roll No.	CGPA
1.	Aerospace Engineering (AE1)	Priyam Chakraborty	06AE3012	9.34
2.	Agricultural & Food Engineering (AG1)	Sattwika Saha	06AG3308	8.72
3.	Biotechnology & Biochemical Engineering (BT1)	Dolonchampa Maji	06BT3002	9.06
4.	Chemical Engineering(CH1)	Sneh Shriyansh	06CH3002	9.30
5.	Civil Engineering(CE1)	Amin Jay Jatin	06CE3012	8.94
6.	Computer Science & Engineering (CS1)	Aurosish Mishra	06CS3027	9.63
7.	Electrical Engineering (EE1)	R.Vignesh	06EE3006	9.52
8.	Electronics & Electrical & Communication Engineering(EC1)	Arkosnato Neogy	06EC3212	9.62
9.	Industrial Engineering & Management(IM1)	Siddharth P Singh	06IM3014	9.16
10.	Mechanical Engineering (ME2)	Ashish Pathak	06ME3210	9.06
11.	Manufacturing Sc.& Engg (MFI)	Virani Nurali Nizar	06MF3006	8.50
12.	Metallurgical & Materials Engineering(MT1)	M.Ravikant	06MT3009	8.64
13.	Ocean Engineering & Naval Architecture(NA1)	S.Abhilash Sharma	06NA3006	8.92

D. M. SC. (5-YEAR) COURSES :

Sl. No.	COURSES	Name of the winner	Instt Roll No.	CGPA
1.	Industrial Chemistry	Mantha Sriteja	06CY2014	8.68
2.	Exploration Geophysics	Rahul Sarkar	06EX2013	8.95
3.	Economics	Kawathekar Rohit Manik	06HS2022	8.75
4.	Mathematics & Computing	Aseem	06MA2024	8.91
5.	Physics	Siddharth Gokuldas Prabhu	06PH2009	8.48
6.	Statistics & Informatics	Rahul B	06SI2027	8.74

E. M. SC. (2-YEAR) COURSES

Sl. No.	DEPARTMENTS	Name of the winner	Instt Roll No.	CGPA
1.	Chemistry	Sharmila Pandey	09CY4013	9.45
2.	Geological Sciences	Sumitra K	09GG4001	8.93
3.	Mathematics	Satyajit Pramanik	09MA4004	9.16
4.	Physics	Madhumita Dhar	09PH4010	9.23

Table -6 contd

4. ENDOWMENT PRIZES - (UNDER GRADUATE)

Sl. No.	Name of Prize	Name of the winner	Instt Roll No.	CGP A	Amount Rs.
1.	Sarat Memorial Prize	K.Gayatri	07IM1012	9.42	500.00
2.	Suhasini Devi Memorial Prize	Anubha Garg	07AG1015	8.60	500.00
3.	P. K Bhattacharya Memorial Prize	Rahul Sarkar	06EX2013	8.95	500.00
4.	Swapn Kumar Saha Memorial Prize	Avik Dutt	07EC1005	9.70	1,000.00

5	Medury Bhanumurthy Memorial Prize	Anubha Garg	07AG1015	8.60	350.00
6	H. N. Bose Memorial Prize	Siddharth Gokuldas Prabhu	06PH2009	8.48	3,000.00
7.	Bigyan Sinha Memorial Prize	Avik Dutt	07EC1005	9.70	1,000.00
8.	Usha Martin Award	Khushboo	07MT1029	9.42	1,000.00
9.	Systems Society Award	Priyadarshini Kumari	07IE1022	8.77	2500.00
10.	Prof.K.L.Chopra Award	Esha Banerjee	09CY4004	8.26	1,000.00
11.	Charubala Devi Memorial Prize	Avishek Biswas	08EC1046	9.76	1000.00
12.	Gouri Basak Design Award	Avakash Kumar	07AR1007	7.88	1,000.00
13.	Prof. Prabodh Chandra Sanyal Award	Aseem	06MA2024	8.91	1,000.00
14.	B. L. Nagpal Memorial Prize	Vikash Kumar Pandey	08CE1009	8.81	2,000.00
15.	Pradeep Kumar Chakraborty Award	Juhi Agrawal	08MT1019	8.91	1,000.00
16.	G. B. Mitra Award	Rahul Sarkar	06EX2013	8.95	1,000.00
17.	Bhartiya Cutler Hammer Prize	Devesh Kumar Dhruw	08EE1040	9.44	3,000.00
18.	Mansara Prize	Krush Dattani	07AR1012	8.45	1,000.00
19.	R. M. Lalwani Prize	Avishek Biswas	08EC1046	9.76	1,000.00
20.	H. P. Bhadury Memorial Prize	Vivek Mishra	08ME1001	9.51	1,500.00
21.	John Von Neuman Award	Avishek Biswas	08EC1046	9.76	2,500.00
22.	Prof. S. K. Nandi Memorial Prize	Gita Kumari	08CH1004	9.50	500.00
23.	International Symposium (Microwave & Communication) 1981 Prize	Avishek Biswas	08EC1046	9.76	3,000.00
24.	Class Of 1970 Alumni (Us) Association Prize	Swarnabha Chattaraj	09EC1002	9.67	2,500.00
25.	Technology Alumni Association (Delhi Chapter) Award	Lakshya Jain	10ME1002 4	9.73	1,500.00
26	IIT Kharagpur Alumni (California Chapter) Award	Swarnabha Chattaraj	09EC1002	9.67	3,000.00
27.	Ram Gopal Kabre Memorial Prize	Nishant Vats	09AR1014	8.62	1,000.00
28.	Prof. S. P. Sengupta Memorial Prize	Mohit Agrawal	07CH1012	9.01	2,500.00
29.	K. Rama Rao Endowment Prize	Jaisinghani Shaily Sudesh	08AG1006	8.35	2,500.00
30.	Smt. Ava Sanyal Memorial Prize	Juhi Agrawal	08MT1019	8.91	2,500.00
31.	Prof. B.N. Avasthi Memorial Award For Sports	1. Chirag Fialoke (Male)	07ME3111	8.29	2,500.00

		2. Potla Navya (Female)	10IM30019	8.11	2,500.00
32.	Prof. Sunil Kanti Sen Memorial Award	Sagarika Chatterjee	10AR10034	7.89	4,000.00
33.	Prof. Sudhir Ranjan Sengupta Memorial Prize	Allen Dan Babu	07CE3105	9.40	2,000.00
34.	Best B.Tech. Project Thesis Award By Mr. Mitrajit Mukhopadhyay	1 st –Kola Siddharth 2 nd -Manish Meena 3 rd – Rohit Sudheendranath	07CH1037 07CH3017 07CH3006	8.36 7.43 8.57	25,000.00 15,000.00 10,000.00
35.	A. A. Hakim Memorial Endowment Prize	Sattwika Saha	06AG3308	8.72	2,500.00
36.	Keshab K Parhi Endowment Prize	Arkosnato Neogy	06EC3212	9.62	15,000.00
37.	Nilanjan Ganguly Memorial Award For E&E.C.E. Deptt	Avik Dutt	07EC1005	9.70	10,000.00
38.	Nilanjan Ganguly Memorial Award For Physics Deptt	Siddharth Gokuldas Prabhu	06PH2009	8.48	10,000.00
39.	Kedar Nath Singh Memorial Prize	Siddharth Gokuldas Prabhu	06PH2009	8.48	6,400.00
40.	Dwaraka Nath Singh Memorial Prize	Ashish Pathak	06ME3210	9.06	6,400.00
41.	Jugal Kishore Singh Memorial Prize	Pinaki Pal	07ME1044	9.26	6,400.00
42.	Rajender Kumar Khanna Memorial Award	Akash Singh	07EE1040	9.28	10,000.00
43.	Ramneek Sodhi Memorial Award	Khushboo	07MT1029	9.42	10,000.00
44.	Sushil Kumar Chowdhury Memorial Award	Poola Chaitanya	07AE1013	8.70	7,000.00
45.	Ashim Ranjan Guha Memorial Award	Anubha Garg	07AG1015	8.60	7,000.00
46.	TKT Srikrishnan Endowment Prize	Palkush Rai Chawla	07ME3106	8.29	20,000.00
5.	J. C. Ghosh	MEMORIAL	PRIZE		
1.	Aerospace Engineering	Praturi Divya Sri	08AE3016	8.87	2,000.00
2.	Agricultural & Food Engineering	Jaisinghani Shaily Sudesh	08AG1006	8.35	2,000.00
3	Biotechnology & Biochemical Engineering	Sona Todi	08BT1004	8.66	2,000.00
4.	Chemical Engineering	Gita Kumari	08CH1004	9.50	2,000.00
5.	Civil Engineering	Vikash Kumar Pandey	08CE1009	8.81	2,000.00
6.	Computer Science & Engineering	Radhika Mittal	08CS1023	9.72	2,000.00
7.	Electrical Engineering	Devesh Kumar Dhruw	08EE1040	9.44	2,000.00
8.	Instrumentation Engineering	Deepak Pathak	08IE1030	8.94	2,000.00
9.	Electronics & Elect. Commu. Engineering	Avishek Biswas	08EC1046	9.76	2,000.00
10.	Industrial Engineering	Maralenhalli Jyothi Bylappa	08IM1002	8.40	2,000.00
11.	Mechanical Engineering	Vivek Mishra	08ME1001	9.51	2,000.00
12.	Manufacturing Science & Engineering	Tanmay Ghonge	08MF1006	8.94	2,000.00
13.	Metallurgical & Materials	Juhi Agrawal	08MT1019	8.91	2,000.00

	Engineering				
14.	Mining Engineering	Joydeep Sanyal	08MI1003	8.45	2,000.00
15.	Ocean Engineering & Naval Architecture	Taskar Bhushan Uday	08NA3002	9.28	2,000.00
16.	Architecture & Regional Planning	Aaron David Mendonca	08AR1005	8.66	2,000.00
17.	Applied Geology	Saptak Mohanta	07GG2014	8.71	2,000.00
18.	Exploration Geophysics	Avinash Nayak	07EX2010	9.34	2,000.00
19.	Mathematics & Computing	Kalyan Asis Sahoo	07MA2005	9.06	2,000.00
20.	Physics	Shivangi Prasad	07PH2004	8.49	2,000.00
21.	Economics (HS)	Soumya Shaw	07HS2007	9.09	2,000.00

Table – 6 contd.

6. BEST PROJECT AWARD :
A. 4-YEAR B. TECH.(HONS.) COURSES :

Sl. No.	Department	Name of the winner	Instt Roll No.	CGPA	Amount Rs.
1.	Aerospace Engineering	Sandipan Chatterjee	07AE3008	9.20	1,000.00
2.	Agricultural & Food Engineering	Priyanka Chaturvedi	07AG3804	8.59	1,000.00
3.	Biotechnology & Biochemical Engineering	Souparno Ghosh	07BT1020	9.33	1,000.00
4.	Chemical Engineering	Jointly: 1.Imran Alam 2.Abhishek Singh	07CH1016 07CH3019	8.57 8.44	500.00 500.00
5.	Civil Engineering	Debarshi Sen	07CE1007	8.87	1,000.00
6.	Computer Science & Engineering	Arun Dobriyal	07CS3014	9.04	1,000.00
7.	Electrical Engineering	Debajit Bhattacharya	07EE1038	9.10	1,000.00
8.	Instrumentation Engineering	Dipanjan Saha	07IE3202	8.82	1,000.00
9.	Industrial Engineering	Ashesh Kumar Sinha	07IM1009	8.58	1,000.00
10.	Electronics & Elect. Comm. Engineering	Avik Dutt	07EC1005	9.70	1,000.00
11.	Mechanical Engineering	Palkush Rai Chawla	07ME3106	8.29	1,000.00
12.	Manufacturing Science & Engineering	Debayan Saha	07MF3002	7.67	1,000.00
13.	Metallurgical & Materials Engineering	Debadutta Prusty	07MT3013	8.75	1,000.00
14.	Mining Engineering	Karthik Ravichandran	07MI3027	8.92	1,000.00
15.	Ocean Engineering &	Sarajeet Kanungo	07NA1004	8.74	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.	CGPA	Amount Rs.
1.	Architecture & Regional Planning	Devaditya Mukherjee	06AR1013	7.95	1,000.00

C. 5-YEAR DUAL DEGREE COURSES :

Sl. No.	Name of Deptt.	Name of the winner	Instt Roll No.	CGPA	Amount Rs.
1.	Aerospace Engineering (AE1)	Tanmay Kumar Mandal	06AE3001	8.30	1,000.00
2.	Agricultural & Food Engineering (AG1)	Sattwika Saha	06AG3308	8.72	1,000.00
3.	Biotechnology & Biochemical Engineering (BT1)	Shreyas Raj R	06BT3017	7.97	1,000.00
4.	Chemical Engineering (CH1)	Vivek Khetan	06CH3004	9.18	1,000.00
5.	Civil Engineering (CE1)	Amin Jay Jatin	06CE3012	8.94	1,000.00
6.	Computer Science & Engineering (CS1)	Diptesh Chatterjee	06CS3031	9.13	1,000.00
7.	Electrical Engineering (EE1)	Abir De	06EE3202	8.98	1,000.00
8.	Industrial Engineering & Management(IM1)	Siddharth P Singh	06IM3014	9.16	1,000.00
9.	Mechanical Engineering (ME1)	Sankhya Mohanty	06ME3107	7.87	1,000.00
10.	Mechanical Engineering (ME2)	D.Naga Neehar	06ME3212	8.90	1,000.00
11.	Mechanical Engineering (ME3)	Siddhartha Khastgir	06ME3303	7.68	1,000.00
12.	Manufacturing Science & Engineering (MF1)	Virani Nurali Nizar	06MF3006	8.50	1,000.00
13.	Metallurgical & Materials Engineering (MT1)	Heena Sinha	06MT3003	8.34	1,000.00
14.	Mining Engineering (MI1)	Jointly : Ramesh Dundra Piyush P Radkar	06MI3029 06MI3007	8.33 8.26	500.00 500.00
15.	Ocean Engineering & Naval Architecture (NA1)	S.Abhilash Sharma	06NA3006	8.92	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	Mantha Sriteja	06CY2014	8.68	1,000.00
2.	Exploration Geophysics	Kumar Aditya	06EX2004	7.77	1,000.00
3.	Applied Geology	Chandra Prakash	06GG2010	8.03	1,000.00

4.	Mathematics & Computing	Uma Kant Sahoo	06MA2014	7.47	1,000.00
5.	Physics	Siddharth Gokuldas Prabhu	06PH2009	8.48	1,000.00
6.	Statistics & Informatics	Manish Raj	06SI2006	6.91	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	Rajat Maji	09CY4017	8.82	1,000.00
2.	Geological Sciences	Debajit Saha	09GG4008	8.50	1,000.00
3.	Geophysics	Prabhakar Nayak	09EX4004	7.89	1,000.00
4.	Mathematics	Suman Ghosh	09MA4013	7.76	1,000.00
5.	Physics	Trisha Nath	09PH4006	8.99	1,000.00

Table A-7

**STUDENTS AWARDED SCHOLARSHIPS BY EXTERNAL AGENCIES
(2010-2011)**

Sl. No.	Awarding Organization	No. of Recipients
1.	National Council of Educational Research & Training, Sri Aurobinda Marg, New Delhi 16	68
2.	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- Except Economics Branch)	421
3.	Rajarshee Shahu Maharaj Merit Scholarship, Director of Social Welfare, Maharashtra State, Pune.	03
4.	CSR Scholarship awarded by Shipping Corporation of India, Mumbai for SC/ST students of O.E. & Naval. Arch. Department	25
5.	Merit-cum-Means Scholarship from Education Director (Scholarship & Stipend Section) Govt. of West Bengal, Kolkata (for 2- Yr. M.Sc. students)	16
6.	Steel Authority of India Ltd., Durgapur, Rourkela, (RSP-4 Nos. + VSP-4 Nos.) Vishakhapatnam Steel Plant, Bokaro	08
7.	Aditya Birla Scholarship, Aaditya Birla Group, Aditya Birla Management Corporation, Mumbai	01
8.	Post Matric Scholarship, Social Welfare Deptt. Luncknow, Govt. of Uttar Pradesh	02
9.	Directorate of Higher Education, Chattisgarh	01
10.	Institute of Engineers, Calcutta.	02
11.	Jagadish Chandra Bose National Talent Search, Calcutta (JBNSTS) (Fresh – 11 + Renewal-28	39
12.	National Board of Higher Mathematics, Deptt. of Atomic Energy, Govt. of India, Mumbai (for students of 2-Yr. M.Sc. course, Deptt of Math.)	01
13.	Indian Oil Corporation Ltd., New Delhi.	01
14.	G.O.I. Scholarship, Govt. of Tamilnadu	01
15.	Post Matric Scholarship to SC/ST Students, Govt. of Bihar	02
16.	MCM Scholarship for Minorities Communities, Ministry of Minority Affairs, New Delhi	02
17.	KVPY Scholarship, IISc, Bangalore	39
18.	Indira Gandhi Single Girl Child PG Scholarship to the girl students of 2-Year M.Sc. course University Grant Commission, New Delhi	02
19.	PG Merit Scholarship to the students of 2-Year M.Sc. course University Grant Commission, New Delhi	03
	TOTAL:	637

Table A-8

**STUDENTS ON ROLL – UNDERGRADUATE (B.TECH/B.ARCH./M.SC./DUAL DEGREE)
COURSES AT THE BEGINNING OF THE SESSION 2010 – 2011**

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	0	20	03	15	02	15	01			87
2	Agri. & Food Engg.	21	08	20	06	15	04	09	02			85
3	Biotech. & Bioch. Engg.	14	07	17	04	09	02	05	02			60
4	Chemical Engg.	47	10	38	03	36	03	31	03			171
5	Civil Engg.	50	05	46	03	37	01	32	04			178
6	Computer Sc. & Engg.	56	05	46	05	43	02	38	01			196
7	Electrical Engg.	59	02	50	01	35	04	35	03			189
8	Electronics & ECE	57	10	54	04	44	03	36	02			210
9	Industrial Engg.	26	02	23	0	20	01	19	01			92
10	Instrumentation Engg.	29	06	20	06	21	04	14	06			106
11	Manuf. Sc. & Engg.	25	03	20	03	20	02	19	02			94
12	Mechanical Engg.	68	04	57	06	52	0	43	01			231
13	Met. & Mat Engg.	36	04	29	02	20	04	18	03			116
14	Mining Engg.	39	0	31	0	23	0	17	01			111
15	Ocean Engg. & N.A.	28	01	27	01	16	02	16	03			94
TOTAL (A):		586	67	498	47	406	34	347	35			2020
(B) B.Arch. 5-Year												
	Architecture	32	12	25	8	23	4	14	10	17	7	152
TOTAL (B):		32	12	25	8	23	4	14	10	17	7	152
(C) M.Sc. Integrated 5-Year												
1	Applied Geology	26	02	24	0	12	02	14	01	11	0	92
2	Economics	22	09	17	05	17	02	16	0	18	0	106
3	Expl. Geophysics	22	04	22	06	20	04	20	01	15	0	114
4	Industrial Chemistry	15	0	11	07	07	05	05	0	07	01	58
5	Maths. & Computing	43	03	34	02	26	02	24	0	22	02	158
6	Physics	21	02	19	03	11	0	05	04	19	0	84
7	Statistics & Informatics					22	02	22	01	27	0	74
TOTAL (C):		149	20	127	23	115	17	106	7	119	3	686
(D) M.Sc. 2-Year												
1	Chemistry	33	07	26	11							77
2	Geological Sciences	15	06	20	05							46
3	Geophysics	13	04	04	0							21
4	Mathematics	22	04	18	06							50
5	Physics	34	06	24	08							72
TOTAL (D):		117	27	92	30							266
(E) Dual Degree 5-Year												
1	Aerospace Engg.	19	01	15	0	13	01	16	0	16	0	81
2	Ag. & F. E./ Water Res. Dev. & Manag.	21	08	19	03	15	01	13	01	15	02	98
3	Biotech. & Bioch. Engg.	16	04	16	03	13	03	18	05	17	02	97
4	Chemical Engg.	28	02	20	03	23	02	16	05	17	02	118
5	Civil Engg./Struct. Engg.	21	03	14	03	13	03	13	0	17	02	89
6	Computer Sc. & Engg./ Comp. & Information Technology	41	03	35	01	30	02	31	0	31	01	175
7	Electrical Engg./ Instru. Engg.	25	04	22	02	19	04	17	02	19	01	115

8	E & ECE/Automation & Comp. Vision	35	10	31	05	31	03	32	02	28	01	178
9	Industrial Engg./IEM	28	01	24	0	18	0	17	0	18	0	106
10	Manuf. Sc. & Engg./IEM	17	0	15	0	09	02	13	01	12	01	70
11	M.E./M.S. Engg.	53	02	42	02	36	02	35	01	35	01	209
12	Met. & Mat. Engg./ Metallurgical Engg.	15	02	14	01	14	02	13	01	08	01	71
13	Mining Engg.	34	0	28	0	22	0	14	01	16	0	115
14	Ocean Engg. & N.A.	21	01	17	01	13	0	09	0	12	0	74
Total (E):		374	41	312	24	269	25	257	19	261	14	1596
TOTAL (A+B+C+D+E)		1258	167	1054	132	813	80	724	71	397	24	4720

Table A-9
STATEMENT OF RESULTS (UNDERGRADUATE) 2010-2011

	Course	1st. Yr.		2nd yr.		3rd yr.		4th yr.		5th yr.		Total
		P	I	P	I	P	I	P	I	P	I	
(A) B.Tech (Hons.)												
1	Aerospace Engineering	30	3	18	3	12	5	18	2	0	0	91
2	Agricultural & Food Engineering	23	6	21	7	15	5	8	0	0	0	85
3	Biotechnology	16	5	19	3	9	1	7	1	0	0	61
4	Chemical Engineering	52	5	39	3	35	3	34	2	0	0	173
5	Civil Engineering	50	5	44	8	27	10	35	3	0	0	182
6	Computer Science & Engineering	60	1	46	4	43	5	39	1	0	0	199
7	Electrical Engineering	60	1	44	10	32	7	36	3	0	0	193
8	Electronics & Electrical Communication Engg	66	1	57	1	44	5	39	6	0	0	219
9	Energy Engineering	0	0	0	0	0	1	1	0	0	0	2
10	Industrial Engineering & Management	27	1	18	6	19	5	18	1	0	0	95
11	Instrumentation Engineering	35	0	24	4	23	2	19	1	0	0	108
12	Manufacturing Engineering	27	1	22	2	20	2	22	3	0	0	99
13	Mechanical Engineering	70	2	58	5	48	8	49	1	0	0	241
14	Metallurgical & Materials Engineering	38	2	24	9	15	14	19	1	0	0	122
15	Mining Engineering	33	6	26	5	20	4	17	0	0	0	111
16	Ocean Engineering & Naval Architecture	27	2	23	5	15	3	18	1	0	0	94
	Total	614	41	483	75	377	80	379	26	0	0	2075
(B) B.Arch. (Hons.)												
1	Architecture and Regional Planning	39	6	26	7	16	9	20	3	25	0	151
	Total	39	6	26	7	16	9	20	3	25	0	151
(C) M.Sc. (2 yr.)												
1	Chemistry	39	1	37	0	0	0	0	0	0	0	77
2	Exploration Geophysics	16	0	4	0	0	0	0	0	0	0	20
3	Geology & Geophysics	21	0	24	0	0	0	0	0	0	0	45
4	Mathematics	26	0	24	0	0	0	0	0	0	0	50
5	Physics & Meteorology	40	0	31	0	0	0	0	0	0	0	71
	Total	142	1	120	0	0	0	0	0	0	0	263
(D) M.Sc. (5yr.)												
1	Chemistry	14	0	15	2	12	0	4	1	8	0	56
2	Exploration Geophysics	24	2	24	4	22	1	20	1	14	0	112
3	Geology & Geophysics	22	6	22	3	10	3	12	3	12	0	93
4	Humanities & Social Sciences	28	3	21	3	17	1	14	1	17	2	107
5	Mathematics	43	3	30	6	25	3	18	10	21	0	159
6	Physics & Meteorology	20	3	16	7	8	3	7	4	14	2	84
7	Statistics and Informatics	0	0	0	2	23	3	18	3	25	0	74
	Total	151	17	128	27	117	14	93	23	111	4	685
(E) Dual Degree												
1	Aerospace Engineering	20	0	13	3	11	2	15	3	14	0	81
2	Agricultural & Food Engineering	26	3	18	4	10	7	13	1	14	2	98
3	Biotechnology	19	1	18	3	14	1	22	0	19	0	97
4	Chemical Engineering	29	1	20	3	22	3	17	4	19	0	118
5	Civil Engineering	21	3	14	3	11	5	12	1	19	1	90
6	Computer Science & Engineering	42	2	33	5	28	4	28	5	27	7	181

7	Electrical Engineering	29	0	22	2	18	6	19	1	17	2	116
8	Electronics & Electrical Communication Engg	44	1	34	3	30	5	33	3	28	2	183
9	Industrial Engineering & Management	27	2	18	6	18	2	15	2	16	1	107
10	Instrumentation Engineering	0	0	1	0	1	0	3	0	0	0	5
11	Manufacturing Engineering	16	1	15	0	10	1	14	0	14	0	71
12	Mechanical Engineering	52	3	43	2	34	5	34	3	31	4	211
13	Metallurgical & Materials Engineering	16	1	15	0	14	2	14	1	8	0	71
14	Mining Engineering	30	4	24	4	19	2	13	1	16	0	113
15	Ocean Engineering & Naval Architecture	19	3	16	3	11	4	7	0	11	1	75
	Total	390	25	304	41	251	49	259	25	253	20	1617
	Total (A+B+C+D+E)	1336	90	1061	150	761	152	751	77	389	24	4791

TABLE – B-1 ADMISSION TO POSTGRADUATE COURSES IN 2010-2011

Deptt./ Centre	Specialisation	Sanct-ioned	Admit.	Reg-ular	SP	QIP	DF	GN	SC	ST	PH	OBC	M	F
AE	Aerospace Engineering	24	24	19	03	00	02	14	04	00	00	06	22	02
AG	Farm Machinery & Power (AG1)	19	17	17	00	00	00	06	03	01	00	07	15	02
	Land & Water Resources Engineering (AG2)	18	17	17	00	00	00	06	04	01	00	06	14	03
	Food Process Engineering (AG3)	30	28	28	00	00	00	11	04	02	00	11	22	06
	Applied Botany (AG4)	20	18	18	00	00	00	08	03	01	00	06	12	06
	Aquacultural Engineering (AG5)	21	00	00	00	00	00	00	00	00	00	00	00	00
	Agricultural Systems & Management (AG6)	19	07	07	00	00	00	05	02	00	00	00	02	05
BT	Biotechnology and Biochemical Engineering	24	17	17	00	00	00	09	03	00	00	05	09	08
CH	Chemical Engineering	85	73	73	00	00	00	31	13	03	00	26	62	11
CE	Hydraulic & Water Resources Engineering (CE1)	20	08	08	00	00	00	05	00	00	00	03	05	03
	Transportation Engineering (CE2)	20	12	12	00	00	00	06	02	00	00	04	10	02
	Environmental Engineering & Management (CE3)	18	07	06	01	00	00	03	03	00	00	01	06	01
	Geotechnical Engineering (CE4)	18	12	12	00	00	00	05	02	01	00	04	09	03
	Structural Engineering (CE5)	19	20	19	01	00	00	10	03	01	00	06	18	02
CS	Computer Science & Engineering	42	48	38	01	03	06	27	07	01	00	13	44	04
CR	Cryogenics Engineering	24	08	08	00	00	00	04	01	01	00	02	06	02
CL	Earth System Science and Technology	31	05	05	00	00	00	05	00	00	00	00	05	00
EE	Machine Drives and Power Electronics (EE1)	20	17	17	00	00	00	09	03	02	00	03	16	01
	Control System Engineering (EE2)	19	20	16	02	01	01	14	00	00	00	06	16	04
	Power and Energy System Engineering (EE3)	18	14	14	00	00	00	07	03	00	00	04	13	01
	Instrumentation (EE4)	19	22	20	01	00	01	14	02	00	00	06	21	01
EC	Fibre Optics and Lightwave Engineering (EC1)	12	08	06	00	00	02	05	01	00	00	02	06	02
	Micro Electronic and VLSI Design (EC2)	29	27	26	00	01	00	14	04	01	00	08	22	05
	RF and Microwave Engineering (EC3)	28	24	16	01	02	05	15	03	00	00	06	21	03
	Telecommunication Systems Engineering (EC4)	28	26	24	00	00	02	12	04	02	00	08	19	07
	Visual Information and Embedded Systems Engineering (EC5)	28	23	21	00	02	00	10	04	00	00	09	19	04
ET	Media and Sound Engineering	15	00	00	00	00	00	00	00	00	00	00	00	00
GG	Exploration Geosciences (GG1)	24	13	13	00	00	00	09	00	01	00	03	07	06
	Computational Seismology (GG2)	13	00	00	00	00	00	00	00	00	00	00	00	00
IM	Industrial Engineering and Management	31	18	15	03	00	00	07	05	00	00	06	15	03
IT	Information Technology	25	20	13	02	02	03	12	02	00	00	06	19	01
MS	Materials Science and Engineering	29	27	22	00	00	05	15	04	01	00	07	22	05
MA	Computer Science and Data Processing	34	17	16	00	01	00	06	01	00	00	10	16	01
ME	Manufacturing Science and Engineering (ME1)	30	19	18	00	00	01	08	04	00	00	07	18	01
	Thermal Science and Engineering (ME2)	37	30	27	00	02	01	15	02	00	00	13	29	01
	Mechanical System Design (ME3)	48	46	36	00	02	08	28	04	00	00	14	43	03

MT-1	Metallurgical & Materials Engineering	54	27	27	00	00	00	16	09	00	00	02	25	02
MI	Mining Engineering	24	05	05	00	00	00	01	01	02	00	01	05	00
NA	Ocean Engineering and Naval Architecture	24	16	11	00	03	02	08	02	00	00	06	15	01
PH	Solid State Technology (PH1)	25	15	15	00	00	00	07	00	00	00	08	13	02
ID	Infrastructure Design and Management	31	18	18	00	00	00	07	05	01	00	05	14	04
RE	Reliability Engineering	24	07	04	00	00	03	04	00	00	00	03	06	01
RT	Rubber Technology	24	09	09	00	00	00	05	02	01	00	01	08	01
WM	Water Management	12	08	08	00	00	00	04	02	02	00	00	08	00
AR	City Planning	42	33	31	01	00	01	19	05	00	00	09	18	15
MM	Medical Science and Technology	15	05	05	00	00	00	02	01	00	00	02	05	00
IP	Intellectual Property Rights	50	32	00	32	00	00	26	01	00	00	05	22	10
BM	Business Administration	100	90	00	88	00	02	57	10	01	02	20	78	12
HS	Human Resources Management	50	19	00	19	00	00	11	04	01	00	03	13	06
MT-2	Steel Technology	00	07	00	07	00	00	07	00	00	00	00	07	00
EMBA	Executive MBA	00	15	00	15	00	00	15	00	00	00	00	13	02
EC-8	Electronics and Communication Engineering (Distance Mode)	00	25	00	25	00	00	19	04	00	00	02	19	06
EE-8	Electrical Engineering (Distance Mode)	00	17	00	17	00	00	15	01	00	01	00	12	05
IT-8	Information and Communication Engineering (Distance Mode)	00	14	00	14	00	00	13	00	00	00	01	10	04
Total		1414	1054	757	233	19	45	591	147	27	3	286	874	180

TABLE B-2 – POSTGRADUATE STUDENTS ON ROLL
1st Year – 2010-2011 & 2nd year – 2009-1010

Dept./Centre	Specialisation	Intake Capacity 2010	1 st Yr.		2nd Yr		Total	
			M	F	M	F	M	F
AE	Aerospace Engineering	24	22	02	17	02	39	04
AG	Farm Machinery & Power	19	15	02	15	00	30	02
	Soil & Water Conservation Engineering	00	00	00	08	04	08	04
	Dairy & Food Engineering	30	22	06	13	02	35	8
	Applied Botany	20	12	06	09	05	21	11
	Water Resource Devl. & Management	18	14	03	05	06	19	09
	Aquacultural Engineering	21	00	00	00	00	00	00
	Agril. System & Management	19	02	05	05	05	07	10
	Post Harvest Engineering	00	00	00	15	02	15	02
ARP	City Planning	42	18	15	13	11	31	26
ChE	Chemical Engineering	85	62	11	53	09	115	20
Civil	Hydraulic & Water Resource Engineering	20	05	03	04	02	09	05
	Transportation Engineering	20	10	02	15	00	25	02
	Environmental Engg. & Management	18	06	01	00	00	06	01
	Geo-Technical Engineering	18	09	03	08	03	17	06
	Structural Engineering	19	18	02	15	02	33	04
CSE	Computer Science & Engineering	42	44	04	42	01	86	5
EE	Machine Drives & Power Electronics	20	16	01	16	00	32	01
	Control System Engineering	19	16	04	17	01	33	05
	Power System Engineering	18	13	01	14	00	27	01
	Instrumentation	19	21	01	14	01	35	02
E&ECE	Fibre Optics & Lightwave Engineering	12	06	02	05	00	11	02
	Microelectronics & VLSI Design	29	22	05	22	04	44	09
	RF & Microwave Engineering	28	21	03	20	04	41	07
	Telecommunication Systems Engineering	28	19	07	21	02	40	09
	Visual Information & Embedded System	28	19	04	24	01	43	05
GG	Exploration Seismology	24	07	06	06	02	13	08
	Computational Seismology	13	00	00	01	00	01	00
SIT	Information Technology	25	19	01	22	01	41	02
MA	Comp. Sc. & Data Processing	34	16	01	26	01	42	02
ME	Manufac. Science Engineering	30	18	01	23	02	41	03
	Thermal Science & Engineering	37	29	01	28	00	57	01
	Mechanical System Design	48	43	03	35	00	78	03
MT	Metallurgical & Materials Engineering	54	25	02	30	04	55	06
MI	Mining Engineering	24	05	00	11	00	16	00
OENA	Ocean Engineering & Naval Arch.	24	15	01	14	02	29	03

PH	Solid State Tech.	25	13	02	13	02	26	04
BT	Biotechnology & Biochemical	24	09	08	13	06	22	14
CR	Cryogenic Engineering	24	06	02	07	00	13	02
HSS	Hum. Resources. Dev. & Management	00	00	00	08	00	08	00
IEM	Industrial Engg. & Managt	31	15	03	13	02	28	05
RE	Reliability Engineering	24	06	01	05	00	11	01
MS	Material Science & Engg.	29	22	05	16	00	38	05
RT	Rubber Technology	24	08	01	13	01	21	02
ID	Infrastructure Design & Management	31	14	04	06	05	20	09
WM	Water Management	12	08	00	04	03	12	03
VGSOM	Business Administration	100	78	12	77	09	155	21
SMST	Medical Imaging & Image Analysis	00	00	00	04	01	04	01
	Medical Science & Technology (3 yr.)	15	05	00	14	01	19	01
MT	PG Diploma in Steel Technology	00	07	00	12	01	19	01
CORAL	CORAL	31	05	00	11	01	16	01
RGSOIPL	LLB (IPR)	50	22	10	17	12	39	22
CET	Media & Sound Engg.	15	00	00	00	00	00	00
HS	Human Resources Management	50	13	06	00	00	13	06
EMBA	Executive MBA (3 yr.)	00	13	02	00	00	13	02
EC-8	Electronics and Communication Engineering (3 yr.) (Distance Mode)	00	19	06	00	00	19	06
EE-8	Electrical Engineering (3 yr.) (Distance Mode)	00	12	05	00	00	12	05
IT-8	Information and Communication Engineering (3 yr.) (Distance Mode)	00	10	04	00	00	10	04
Total		1414	874	180	819	123	1693	303

TABLE – B-3 – STATEMENT OF RESULTS RESULTS OF POSTGRADUATE EXAMINATION
M.TECH./MCP/MMST/MBA/LLB/PGDST
2008-2009 BATCH OF STUDENTS

Deptt./ Centre	Speecialisation	Number Registered	No. Declared Successful	No. of Incomplete Results	Remarks
AE	Aerospace Engineering	13	13		
AG	Farm Machinery & Power (AG1)	09	09		
	Soil and Water Conservation Engineering (AG2)	08	08		
	Diary and Food Engineering (AG3)	09	09		
	Applied Botany (AG4)	11	11		
	Water Resources Development and Management (AG5)	10	09	08AG6510	
	Aquacultural Engineering (AG6)	00	00		06AG6601
	Agricultural Systems & Management (AG7)	06	06		
	Post Harvest Engineering (AG8)	09	09		
BT	Biotechnology and Biochemical Engineering	10	10		
CH	Chemical Engineering	44	42	08CH6051, 08CH6052	06CH6043
CE	Hydraulic & Water Resources Engineering (CE1)	10	10		
	Transportation Engineering (CE2)	13	13		
	Environmental Engineering & Management (CE3)	04	04		
	Geotechnical Engineering (CE4)	01	01		
	Structural Engineering (CE5)	09	09		
CS	Computer Science & Engineering	22	21	08CS6020	07CS6004
CR	Cryogenic Engineering	05	04	08CR6010	
CL	Earth System Science and Technology	06	06		
EE	Machine Drives and Power Electronics (EE1)	09	08	08EE6105	
	Control System Engineering (EE2)	10	08	08EE6205, 08EE6211	
	Power System Engineering (EE3)	11	09	08EE6314, 08EE6316	07EE6314
	Instrumentation (EE4)	16	16		
EC	Micro Electronic and VLSI Design (EC2)	23	23		
	RF and Microwave Engineering (EC3)	16	16		
	Telecommunication Systems Engineering (EC4)	20	20		06EC6413
	Visual Information and Embedded Systems Engineering (EC5)	15	13	08EC6501, 08EC6515	
ET	Media and Sound Engineering	06	06		
GG	Earth and Environmental Sciences (GG1)	08	07	08GG6109	
	Computational Seismology (GG2)	05	05		
HS	Human Resource Development and Management	12	12		
IM	Industrial Engineering and Management	11	10	08IM6019	07IM6011
IT	Information Technology	20	20		07IT6009
MM	Medical Imaging and Image Analysis	09	09		

MS	Materials Science and Engineering	15	15		07MS6003
MA	Computer Science and Data Processing	24	24		
ME	Manufacturing Science and Engineering (ME1)	20	17	08ME6107, 08ME6116, 08ME6122	
	Thermal Science and Engineering (ME2)	19	16	08ME6212, 08ME6227,08ME6228	
	Mechanical Systems Design (ME3)	20	19	08ME6315	
	Mechanical Systems Dynamics and Control (ME4)	15	13	08ME6405, 08ME6410	07ME6409
MT-1	Metallurgical & Materials Engineering	19	18	08MT6019	
MI	Mining Engineering	11	08	08MI6007, 08MI6010, 08MI6011	
NA	Ocean Engineering and Naval Architecture	11	11		
PH	Solid State Technology	14	14		
ID	Infrastructure Design and Management	09	09		
RE	Reliability Engineering	14	14		
RT	Rubber Technology	11	11		
WM	Water Management	07	07		
AR	City Planning	24	24		
MM	School of Medical Science and Technology (3Yr.)	08	08		
IP	Rajiv Gandhi School of Intellectual Property Law (3Yr.)	18	17	07IP6030	
BM	Business Administration	79	79		
MT-2	Postgraduate Diploma in Steel Technology	13	13		
Total		741	713	28	09

TABLE: C-1
NUMBER OF RESEARCH SCHOLARS ENROLLED FOR THE PH.D. DEGREE DURING
2010-2011 (01/07/2010 TO 30/06/2011)

Deptt./Centre School	Institute Scholar	Sponsored Scholar	Scheme/CSIR/UGC/ QIP	Teach. /Non-teaching	Total	Genl.	SC	ST	OBC	MINOR	M	F
AE	03	00	00	-	03	01	01	-	01	-	03	00
AG	06	00	25	-	31	23	02	-	06	-	18	13
AR	06	00	02	-	08	06	00	-	01	01	04	04
AT	03	00	07	-	10	09	00	-	01	-	08	02
BT	03	00	09	-	12	11	01	-	00	-	06	06
CY	02	00	30	-	32	22	04	-	04	02	28	04
CH	07	00	01	-	08	05	01	-	02	-	06	02
CE	13	03	05	-	21	16	03	01	01	-	18	03
CS	03	00	06	01	10	07	02	-	01	-	09	01
CR	02	00	02	-	04	03	01	-	00	-	04	00
ET	03	00	01	-	04	03	01	-	00	-	03	01
CL	00	01	03	-	04	04	00	-	00	-	04	00
EE	10	00	01	-	11	06	01	-	02	02	09	02
EC	10	01	09	-	20	19	00	-	01	-	17	03
GG	04	00	09	-	13	06	02	01	03	01	11	02
GS	03	01	02	-	06	05	00	-	01	-	05	01
HS	03	00	02	-	05	04	00	-	01	-	04	01
IM	04	03	01	01	09	06	01	01	01	-	07	02
ID	02	00	00	-	02	02	00	-	00	-	02	00
IP	02	00	00	-	02	02	00	-	00	-	01	01
MS	04	00	10	-	14	10	00	-	01	03	12	02
MA	12	00	00	-	12	08	01	-	03	-	09	03
ME	22	04	10	-	36	29	02	-	04	01	34	02
MT	04	03	00	-	07	04	01	-	02	-	05	02
MI	05	00	05	-	10	07	01	01	01	-	08	02
NA	03	00	00	-	03	02	01	-	00	-	03	00
PH	09	00	03	-	12	09	02	-	01	-	11	01
RE	02	01	00	-	03	02	00	-	01	-	01	02
RT	00	02	06	-	08	06	01	-	01	-	07	01
RD	00	00	00	-	00	00	00	-	00	-	00	00
MM	02	04	08	-	14	11	02	-	01	-	10	04
IT	00	00	05	-	05	04	00	-	00	01	04	01
BM	11	04	01	-	16	13	01	-	01	01	15	01
WM	02	00	00	-	02	01	00	-	00	01	01	01
TOTAL	165	27	163	02	357	266	32	04	42	13	287	70

TABLE: C-2**NUMBER OF MS STUDENTS ENROLLED DURING: 2010-2011 (01/07/2010 TO 30/06/2011)**

Deptt./Centre/ School	Total	Genl.	SC	ST	OBC	Minor	Male	Female
AG	03	03	-	-	-	-	02	01
AT	03	03	-	-	-	-	03	00
AE	01	01	-	-	-	-	00	01
CS	06	06	-	-	-	-	05	01
CE	02	02	-	-	-	-	02	00
EC	10	09	01	-	-	-	09	01
EE	08	08	-	-	-	-	05	03
IT	05	05	-	-	-	-	05	00
MT	04	03	-	-	01	-	03	01
ME	07	07	-	-	-	-	06	01
RE	01	01	-	-	-	-	01	00
MM	02	02	-	-	-	-	02	00
BM	02	02	-	-	-	-	00	02
TOTAL	54	52	01		01		43	11

TABLE: C-3**UGC SCHOLARS ENROLLED DURING: 2010-2011(01/07/2010 TO 30/06/2011)**

Dept/Centre/ School	Total Number	General	SC	ST	OBC	MINOR	Male	Female
BT	01	01	-	-	-	-	-	01
CY	12	07	-	-	03	02	10	02
GG	03	02	-	01	-	-	02	01
MS	03	03	-	-	-	-	02	01
MM	01	-	01	-	-	-	01	-
RT	01	01	-	-	-	-	01	-
TOTAL	21	14	01	01	03	02	16	05

INDIAN INSTITUTE OF TECHNOLOGY, KHARAGPUR
RECEIPT AND PAYMENT ACCOUNT FOR THE YEAR 2010-11

Sl. No.	R E C E I P T S	(Amount - Rs.)	Sl. No.	P A Y M E N T S	(Amount - Rs.)
I	Opening Balance (Bank Balances)		I	EXPENSES	
	a) In Current accounts	525785386		a) Establishment Expenses	1704428836
	b) In Savings accounts	268564282		b) Administrative Expenses	564638885
II	Grants Received		III	Investments and deposits made	
	From Govt. of India			a) Out of Earmarked/Endowment funds	626792965
	Non-Recurring (Plan)	960000000		b) Out of Instt. Dev. Fund	339825312
	Recurring (Non-Plan)	1854000000		c) Out of Own Funds & Others	4551102741
	OSC -PLAN	907700000	IV	Expenditure on Fixed Assets & Capital Work-in-progress	762287715
III	Income on Investments from		VII	Other Payments	978228482
	a) Earmarked/Endowment Fund	34618732			
	b) Institute Development Fund	22603855	VIII	Closing Balances	
	c) Own Funds	46257767		a) In current accounts	311669061
IV	Interest Received			b) In savings accounts	678863862
	a) On Bank deposits	10958773			
	b) Recoverable Advances	6228307			
V	Other Income	259464663			
VI	Amount Borrowed	40000000			
VII	Other Receipts	5581656094			
	TOTAL	10517837859		TOTAL	10517837859