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

As on June, 2011

<table>
<thead>
<tr>
<th>Name</th>
<th>Provision in the Act</th>
<th>Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shri Kapil Sibal</td>
<td>Chairman of the Council of IITs</td>
<td>Ex-officio</td>
</tr>
<tr>
<td>Hon’ble Minister (HRD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr. Anil Kakodkar</td>
<td>Member</td>
<td>Ex-officio</td>
</tr>
<tr>
<td>Chairman, BoG, IIT Bombay</td>
<td></td>
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<tr>
<td>Shri R.P. Agrawal</td>
<td>Member</td>
<td>do</td>
</tr>
<tr>
<td>Chairman, BoG, IIT Delhi</td>
<td></td>
<td></td>
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<tr>
<td>Dr. R.P. Singh</td>
<td>Member</td>
<td>do</td>
</tr>
<tr>
<td>Chairman, BoG, IIT Guwahati</td>
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<tr>
<td>Prof. M. Anandakrishnan</td>
<td>Member</td>
<td>do</td>
</tr>
<tr>
<td>Chairman, BoG, IIT Kanpur</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr. Shiv Nadar</td>
<td>Member</td>
<td>do</td>
</tr>
<tr>
<td>Chairman, BoG, IIT Kharagpur</td>
<td></td>
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<tr>
<td>Mr. M. M. Sharma</td>
<td>Member</td>
<td>do</td>
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<tr>
<td>Chairman, BoG, IIT Madras</td>
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<td></td>
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<tr>
<td>Shri Analjit Singh</td>
<td>Member</td>
<td>do</td>
</tr>
<tr>
<td>Chairman, BoG, IIT Roorkee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prof. Devang V. Khakhar</td>
<td>Member</td>
<td>Ex-officio</td>
</tr>
<tr>
<td>Director, IIT Bombay</td>
<td></td>
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</tr>
<tr>
<td>Prof. Surendra Prasad</td>
<td>Member</td>
<td>do</td>
</tr>
<tr>
<td>Director, IIT Delhi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prof. Gautam Barua</td>
<td>Member</td>
<td>do</td>
</tr>
<tr>
<td>Director, IIT Guwahati</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prof. S. G. Dhande</td>
<td>Member</td>
<td>do</td>
</tr>
<tr>
<td>Director, IIT Kanpur</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prof. Damodar Acharya</td>
<td>Member</td>
<td>do</td>
</tr>
<tr>
<td>Director, IIT Kharagpur</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prof. M. S. Ananth</td>
<td>Member</td>
<td>do</td>
</tr>
<tr>
<td>Director, IIT Madras</td>
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<tr>
<td>Prof. H. K. Verma</td>
<td>Member</td>
<td>do</td>
</tr>
<tr>
<td>Director (officiating), IIT Roorkee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prof. Ved Prakash</td>
<td>Member</td>
<td>Ex-officio</td>
</tr>
<tr>
<td>Chairman (actg.), University Grants Commission,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prof. Samir K Brahmachari</td>
<td>Member</td>
<td>Ex-officio</td>
</tr>
<tr>
<td>Director General (DG), Council of Scientific and Industrial Research</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr. K. Kasturirangan</td>
<td>Member</td>
<td>Ex-officio</td>
</tr>
<tr>
<td>Chairman, Council of Indian Institute of Science, Bangalore</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Prof. P. Balaram
Director, Indian Institute of Science, Bangalore

Dr. S.S. Mantha, Chairman,
All India Council for Technical Education

Prof. C.N.R. Rao, Chairman
Scientific Advisory Council to the Prime Minister (term upto 05.09.2012)

Prof. C.S. Seshadri
Director, Chennai Mathematical Institute

Prof. Sabyasachi Bhattacharya
Ex-Director, Tata Institute of Fundamental Research, Mumbai

Dr. Kota Harinarayan
Chairman, Research Council of Central Scientific Instruments Organization,
National Aerospace Laboratories, Bangalore

Shri Tarun Das
Chief Mentor, Confederation of Indian Industry, Gurgaon

Smt. Vasanthi Stanley, MP,
Rajya Sabha (co-terminus)

Shri Deepender Singh Hooda, MP,
Lok Sabha

Shri Janardhana Swamy
MP, Lok Sabha

Smt. Vibha Puri Das,
Secretary, Deptt. of Higher Education

Shri Sumit Bose
Secretary, Department of Expenditure

Shri R. Chandrasekhar
Secretary, Department of Information Technology

Shri Ashok Thakur,
Additional Secretary (HE),
Ministry of Human Resource Development,
Deptt. of Higher Education

Ex-officio
[Section 31(2) (g)]

[Section 31(2) (i)]

[Section 31(2) (j)]

[Section 31(2) (k)]

[Section 31(2) (h)]

[Section 31(3)]
## Board of Governors

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

<table>
<thead>
<tr>
<th>Name and Address</th>
<th>Position</th>
</tr>
</thead>
</table>
| **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 Kharagpur | Secretary |
Building and Works Committee

1 Prof. D. Acharya
Director, IIT Kharagpur

2 Director (T)
Government of India
Ministry of Human Resource Development
Department of Higher Education
Shastri Bhawan
New Delhi -110001

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

4 Shri Dilip Banerjee
Superintending Engineer
South Western Circle
Public Works Department (PWD)
Saheed Mangal Pandey Sarani
Paschim Medinipur - 721101

5 Head
Department of Civil Engineering
IIT Kharagpur

6 Head
Department of Electrical Engineering
IIT Kharagpur

7 Head
Dept. of Architecture & Regional Planning
IIT Kharagpur

8 Registrar
IIT Kharagpaur

Chairman
Member
Member
Member
Member
Member
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

<table>
<thead>
<tr>
<th>Category</th>
<th>Faculty Name</th>
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</thead>
<tbody>
<tr>
<td>Undergraduate Studies</td>
<td>Prof. S. K. Som</td>
</tr>
<tr>
<td>Postgraduate Studies &amp; Research</td>
<td>Prof. P. K. J. Mohapatra</td>
</tr>
<tr>
<td>Faculty</td>
<td>Prof. Amit Basak</td>
</tr>
<tr>
<td>Planning &amp; Coordination</td>
<td>Prof. B. K. Mathur</td>
</tr>
<tr>
<td>Sponsored Research &amp; Industrial</td>
<td>Prof. P. P. Chakrabarti</td>
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<tr>
<td>Consultancy</td>
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<tr>
<td>Students’ Affair</td>
<td>Prof. Souvik Bhattacharyya</td>
</tr>
<tr>
<td>Continuing Education</td>
<td>Prof. Ajay Chakraborty</td>
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<td></td>
<td>Prof. Somnath Sengupta</td>
</tr>
<tr>
<td>Alumni Affairs &amp; International Relations</td>
<td>Prof. Amit Patra</td>
</tr>
<tr>
<td>Vinod Gupta School of Management</td>
<td>Prof. A. Tripathy</td>
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</tbody>
</table>

### Head of Departments

<table>
<thead>
<tr>
<th>Department</th>
<th>Faculty Name</th>
<th>Upto Date</th>
<th>From Date</th>
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<tbody>
<tr>
<td>Aerospace Engineering</td>
<td>Prof. A. K. Ghosh</td>
<td></td>
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<tr>
<td></td>
<td>Prof. K. P. Sinha mahapatra</td>
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<tr>
<td>Agricultural &amp; Food Engineering</td>
<td>Prof. Rajendra Singh</td>
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<tr>
<td>Architecture &amp; Regional Planning</td>
<td>Prof. B. K. Sengupta</td>
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<tr>
<td>Biotechnology</td>
<td>Prof. Amit K. Das</td>
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<tr>
<td>Chemical Engineering</td>
<td>Prof. Amar Nath Samanta</td>
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<tr>
<td>Chemistry</td>
<td>Prof. P. K. Chatteraj</td>
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<tr>
<td>Civil Engineering</td>
<td>Prof. L.S. Ramachandra</td>
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<tr>
<td>Computer Science &amp; Engineering</td>
<td>Prof. Jayanta Mukhopadhyay</td>
<td></td>
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<tr>
<td>Electrical Engineering</td>
<td>Prof. A. K. Sinha</td>
<td>Upto 30.09.2010</td>
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<tr>
<td></td>
<td>Prof. Jayanta Pal</td>
<td>From 01.10.2010</td>
<td></td>
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<tr>
<td>Electronics &amp; Electrical</td>
<td>Prof. C.K. Maiti</td>
<td></td>
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<tr>
<td>Communication Engineering</td>
<td></td>
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</tr>
<tr>
<td>Geology &amp; Geophysics</td>
<td>Prof. Biswajit Mishra</td>
<td></td>
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</tr>
<tr>
<td>Humanities &amp; Social Sciences</td>
<td>Prof. D. Suar</td>
<td>Upto 30.09.2010</td>
<td></td>
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<tr>
<td></td>
<td>Prof. K. B. L. Srivastava</td>
<td>From 01.10.2010</td>
<td></td>
</tr>
<tr>
<td>Industrial Engineering &amp; Management</td>
<td>Prof. B. Mohanty</td>
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<tr>
<td>Mathematics</td>
<td>Prof. A. R. Roy</td>
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<td></td>
<td>Prof. P. D. Srivastava</td>
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<tr>
<td>Mechanical Engineering</td>
<td>Prof. A. K. Chattopadhyay</td>
<td>Upto 30.09.2010</td>
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<tr>
<td></td>
<td>Prof. Ranjan Bhattacharyya</td>
<td>From 01.10.2010</td>
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<tr>
<td>Metallurgical &amp; Materials Engineering</td>
<td>Prof. S.K. Roy</td>
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<tr>
<td>Mining Engineering</td>
<td>Prof. J. Bhattacharyya</td>
<td>Upto 30.09.2010</td>
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<td></td>
<td>Prof. S. K. Das</td>
<td>From 01.10.2010</td>
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</tbody>
</table>
Ocean Engineering & Naval Architecture  
Prof. N. R. Mandal  
From 01.10.2010  
Physics & Meteorology  
Prof. O. P. Sha  
From 01.10.2010  
Prof. R. N. P. Choudhary  
Upto May 2010  
Prof. B. K. Mathur  
Upto 31.01.2011  
Prof. S. K. Ray  
From 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 30.09.2010  
From 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  
From 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
<table>
<thead>
<tr>
<th>Department/Division</th>
<th>Professor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRF (Materials Division)</td>
<td>Prof. Rahul Mitra</td>
</tr>
<tr>
<td>CRF (Life Science Division)</td>
<td>Prof. A. K. Ghosh</td>
</tr>
<tr>
<td>Rajbhasha Vibhag</td>
<td>Prof. U. C. Gupta</td>
</tr>
<tr>
<td>Nehru Museum of Science &amp; Technology</td>
<td>Prof. D. Sen</td>
</tr>
<tr>
<td>Kalpana Chawla Space Technology Cell (KCSTC)</td>
<td>Prof. Somnath Sengupta</td>
</tr>
</tbody>
</table>

**Professors-in-Charge**

<table>
<thead>
<tr>
<th>Department/Division</th>
<th>Professor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B C Roy Technology Hospital</td>
<td>Dr. Analava Mitra</td>
</tr>
<tr>
<td>Examinations</td>
<td>Prof. P. D. Srivastava</td>
</tr>
<tr>
<td>Training &amp; Placement</td>
<td>Prof. Biswajit Maiti</td>
</tr>
<tr>
<td>General Time Table</td>
<td>Prof. D. K. Pratihar</td>
</tr>
<tr>
<td>Convocation-2010</td>
<td>Prof. S. K. Som</td>
</tr>
<tr>
<td>Institute Information Cell</td>
<td>Prof. B. K. Mathur</td>
</tr>
<tr>
<td>President, Technology Students</td>
<td>Prof. Manish Bhattacharjee</td>
</tr>
<tr>
<td>Gymkhana</td>
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</tr>
<tr>
<td>Refrigeration &amp; Air Conditioning</td>
<td>Prof. Sukanta Dash</td>
</tr>
<tr>
<td>Horticulture</td>
<td>Prof. C. K. Mukherjee</td>
</tr>
<tr>
<td>Water Works</td>
<td>Prof. A. K. Gupta</td>
</tr>
<tr>
<td>Civil Works (Construction and Maintenance)</td>
<td>Prof. N. Dhang</td>
</tr>
<tr>
<td>Electrical Works</td>
<td>Prof. D. Das</td>
</tr>
<tr>
<td>Telecommunication</td>
<td>Prof. S. S. Pathak</td>
</tr>
<tr>
<td>Institute Guest Houses</td>
<td>Prof. B. K. Sengupta</td>
</tr>
<tr>
<td>Intellectual Property Right &amp; Industrial Relation</td>
<td>Prof. S. Tripathy</td>
</tr>
</tbody>
</table>

**General**

<table>
<thead>
<tr>
<th>Position</th>
<th>Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Librarian</td>
<td>Dr. B. Sutradhar</td>
</tr>
<tr>
<td>Public Information Officer</td>
<td>Dr. Anathbandhu Patra</td>
</tr>
<tr>
<td>Head, B.C. Roy Technology Hospital</td>
<td>Dr. Seema Ray</td>
</tr>
<tr>
<td>Superintending Engineer (Civil)</td>
<td>Shri T. K. Mukherjee</td>
</tr>
<tr>
<td>Executive Engineer (Civil)</td>
<td>Shri Subrat Roy (on EOL)</td>
</tr>
<tr>
<td>Executive Engineer (Electrical)</td>
<td>Shri S. K. Biswas</td>
</tr>
<tr>
<td>Security Officer</td>
<td>Shri U. P. Singh</td>
</tr>
</tbody>
</table>

**Deputy Registrars**

<table>
<thead>
<tr>
<th>Section</th>
<th>Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment Section</td>
<td>Shri Atul Prakash Trivedi</td>
</tr>
<tr>
<td>Finance &amp; Accounts</td>
<td>Dr. Tapan Kumar Ghosal</td>
</tr>
<tr>
<td>Estate Office</td>
<td>Shri B. K. Basu Roychowdhury</td>
</tr>
<tr>
<td>Stores &amp; Purchase</td>
<td>Shri Sandeep Chatterjee</td>
</tr>
</tbody>
</table>
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 28.2014)
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. Bandypadhyay
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
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<tr>
<th>Department of Mathematics</th>
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<td>Prof. B. Maiti</td>
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<td>Prof. M. Chakraborty</td>
<td>Prof. I. Dube</td>
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<td>Prof. R. N. Ghosh</td>
<td>Reliability Engineering Centre</td>
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<td>Prof. S. K. Pabi</td>
<td>Prof. V. N. A. Naikan</td>
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<td>Prof. N. Chakraborty</td>
<td>Rubber Technology Centre</td>
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<td>Prof. I. Manna (Lien up to</td>
<td>Prof. A. K. Bhowmick (Lien up to 12.07.2014)</td>
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<td>28.02.2015)</td>
<td>Prof. D. K. Tripathy (Lien up to 30.09.2011)</td>
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<td>Prof. Siddhartha Das</td>
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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
- M. Tech. - Fibre Optics and Lightwave 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 Minster 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 Chaurasia 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. N. N. Mukhiya, 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 derivates. 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 pathogenicity 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, secure 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 in the 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. Monocrystalline 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. Pilling 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 MOVCID 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 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.

**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, Jyvaskyla 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 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 1981 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 form 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**


**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**

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, Bhrigu Nath, Life - ISTE, India
10. Singh, Bhrigu 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
7. Pradhan, Suresh Chandra (2010) Member - IJVSS
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)
5. Analysis and Development of Conceptual Design Methodologies for Air Collection and Enrichment System of Air Breathing Propulsion -Phase II (IIT â€“ 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)
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 lement 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)
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 Acoustics 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
3. 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
4. Sinha, Manoranjan - Presented papers in AIAA Astrod ynamics conference (Ontario, Toronto, Canada, ) 2-5 August, 2010

Invited Lectures by Faculty Members

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

Books Published


Seminars, Conferences and Workshops Organised

1. Fifth International Conference of Theoretical, Applied, Computational and Experimental Mechanics

Papers Published in Journals


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)


**Papers Presented in Conferences**


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)


Department of Architecture & Regional Planning

Head
Prof. Biplab Kanti Sen Gupta

Professors
Banerjee, Uttam Kumar
Ph.D. (IIT Kharagpur), Urban Design, Green Buildings and Eco Habitat, Tourism Planning and Management, Urban Waterfront Development, Ergonomics and Product Design

Barman, Jaydip
Ph.D. (IIT Kharagpur), Urban Design, Green Buildings and Eco Habitat, Tourism Planning and Management, Urban Waterfront Development, Ergonomics and Product Design

Chattopadhyay, Subrata
Ph.D. (IIT Kharagpur), Housing Industrial township Ancillary industry Eco-industrial estate

Datta, Rabindranath
Ph.D. (IIT Kharagpur), City Planning Urban and Regional Transportation Planning

Merchant, Arif N
Ph.D. (Cincinnati USA), Urban Design, City Planning

Sen Gupta, Biplab Kanti
MCP (IIT Kharagpur), Urban and Regional Planning, Architectural Design for Institutional Buildings

Associate Professors
Basu, Sanghamitra

George, Abraham

Sen, Joy
Ph.D. (IIT Kharagpur), Community livability and regional planning, Architecture and Planning Heritage Studies

Sen, Somnath
Ph.D. (IIT Kharagpur), Environmental Planning and water sensitive urban planning

Assistant Professors
Ahmed, Mokaddes Ali
Ph.D. (IIT Kharagpur), Barrier Free Architecture, Behavioral Architecture, Urban Design, Town Planning and Settlement Planning, Ergonomics and Product Design

Banerji, Haimanti
Ph.D. (IIT Kharagpur), Barrier Free Architecture, Behavioral Architecture, Urban Design, Town Planning and Settlement Planning, Ergonomics and Product Design

Chakraborty, Banhi
Ph.D (IIT Kharagpur), Planning & Technology Transfer

Das, Sutapa
Ph.D. (National University of Singapore), Intelligent building

Dutta, Joydeep
MUP (Illinois), Graphic Design & Visual Communication, Decision Modelling for Retail Location

Majumdar, Tapan Kumar
MCP (IIT Kharagpur), Work environment in industries for industrial workers, Low cost Construction

Mazumder, Tarak Nath
Ph.D. (IIT Kharagpur), Urban Planning

Pandit, Deaprabatim
Ph.D. (Univ. of Tokyo), Transportation Planning, Urban Services & Utilities, Urban Environmental Planning, GIS & RS

Paul, Saikat Kumar

Faculty Appointments
George, Abraham
Associate Professor

New Academic Programmes
M. Arch: Master of Architecture in Sustainable Built Environments is being taken up.
Brief Description of on-going activities


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)


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

Thrust Areas

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)

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
10. Chakraborty, Banhi, Associate member - Institute of Town Planners India
11. Chattopadhyay, Subrata, Member - Council of Architecture
12. Chattopadhyay, Subrata, Associate Member - Council of Architecture
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, *Member* - Indian National trust for Art and Cultural Heritage
20. George, Abraham, *Member* - Fulbright Academy
21. George, Abraham, *Associate Member* - Indian Institute of Architects
22. George, Abraham, *Graduate Member* - Haggai Institute for Leadership Training
23. Majumdar, Tapan Kumar, *ASSOCIATION* - INDIAN INSTITUTE OF TOWN PLANNERS
24. Majumdar, Tapan Kumar, *LIFE MEMBER* - COUNCIL OF ARCHITECTURE
25. Majumdar, Tapan Kumar, *LIFE MEMBER* - INDIAN SOCIETY FOR TECHNICAL EDUCATION
26. Mazumder, Tarak Nath, *Associate Member* - Institute of Town Planners, India
27. Mazumder, Tarak Nath, *Associate Member* - Council of Architecture
28. Mazumder, Tarak Nath, *Associate Member* - Indian Institute of Architects
30. Paul, Saikat Kumar, *Regular* - Institute of Town Planners India
32. Sen Gupta, Biplab Kanti, *Registered* - Council of Architecture
33. Sen Gupta, Biplab Kanti, *Registered* - The Indian Institute of Architects
34. Sen Gupta, Biplab Kanti, *Regular* - Institute of Public Administration

**Member - Editorial Board**

2. Datta, Rabindranath (2010) *Member of Editorial Advisory Board* - SPANDREL
5. George, Abraham (2010) *Reviewer,* (3 papers reviewed) - International Conference on Sustainable Buildings and Infrastructure - 2010, Petronas University
7. Sen Gupta, Biplab Kanti (2007) *Member of the Editorial Board* - ABACUS

**Awards & Honours**

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 Kg, 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 Enterprenueuship 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 Minesterial 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 (GCCE Program CSuR The University of Tokyo, Rs.0.00 Lakhs)
15. Master Plan for for Aizawl Urban Area-2030 (Aizawl 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.18.02 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 City 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 â€” Vision 2030 (ADA, Rs.70.22 Lakhs)
29. Preparation of Perspective Plan â€” 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 Bardhman 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, Malaysia) 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
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)
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, Bidlab Kantil (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

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: EcoBlock

Short-Term Courses, Training Programmes and Workshops organised

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

Papers Published in Journals

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)
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)
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)
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)
Papers Presented in Conferences


4. Accepted paper: A methodology for bus transit system reform & redesign: Case study Kolkata, India, By Debapratim Pandit & Tuhin Subroto Maparu, 12th International Computers in Urban Planning and Management Conference, 2011, Lake Louise, Canada, (2011)


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)


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)


17. Land as Resource for Urban Development, By Prof. B.K. Sengupta, Prof. H. Banerji, Institute of Twon Planners, Kolkata, Panchkula, (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)


30. 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, (2011)


32. The urban housing market â€“ Revisiting Urban Metropolitan Scenario, By S Chattopadhyay, T N Mazumder, International Association for Housing Science Congress, Santander, Spain, (2010)

33. 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)


Department of Biotechnology

Head
Prof. Amit Kumar Das

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

Associate Professors
Ghosh, Sudip Kumar  Ph.D.(Kalyani Univ), Molecular and cellular parasitology and nanobiotechnology
Sen, Ramkrishna  Ph.D.(IIT Madras), 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  Ph.D.(Jadavpur Univ), Bioinformatics and Computational Biology
Ghosh, Anindya Sundar  Ph.D.(Calcutta Univ), Microbial genetics and Antimicrobial chemotherapy
Maiti, Mrinal Kumar  Ph.D.(Calcutta Univ), Plant Molecular Biology, Transgenic Plants, Metabolic Engineering, Plant Biotechnology
Sarin, Pinaki  Ph.D.(BHU, Varanasi), 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
Thrust Areas

1. Healthcare Biotechnology (Prospecting novel therapeutics/diagnostics molecules for cancer, protozoan parasites, microbes, tuberculosis, etc.).
3. Bioremediation, Biomaterials and Tissue engineering

New Acquisitions


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-WarrenGraduate 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 0412University 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 roteoglycan fibril, Professor Alvina Andreevna Vazina,Institute of theoretical and experimental biophysics, Russian academy of sciences, Pushchino, Moscow region, Russia,Nadezhda Fedorova 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 Redll, LBI-Ludwig Boltzmann Institue 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: Uslo 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. Moulnath Acharya (Ph.D., Dept. of Medical Genetics, 8-32 Medical Sciences Building, University 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 SO17 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 Photobiotechnology 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 propagation 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 Medicine, 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.)


4. Suvankar Ghorer : Molecular Characterization of genome segment 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)
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 (IIChE)
6. Das, Debabrata, Life member - The Institution of Engineers (India) (IE)
7. Dey, Satyahrani, Member, Executive Committee - Asian 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
22. Sen, Ramkrishna, Life member - Indian Institute of Chemical Engineers (IIChE)

**Member - Editorial Board**

4. Das, Debabrata (2010) Member of the Editorial board - Biotechnology for Biofuels
8. Kundu, Subhas Chandra (2011) Editorial Board Member - Biomaterials and Biodevices

**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. Analysis of macromolecular interactions in ribosome: implication to its self assembly (Sponsor:Submitted (DST (submitted), Rs.16.00 Lakhs)
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. 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 groundwate (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 metrics 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, 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 homeopathic 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 (IUSS TF, Rs.29.00 Lakhs)
34. Exploration of microbial diversity and microbial role in arsenic mobilization in As- contaminated groundwater of North Eastern states (Arunachal Pradesh (Department of Biotechnology, Rs.68.28 Lakhs)
35. Exploring Immunomodulatory potential of mushroom glucan/proteoglucan 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.37.00 Lakhs)
38. Genetic Engineering of Lignin Biosynthetic Pathway in Sorghum (Nagarjuna Fertilizers and Chemicals Limited, India, Rs.22.86 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) (IITFoun dation (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 RK'02, 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 Golbal 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
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, ) May 11-12, 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, Erlangan, 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 phylogeny 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 Rourkela)
23. Silk proteins as biomaterials for tissue engineering and regenerative medicine by Kundu, Subhas Chandra (See Chitra Tirunal Institute for Medical Sciences & Technology, Trivandrum)
25. Silk fibroin PVA Hydrogels for Biomedical Applications by Kundu, Subhas Chandra (Tisse 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 Krankenhau, 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 interactionâ€™ 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


Seminars, Conferences and Workshops Organised

1. Bioinformatics in genomics and proteomics

Papers Published in Journals

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


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 6508-656  (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)


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)

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.carbpol (2011)
Papers Presented in Conferences


3. Amelioration of biohydrogen production by homologous over expression of FeFe hydrogenase in Enterobacter cloacee IIT-BT 08, By Namita Khanna, Chitrakatha Nag Dasgupta and Debabrata Das, Hydrogenase 2010, Uppsala University, (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)


11. Deciphering catalytic mechanism and substrate binding from crystal structure of GAPDH, By Amit Kumar Das, Guha Research Conference 2010, Aurangabad, (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)


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 Kazzy and Pinaki Sar, Microbes in water waste and waste water treatment, bioremediation and energy production, BITS Pilani, Goan, (2011)


21. Microbial diversity and community structure within Jaduguda uranium mines: Culture independent molecular approach, By Paltu Kumar Dhal, Sufia K Kazzy and Pinaki Sar, 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)


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)


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)

Department of Civil Engineering

Head
Prof. Lingadahally Ramachandra

Professors
Baidya, Dilip Kumar
Ph.D. (IISc Bangalore), Pile foundations Soil Dynamics Reliability in Gotechnical Engg

Bandyopadhyay, Janendra Nath
Ph.D. (IIT Kharagpur), Structural Engineering

Barai, Sudhir Kumar
Ph.D. (IISc Bangalore), Soft Computing Applications, Structural Health Monitoring, Recycled Construction Materials, Fracture in Concrete

Bhattacharyya, Sriman Kumar
Ph.D. (IIT Kharagpur), Structural Health Monitoring, STRUCTURAL ENGINEERING, Fluid-structure Interactions, Restoration of Structures

Das Gupta, Shambhu Pada
Ph.D. (IIT Kanpur), Geotechnical Engineering

Desai, Venkappayya R
Ph.D. (Clemson Univ), Green infrastructure

Dey, Subhasish
Ph.D. (IIT Kharagpur), Applied Hydrodynamics, Turbulence, Fluvial Hydraulics

Dhang, Nirjhar
Ph.D. (IIT Kharagpur), Concrete, Dynamics and Control of Railway Bridges, Biomechanics

Ghosh, Deba Prasad
Ph.D. (IIT Kharagpur), Geotechnical Engineering

Pandey, B B

Ramachandra, Lingadahally
Ph.D. (IIT Chennai), Stability of Structures, Nonlinear Vibrations, Shell analysis

Reddy, Kusam Sudhakar
Ph.D. (IIT Kharagpur), Pavement analysis, Pavement Design, Pavement Evaluation, Pavement Materials

Sen, Dhrubajyoti
Ph.D. (IIT Delhi), Water Resources Engineering

Associate Professors
Bhattacharya, Baidurya
Ph.D. (Johns Hopkins Univ), Computational materials science, Risk and reliability analysis of infrastructure systems

Gangrekar, Makarand Madhao
Ph.D (IIT Bombay), Microbial Fuel Cells, UASB reactor for anaerobic wastewater treatment, Water and Wastewater Treatment, Bioenergy recovery during waste management

Gupta, Ashok Kumar
Ph.D. (IIT Bombay), Environmental Engineering

Maitra, Bhargab

Maity, Damodar
Ph.D. (IIT Kharagpur), Seismic Analysis of Dam, Health Monitoring of Structures, Cost Effective Housing

Reddy, M Arunath
Ph.D. (IIT Kharagpur), Transportation Engineering

Roy, Debasis
Ph.D.(Univ. of Brit Col), Geotechnical Earthquake Engineering, Ground Improvement, In situ testing of Geomaterials

Sen Gupta, Aniruddha
Ph.D (Univ of Illinois), Geotechnical Earthquake Engineering, Landslide Hazard Mitigation, Mechanics of Materials

Assistant Professors
Chakraborty, Sushanta
Ph.D. (IIT Kharagpur), Fibre Reinforced Plastic Composite Structures

Deb, Arghya
Ph.D (Princeton Univ), Failure and Debonding in concrete, Impact loading on concrete structures, Constitutive modelling, Finite Element Method

Deb, Kousik
Dhar, Anirban  

Goel, Sudha  
Ph.D. (Johns Hopkins Univ), ENVIRONMENTAL RISK ASSESSMENT, WATER QUALITY AND TREATMENT, SOLID WASTE MANAGEMENT, ENVIRONMENTAL ENGINEERING

Hossain, Shaikh Jahangir  
Ph.D. (IIT Kharagpur), computational mechanics

Maity, Rajib  

Mitra, Nilanjan  
Ph.D. (UW, SEATTLE), Fluid Structure Interaction, Shock wave, Probabilistic modeling, Computational mechanics, composite structures, reinforced concrete structures

Mitra, Sudeshna  
Ph.D. (ASU, Phoenix), Transportation Safety, Crash Data Analysis, Statistical and Econometric Applications, Transportation Planning, Traffic Engineering

Pal, Anjali  
Ph.D. (Calcutta Univ.), (1) Environmental Engineering and Science (2) Nanoscience (3) Analytical Science

Shaw, Amit  
Ph.D. (IISc Bangalore),

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

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; Adsolubilization/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 coherant 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
New Acquisitions

1. Total organic carbon analyzer
2. Atomic absorption spectrophotometer
3. Seismic piezocone
4. In-situ 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 (Professor Tuan Vo-Dinh) and Department of Civil Engineering, IIT Kharagpur (Dr. Anjali Pal)

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

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 : Performance evaluation of low volume roads(Ph.D)
2. Shailendra Kumar : Behaviour fracture parameters for crack propagation in concrete(Ph.D)
3. Rajendra Kumar Hansoor : Influence of notch on the response of mild steel beams subjected to low velocity impact(Ph.D)
4. Bappaditya Mannya : 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)
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. Pradyumma 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 Tunnelling 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)
Member - Editorial Board

5. Bhattacharyya, Baidurya (0) Editorial Board Member - International Journal of Engineering Under Uncertainty: Hazards, Assessment and Mitigation
17. Dey, Subhasish (2010) Associate Editor - Sedimentology
32. Roy, Debasis (2010) Associate Editor - Geomechanics and Engineering
Awards & Honours

1. Bhattacharya, Baidurya (0) Adjunct Faculty, Dept of Civil and Environmental Engineering, Newark, DE 19716, USA
2. Deb, Kousik (2010) DAAD Fellowship â€“ 2010 for research stay at RWTH, Aachen, Germany
3. Maity, Rajib (2011) IEI Young Engineers Award
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

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. of, 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 â€“ 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 â€”Groundwater Hydrologyâ€™ (National Programme on Technology Enhanced Learning (NPTEL), Ministry of Human Resource Development, Rs.0.00 Lakhs)
16. Development of a video course on â€”Numerical methods for Civil Engineeringâ€™ (National Programme on Technology Enhanced Learning (NPTEL), Rs.2.50 Lakhs)
17. Development of a video course on â€”Probability methods for Civil Engineeringâ€™ (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. Effects of Fines on Behavior of Geosynthetic-Reinforced Sands (Indian Institute of Technology Kharagpur, Rs.5.00 Lakhs)
24. ELECTROCOAGULATION IN CONTINUOUS-FLOW SYSTEMS FOR REMOVAL OF DRINKING WATER CONTAMINANTS (DST-WTI, Rs.35.90 Lakhs)
25. Exploratory investigation on Development of Damage Mechanics based Methodologies for Lifing of Aeroengine Components (DNRL, Rs.10.00 Lakhs)
26. 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)
27. First order seismic microzonation of Kolkata area (Ministry of Earth Sciences, Government of India, Rs.62.10 Lakhs)
28. Improving mechanical performance and delamination resistance in sandwich composite panels (Department of Science and Technology (DST/SERC), India, Rs.25.00 Lakhs)
29. Joint Network center on Highway and Airport Pavement Engineering (IUSSTF, New Delhi, Rs.55.00 Lakhs)
30. 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)
31. Multi-scale modeling of defects and interfacial phenomena in CNT-based nanocomposites (DST, Rs.21.00 Lakhs)
Consultancy Projects

1. Assessment of undrained extensile behavior of Padma Bridge Soils -1 (BPBS) (DCL-FCL, Dhaka, Bangladesh, Rs.0.00 Lakhs)
2. Assessment of undrained extensile 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, Safadarganj, UP, Rs.0.50 Lakhs)
5. City Development Plan for Halda (Halda 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. Expertâ€™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. F" Checking design and drawing of UASB type sewage treatment plant (CDST) (Appor 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 (NHAI 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, 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 at 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 (PADD) (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 Building 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 Amanatha - 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)
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)
11. Desai, Venkappayya R - To present a Technical paper & to chair a Technical Session (Univ. of Mauritius, Reduit, Mauritius, 16-18 Sep., 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 4th - July, 2010)
15. Dey, Subhasish - Visiting Scientist (Laboratoire Central des Ponts et Chausées, France, 4 - 17 July 2010)
16. Dey, Subhasish - Key note Speaker (Wiejce, 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)
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 Chausées, 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 Agrl. 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)
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)
18. Dye Wastewater Treatment by Adsolubilization and Advanced Oxidation Processes by Pal, Anjali (Raiipur, Chhattisgarh)
19. Dye Wastewater Treatment by Pal, Anjali (Manipur University, Manipur)
20. Capacity Building for Earthquake Preparedness by Maity, Damodor (Kolkata organized by Indian Chamber of Commerce)
21. Finite Element Modeling of Reinforced Concrete Bridges by Maity, Damodor (IIT Guwahati)
22. Structural Design using STAAD PRO Software by Maity, Damodor (Indian Oil Management Academy Haldia Township, Midnapore (E))
23. Sustainable Development for Road Infrastructure by Reddy, M Amanatha (GMRIT Rajam)

**Books Published**


**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)
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

9. An Investigation on Warm and Half Warm Bituminous Mixes (under review) By Vijay Kakade., Debaddata 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 Sushir J. Jain Soil Dynamics and Earthquake Engineering Accepted (2011)
12. Attribution of aerosol radiative forcing over India during the winter monsoon to emissions from source categories and geographical regions By S. Verma, C. Venkataaraman, O. Boucher Atmospheric Environment 3(10-11)4 (2011)
20. Dynamic Analysis of Nailed Soil Slopes By A. Sengupta & Debabrata Giri Ground Improvement 2010(0)
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)
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)
Papers Presented in Conferences


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)


12. Entrainment Threshold of Loose Boundary Streams (Keynote), By Subhasish Dey, XXX International School of Hydraulics, Wroclaw, Poland, (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)


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 (3YGEC), New Delhi, India, (2011)

47. Use of Infinite Elements in the Dynamic Analysis of Rigid Pavement Resting on Two Parameter Soil Medium,
49. Water Conservation – Quantitative and Qualitative Considerations,
48. Wastewater treatment and electricity generation in novel up-flow microbial fuel cell under different organic loading rates.
46. Understanding Driver Behavior using Macroscopic Traffic Data,
45. Sustainability of National Highway System in India: Lessons Learnt,
31. Prediction of the Separation Length at Soil-Pile Interface under Vertical Vibration using Artificial Neural Network Approach,
27. Numerical study of reinforced concrete T-beams strengthened in shear with GFRP sheet,
44. Structural health monitoring of truss structures using virtual distortion method,
30. Performance of Nailed Slopes under Cyclic Loading Condition,
43. Static and dynamic response of large diameter pile on soft rock,
42. Silver Doped TiO2 Catalyzed UV Photodegradation of Malachite Green Dye,
39. Rice Mill Wastewater Treatment Using Microbial Fuel Cell,
38. Residual shear strength of non plastic soils from energy approach,
35. Recycled aggregate concrete: A sustainable built environment,
36. Recycled aggregates: A Sustainable Construction Materials,
32. Probabilistic prediction of streamflow using the information of Outgoing Longwave Radiation through Placket copula,
34. Rational Design Criteria for Sustainable Rural Roads,
33. Performance of Nailed Slopes under Cyclic Loading Condition,
32. Probabilistic prediction of streamflow using the information of Outgoing Longwave Radiation through Placket copula,
28. Optimal Estimation of Design Parameters for Stone Column Improved Soft Soil,
29. Optimal Properties of Zn-coated Fe combining Molecular Dynamics, Evolutionary Meta-model and Multi-objective Genetic Algorithms,
25. Use of Infinite Elements in the Dynamic Analysis of Rigid Pavement Resting on Two Parameter Soil Medium,
24. Numerical study of reinforced concrete T-beams strengthened in shear with GFRP sheet,
Department of Chemical Engineering

Head
Prof. Amar Nath Samanta

Professors

Das, Gargi  
Ph.D. (IIT Kharagpur), Multiphase flow, Two phase instrumentation, CFD simulation

DasGupta, Sunando  
Ph.D. (RPI, USA), Microscale Transport Process and Microfluidics

De, Sirshendu  
Ph.D. (IIT Kanpur), Membrane separations, Transport Processes, Flow through microchannels

Mukherjee, Dibyendu  
Ph.D. (IIT Kharagpur), Multi Phase Flow Column Flotation Modeling & Simulation

Neogi, Sudarsan  
Ph.D. (Ohio Univ., USA), Advanced Materials Processin Plasma Enhanced Chemical Vapor Deposition Surface engineering

Pradhan, Narayan Chandra  
Ph.D. (UDCT Bombay), Heterogeneous Catalysis, Chemical Process Development, Petrochemical Technology, Petroleum Refining, Separations Technology

Saha, Ranajit Kumar  
Ph.D. (IIT Kharagpur), Combustion Engineering, Fuels&New Energy Conversion Processes, Fluidization Engineering

Samanta, Amar Nath  
Ph.D. (IIT Kharagpur), Process Dynamics & Control, Nonlinear Process Control, Process Modeling & Simulation

Associate Professors

Basu, Jayanta Kumar  
Ph.D. (IIT Kharagpur), Reaction Engineering, Adsorption and Separation Science, Water Treatment

Chakraborty, Sudipto  
Ph.D. (IIT Kharagpur), Process Modelling and Simulation, CFD & Heat Transfer

Ganguly, Saibal  
Ph.D. (IIT Kanpur), Refinery,Petrochemicals,Polymer,Coal, RealTime Simulation,Control,Optimization

Kar, Debabrata  
Ph.D. (IIT Kharagpur), Mineral Processing, Fluidization Engineering, Biogas Development

Kundu, Gautam  
Ph.D. (IIT Kharagpur), Multiphase Operation, Mineral Beneficiation, Rheology of Suspension

Meikap, Bhim Charan  
Ph.D. (IIT Kharagpur), Pollution Control, Coal Benificiation, CO2 Capturing, Fluidization

Neogi, Swati  
Ph. D. (Ohio University), Polymer Application Research, Composite manufacturing technology, Materials development, Fiber optics Cable design, Polymer fracture analysis/durability stu, Flame retardant materials development

Patwardhan, Anand Vinayak  
Ph.D. (UDCT Mumbai), Green Technology, Mass Transfer Operations, Heterogeneous Reactions, Microchannel Reactors

Assistant Professors

Chakrabarty, Saikat  
Ph.D. (Univ. of Houston), Chemical Reaction Engineering, Biomedical Engineering, Bioenergy

Chakrabarty, Jayanta  
Ph.D. (IISc., Bangalore), Particle technology, Population balance modeling, Synthesis of nanoparticles, Crystallization

G, Harikrishnan  
Ph.D. (IIT Bombay), foams, polymer nanocomposites, polymers from bio-renewable resources, rheology, coatings

Ganguly, Somenath  
Ph.D. (Univ. of Kansas, USA), Flow in thin channel and porous media, Hydrogel, Improved recovery of hydrocarbon

Jana, Amiya Kumar  
Ph.D. (IIT Kharagpur), Nonlinear Control

Mukherjee, Rabibrata  
Ph.D. (IIT Kanpur), Polymer Thin Film Instability, Soft Lithography, Nano Patterning, Structural Super Hydrophobicity

Ray, Subhabrata  
M.Tech. (IIT Kharagpur), Petroleum Refining, Process Control

Sarkar, Debasish  
Ph.D. (IISc. Bangalore), Optimization and control of fed-batch bioreactors, Crystallization process modeling and control, Multi-objective optimization: Genetic Algorithms, Multivariate image analysis
Sengupta, Sonali Ph.D.(UDCT Mumbai), 1. Heterogeneous and Homogeneous Catalysis 2. Reaction Engineering

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
7. Development of innovative catalysts from fly ash for organic chemical synthesis (alkylation, isomerisation etc.)
8. Plasma assisted surface modification for chemical engineering applications
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

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. Eppendrof 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)
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. Collaborators: 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 Fabrionics 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)
5. Barun Kumar Thakur : Casting, Characterisation and optimisation of memodiaysis membrane(M.S.)
6. Debjoyoti Goswami : Surfactant enhanced Tipase catalyzed oil hydrolysis(PhD)

Member - Professional Bodies

1. Basu, Jayanta Kumar, Life Member - Indian Institute of Chemical Engineers
2. Chakraborty, Saikat, Associate - Indian Institute of Chemical Engineers
3. Chakraborty, Sudipto, Life Member - IE(I)
4. Chakraborty, Sudipto, Life Member - IICHE
5. Chakraborty, Sudipto, Life Member - IITKgp
6. Das, Gargi, Life member - Indian Institute of Chemical Engineers
7. De, Sirendu, 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 (IIChE)
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, Dilbyendu, Regular - Indian Institute of Chemical Engineers
21. Mukherjee, Dilbyendu, 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, Debasish, Associated Member - The Institution of Engineers (India)
26. Sarkar, Debasish, Associate Member - Indian Institute of Chemical Engineers
27. Sengupta, Sonali, Life-member - Indian Institute of Chemical Engineers
**Member - Editorial Board**

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 Foundationsâ€™s 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

**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. â€¢ 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 updgradation of high ash Indian coal (DES) (Tata Steel, Jamshedpur, Rs.20.00 Lakhs)

**Consultancy Projects**

1. Composite Development Center (RDSO, Rs.7.50 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 â€“ 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 Fabrionics (University of California, Irvine and Northwestern University, USA, ) June 26 - July 10
3. Meikap, Bhim Charan - To Chair a Technical Session on Transport Processes and Novel Separation Technologies 13th APCChE (Taipei, Taiwan, ) 5-8, October, 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 â€œEnglish for technical writingsâ€, 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, Annamalainagar, 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, 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 Fabriconics 2011)  
13. Soft Fabrication: Soft Lithography and Beyond by Mukherjee, Rabibrata (Aurangabad, Indo US Student Workshop on Fabriconics 2011)  
14. Micro, Meso and Nano Patternning 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, Jwaharlal 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)  
19. Column flotation cell â€“ 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 (Thrisur)  
21. Fundamentals of Multiphase flow by Das, Gargi (Thrisur)

Books Published


Papers Published in Journals

17. 18. 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)  
Vapour liquid equilibria of carbon dioxide in dilute and concentrated aqueous solutions of piperazine at low to high pressure By Sukanta Kumar Dash, Arunkumar Samanta, Amar Nath Samanta, Syamalendu S. Bandopadhyay Fluid Phase Equilibria 300, 145-154 (2011)

Papers Presented in Conferences

Department of Chemistry

**Head**
Prof. Pratim Kumar Chattaraj

**Professors**

Basak, Amit  
*Ph.D.(Cal), D.Phil.(Oxon)*, Bioorganic/Medicinal Chemistry

Bhattacharjee, Manish  
*Ph.D.(NEHU)*, Catalysis

Chattaraj, Pratim Kumar  
*Ph.D.(IIT Bombay)*, Density functional theory, Chemical reactivity, ab initio calculations, Quantum chaos, Aromaticity in metal clusters

Mal, Dipak Ranjan  
*Ph.D.(Missouri)*, Total synthesis of bioactive natural products heterocyclic chemistry dearamatization annulation

Pal, Tarasankar  
*Ph.D.(Burdwan Univ.), D.Sc.(Visva Bharati Uni)*, Inorganic Chemistry

Pathak, Tanmaya  

Pramanik, P  

Ray, Debashis  
*Ph.D.(Jadavpur Univ)*, 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  
*Ph.D.(Calcutta Univ)*, Intramolecular Heck Reactions

Roy, Sujit  
*Ph.D.(IIT Kanpur)*, Organometallic Chemistry, Homogeneous Catalysis

Sarkar, Nilmoni  
*Ph.D.(Jadavpur Univ)*, Characterization of Ionic Liquid containing Microemulsion, Photoinduced electron transfer in RTIL and RTIL containing confined media.

Sarkar, Tarun Kumar  
*Ph.D.(Calcutta Univ)*, Synthetic Organic and Organometallic Chemistry

Srivastava, Sunil Kumar  
*Ph.D.(IIT Kharagpur)*, Nanomaterials and polymer composites

**Associate Professors**

Bandyopadhyay, Sanjoy  
*Ph.D.(IISc Bangalore)*, Protein folding, Theoretical and Computational Chemistry, Hydration properties of bio-molecules, Self-assembled molecular films at interfaces

Biradha, Kumar  
*Ph.D.(Hyderabad)*, Gas sorption studies, Supramolecular Chemistry, Crystal Engineering, Polymorphism, Coordination Polymers, Structural Chemistry, solid state reactions

Dasgupta, Swagata  
*Ph.D.(RPI New York)*, Protein ligand binding Protein aggregation studies

Dey, Joykrishna  

Hajra, Saumen  
*Ph.D.(Pune Univ)*, Catalytic Asymmetric Reactions, Organocatalysis, Total Synthesis of Biologically Active Compounds

Maiti, Mrinal Mohan  
*Ph.D.(IIT Kharagpur)*, Optical and electrochemical sensors, Electrocatalysis and fuel cell, Inorganic functional nanomaterials

Taraphder, Srabani  
*Ph.D.(IISc Bangalore)*, Theoretical Physical Chemistry

**Assistant Professors**

Ayyappan, Anoop  
*Ph.D.(Univ. of Hyderabad)*, Computational Chemistry, Reaction Mechanisms, QM/MM studies of biological systems, Computational Photochemistry

Dhara, Dibakar  
*Ph.D.(Osmania Univ. Hyderabad)*, Polymer Chemistry, Colloid and Surface Chemistry
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 aqeous medium polymerization and cationic ruthenium complexes as catalysts for various organic trasformations. 

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. Nirpen 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)
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 actnine chemistry: Orgnometallic 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.)
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 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), Macmillian 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, Dibaker, 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, Sunee Kumar, - Life Member: Materials Research Society of India
17. Srivastava, Sunee 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 - Philosophic Nature
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
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

Awards & Honours

Fellowships

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 γ-Butyrolactone Natural Products (CSIR, New Delhi, Rs.26.28 Lakhs)
6. Theoretical Modelling of the Role of Hydration in Proton Transfer Processes in Proteins (CSIR, Rs.8.39 Lakhs)
7. Carbon nanotube supported electrocatalyst for fuel cells and metal air battery applications (DRDO, Rs.34.96 Lakhs)
8. Characterization of IonicLiquid 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 an (DST, Rs.38.00 Lakhs)
10. Computational studies of gold catalyzed cycladdition reactionos (ISIRD, Rs.5.00 Lakhs)
11. Crystal Engineering Studies on Derivatives Containing 2A² 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 Disorption 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. Gold catalyzed organic transformations: Applications to the synthesis of bioactive natural products (DST, Rs.29.16 Lakhs)
26. Hydroxymethylated cycloalkenones privileged small molecular chiral templates for asymmetric synthesis of bio-active natural products (DST, Rs.35.00 Lakhs)
27. Hydroxynitrile lyase biocatalysis: production of active pharmaceutical intermediates by substrate engineering (DBT, New Delhi, Rs.20.00 Lakhs)
28. Hydroxynitrile lyase biocatalysis: production of active pharmaceutical intermediates by substrate engineering (DBT, New Delhi, Rs.20.00 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-oilfenic 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. P-π 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 Bimetalllic Complexes Using Metalloigands (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 Lifesciences: 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. Polysaturated fatty acids from animal visera
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 funda (Novosibirsk, Russia, ) September 27-30
4. Srivastava, Sunee 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 Conferences 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. Nag, Ahindra - Invited Chairman of International conference on recent trends on Biosciences (Bangkok, Thailand, ) 18-23 October, 2010
8. Biradha, Kumar - Chairing AsCA 2010 (Busan, Korea, ) 30th October to 3rd November
9. Biradha, Kumar - First Chaina-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-arylcyclohexanes: Total synthesis of clavcurativine D by Mal, Dipak Ranjan (Indian Chemical Society, Kolkata)
4. Biocatalytic enantioselective scaffolding of hydroxymethylated cycloalkenones, diversity oriented by by Nanda, Samik (IICT, Hyderabad)
5. Lactams as antibiotics by Ray, Jayanta Kumar (3rd ICDD Conference Dubai)
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/AOCFT 2010 Congress by Chattaraj, Pratim Kumar (Swinburne University, Melbourne, Australia)
12. Colloquium by Chattaraj, Pratim Kumar (University of Kalyani, Kalyani, India)
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 Bandypadhyay, Sanjoy (Department of Mathematics, Indian Institute of Technology, Kharagpur, India)
18. Hydration of bio-molecules by Bandypadhyay, Sanjoy (S. N. Bose National Centre for Basic Sciences, Kolkata, India)
19. Some recent understandings on bio-molecular hydration by Bandypadhyay, 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)
29. Nanoarchitectured 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)
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, Dwarad, Karnataka.)
33. Interference and Template Effects in Crystal Engineering by Biradha, Kumar (IISc Bangalore)
34. Chairing a Micro Symposium (MS-12) on â€œCrystal Growth and Engineeringâ€ for AsCA-2010 by Biradha, Kumar (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 (Alabama, 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, Kualalumpur, 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 (Maharayas 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 macrocycles by Nanda, Samik (Visvabharati, Santiniketan, 9th CRSI kolkata chapter)

Books Published

Seminars, Conferences and Workshops Organised
Papers Published in Journals

27. A rapid entry to C-phenylcarbazoles: total synthesis of clausamines C-D, clausatetone D, and clausaine F, By Jana, A. Mal D. *Chemical Communications* 46, 4411- 4413 (2010)
Papers Presented in Conferences


Cryogenic Engineering Centre

**Head**
Prof. Vutukuru Vasudeva Rao

**Professors**

- Bandopadhyay, Syamalendu Sekhar
  - Ph.D. (IIT Kharagpur), Separation processes, Natural gas processing, Carbon dioxide capture and sequestration, Air breathing propulsion

- Chowdhury, Kanchan
  - Ph.D. (IIT Kharagpur), Simulation of Helium Plants, Cryogenic Air Separation, Safety in Oxygen-enriched Systems, Conventional Refrigeration

- Dey, Tapas Kumar
  - Ph.D. (Delhi Univ), Nanofluids and its applications, Polymer Nanocomposites, Electronic Packaging Materials, Nanostructured Thermoelectrics

- Rao, Vutukuru Vasudeva
  - Ph.D. (IIT Madras), Applied Superconductivity, Vacuum Technology, Cryo Physics

- Sarangi, Sunil Kumar
  - Ph.D. (Stony Brook),

**Assistant Professors**

- Adyam, Venimadhav
  - Ph.D. (IISc. Bangalore), Multiferroics Spintronics Thermoelectrics Nanomaterials and Thin film batteries

- Ghosh, Indranil
  - Ph.D. (IIT, Kharagpur), Compact Heat Exchangers, Heat Transfer in Porous Media, Sorption Cooling

- Ghosh, Partha Sarathi
  - Ph.D. (IIT Kharagpur), 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
  - Ph.D. (IIT Kharagpur), Matrix heat exchanger, Cryogenic hydrostatic bearing

- Sandilya, Pavitra
  - Ph.D. (IIT Kanpur), 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. Nandi, Tapas Kumar, Life Member - Indian Cryogenics Council
8. Nandi, Tapas Kumar, Life Member - Indian Society for Technical Education (ISTE)
9. Rao, Vutukuru Vasudeva, Life - Indian Vacuum Society
10. 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. Development of thermophysical measurement system for liquids and investigations on the thermal conductivity and pool boiling of 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 multifilmonic 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, SRC 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 multifilmonic 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 intro Piperazine Activated Aqueous N-Methyldeethanolamine by Bandyopadhyay, Syamalendu Sekhar (Talloires, France)
3. Thermal and Rheological Properties of Nanoscale Colloidal Solutions (Nanofluids) by Dey, Tapas Kumar (University of Hyderabad)
4. Enhanced Heat Conduction of Nanofluids & its Appl in Thermal Management of Modern Electronic Devices by Dey, Tapas Kumar (University of Rajasthan, Jaipur)
5. Designed Multiferroics by Adyam, Venimadhav (DMRL, Hyderabad)
6. Trends in Oxide Electronics by Adyam, Venimadhav (IISc Bangalore)
7. 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**


**Papers Published in Journals**

12. Observation of enhanced positive magneto resistance at low temperatures in Ni0.8Fe0.2/c granular composites By G. Mandal, V. Srinivas, V. V. Rao alloys and compd. 504, 110-114 (2010)
Papers Presented in Conferences


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)


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)


Department of Computer Science & Engineering

**Head**
Prof. Jayanta Mukhopadhyay

**Professors**
- **Basu, Anupam**  
  Ph.D. (IIT Kharagpur), Assistive Technology, Embedded Systems, Language Processing
- **Chakrabarti, Partha Pratim**  
  Ph.D. (IIT Kharagpur), Artificial Intelligence, CAD for VLSI & Embedded Systems, Design of Algorithms, Reliable and Fault Tolerant Systems
- **Dasgupta, Pallab**  
  Ph.D. (IIT Kharagpur), VLSI CAD & Electronic Design Automation, Formal Verification
- **Ghose, Sujoy**  
  Ph.D. (IIT Kharagpur), Networks, Algorithms, AI, Info Systems
- **Gupta, Arobinda**  
  Ph.D. (Iowa), Distributed Systems, Mobile Computing
- **Kumar, Rajeev**  
  Ph.D. (Sheffield), Programming Language & Software Engineering, Multiobjective Optimization & Evolutionary Computing, EDA & Embedded Systems, Multimedia Systems & Video Transcoding, Education Standards & Quality
- **Majumder, Arun Kumar**  
  Ph.D. (Cal), Ph.D. (Florida), Database and Multimedia Systems, Information Security, Medical Informatics and Telemedicine
- **Mall, Rajib**  
  Ph.D. (IISc Bangalore), program analysis and testing
- **Mandal, Chittaranjan**  
  Ph.D. (IIT Kharagpur), VLSI CAD, Networking, Formal Verification
- **Mukhopadhyay, Jayanta**  
  Ph.D. (IIT Kharagpur), Image Processing, Medical Informatics, Bio-informatics
- **Pal, Ajit**  
  Ph.D. (Calcutta Univ), CAD for Low Power Embedded systems Computer Networks
- **Pal, Sudebkumar Prasant**  
  Ph.D. (IISc Bangalore), Design and analysis of algorithms, Computational and combinatorial geometry
- **Roychowdhury, Dipanwita**  
- **Sarkar, Dipankar**  
  Ph.D. (IIT Kharagpur), Formal Verification, Symbolic Logic and Automated Reasoning
- **Sarkar, Sudeshna**  
  Ph.D. (IIT Kharagpur), Machine learning, Natural Language Processing, Data Mining
- **Sengupta, Indranil**  
  Ph.D. (IIsc Calcutta), VLSI design and testing, Cryptography and network security

**Associate Professors**
- **Ganguly, Niloy**  
  Ph.D. (BE SU, Calcutta), Peer-to-peer Networks, Online Social networks, Network Theory, Wireless Internet, Delay Tolerant Networks
- **Mitra, Pabitra**  
  Ph.D. (ISI Calcutta), Machine Learning, Data Mining, Information Retrieval

**Assistant Professors**
- **Bhowmick, Partha**  
- **Chakraborty, R S**  
  Ph.D. (CWR Univ USA), Hardware Design for Security, Digital Watermarking, VLSI Design and Methodologies
- **Das, Abhijit**  
  Ph.D. (IISc Bangalore), Arithmetic and algebraic algorithms, Cryptography and network security
- **Mukhopadhyay, Debdeep**  
  Ph.D. (IIT Kharagpur), Cryptology, VLSI, Embedded systems for Cryptographic Systems, Side Channel Analysis

**Lecturer**
- **Dey, Partha Sarathi**  
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

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 MatemÃ­aticas, 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.)
3. Vivekananda Bhatt : Some Topics on Audio Watermarking Techniques(Ph.D.)
4. Jaiprakash T. Lalichandhi : 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)
11. Antra 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. Day, 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 - IAM
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

**Awards & Honours**

6. Chakraborty, 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
Fellowships

1. Ganguly, Niloy (2010) DAAD Fellowship for short visit
2. Mukhopadhyay, Debdeep (2011) Outstanding 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 literaty 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 accessl 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) (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 Defence Staff, Ministry of Defence, 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)
22. Extending the Scope of Equivalence Checking in Complex Embedded System Design Verification (DST, Rs.840000.00 Lakhs)
23. Fundamental Research in Information Assurance (Headquarters Integrated Defence Staff, Ministry of Defence, Rs.48.00 Lakhs)
24. Hard Security: Ensuring TRUST in Integrated Circuits (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)
25. Image analysis for preservation and archiving of Indian Cultural Heritage (DST, Rs.23.00 Lakhs)
26. Indian Language Machine Translation Phase II (Ministry of Communications and Information Technology, Rs.40.00 Lakhs)
27. Investigation of Cryptanalytic Techniques (Headquarters, Integrated Defence Staff, Ministry of Defence, Govt of India, Rs.44.30 Lakhs)
28. Leveraging Simulation Dumps and Failure Traces for Formal Property Verification (INTEL Technology India Pvt. Ltd, Bangalore, Rs.10.00 Lakhs)
29. Linux kernel development and support (Nucleodyne Systems Inc., USA, Rs.5.00 Lakhs)
30. Pattern Recognition Algorithms for Bioinformatics (DST, Rs.24.50 Lakhs)
31. Preprocessing and Analysis of Degraded Documents (MCT, GOI, Rs.34.00 Lakhs)
32. Programming and Data Structures Virtual Lab (MHRD, Rs.20.00 Lakhs)
33. Regression Testing of Object-Oriented Programs (DST, New Delhi, Rs.10.54 Lakhs)
34. Safety messaging in vehicular networks (General Motors India, Rs.0.00 Lakhs)
35. Special Manpower Development Project (DIT, Rs.90.00 Lakhs)
36. Speech Based Computer Interface (Intel, Rs.10.00 Lakhs)
37. Strategies for power reduction during VLSI circuit testing (DIT, Government of India, Rs.31.00 Lakhs)
38. 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)
39. The Bangla Treebank (Central Institute of Indian Languages, Mysore, TDIL program, Rs.25.00 Lakhs)
40. Virtual Lab for Computer Organisation & Architecture (MHRD, Rs.56.00 Lakhs)
41. 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.19.10 Lakhs)
5. Core Banking for OSCB (OSCB, Rs.50.00 Lakhs)
6. Core Banking Systems Implementation (Orissa State Cooperative Bank Ltd., Bhubaneswar, Rs.56.25 Lakhs)
7. Design of PSEC-KEM (NTT Labs, Japan, Rs.20.00 Lakhs)
8. Drafting Revised Guidelines for UG Engineering Program Accreditation (NBA, Rs.0.00 Lakhs)
9. Feasibility studies on upliftment of science and technology in Dubai: the role of IIT Kharagpur (Educare International Foundation, Dubai, Rs.3.00 Lakhs)
10. Formal Design Intent Modeling and Verification of Mixed-Signal Designs (Semiconductor Research Corporation, USA, Rs.45.00 Lakhs)
11. Formal Methods for Component Based Verification of Automotive Feature Controls (General Motors, Rs.60.00 Lakhs)
12. Formal methods for power intent verification (MPIV) (Synopsys (India) Pvt. Limited, RMZ Infinity, Tower A, Old Madras Road, Bangalore-560016, Rs.25.00 Lakhs)
13. Formal Verification of Post Silicon Bug Fixes (INTEL Technology India Pvt. Ltd, Bangalore, Rs.22.06 Lakhs)
14. GM Collaborative Research Laboratory on Electronics, Controls and Software: Projects (General Motors, Rs.425.00 Lakhs)
15. IT Consultancy (CITM) (UCO Bank, Rs.15.00 Lakhs)
16. IT Consultant at NIC (National Insurance Company Limited, Rs.3.12 Lakhs)
17. Platform Architecture Modeling for Exploring Power Management Strategies (Intel, Rs.16.00 Lakhs)
18. Sanyog Phase II: A portable communication Tool for the Speech & Neuro Motor Impaired People (Media Lab Asia, New Delhi, Rs.71.12 Lakhs)
19. Synopsys CAD Laboratory (Synopsys, Rs.172.72 Lakhs)
20. Web Portal Development (WPDC) - Completed (WBSEDCL, Rs.3.00 Lakhs)
21. TECHNICAL CONSULTANCY SERVICES ON IT MATTERS (UCO BANK, KOLKATA, RS.2.50 LAKHS)
22. West Bengal State Wide Area Network (WANE) (WTL, Rs.30.00 Lakhs)

Technology Transferred

1. Society for Natural Language Technology, Govt of West Bengal - Anwesan: 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. Mail, 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, Debeen - Presentation of Technical Paper (CT-RSA 2011, San Francisco, USA, ) 7 days
5. Ganguly, Niloy - Visiting collaborators (Germany, France, ) 1.5 months
6. Sarkar, Sudeshna - Organizer of CLIA workshop at COLING 2010 (Beijing, China, ) August 2010
7. Mukhopadhyay, Debeen - Invited Talk (NKC Abu Dhabi, UAE, ) 2 days
8. Dasgupta, Pallab - Annual Review Meeting of SRC Global Research Corporation (University of Texas, Austin, USA, ) April 2010
9. Majumder, Arun Kumar - Visiting Professor for research collaboration (George Mason University, Fairfax, Virginia, ) May-June 2010
10. Majumder, Arun Kumar - As member of Association of Indian Universities Delegation (Scottish Universities- University of Strathclyde Galgows, University Abertay Dundee and Edinburgh University, ) May 2010
11. Majumder, Arun Kumar - As member of Association of Indian Universities Delegation (Dutch Universities - Eindhoven University of Technology, Tilburgh University, Ultrecht University, Erasmus University and Delft University, ) May 2010
12. Majumder, Arun Kumar - As member of Association of Indian Universities Delegation (Strathclyde Galgows, University Abertay Dundee and Edinburgh University, ) May 2010
13. Majumder, Arun Kumar - As member of Association of Indian Universities Delegation (Nancy, France, ) 14th to 16th June, 2010
Invited Lectures by Faculty Members

1. Program Slicing and Its Applications by Mall, Rajib (Trivandrum)
3. Hardware Trojans: Threats and Emerging Solutions by Chakraborty, R S (Short-term Course on Information Security, IIT Kharagpur)
6. Exciting moments of research by Mukhopadhyay, Jayanta (Shilong)
9. Video Compression by Mukhopadhyay, Jayanta (IIT Guwahati)
10. State based video modeling and its applications by Mukhopadhyay, Jayanta (IIT Kharagpur)
11. State based video modeling by Mukhopadhyay, Jayanta (MSRCT, Bangalore)
13. Algorithmic Art by Random Digital Curves by Bhowmick, Partha (ISI Kolkata)
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 (Freescale Semiconductors, Austin, Texas, USA)
17. Can Intelligence be Artificial? by Dasgupta, Pallab (Bengal Institute of Technology Kolkata)
18. Design Intent Verification by Dasgupta, Pallab (Intel Technology India Pvt Ltd)
19. Embedded Challenges & Trends by Chakraborti, Partha Pratim (Jadavpur University, Kolkata)
20. The Sciences of the Artificial by Chakraborti, Partha Pratim (CGCRI, Kolkata)
21. Artificial Intelligence by Chakraborti, Partha Pratim (SNSP Programme, Kalamandir, Kolkata)
22. Side Channel Attacks by Chakraborti, Partha Pratim (SNSP 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)
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


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

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

37. On approximating Euclidean metrics by weighted l-cost distances in arbitrary dimension By J. Mukherjee Pattern Recognition Letters 32, 824-831 (2011)
Papers Presented in Conferences


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)
75. The Effects of Restrictions on Number of Connections in OSNs: A Case-Study on Twitter, By Saptarshi Ghosh, Gautam Korfam, and Niloy Ganguly, WOSN, Boston, (2010)
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 (Wisssec), Nijmegen, the Netherlands, (2010)
80. Verification of Register Transfer Level Low Power Transformations, By Chandan Karfa, Dipanwita Sarkar, Chittaranjan Mandal, IEEE Computer Society Annual Symposium on VLSI (ISVLSI) 2011, Chennai, India, (2011)
Department of Electronics & Electrical Communication Engineering

**Head**
Prof. Chinmay Kumar Maiti

**Professors**

- **Bandyopadhyay, Kalyan Kumar**  
  Ph.D. (Jadavpur University), satellite communication
- **Banerjee, Swapna**  
  Ph.D. (IIT Kharagpur), VLSI based embedded system design for signal/image processing, Biomedical Instrumentation, Device modeling, Low power circuits, Mixed-signal design
- **Biswas, Dhrubes**  
- **Biswas, Prabir Kumar**  
- **Chakraborty, Ajoy**  
  Ph.D. (IIT Kharagpur), Electromagnetics, EMI/EMC, ESD, Computational Techniques, Array Antenna
- **Chakraborty, Mrityunjay**  
- **Dutta, Debasis**  
  Ph.D. (IIT Kharagpur), Optical Networks, Wireless Networks
- **Gangopadhyay, Ranjan**  
  Ph.D. (IIT Kharagpur), Wireless and Fibre Communication
- **Garg, Ramesh**  
  Ph.D. (IIT Kanpur), Electromagnetics
- **Maiti, Chinmay Kumar**  
  Ph.D. (IIT Kharagpur), Microelectronics, Silicon Heterostructure, Online Laboratories
- **Pathak, Sant Sharan**  
  Ph.D. (IIT Delhi), Digital Communication
- **Rajakumar, Ratnam Varada**  
  Ph.D. (IIT Kharagpur), Digital Signal Processing, Communication Systems, Detection and Estimation
- **Ray, Ajoy Kumar**  
  Ph.D. (IIT Kharagpur), Image Processing and Computer Vision, Pattern Recognition in Medicine, Soft computing
- **Sanyal, Subrata**  
  Ph.D. (IIT Kharagpur), RF & Microwave Engineering, E.M.Scatte
- **Sen Gupta, Somnath**  
  Ph.D. (IIT Bombay), Image Processing and Computer Vision

**Associate Professors**

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


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

Guha, Prasanta Kumar  Ph.D. (IIT Kanpur), 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 Ultrasoundography 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?Ý CMOS ADC and work is also going on the design of an ADC 0.18?Ý BiCMOS technology with enhanced performance. c) Communication Systems: Research is being carried out to design a GPSK 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, 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 lime 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. 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. 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?Ý CMOS ADC and work is also going on the design of an ADC 0.18?Ý 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 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.


Thrust Areas

1. MEMS & Semiconductor Technology
2. Broadband Communication Networks
3. VLSI Circuits and Systems

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 Melin 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)
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 Narasahai : 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, Dhrubes, 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, Ajay, Senior - IEEE
7. Chakraborty, Ajay, 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, Debasis, Life Member - IE
13. Dutta, Debasis, Member - IEEE
14. Garg, Ramesh, Fellow - IEEE
15. Ghosh, Bratin, Member - Institute of Electronics and Electrical Engineers (IEEE)
16. Halder, Achintya, Regular - IEEE
17. Mahapatra, Sudipta, *Life member* - CSI, India
18. Mahapatra, Sudipta, *Member* - IEEE, USA
19. Maiti, Chinnay Kumar, *Senior Member* - IEEE
20. Mandal, Pradip, *Regular - IEEE*
21. Mukhopadhyay, Sudipta, *Senior Member* - 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. Sanayi, 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**

5. Dutta, Debasish (0) *Editor* - IEEE Communications Surveys and Tutorials, IEEE Communication Society
6. Dutta, Debasish (0) *Editor* - Journal of Optical Switching and Networks

**Awards & Honours**


**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 Ultrasoundography 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 (IIUSU), Rs.35.00 Lakhs)
26. Development of a Long Sound Analyzer (Institute of Pulmocare & Research, Rs.7.00 Lakhs)
27. Development of MEMS based accelerometers for high frequency RF/microwave c (Department of Information Technology, GOI and ATDC, IIT Kharagpur, Rs.9479.92 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 Generator (DST, Govt. of India, Rs.7.00 Lakhs)
31. Design and Development of MEMS based components for RF applications (NPMASS, Rs.166.00 Lakhs)
32. Digital Electronic Circuits Virtual Laboratory (MHRD, Rs.50.00 Lakhs)
33. 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, Rs.26.16 Lakhs)
43. FPGA based design and development of H.264 Codec (ISRO, Rs.14.80 Lakhs)
44. GaInGaN 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 Distortion 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, 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, Ahmednagar, Rs.9.83 Lakhs)
59. MOSFET Modeling and Parameter Extraction (DRDO, New Delhi, Rs.56.00 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 (DST) (SAC, ISRO, Rs.5.00 Lakhs)
62. Multi-access network system in s-band using digital beam steering techniques (ISRO, Rs.24.50 Lakhs)
63. Movable Lifetime Management for the Next Generation Wireless Internet (VEICET-Vodafone-Essar, Rs.48.00 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)
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 particles 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 (Intelliys 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 ultrasound 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, Dhrubes - 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
10. Biswas, Dhrubes - 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, Bhishnudatta - Collaborative research with UCLA (University of California, Los Angeles, ) 1 week
14. Chakraborty, Mrityunjoy - Present paper, chairing TC meeting (Singapore, ) December 12-17, 2010
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

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)
7. Challenges in 3-D Image Processing by Biswas, Prabir Kumar (SGGS College of Engineering, Nanded)
8. Transform Domain Processing by Biswas, Prabr Kumar (Rajiv Gandhi Institute of Technology, Mumbai)
9. VLSI based Embedded Systems for Biomedical applications by Banerjee, Swapna (Int'l 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 (ICMB-2010), SMST, IIT Kharagpur)
11. An Embedded Doppler Ultrasonography System by Banerjee, Swapna (NIT, Hamirpur)
12. An Embedded Doppler Ultrasoundography 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 Bhattacharya, Tarun Kanti (EFY Design Engineers Conference, Pragati Maidan, New Delhi)
30. Micro Cantilevers and its applications by Bhattacharya, Tarun Kanti (Amity School of Engineering and Technology)
31. MEMS based devices for space application by Bhattacharya, Tarun Kanti (4 th ISSS conference, VNIT, Nagpur)
32. MEMS and Microsystems by Bhattacharya, Tarun Kanti (Institute of Radio Physics and Electronics, Calcutta University)
33. MEMS based accelerometer for g to micro g by Bhattacharya, Tarun Kanti (ToCH institute of Science and Technology)
34. MEMS and Interfacing Electronics by Bhattacharya, Tarun Kanti (IMEC, Belgium)
35. 2.5 Gbps SERDES for CBM experiment by Bhattacharya, 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, Debasis (Central Glass and Ceramic Research Institute, CSIR Laboratory, Calcutta)
38. Optical Networks by Dutta, Debasis (Institution of Engineers, Calcutta)

Books Published


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)
12. VLSI-DSP Based Embedded System for Biomedical Applications (9th July to 22nd July)

Papers Published in Journals


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)


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)


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 Saurab, and Dhruves Biswas Journal for Advances in Entrepreneurship, Firm Emergence, and Growth Volume 13 (2011)


Papers Presented in Conferences

1. a°°FLUID ANTENNASâ€ By I. SHUVA JYOTI KAR, Prof.(Dr) AJAY CHAKRABARTY, Prof.(Dr) B.K.SARKAR,, MECAP 2010, CAIRO EGYPT, (2010)


21. APPROACHING SUB-WAVELENGTH RESOLUTION, By SHUVA JYOTI KAR, Prof.(Dr) B.K.SARKAR, ISAPE 2010, GUANGZHOU, CHINA, (2010)
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)
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, SPRCOM, Indian Institute of Science, Bangalore, (2010)
49. FLUID ANTENNAS AS EMI SENSORS â€¢, 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. 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 Dhrubs Biswas, 7th Annual Satter Conference, NYU-Stern Conference on Social Entrepreneurship, New York, (2010)

**Centre for Educational Technology**

**Head**
Prof. Bani Bhattacharaya

**Assistant Professors**

Bhattacharya, 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
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

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 (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
Invited Lectures by Faculty Members

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

Papers Published in Journals


Papers Presented in Conferences


Effective Group Therapy for HIV/AIDS By Atasi Mohanty & Nivedita Das PsyInsight Vol.1 No.4 November (2010)

Positive Parenting By Atasi Mohanty PsyInsight Vol.2 No.1 February (2011)
Department of Electrical Engineering

Head
Prof. A. K. Sinha  Up to  30.09.2010
Prof. Jayanta Pal  From 01.10.2010

Professors
Barua, Alok  Ph.D. (IIT Kharagpur), BIST for Pipelined ADC
Bhattacharya, Tapas Kumar  Ph.D. (IIT Kharagpur), Electrical Machines & drives. circuits., Electromagnetics, LIM., Transformer, inrush current minimization
Chakraborty, Chandan  Ph.D. (IIT Kharagpur), Electric Machines, Industrial Drives, Power Converters
Das, Debnath  Ph.D. (IIT Delhi), Electric Power Distribution System Power System Operation and Control
Das, Sarit Kumar  Ph.D. (IIT Kharagpur), Control Systems
Dutta, Pranab Kumar  Ph.D. (IIT Kharagpur), Biomedical Image Processing, Signal Processing, Optoelectronics
Kishore, N K  Ph.D. (IISc Bangalore), High Voltage and Insulation Engg., Renewable Energy, Power System Transients
Maka, Srinivasu  Ph.D. (IIT Kharagpur), Biomedical System Engineering, Control Systems & Instrumentation Engineering
Mohan, Bhusan Kumar  Ph.D. (IIT Kharagpur), Control Systems, Fuzzy Logic Applications in Control Systems, Orthogonal Functions Applications in Control Systems
Patra, Amit  Ph.D. (IIT Kharagpur), Power Management Circuits, VLSI Design, Fault Tolerant Control
Sen Gupta, Sabyasachi  Ph.D. (IIT Kharagpur), Machine Drives and Power Electronics
Sen, Siddhartha  Ph.D. (IIT Kharagpur), Fractional Order Systems, MEMS Capacitive Accelerometer, Control Allocation
Sinha, Avinash Kumar  Ph.D. (Pilani), Electrical Power Systems

Associate Professors
Kastha, Deaprasad  Ph.D. (Tennessee), Wind Electrical Systems, Switched Mode Power Supplies, Machine Drives
Poddar, Gautam  Ph.D. (IISc Bangalore), Medium voltage converter with high frequency isolation
Pradhan, Ashok Kumar  Ph.D. (Sambalpur Univ.), Power System Protection Wide Area Measurement System Applied Signal Processing
Prasad, Dinkar  Ph.D. (IIT Kharagpur), Power Electronics, Machine Drives

Assistant Professors
Bhattacharya, Tanmoy  Ph.D. (IISc. Bangalore), Power Converters and Machine Drives
Biswas, Karabi  Ph.D. (IIT Kharagpur), Sensor Design & Development of Instrumentation system and Study of Fractional Order systems
Chatterjee, Dheeman  Ph.D. (IIT Kanpur), Power System Dynamics, Grid Integration of Renewables, FACTS controllers
Chattopadhyay, Souvik  Ph.D (IISc. Bangalore), Digital Control of Power Converters, Soft-switched dc dc converters
Deb, Alok Kanti  Ph.D. (IIT Delhi), Control Systems, Computational Intelligence
Mukherjee, Anirban  Ph.D. (IIT Kharagpur), Computational Biology, Biomedical Signal Processing

Faculty Appointments
Dr. Tanmoy Bhattacharya  Asst. Professor

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. Anweesa Sengupta : Control allocation and design of controller for satellite launch vehicle(MS)
4. Mr. Amtiava 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 : Supervised 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 Tecnical Education (ISTE)
23. Routray, Aurobinda, Member - SIAM, USA
24. Routray, Aurobinda, Member - IEEE, USA
25. Sinha, Avinash Kumar, Member - IEEE, USA

**Member - Editorial Board**

11. Mukhopadhyay, Siddhartha (0) Member - Paritantra
12. Patra, Amit (0) Member, Editorial Board - International Journal of Electrical Engineering Education

**Awards & Honours**

1. Sinha, Avinash Kumar (2010) IBM Open Collaborative Faculty Award

**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 GSVL 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 Aircraft 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-Alone 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 Intent 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-July 2010
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

Invited Lectures by Faculty Members

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 Laboratory by Kishore, N K (NIT Surathkal - ICIIS2010)
6. Research opportunites 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 (AICTAM Sriakulam 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), MNIT, Allahabad)
18. Tutorial on Sensor Data Fusion (Model Free Techniques) by Deb, AloK Kanti (International Conference on â€œSystem 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 (Hy-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)

Books Published

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

Seminars, Conferences and Workshops Organised
Short-Term Courses, Training Programmes and Workshops organised

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

Papers Published in Journals

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)
14. Cancer Classification from Gene Expression Data by NPPC Ensemble By Ghori, S. Mukherjee, A. Sengupta S Dutta, P.K. IEEE/ACM Trans. on Computational Biology and Bioinformatics vol. 8 no. 3 (2011)
27. Detecting the Genesis of fatigue in trained drivers by studying the variation of Blood Biochemical Parameters under simulated driving condition By 4- Bibhukalyan Prasad Nayak, Gyan Ranjan Salpathy, Biswajit Maharathi and Aurobinda Routray International Journal of Biological Sciences and Engineering to appear (2011)
30. Discrete-Time Simulation of a Peak Current Controlled DC/DC Buck Converter Using Modal Decomposition By Samanta Susovon, Siddhartha Mukhopadhyay, Robert Sheehan (0)
35. Fabrication of a Fractional Order Capacitor with desired specifications: A study on process identification and characterization By Mulinti Sivaramakrishna,Suli Das, Karabi Biswas, and Bhaswati Goswami IEEE Transaction on Electron Devices (0)
46. New State and Measurement Models for Endo-atmospheric Tracking of Ballistic Targets using Seeker Measurements By Shrabani Ghosh, Siddhartha Mukhopadhyay, Aurobinda Routray IEEE Transactions (0)
51. Periodic compensation of a class of decentralized systems with fixed modes By Arun Ghosh, Sarit K. Das Automatica September (2010)
56. Simultaneous stabilization/pole placement of pairs of LTI plants using periodic controllers By Jayati Dey, Sarit K. Das Journal of Control Theory and Applications To appear (0)


28. Effect of voltage induced electrostatic forces on MEMS capacitive accelerometer, By Banibrata Mukherjee, K B M Swamy, Sougata Kar and Siddhartha Sen, Techsym, Kharagpur, (2011)


30. Electrotwisting-on-dielectric induced droplet actuation in M x N array of electrode, By S. Sohail, D. Das, S. Das, and K. Biswas, COMSOL Conference., Banglore, India., (0)


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<th>No.</th>
<th>Title</th>
<th>Authors</th>
<th>Conference/Event</th>
<th>Location/Year</th>
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<tr>
<td>41</td>
<td>Parametric Analyses on Impulse Voltage Generator and Power Transformer Winding for Virtual High Voltage Laboratory Environment</td>
<td>Sachin Kumar, N. K. Kishore and B. Hemalatha</td>
<td>16th NATIONAL POWER SYSTEMS CONFERENCE</td>
<td>Hyderabad, (2010)</td>
</tr>
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<td>48</td>
<td>Root locus method for any fractional order commensurate system</td>
<td>Abir De and Siddhartha Sen</td>
<td>Techsym, Kharagpur, (2011)</td>
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<td>51</td>
<td>Study of electrical equivalent model of the PMMA coated probe dipped in milk and milk adulterated with tap water</td>
<td>Siuli Das, Mulinti Sivaramakrishna, Karabi Biswas and Bhaswati Goswami</td>
<td>IECR-2010, NIT Rourkela 27-29 December 2010</td>
<td>(2010)</td>
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G S Sanyal School of Telecommunication

Head
Prof. Saswat Chakrabarti Up to 30.06.2010
Prof. Debasish Datta 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 Melbourne),
Das, Suvra Sekhar Ph.D. (Aalborg Univ., Denmark), Broadband Mobile Communications, Physical & MAC Layer, 4G, OFDM, MIMO, Packet Scheduling, Link Adaptation, Femto Cells

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. Lossless Compression Methods for Images and Pictures
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


Thrust Areas


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 â€“ 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. Panda (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)
5. Chinmay Chakraborty : PSTN/IP Telephony Gateway Over Heterogeneous Networks(MS)
6. Tuhin Subhra Chakraborty : MB-OFDM, VLSI Architecture(MS)
7. Sruti Ganchaudhuri : 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. 1.85 Lakhs)
4. Fading Channel & Mobile Communications (MHRD, Rs. 95.00 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. 12.75 Lakhs)
7. Studies on Fade Mitigation 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**


**Papers Published in Journals**


**Papers Presented in Conferences**

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
Chaterjee, 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
Komalesha, H. S. Ph.D.(IIT Kharagpur), Indian Women’s Short Fiction in English
Mishra, Pulak Ph.D (Vidyasagar University), Industrial Economics, Public Economics, Economics of Rural Development

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:

Training and development programmes on:

Course development on:

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

New Acquisitions

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)
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)
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, Jayashree, *Life Member* - Dravidian Linguistics Association
9. Chakraborty, Jayashree, *Life Member* - Linguistic Society of India
10. Chatterjee, Bani, *Life Member* - Regional Science Association
11. Chatterjee, Bani, *Life Member* - International Society of Adult Education
13. Goocam, Raising, *Regular - International Society on Multiple Criteria Decision Making (MCDM)*, USA
14. Goswami, Kishor, *Life Member - Agricultural Economics Research Association*, New Delhi, India
15. Goswami, Kishor, *Life Member - Indian Red Cross Society*, India
16. Goswami, Kishor, *Life Member - Circle for Child and Youth Research Cooperation in India â€œ CCYRCI*, Lucknow, India
17. Komalesha, H. S., *Member* - American Literary Translators Association
18. Nayak, Narayan Chandra, *Life Member - Indian Economic Association*
19. Nayak, Narayan Chandra, *Member - Regional Science Association*
20. Patnaik, Priyadarshini, *Regular - Word and Music Association*
22. Pradhan, Rabindra Kumar, *Life Membership - Indian Academy of Applied Psychology*
23. Pradhan, Rabindra Kumar, *Life Membership - Indian Society for Training and Development*
24. Pradhan, Rabindra Kumar, *Annual - National Academy of Psychology*, India
25. Pradhan, Rabindra Kumar, *Life Membership - Indian Science Congress Association*
26. Pradhan, Rabindra Kumar, *Annual - International Association of Applied Psychology*
27. Roy, Anjali, *Life - IASA*
28. Roy, Anjali, *Regular - IACS*
29. Roy, Anjali, *President - AASA*
30. Roy, Anjali, *Life - IACALS*
31. Singh, Seema, *member - Multi - Ethnic Literatures of the World, MELOW â€“ India*
32. Singh, Seema, *Member - International Association of Business Communicators (IABC)*, San Fransisco, California, USA
33. Singh, Seema, *member - Indian Association for Commonwealth Literature and Language Studies (IACLALS)*, New Delhi
34. Singh, Seema, *Member - Multi - Ethnic Literatures of the US, MELUS â€“ India*
35. Singh, Seema, *Member - Association for Business Communication (ABC), NY, USA*
36. Singh, Seema, *Member - International Association for the Teachers of English as a Foreign Language (IATEFL)*, University of Kent, UK
37. Singh, Seema, *member - English Language Teachers Association of India (ELTAI)*, Chennai
40. Srivastava, Kailash Bihari Lal, *Member of the Executive Committee - Academy of International Business, India Chapter*
41. Srivastava, Kailash Bihari Lal, *Member - Indian Academy of Management*
42. Srivastava, Kailash Bihari Lal, *Regular - National Academy of Psychology*
43. Suar, Damodar, *Member - Association for Psychological Science*
44. Suar, Damodar, *Life Member - National Academy of Psychology*
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
4. Goswami, Kishor (2011) *Associate Editor* - Journal of Business Excellence
5. Goswami, Kishor (2009) *Reviewer* - Journal of Rural and Community Development, Canada
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*
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 &apos; A Case Study (Rubber Research Institute of India, India, Rs.0.00 Lakhs)
2. Bangla Treebank (CIIL, 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 Jatropha 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)
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 &apos; 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 Conference 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 Ill (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
12. Goswami, Kishor - Invited by SANDEE to a Research and Training Workshop (Kathmandu, Nepal, ) December 8-10, 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 Ill, 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, Vishakhapatam)
8. Executives EO by Pradhan, Rabindra Kumar (NIST, Sciences 12-15 December 2010)
9. Emotional Intelligence: Assessment & Intervention 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)
15. Annual Lecture on Bhangraâ€™s â€œCoolâ€™ 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. Cosmopolitanis of a Borderless Space by Roy, Anjali (IIT Guwahati)
18. Three Cheers and Three Curses; English in India by Komalesha, H. S. (C R Engineering College, Tirupati)
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


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)
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)
6. Short Term Course on Emotional Intelligence: Optimizing Human Performance at Work (23-25 December 20)
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)


13. The Quest for Selfhood in Ladies Coupe: A Study of Feminist Narratology in Anita Nair’s By Maninder Kapoor & Seema Singh Wasafiri: The Magazine of International Contemporary Writing (Forthcoming) (0)

14. 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)


17. 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)


21. Curfew (Short Story) By Sanjukta Rout (also printed in volume on Women Writing)


23. 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)

24. 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)


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)

**Papers Presented in Conferences**

15. Markets for Environmental Services in India: Opportunities and Challenges, By Bhagirath behera, Pulak Mishra, Narayan Chandra Nayak, Seminar on âClimate Change and Markets: Opportunities, Challenges, and Policy Concerns, India Habitat Centre, New Delhi, (2011)
17. Positive Emotion & Creative Potential, By Papri Nath & Rabindra Kumar Pradhan, NAOP Annual Conference, India, JNU, New Delhi, India, (2011)
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 teh 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)
2. Environmental Engineering (Planning, design, operation and management of water supply and waste management systems, Environmental Impact Assessment)
3. 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)
4. 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)
5. Infrastructure Project management
6. 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 Ph.D. (IIT Kharagpur),
Banerjee, Rabindra Nath PGDM (Edinburgh UK),
Mohapatra, Pratap Kumar Jagadev Ph.D. (IIT Kharagpur), Industrial Engineering & Management
Mukherjee, Jyoti Ph.D.,
Sahu, Sadananda Ph.D. (IIT Kharagpur), 1. Industrial Engineering 2. Supply Chain Management 3. Productivity management
Srinivasan, S Ph.D. (IIT Kharagpur), 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 Ph.D. (IIT Kharagpur), Safety engineering and management, Engineering ergonomics and worksystem design, Quality engineering and management
Sarmah, Sarada Prasad Ph.D. (IIT Kharagpur), Inventory Management, Supply chain Management and logistics, Operations Management

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

Senior Lecturer
Nandy, Ayan Ph.D. (IIM, Calcutta),

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 Katheryn 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)

Member - Professional Bodies

1. Jenamani, Mamata, Regular - IEEE
2. Jha, Jitendra Kumar, Member (MIE 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 - AIM 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

5. Tiwari, Manoj Kumar (2009) Editorial Board Member - Production Planning and Control (PPC)
7. Tiwari, Manoj Kumar (2009) Associate Editor - Journal of Intelligent Manufacturing (JIM)

**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)
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 (Central 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

**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 (McNailey Bharat Ltd, Kolkata)
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**


**Seminars, Conferences and Workshops Organised**

1. Project Management Fundamentals
Papers Published in Journals

3. A Framework for Integrated Analysis of Quality Defects in Supply Chain By Aravindan S and J Maiti Quality Management Journal Accepted (0)

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))


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)


Papers Presented in Conferences


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)

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. 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 Research by Prof. U. P. Khedkar (Indian Institute of Technology Bombay)
3. Cell Phone â€” 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 with some Behavioral UML Models(Ph.D)
4. Kamalika Datta : Audio Water Marking Techniques using Discrete Wavelet Transform(MS)

Member - Professional Bodies

1. Ghosh, Soumya 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
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)
17. Sreenivasa Rao, Krothapalli (0) Member - International Journal of BioSciences and Technology

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, Bangalpre, 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
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 ICEM'T-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

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

Papers Presented in Conferences


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 ICDCom), Ranchi, India, (2011)


School of Medical Science & Technology

Head
Prof. Pranab Kumar Dutta

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

Assistant Professors
Bhattacharya, Sangeeta Das  
MD (Johns Hopkins Univ.), Evidence Based Health Policy, Internal medicine and pediatrics, Vaccine preventable diseases in HIV infected children, Design and development of electronic health record systems for the management of chronic diseases, Development of College Mental Health Programs in the Indian Scenario
Chakraborty, Chandan  
Ph.D. (IIT Kharagpur), Biostatistics, Medical Image Analysis, Biomedical Pattern Classification, Medical Informatics
Chatterjee, Jyotirmoy  
Ph.D., Multimodal Medical Imaging-Analysis Regenerative Medicine Pre-cancer Cancer Natural Healing Agents
Dhara, Santanu  
Ph.D. (IIT Kharagpur), Biomaterials and Tissue Engineering, Nano/Micro Fabrication and surface Modification
Manjunatha M  

Faculty Appointments
Dr. Sudarshan Ghosh Dasidhar 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.

Thrust Areas


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. Dhartiri 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
5. Chaudhury, Koel, Life membership - National Magnetic Resonance Society
6. Chaudhury, Koel, Life membership - American Association for Cancer Research
7. Mandal, Mahitosh, Associate Member - American Association for Cancer Research
8. Mandal, Mahitosh, Associate Member - American Society for Biochemistry and Molecular Biology
9. Mandal, Mahitosh, Associate Member - Indian Association for Cancer Research
10. Mandal, Mahitosh, Associate Member - Indian Science Congress Association
11. Manjunatha M, M - Institute of Engineers (I)
12. Manjunatha M, Life Member - Biomedical Engineering Society of India
13. Manjunatha M, Member - Indian Society for Technical Education
14. Manjunatha M, M - Institute of Electrical and Electronics Engineers USA
15. Manjunatha M, Member - IEEE-Engineering in Medicine & Biology Society
16. Mitra, Analava, Member - American Chemical Society
17. Mitra, Analava, Member - Centre of Applied Medicine Kathmandu-Nepal
18. Mitra, Analava, Member - Society for Advanced studies in Medicine and surgery
19. Mitra, Analava, Life Member - Indian Medical Association
20. Mitra, Analava, Life Member - IMA College of General practitioners
21. Mitra, Analava, Member - National Association of Psychologists

Member - Editorial Board

**Awards & Honours**

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

**Sponsored Research Projects**

1. DST FIST for SMST (DST, Govt. 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 Analyzer 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 undergoing (ICMR, Rs.30.86 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 Fibillar 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 (NPMAS, 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, Gof, 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

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
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, Shillong)
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


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


Papers Presented in Conferences


63. Some hypothetical approaches towards management of Pneumoconiosis, By Ayan Dasgupta, B. Day and Analava Mitra, 34th ICSMRI (Accepted Paper), IIT Kharagpur, (2011)


66. Study of Self Medication of Allopathic Medicine Among College Students In West Bengal, By Debasis Dewanjee, Analava Mitra, Jyotirmoy Chatterjee, ICSMB, IIT Kharagpur, (2010)


Department of Mechanical Engineering

**Head**
Prof. Ajay Kumar Chattopadhyay  Up to 30.09.2010
Prof. Ranjan Bhattacharyya  From 01.10.2010

**Professors**

Bhattacharyya, Ranjan  Ph.D.(Kentucky), Nonlinear Elasticity, Vibration, Dynamical Systems
Bhattacharyya, Sati Nath  Ph.D.(IIT Kharagpur), Fluid Mechanics
Bhattacharyya, Souvik  Ph.D.(Texas A & M), Thermal science, Natural refrigerant based transcritical heating cooling systems, Thermodynamic optimization, Natural circulation loops (NCLs), Energy Engineering
Chakraborty, Suman  Ph.D., Microfluidics and Nanofluidics, Interfacial Phenomena, Transport Phenomena in Materials Processing, Computational Fluid Dynamics (CFD)
Chatterjee, Anindyaa  Ph.D.(Cornell University), Applied mechanics, Dynamics
Chattopadhyay, Ajay Kumar  Ph.D.(Jadavpur Univ), Machining, Grinding, Surface Coating, Metal-Ceramic Joining
Das Gupta, Anirvan  Ph.D.(Kanpur), Wave propagation, Dynamics of discrete and continuous systems
Dash, Sukanta Kumar  Ph.D.(IIT Kharagpur), pressure drop in gas solid flow
Guha, Abhijit  Ph.D.(Cambridge),
Karmakar, Ranjit  Ph.D.(IIT Kharagpur), APPLIED MECHANICS
Maiti, Biswajit  Ph.D.(IIT Delhi), Fluid Machinery, Two-Phase Flow, Applications of Finite Element Method
Maiti, Rathindranath  Ph.D.(IIT Kharagpur), Mechanical and Fluid Power Transmission and Gear Engineering, Mechanical and Fluid Power Transmission and Gear Engineering
Mishra, Prasanta Kumar  Ph.D.(Jadavpur Univ), Mfg Sci & Engg (Nonconventional Mfg), Innovative Machine Design
Mohanty, Amiya Ranjan  Ph.D.(Kentucky), Machinery Condition Monitoring, Acoustics and Noise Control, Underwater Acoustics
Mukherjee, Amalendu  Ph.D.(IIT Kharagpur), System Dynamics and Controls
Nath, Ashish Kumar  Ph.D.(Bombay University), Laser material interaction and processing, Underwater laser processing, Nontraditional manufacturing processes
Paul, Soumitra  Ph.D.(IIT Kharagpur), Machining and Grinding, Cutting Tool Coating
Pratihar, Dilip Kumar  Ph.D.(IIT Kanpur), Soft Computing, Robotics, Manufacturing Science
Ray, Manas Chandra  Ph.D.(IIT Kharagpur), Smart Structures, Composite Structures, Nanocomposites, Fluid-structure interaction, Active constrained layer damping
Roy Chowdhury, Samar Kumar  Ph.D.(Birmingham), Tribology Bio-Tribology Nano-Tribology
Som, Sankar Kumar  Ph.D.(IIT Kharagpur), Thermal Science and Engineering, Thermal Science and Engineering

**Associate Professors**

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

Assistant Professors
Gupta, Abhishek  Ph.D. (RICE Univ.), Robotics, Mechatronics, Haptics
Panda, Sushanta Kumar  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
Racherla, Vikranth  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
Ramanujam, S  Ph.D. (IIT Kharagpur),
Sarangi, Mihir  Ph.D. (IIT Kharagpur), Machine Design

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. Amttech CdTi Detector and Preamplifier, Digital Pulse Processor
9. Anton Paar Rheometer
10. Micro-Epsilon Laser Displacement Sensor
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. YOKOBAYWA 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)


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.)
6. Rashmi Ranjan Das : Adhesion failure and Delamination of Bonded Tubular joints made with Laminated FRP Composites and Functionally Graded Materials(Ph.D.)
9. Lakshminar Baisal : Natural, Forced, and Phase-change Convective Transport in Microchannels(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 Nanofluiddic 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 Kant, life member - Indian Institute of Metals
7. Pratihar, Dilip Kumar, Member - Association for Machines and Mechanisms
8. Pratihar, 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

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
12. Pratihar, Dilip Kumar (2009) Member of Editorial Board - Technology and Investment
13. Pratihar, Dilip Kumar (2011) Member of Editorial Board - International Journal of Knowledge and Web Intelligence
14. Pratihar, Dilip Kumar (2011) Member of Editorial Board - Intelligent Information Management
15. Pratihar, Dilip Kumar (2011) Member of Editorial Board - Intelligent Control and Automation
17. Pratihar, Dilip Kumar (2008) Member of Editorial Board - International Journal of Advanced Intelligence Paradigms

Awards & Honours

1. Pratihar, Dilip Kumar (2001) Alexander von Humboldt Fellowship, Germany
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, Acousticsl Society of India, 2009

Fellowships


Sponsored Research Projects

1. 2D Laser Doppler Velocinetry 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)
<table>
<thead>
<tr>
<th>No.</th>
<th>Consultant/Project Details</th>
<th>Cost (Lakhs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Development of a Schlieren imaging system to study natural convection of heated vertical</td>
<td>Rs.4.90 Lakhs</td>
</tr>
<tr>
<td></td>
<td>plate (SRIC, IIT Kharagpur)</td>
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<tr>
<td>2</td>
<td>Optimal design of human muscle like electro active polymer actuators (DST, Rs.8.14 Lakhs)</td>
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<tr>
<td>3</td>
<td>Optimal design of tough wear resistant nanostructured coatings (SRIC, IIT Kharagpur, Rs.5.00 Lakhs)</td>
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<td>4</td>
<td>Pre-clinical analysis of failure mechanisms and design optimization of acetabular prosthesis (DBT, New Delhi, Rs.23.38 Lakhs)</td>
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<td>5</td>
<td>Rapid DNA Hybridization in Microfluidic Channels (DBT, Rs.0.00 Lakhs)</td>
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<tr>
<td>6</td>
<td>Setting up a research and development centre for Damodar Valley Corporation at Kolkata (DVC, Kolkata, Rs.10600.00 Lakhs)</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>STANDARDIZATION OF PROCESS PARAMETERS IN WITHERING, MACERATION, ROLLING, FERMENTATION AND DRYING OF TEA (Tea Board, GOI, Rs.366.96 Lakhs)</td>
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<td>8</td>
<td>Steel Technology Centre (Ministry of Steel &amp; DST, Rs.2025.00 Lakhs)</td>
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<td>9</td>
<td>Pedagogy (Mechanics of materials) (MHRD, Rs.0.00 Lakhs)</td>
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<tr>
<td>10</td>
<td>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)</td>
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<tr>
<td>11</td>
<td>Turbulent Flow Computation of Two-Dimensional Incompressible Viscous Flow through a Cascade (ARDB Aerodynamics Panel, Rs.12.61 Lakhs)</td>
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<td>12</td>
<td>Vibration induced transport of particles (DST, Rs.26.60 Lakhs)</td>
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<td>13</td>
<td>Transport Phenomena across Biological Cell Membranes within Microfluidic Lab-on-a-Chip Systems (British Council, Rs.0.00 Lakhs)</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Heat Transfer and Fluid Flow Analysis for Cast Soap Manufacturing Process (ITC, Rs.0.00 Lakhs)</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Acoustical Design of Kolkata Kala Kendra (Government of West Bengal, Rs.6.00 Lakhs)</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Characterization of Surface Roughness for Pressure-Driven and/or Electro-osmotic Liquid Flow in Microchannel (DEPHI, Rs.0.00 Lakhs)</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Demonstration of and advice on finite element analyses of elastic-plastic structures (Usha Martin Limited, Kolkata, Rs.2.00 Lakhs)</td>
<td></td>
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<tr>
<td>18</td>
<td>Developing suitable pedagogical methods for various classes, Intellectual calibers and research in e-learning (Pedagogy) (MHRD, Rs.0.00 Lakhs)</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Development of a fundamental model for characterizing solidification transport in the mushy region (General Motors, Rs.0.00 Lakhs)</td>
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<tr>
<td>20</td>
<td>Development of a Multiphase Flowmeter (General Electric, India, Rs.3.00 Lakhs)</td>
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<tr>
<td>21</td>
<td>Development of Numerical Models for Emulsion and Nanofluid Heat Transfer (TATA Steel, Rs.0.00 Lakhs)</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Development of System for monitoring of slow speed running equipment (SAIL, RDCIS, Ranchi - Completed, Rs.8.50 Lakhs)</td>
<td></td>
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<tr>
<td>23</td>
<td>Experimental sample preparation by Wire Cut EDM (Various institutes, Rs.0.75 Lakhs)</td>
<td></td>
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<tr>
<td>24</td>
<td>Flow equalization in PA cold duct. (Jindal Steel and power Ltd, Rs.2.00 Lakhs)</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Heat Transfer and Fluid Flow Analysis for Cast Soap Manufacturing Process (ITC, Rs.0.00 Lakhs)</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Modelling and Simulation of Hydro-pneumatic Shock Isolation System, through Bond Graph on SOMBOLS Shakti (DRDO, R&amp;D(E) Engineers, Through High Tech Consultance, STEP iit Kharagpur, Rs.15.00 Lakhs)</td>
<td></td>
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<tr>
<td>27</td>
<td>Virtual Laboratory on Mechanical Systems and Signal Processing (MHRD, Rs.50.00 Lakhs)</td>
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<tr>
<td>28</td>
<td>Virtual Laboratory on multiphase flow (MHRD, Rs.0.00 Lakhs)</td>
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<tr>
<td>29</td>
<td>Virtual Labs (Mechanisms) (MHRD, Rs.17.00 Lakhs)</td>
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<tr>
<td>30</td>
<td>VLS-4 (MHRD, Rs.58.00 Lakhs)</td>
<td></td>
</tr>
</tbody>
</table>

**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 (DEPHI, 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 Consultance, STEP iit Kharagpur, Rs.15.00 Lakhs)**
13. **Virtual Laboratory on Mechanical Systems and Signal Processing (MHRD, Rs.50.00 Lakhs)**
14. **Virtual Laboratory on multiphase flow (MHRD, Rs.0.00 Lakhs)**
15. **Virtual Labs (Mechanisms) (MHRD, Rs.17.00 Lakhs)**
16. **VLS-4 (MHRD, Rs.58.00 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
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 (Lulea University of Technology, Lulea, Sweden, ) 71 days
8. Chakraborty, Suman - Collaborative Project (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
12. Bhattacharyya, Souvik - Invited Panelist and Keynote Address in International Symposium, Gave a talk at Vrije University (Brussels, ) September 27-30, 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 Bhatnacharya, 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

Short-Term Courses, Training Programmes and Workshops organised
<table>
<thead>
<tr>
<th>Papers Published in Journals</th>
</tr>
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<tbody>
<tr>
<td><strong>1.</strong> Knowledge-based Systems in Engineering/Soft Computing (5 days)</td>
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<tr>
<td><strong>2.</strong> Second Short term Course on Thermal Power Plant for TATA Power Engineers (13 to 23 December 2010)</td>
</tr>
</tbody>
</table>

| **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) |
| **14.** An electromechanical model for characterizing sensing and actuating performance of unimorphs based on plain dielectric polymers **By** Racherla V | *Sensors and Actuators: A Physical* Accepted (2011) |
| **15.** An experimental investigation on the quenching of a hot vertical heater by water injection at high flow rate **By** S.K. Sahu, P.K. Das, Souvik Bhattacharyya | *Nuclear Engineering and Design* 240(6), pp.1559-1668 (2010) |
| **17.** Analysis of phase transformation in plasma sprayed alumina coatings using Rietveld refinement **By** Kazi Sabiruddin, J Joardar and P P Bandypadhyay | *Surface and Coating Technology* V 204, 3248-3253. (2010) |
| **20.** E~AEAcousticWave Induced Analyte Separation in Narrow Fluidic Confinements in Presence of Interfacial Interactions** | Langmuir, vol. 26, pp. 15035A15043, 2010 By B. Bhat and S. Chakraborty (0) |
| **23.** E~AEAnalyzing the Fluid Flow in Continuous Casting through Evolutionary Neural Nets and Multi-Objective Genetic Algorithms** | Steel Research International, vol. 81, pp. 197-203, 2010 By D. Govindan, S. Chakraborty, N. Chakrabarti (0) |
| **24.** E~AEAugmented surface adsorption characteristics by employing patterned microfluidic substrates in conjunction with transverse electric fields** | *Microfluidics and Nanofluidics*, vol. 8, pp.313-327, 2010 By S. Das and S. Chakraborty (0) |
| **25.** E~AEComputational Analysis of the effects of process parameters on molten pool transport in copper-nickel dissimilar laser weld pool** | *Numerical Heat Transfer A*, vol. 58 pp 272-294, 2010 By A. K. Skouras, N. Chakraborty, S. Chakraborty (0) |
| **26.** E~AEControlled Microbubble Generation on a Compact Disk** | *Applied Physics Letters*, vol. 97, pp. 234103(1-3), 2010 By D. Chakraborty and S. Chakraborty (0) |
| **27.** E~AEEffect of Conductivity Variations within the Electric Double Layer on Streaming Potential Estimation in Narrow Fluidic Confinements** | Langmuir, vol. 26, pp. 11589A11596, 2010 By S. Das and S. Chakraborty (0) |
| **28.** E~AEEffect of Confinement on the Collapsing Mechanism of a Flexible Polymer Chain** | *Journal of Chemical Physics*, vol. 133, pp. 174904(1-15), 2010 By S. Das and S. Chakraborty (0) |
| **30.** E~AEFrictional and heat transfer characteristics of single-phase microchannel liquid flows** | *Heat Transfer Engineering* (accepted for publication) By R. Dey, T. Das, S. Chakraborty (0) |


112. Simulation of core annular downflow through CFD- a comprehensive study  By S.Ghosh, G. Das and P.K.Das Chemical Engineering and Processing 49(11)pp 1222-1228 (2010)

113. Smart damping of laminated composite plates using vertically reinforced 1-3 piezoelectric composites  By S. Sarangi and M. C. Ray Acta Mechanica (2011)


115. Some investigations on the enhancement of boiling heat transfer from planer surface embedded with continuous open tunnels  By V.V. Satyamurty, V.V. and Ramjee Repaka Heat Transfer Engineering Journal, DOI: 10.1080/01457632.2010.506170, 33, 011202 (2011)


# Department of Geology & Geophysics

**Head**
Prof. Biswajit Mishra

## Professors

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

<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Bhattacharya, Amit Kumar</td>
<td>Ph.D. (IIT Kharagpur)</td>
<td></td>
</tr>
<tr>
<td>Mamtani, Manish A</td>
<td>Ph.D. (MSU, Baroda)</td>
<td>Structural Geology, Microtectonics</td>
</tr>
<tr>
<td>Mohanty, William Kumar</td>
<td>Ph.D. (Delhi Univ.)</td>
<td>Seismology, Seismic Hazard Assessment, Gravity &amp; Magnetic Methods of Prospecting</td>
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## Assistant Professors

<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Basu, Arindam</td>
<td>Ph.D. (The Univ. of Hong Kong)</td>
<td>Rock Mechanics, Engineering Geology</td>
</tr>
<tr>
<td>Dalai, Tarun K</td>
<td>Ph.D. (PRL Ahmedabad)</td>
<td>Surficial and aquatic geochemistry, Radioenic isotopes in natural envt., Trace element geochemistry</td>
</tr>
<tr>
<td>Mitra, Supriyo</td>
<td>Ph.D. (Cambridge Univ)</td>
<td>Continental Tectonics, Seismic Tomography, Earthquake Seismology, Lithospheric Structure</td>
</tr>
<tr>
<td>Mukherjee, Abhijit</td>
<td>Ph.D. (Univ. of Kentucky, USA)</td>
<td>Surface water-sea water-groundwater interaction, Mine-site hydrology, Physical Chemical and Isotope Hydrogeology, Contaminant Fate and Transport, Environmental Geochemistry, Effect of Climate Change</td>
</tr>
<tr>
<td>Pruseth, Kamal Lochan</td>
<td>Ph.D. (IIT Kharagpur)</td>
<td>Sulfide Phase Equilibria, Experimental Petrology, Ore Geology</td>
</tr>
<tr>
<td>Ray, Sanghamitra</td>
<td>Ph.D. (Calcutta Univ)</td>
<td>Vertebrate paleobiology, Gondwana stratigraphy and sedimentation</td>
</tr>
<tr>
<td>Sanyal, Prasanta</td>
<td></td>
<td>Stable Isotope Geochemistry, Sedimentology</td>
</tr>
<tr>
<td>Upadhyay, Dewashish</td>
<td>Ph.D. (Univ. of Bonn, Germany)</td>
<td>Geochemistry, Igneous Petrology, Cosmochemistry</td>
</tr>
</tbody>
</table>

## Lecturer

<table>
<thead>
<tr>
<th>Name</th>
<th>Qualification</th>
<th>Specialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Datta, Indira</td>
<td>Ph.D. (IIT Kharagpur)</td>
<td>Digital Remote SensingData Analysis in Geoscience</td>
</tr>
</tbody>
</table>
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 â€“ 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 Bareli, 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 Jongnagiri, eastern Dharwar Craton(Ph.D.)
3. Baikeh Mukherjee : Holocene record of Southwest Monsoon Variability from the Northwest Arabian Sea (Let 117')(Ph.D.)
4. Sabyasachi Majt : Coastal change study along Midnapur Balasore coast of eastern India through integrated Remote Sensing and Geographic Information System based approach(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,Aligargh
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
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, Sanjiv Kumar, *Senior Life Fellow* - The Geological, Mining and Metallurgical Society of India (GMMSI)
15. Nath, Sanjiv Kumar, *Regular Member* - Member Registration No. 8810 : The Mining Geological & Metallurgical Institute of India (MGMi)
16. Nath, Sanjiv Kumar, *Regular Member* - Member (No. 10283967): American Geophysics Union (AGU)
17. Nath, Sanjiv Kumar, *Regular Member* - Member (No. 16472): The Seismological Society of America (SSA).
18. Nath, Sanjiv Kumar, *Regular Member* - Member (No. 10283967): American Geophysics Union (AGU)

**Member - Editorial Board**

2. Gupta, Saibal (0) *Member, Editorial Board* - Himalayan Geology
3. Gupta, Saibal (0) *Member, Editorial Board* - Indian Journal of Geology
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

**Awards & Honours**

1. Basu, Arindam (2006) *Postdoctoral Fellowship by FAPESP @ Universidade de SÃ£o Paulo, Brazil*
Sponsored Research Projects

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, Mombai, Rs.20.00 Lakhs)
9. Groundwater-Sea water interaction at a coastal aquifer adjoining the Bay of Bengal: implications on flux and solute exchange (ISIRD, SRIC IIT Kharagpur, Rs.5.00 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 â€” an evaluation from structure, metamorphism, fluid inclusions and earthqu (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 â€” 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 Inginjharan 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 Kakarapara Atomic Power Plant (KAPS- 1,2) (Nuclear Power Corporation of India Limited, Government of India, Rs.10.75 Lakhs)
4. The Indian Continental Shelf as a potential source of Phosphate (Ministry of Earth Sciences, Rs.93.00 Lakhs)
5. The relationship between anisotropy of magnetic susceptibility, strength anisotropy and microstructure in rocks devoid of mesoscopic foliations (DST, New Delhi, Rs.19.55 Lakhs)
6. The Thermal Evolution of Peninsula India: Past behaviors and Future Potential. (Australia â€” India Strategic Research Fund (AISRF) and Department of Science and Technology (DST), Rs.13.59 Lakhs)
7. The exhumation factor in the genesis of inverted metamorphic sequences â€” an evaluation from structure, metamorphism, fluid inclusions and earthqu (DST, Rs.14.22 Lakhs)
8. The relationship between anisotropy of magnetic susceptibility, strength anisotropy and microstructure in rocks devoid of mesoscopic foliations (DST, New Delhi, Rs.19.55 Lakhs)
9. The Thermal Evolution of Peninsula India: Past behaviors and Future Potential. (Australia â€” India Strategic Research Fund (AISRF) and Department of Science and Technology (DST), Rs.13.59 Lakhs)
10. The exhumation factor in the genesis of inverted metamorphic sequences â€” an evaluation from structure, metamorphism, fluid inclusions and earthqu (DST, Rs.14.22 Lakhs)

Visits Abroad by Faculty Members

1. Mamta, 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
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)
8. AMS, AARM and SEM-EBSD analysis and the deformation mechanism of magnetite in polymetallic rocks by Mamtani, Manish A (University of Cenalia (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 #6enterdisciplinary Studies and Promotion of Research on Natural Disaster organized by MICROSSIS - 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

Papers Presented in Conferences


3. A probabilistic approach towards Earthquake Hazard Assessment using two first order Markov models in Noreastern India, By Alok Kumar Mohapatra , William K. Mohanty and Rahul Sarkar, AOGS, Hyderabad, India, (2011)


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)


7. @Exposing# the granulites of the Eastern Ghats Belt, India - Implications for exhumation of UHT terranes, By Gupta, S., Asia Oceania Geosciences Society (AOGS 2010), Hyderabad, (2010)


9. Chromite investigation in Tangarpahar, Orissa : an example of integrated geological and geophysical study for mineral exploration, By Saibal Gupta, @"Recent Developments in Geology, Mineral and Groundwater Resources of India"#, Aurangabad, (2011)


17. Microstructures, fracstals and the evaluation of deformation conditions â€“ possibilities, problems and challenges, By Mamtani, M.A., Rock Deformation & Structures (RDS-I), Jadavpur University, Kolkata, (2010)


31. Schlumberger Resistivity Survey over the Subsurface Alluvium Aquifer of Barasat (West Bengal), Implication to Arsenic Contamination, By Arkoprovo Biswas, S. P. Sharma, Saikat Sengupta, Anindy Sarka, International Seminar on Recent Advances in Geoscience, ISM Dhanbad, (2011)

32. The behavior of the U Pb system and trace elements in zircon during contact metamorphism: a case study from the Kadavur anorthosite complex, SE India, By Kooijman, E., Upadhyay, D., Berndt, J., Mezger, K., Srikanthappa, C., Deutsche Mineralogisch Gesellschaft Meeting, (2008)


Department of Mining Engineering

Head
Prof. J. Bhattacharyya Up to 30.09.2010
Prof. Samir Kumar Das From 01.10.2010

Professors
Bhattacharya, Jayanta Ph.D. (IIT Kharagpur), Environmental Engineering and Management Social Impacts Mine Planning and Reliability Engineering
Bhattacherjee, Ashis Ph.D. (Penn-State), Occupational Health and Safety and Operations Research applications in mining
Das, Samir Kumar Ph.D. (ISM Dhanbad), Strata Control and Rock Mechanics, Mines Safety Engineering, Mine Environment
Mukhopadhyay, Subir Kumar Ph.D. (IIT Kharagpur), 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 Ph.D. (London Univ), RS and GIS Application in Environmental Management in Surface Mining. Disaster Management
Rao, Karanam Uma Maheshwar Ph.D. (IIT Kharagpur), Rock Mechanics, Mine Development, Underground Metal Mining
Sastry, Bhamidipati Suryan Ph.D. (Utah), Underground Environment and Ventilation

Associate Professors
Deb, Debasis Ph.D. (Alabama Univ, USA), Rock Mechanics, Numerical modelling, Mine Design, Ground Control
Majumder, Arun Kumar Ph.D. (Univ. of Queensland), Mineral and Coal Processing Solid-Fluid Interactions Fine Particle Processing
Pal, Samir Kumar Ph.D. (IIT Kharagpur), Geomechanics - Roof fall prediction in underground coal mines, Mine Void Filling â€“ Blind backfilling of abandoned mines using sand and other waste material, Wear of Elastomers in Mining â€“ Abrasion of elastomers when abraded against different rocks.

Assistant Professors
Dey, Kaushik Ph.D. (ISM, Dhanbad), Rock excavation blasting mechanised rock cutting surface mining
Patra, Aditya Kumar Ph.D. (Imperial College, London), Air pollution measurement and modelling
Prusty, Basanta Kumar Ph.D. (Southern Illinois), Coalbed methane and shale gas, Geological Carbon Sequestration, Clean Coal Technology
Samanta, Biswajit Ph.D. (IIT Kharagpur), Mine planning, Geostatistics, Mine environment and ventilation
Verma, Abhiram Kumar Ph.D. (IIT Kharagpur), 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 wastewater; 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 coal mines; 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, co-kriging, 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 & ISAR 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 Angeles 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 a€¨ 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)
4. A K Jha : Evaluation of the Effects of Surface Blasting on Adjacency 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 MGI
9. Deb, Debasis, Life Member - Indian Society of Theoretical and Applied Mechanics (ISTAM)
10. Deb, Debasis, Life-time - International Society of Rock Mechanics (ISRM)
11. Deb, Debasis, Life-time - Mining, Geology and Metallurgical Society of India (MGI)
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 - MGI
31. Pathak, Khanindra, Life Member - Acoustic Society of India
32. Patra, Aditya Kumar, Life member - Mining, Geological and Metallurgical Institute of India (MGI)
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-112704 - Institution of Engineers - FIE
43. Samanta, Biswajit, Regular - MGI
44. Samanta, Biswajit, Regular - Institute of Engineer
45. Samanta, Biswajit, Regular - SME (Society of Mining Engineering, USA)
**Member - Editorial Board**

6. Rao, Karanam Uma Maheshwar (0) Member, Editorial Board - International Journal of Earth Sciences And Engineering
7. Samanta, Biswajit (2008) Associate Editor - Mining Engineering

**Awards & Honours**

1. Chakravarty, Debashish (2010) Award of Merit from IEI for one of the Technical Papers
5. Bhattacharya, Jayanta (2011) Honorary Advisor, Corporate and Social Performance, Tata Steel
7. Chakravarty, Debashish (2010) Institute Bronze Medal from MGM
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, Jr 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. â€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-Tyre 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, GOL, 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)
3. Aresting 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 IT-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. Environmental impact assessment for fly-ash mixed dumping in JOCCM#1 (JSPL, Rs.5.10 Lakhs)
10. Evaluation of sealed off areas at Moonidih Mine, India (Southern Illinois University Carbondale, U.S.A., Rs.9.85 Lakhs)
11. Feasibility studies of underground mining in weathered rock in Kaliapani Chromite Mines of Balasore Alloys Ltd (Blasore Chormite Mines, Rs.4.95 Lakhs)
12. Geo-Environmental Study for Fly-Ash Mixed Dumping in JPOCCM (JPL, Rs.5.20 Lakhs)
13. Geotechnical Instrumentation Monitoring and Data Analysis for Sub Level Open Stope at Bangur Chromite Mines (Underground) (GMD) (The Orissa Mining Corporation, A Govt. of Orissa Undertaking, Rs.3.02 Lakhs)
14. Heightening the tailings dam embankment at Sukinda Chromite Mines (Tata Steel, Rs.2.50 Lakhs)
15. 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)
16. Intent for Slope Stability Study of Overburden Dump at TRB Iron Ore Mines, Tansa, Jharkhand (TRBI) (Jindal Steel and Power Ltd., Sundargarh, Orissa, Rs.3.65 Lakhs)
17. Monitoring of Strata Movement of Pit Slope (Balasore Alloys Ltd, Rs.1.80 Lakhs)
18. Numerical Modelling of Tailings Pond Dam for TATA SCM (SCM, TATA, Rs.2.60 Lakhs)
19. Performance Measurement of Surface Miner and Cost Benefit Analysis (NALCO, Rs.3.90 Lakhs)
20. Rock Mechanics Study at Narwapahar Mines, UCIL, Phase - I (Uranium Corporation of India Ltd., Govt. of India Enterprise, Rs.3.25 Lakhs)
21. Rock Mechanics Study at Narwapahar Mines, UCIL, Phase - II (Uranium Corporation of India Ltd., Govt. of India Enterprise, Rs.2.96 Lakhs)
22. Rock Mechanics Study at Narwapahar UCIL Mines (Phase I-II) (Uranium Corporation of India Limited (UCIL) (GoI), Rs.6.00 Lakhs)
23. Rock Mechanics Study at Narwapahar UCIL Mines (Phase I-IV) (Uranium Corporation of India Limited (UCIL), Rs.12.00 Lakhs)
24. Rock Mechanics Study at Narwapahar Mines, UCIL, Phase - I (Uranium Corporation of India Ltd., Govt. of India Enterprise, Rs.2.85 Lakhs)
25. Slopes Design and Their Stability Analysis at Narwapahar Mines, UCIL (Uranium Corporation of India Ltd., Govt.of India Enterprise, Rs.3.15 Lakhs)
26. Study of Dump Slopes at Sukinda chromite mines, Sukinda. (TISCO -Tata Iron & Steel Co. Limited, Rs.12.00 Lakhs)
28. Study of ventilation system at Boula Chromite mine (FACOR, Rs.0.80 Lakhs)
29. Study Project for determining suitability of Surface Miners at NALCO Mines, Damanjodi, Orissa (NALCO, Rs.8.60 Lakhs)
30. 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. Bhattacharyya, 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 - May2009 (Chonnam National University , Gwanju 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 Bhattacharyya, Ashis (Udaipur)
7. Investigations on Rotary Rock Drilling by Rao, Karanam Uma Maheshwar (Channam National University, Gwanju, 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)
16. Development of Curriculum, its delivery and Students Assessment 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**


**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)
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)
9. Rock Mechanics for Practicing Engineers (4 days)

**Papers Published in Journals**


42. Uncertainty Based Mine Production Scheduling for Ore Grade Contro using Conditional Simulationl and Multi-objective Genetic Algorithm By Samanta B., Raj K V, Bhattacharjee A, and Chakravarty D Expert System (under review) (0)


Papers Presented in Conferences


Department of Mathematics

Head
Prof. A. R. Roy     Up to 30.09.2010
Prof. Parmeshwary Dayal Srivastava   From 01.10.2010

Professors

Bhattacharyya, Somnath   Ph.D. (IIS: Bangalore), Computational Fluid Dynamics, Micro-/nanoFluidics Modeling
Goswami, Adrijit   Ph.D. (Jadavpur Univ), Operations Research and Theoretical Computer Science
Gupta, Dharmendra Kumar   Ph.D. (IIT Kharagpur), Numerical Analysis and Computer Science
Gupta, Umesh Chandra   Ph.D. (IIT Delhi), Statistics, Stochastic Modelling, Queueing Theory
Jain, Vinay Kumar   Ph.D. (IIT Delhi), Zeros of polynomials and analytic functions & Extremal problems of polynomials
Kumar, Somesh   Ph.D. (IIT Kanpur), Statistical Decision Theory, Estimation Theory, Quantum Information and Computation, Statistical Data Analysis, Experimental Designs
Roy, Akhil Ranjan   Ph.D. (IIT Kharagpur), General Th. of Relativity, Theoretical Cosmology, Fuzzy Optimization, Dynamics of Nonlinear Systems
Srivastava, Parmeshwary Dayal   Ph.D. (IIT Kanpur), Functional Analysis & Cryptography

Associate Professors

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

Assistant Professors

Biswas, Debapriya   Ph.D. (Leeds Univ), Functional Analysis, Lie Groups Lie Algebras and their Representation theory, Complex Analysis
Dutta, Ratna   Ph.D. (ISI, Kolkata), 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   Ph.D. (Calcutta Univ.), Mathematical & Theoretical Physics, Quantum Mechanics, Dynamical System, Fluid, Non-linear Evolution Equation in Real & Complex Domain
Gayen, Rupanwita   Ph.D. (Univ of Calcutta), Linear water waves, Integral equations
Ghoshal, Koeli   Ph.D. (Jadavpur Univ.), Mathematical Modelling of turbulence and sediment transport in open channel flow
Kumar, Jitendra   Ph.D. (Univ. of Magdeburg, Germany), 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


**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 Fixed Point Theory by Prof. P. Veermani (IIT Madras)
5. A Panaramic View of Gupta-Vizing Theorem & Vizingâ€™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 e-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
Member - Editorial Board

1. Biswal, Mahendra Prasad (2008) Member of Editorial Board - Mathematical Reviews

Awards & Honours

2. Ganguly, Asish (1993) National Scholar (BSc)
5. Ganguly, Asish (1997) Research Fellow CSIR

Fellowships


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(semantic), 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 assess 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 (GIMT 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


Short-Term Courses, Training Programmes and Workshops organised

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

Papers Published in Journals

<table>
<thead>
<tr>
<th>Paper Number</th>
<th>Title</th>
<th>Journal/Conference</th>
</tr>
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<tbody>
<tr>
<td>56</td>
<td>Spectrum &amp; fine spectrum of generalized 2nd order difference operator $\Delta_2uv$ on sequence space $c_0$</td>
<td>By S.K.Parhi and D.K.Gupta International Journal of Computational Methods Vol.9, no.1, pp 57- (2011)</td>
</tr>
<tr>
<td>61</td>
<td>Symmetric duality with $\nu(p, r)$-rhoteta(eta,theta)-$\nu$-invexity</td>
<td>By P. Mandal and C. Nahak Applied Mathematics and Computation to appear (2011)</td>
</tr>
<tr>
<td>62</td>
<td>The Actions of Subgroups of SL(2, R) for the Clifford Algebra in EPH cases</td>
<td>By Debapriya Biswas Communications in Mathematical Analysis (CMA) 11, No. 1, pp.41-50 (2011)</td>
</tr>
<tr>
<td>63</td>
<td>The continuous coagulation equation with multiple fragmentations</td>
<td>By Giri, A.K. Kumar, J. Wamecke, G. Journal of Mathematical Analysis and Applications 374 (2011)</td>
</tr>
<tr>
<td>64</td>
<td>The Effect of Body Acceleration on Two Dimensional Flow of Casson Fluid through an Artery with Asymmetric Stenosis</td>
<td>By Sachin Shaw, P. V. S. N Murthy and S. C. Pradhan The Open Transport Phenomenon Journal 2, 55-68 (2010)</td>
</tr>
<tr>
<td>66</td>
<td>The Introduction of Projective Coordinates and Compactification for the three EPH Cases.</td>
<td>By Debapriya Biswas (communicated) (2011)</td>
</tr>
</tbody>
</table>

**Papers Presented in Conferences**

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)


15. Stochastic Manufacturing Inventory System with process deterioration and machine breakdown, By A. Goswami, *Recent applications in Mathematics*, Burdwan University, Burdwan, (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  
*Ph.D. (IISc Bangalore), Astrophysics, Cosmology*

Chandra, Naresh  
*Ph.D. (Queens Univ, UK), Atomic, Molecular, and Optical Physics*

Chandrasekar, A  
*Ph.D. (IISc Bangalore), Atmospheric Sciences*

Choudhary, Ram Naresh Prasad  
*Ph.D. (Edinburgh, UK), Ferroelectricity, Crystal structure, Liquid Crystals, Condensed Matter Physics(experimental), Nanomaterials and nanotechnology*

Ghatak, Sobhendu Kumar  
*Ph.D. (Calcutta Univ), Condensed Matter Physics, BioPhysics,*

Kar, Sayan  
*Ph.D. (IIT Kanpur), Gravitation and Geometry, High Energy Physics, Quantum mechanics*

Kumar, Krishna  
*Ph.D. (IIT Kanpur), Hydrodynamic flows, Pattern-forming instabilities*

Mathur, Balbir Kumar  
*Ph.D. (IIT Kharagpur), Web Based Service, Microprocessor, ERP, Thin Films*

Raina, Prabhu Krishna  
*Ph.D. (IIT Kanpur), Nuclear and Particle Physics*

Ray, Samit Kumar  
*Ph.D. (IIT Kharagpur), Semiconductor nanostructures, Condensed Matter Physics, Thin Films, Photovoltaics*

Roy, Anushree  
*Ph.D. (IISc Bangalore), Raman spectroscopy*

Sharma, Shivcharan Lal  
*Ph.D. (IIT Kanpur), 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  
*Ph.D. (IIT Bombay), Electronic properties of solids, Magnetic, electrical transport properties, Nanaomaterials, Non-crystalline solids*

Taraphder, Arghya  
*Ph.D. (IISc Bangalore), Condensed matter physics*

**Associate Professors**

Datta, Prasanta Kumar  
*Ph.D. (Burdwan Univ), Ultrafast Lasers and Nonlinear Optics, Photonics*

Dhar, Achintya  
*Ph.D. (Jadavpur Univ), Organic Semiconductors, Semiconductor Nanostructures, Heterostructure Devices*

Nath, Tapan Kumar  
*Ph.D. (IIT Kanpur), Magnetic thin films and heterojunctions, Spintronics, Nanostructured Magnetic Oxides, Magnetic metal Nanoparticles, Multiferroics, Magnetic Spinnel ferrites for high frequency use, Metallic glasses (bulk and nanocrystalline), Superconductivity*

Shukla, Pragya  
*Ph.D. (JNU Delhi), Statistical Studies of Complex Systems, Random Matrices and Quantum Chaos, Theoretical Physics*

**Assistant Professors**

Chandra, Amreesh  
*Ph.D. (I.T., B.H.U.), Multifunctional Ceramics, Energy Systems, Polymer Composites, Experimental Condensed Matter Physics, Microbial Fuel Cells, Supercapacitors*

Das, Amal Kumar  
*Ph.D. (IOP Bhubaneswar), Experimental Condensed Matter Physics, Magnetism including spintronics, Magnetic semiconducting nanoparticles and thin films, Mechanical and magnetic stress measurement of thin films*

Das, Baidya Nath  
*Ph.D. (IIT Kharagpur), solid state physics*

Kastigir, Sugata Pratik  
*Ph.D. (IOP Bhubaneswar), Mathematical Physics/High Energy Physics*

Majumder, Sonjoy  
*Ph.D. (IIT Bangalore), Computational Many-body physics, Atomic & Molecular Physics, Theoretical modeling of bulk and nano-materials, Astronomy and Astrophysics*
Panigrahi, Kamal Lochan  
**Ph.D.** (Institute of Physics, Bhubaneswar), String Theory, High Energy Physics

Roy Chaudhuri, Partha  
**Ph.D.** (IIT Delhi), Fiber & Integrated Optics and Optoelectronics, Experimental Bio-Photonics & Nano-Photonics

Singh, Ajay Kumar  
**Ph.D.** (Calcutta Univ), Experimental Nuclear Physics, Double Beta decay studies

Srivastava, Sanjeev Kumar  
**Ph.D.** (JNU, New Delhi), Materials Engineering using Ion Beams, Thin Films and Multilayers, Nuclear Condensed Matter Physics, Quantum Criticality

Thakur, Awalendra Kumar  
**Ph.D.** (NEHU Shillong), Composite Nanostructures, Solid State Ionics, Dielectrics & Ferroelectrics, Renewable Energy Sources, E. M. I. Shielding

**Scientific Officer**

Chakraborty, Syamal  
**Ph.D.** (IIT Kharagpur), Glass and ceramics, Sol-gel science, Preparatory course physics, Writing popular science

**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, Microporcessors 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 Pölvka (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.)
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 radiop-interferrometric observations of neutral hydrogen(Ph.D.)
10. Surajit Mondal : Synthesis and characterization of zinc oxide nanostructures(Ph.D.)
11. Amaresh Chandra Mishra : Microstructure and magnetooptical 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, Armeesh, Life Member - Indian Solid State Ionics Society
3. Chandra, Armeesh, 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 Internation 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

2. Choudhary, Ram Naresh Prasad (2010) Editorial Board Member - The Open Materials Science
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
8. Choudhary, Ram Naresh Prasad (0) Editorial Board Member - Bulletin of Pure and Applied Sciences D

Awards & Honours

1. Thakur, Awalendra Kumar (2010) Best Paper Award at Recent Trends in Materials and Devices (RTMD-2010), AUUP, Noida
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

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/schemi (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 Freqency 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 124Sn (DST India, Rs.43.00 Lakhs)
15. Generation of tunable mid-infrared coherent radiation in the range of 12.7-17um 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, SRC, 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 Kharagpur, 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 Microstructure 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 $\mu$-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/SiGe Structures Doped with Shallow Acceptors (Department of Science & Technology, Govt. of India, Rs.9.63 Lakhs)
35. Theoretical studies on transition metal dichalcogenides (TMD) (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 departments and 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, Italy) 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, 22-25 January, 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-July 65 days
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 Applications 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. Excitations with One Dimensional Semiconductor Nanostructures by Ray, Samit Kumar (Jadavpur University, Kolkata)
11. III-VI Semiconductor Hybrid Nanocomposites for Photovoltaic Applications by Ray, Samit Kumar (EU-India workshop/ EICOON School @ Nanomaterials for Sustainable Energy, Delhi)
13. MBE Growth of SiGe heterostructures by Ray, Samit Kumar (Kolkata University)
15. Magnetic Nanoparticles by Nath, Tapan Kumar (International Conference on Nanomaterials and Nanotechnology (NANO-2010), KSR College, Taminalu)
16. Ion beam synthesis of buried Au and Ag nanoparticle layers in SiOx. by Srivastava, Sanjeev Kumar (ISCA Congress, SRM University, Chennai)
17. Boundary value problems for the Helmholtz equation by Khaustigir, Sugata Pratik (IIT Kanpur, India)
18. Quantum Phase transition in Kicked Rotor by Datta, Prasanta Kumar (Dept. of Physics, IIT Delhi)
19. Development of optical parametric Oscillator tunable in the range 0.95-1.4µm by Datta, Prasanta Kumar (LASTEC, DRDO, Delhi)
20. New novel geometrical flows using higher order and higher derivative terms by Kar, Sayan (26th IAGRG Meeting, HRI, Allahabad)
21. Ferromagnetic material dichalcogenides by Taraphder, Arghya (KRI, HRI Allahabad)
22. Quantum Conduction in tight-binding models with flat bands by Kaur, Ketaki (North Bengal University)
23. Recent trends in semiconductor nanostructures by Ray, Samit Kumar (Vidyasagar University)
24. Rotating Convection at low Prandtl-number convection by Kumar, Krishna (Indian Association of Cultivation of Sciences, Jadavpur)
25. Rotating Convection in zero-Prandtl-number fluids by Kumar, Krishna (Viswabharati, Shantiniketan, West Bengal)
26. Strongly correlated systems by Taraphder, Arghya (IIT Roorkee)
27. Correlated and frustrated systems by Taraphder, Arghya (MPI Dresden)

Books Published


Papers Published in Journals

3. A.C. Conductivity and Relaxation Behavior in Polymer Nanocomposite By A. L. Sharma and Awalendra K. Thakur Ions 17(2), 135-143 (2011)
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. Maiti 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)
84. Structural and optical properties of germanium nanostructures on Si(100) and embedded in high-k oxides By Samit K Ray, Samarendra Das, Raj K Singh, Santanu Mann, Achintya Dhar, &a Nanoscale Research Letters 6, 224 (2011)
89. Suppression of charge ordering and emergence of weak ferromagnetism in nanoparticles of La0.5Ca0.5MnO3 By S. K. Giri and T. K. Nath, Journal of Nanoscale and Nanotechnology 11, 1-9 (2011)

Papers Presented in Conferences

3. Appearance of ferromagnetism in nanoparticles of antiferromagnetic Sm0.5Ca0.5MnO3 and Nd0.45Sr0.6MnO3, 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)
5. Data analysis for double beta decay processes in natural Tin, By Soumik Das et al., DAE symposium on Nuclear Physics 55, 466 (2010), BITS Pilani, (0)
9. Development of Optical Parametric Oscillator tunable in the range of 900-1500nm for spectroscopic application, By S P Singh, S Mondal, K Hussain and P K Datta, National Laser Symposium 19, RCCAT (DAE), Indore, (0)
12. Dielectric, Electrical and Magnetic Properties of PbZr0.53Ti0.47O3 - NiO.65Zn0.35Fe2O4 Multiferroic Composite, By Dhiren K. Pradhan, T. K. Nath and R. N. P. Chowdhury, XVI - National Seminar on Ferroelectrics & Dielectrics (NSFD-XVI - 2010), Manipal University, Manipal,, (2010)


54. Semiconductor Optical Amplifier based all-optical logic operation at 80 Gb/s, By K. Hussain1, S. P. Singh1, R. Pradhan2, and P.K. Datta1, National Laser Symposium 19, RRCAT (DAE), Indore, (2010)

55. Shell Model calculation for Te isotopes, By Somnath Nag, Purnima Singh and A.K. Singh, DAE symposium on Nuclear Physics 55, 60 (2010), BITS Pilani, (0)


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, In situ Nanocomposites for supercapacitor Application, Polymer Blends and its compatibilization, In situ 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, Nanocermics and hybrid composites, Magnetics and magnetocaloric materials, Ferroics and applications, Porous materials and applications, Metallic foams for biological applications, Nanofluids and nanogelues, 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 specialty 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, nanofluids, 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**


**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. Vijayamohanam K. Pillai (NCL, Pune)
4. The fate of charge seperation & 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.)
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
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
7. Pradhan, Debabrata (0) Associate Editor - Materials Express
8. Ram, Shanker (2011) Editorial Board Member - ISRN Nanotechnology

**Fellowships**

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 (NPMAS, 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 MEM 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 (DNPI, 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 Fabrionics (Indo-US Science and Technology Forum, Rs.0.00 Lakhs)
20. MOCVD growth and characterization of InGaPGaAs & 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 metalorganic 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-currentisance properties in (La1-xEux)0.67Ca0.33MnO3 in a hybrid nanocomposite structure (UGC-DAE Consortium for Scientific Research (Indore), Rs.1.00 Lakhs)
25. Preparation of poly(mide 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 AFe12O19 (A = Ba, Sr) nanoparticles reinforced nanocomposites for space applications (CSIR, New Delhi, Rs.14.56 Lakhs)
29. Synthesis of mixed metal oxide, and porous oxide nanostructured materials by using hydrothermal technique (ISIRD-Kharagpur, Rs.5.00 Lakhs)
30. Use of Nanocomposites for Efficient Welding of Thermoplastics (DST, New Delhi, Rs.0.00 Lakhs)
31. 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 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 Humboldt 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 materials and 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)
6. ZnO Nanostructured Materials for Sunlight-Driven Hydrogen Generation using Water Photoelectrolysis by Pradhan, Debabrata (Northern 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 (Philips-UniversitA¶t Marburg, Germany)
10. Synthesis and Characterization of New Semifluorinated Aromatic Poly(ether amide)s for Pervaporation by Banerjee, Susanta (Leibniz-Institut fA¼r Polymerforschung Dresden, Germany)
11. Semi-fluorinated poly(arylene ether)s and poly(ether mide)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 ma by Ram, Shanker (Central Glass & Ceramic Research Institute, Kolkata)
16. Synthesis and characterization of organo-inorganic hybrid polymeric nanocomposites 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 effect of polyphosphazene and SiO coated MWCNTs for 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)
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)
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 Nano Electric Co., Qingdao, China)

**Papers Published in Journals**

5. Antibacterial effect of lanthanum calcium manganese (La0.67Ca0.33MnO3) 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)
7. Biodegradation of Polyethylene Glycol-Based Polyether Urethanes By Suparna Sarkar Piyali Basak Basudam Adhikari Polymer-Plastics Technology and Engineering 50, 804â€”88 (2011)


32. Highly Reversible and Repeatable PTCR Characteristics of PMMA/Ag-coated Glass Bead Composites Based on CTE Mismatch Phenomena By Pratima Kar, B. B. Khatau Polymer Engineering and Science In Press (2011)

33. Hydrogen sensing characteristics of wet chemical synthesized tailored Mg0.5Zn0.5Fe2O4 nanostructures By S. Mukherjee, and S.B. Majumder Nanotechnology 21 255504-255509 (2010)


47. 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)

48. Preparation and Comparison of Hydrophobic Cotton Fabric Obtained by Direct Fluorination and Admicellar Polymerization of Fluoromonomers By J. Maly, P. Kothary, E. A. Gell@Rear and C. Jacob Industrial & Engineering Chemistry Research 49(13), 6075 (2010)


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

Nanootechnology

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-bindane containing fluorinated poly(ether imide): Synthesis, characterization and gas separation properties

By S. Ram, S. Ghosh and C. Jacob

Polymer-Plastics Technology and Engineering

49: 1107-11094 (2010)

59. Synthesis and electrochemical characterization of LiNi0.8Co0.15Mg0.05O2 (1-x) Li(Li1/3Mn2/3)O2 (0.0<x<1.0) cathodes for Li rechargeable batteries

By A. Pramanik, C. Ghanty and S. B. Majumder

Solid State Science

12 1797-1802 (2010)

60. 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)

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


63. Study of Fe-rich FePt nanoparticles synthesized by a single step reverse micelle route

By S. K. Kamal, P. K. Sahoo, L. Durai, P. Ghosal, S. Ram, and M. Raju

J. Alloys Compd.

501, 297-300 (2010)

64. Synthesis and characterization of fluorene based 1-4-conjugated ter-copolymers

By S. Chatterjee, S. Banerjee, P. Banerji, and C. Jacob

Synth. Metal


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. Salipathi, A. Ghosh, S. Banerjee, H. Komber, B. Voit


66. Synthesis and electrochemical characterization of LiNi0.8Co0.15Mg0.05O2 (1-x) Li(Li1/3Mn2/3)O2 (0.0<x<1.0) 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 Fe3BO6 of single crystallites from a borate glass

By S. Ram, K. Kumari, and R. K. Kothala

Transactions Ind. Ceram. Soc.

69, 1-6 (2010)

69. Synthesis and characterization and gas transport properties of new poly (imide siloxane) copolymers from 4,4-(4,4-isopropylidenediphenoxy)bis(phthalic anhydride)

By A. Ghosh, S. K. Sen, B. Dasgupta, S. Banerjee, B. Voit

J. Membr. Sci.


70. Synthesis, characterization and properties of semifluorinated organo-soluble new aromatic polyamides

By D. Bera, B. Dasgupta, S. Chatterjee, S. Maji, S. Banerjee


DOI: 10.1002/pat.182 (2010)

71. Synthesis, characterization, and cytotoxicity analysis of polyethylene glycol-based polyether urethanes

By Suparna Sarkar, Piyali Basak, Swatilekha Das, Basudam Adhikari and R. Mouawia

Materials and Manufacturing Processes

25, 1494â€”1504 (2010)

72. Temperature dependent hopping conduction in lithium-doped zinc oxide in the range 10 - 300 K

By S. Majumdar and P. Banerji

Applied Physics A

100, 487 (2010)

73. Structural and impedance spectroscopy of pseudo-co-ablated (SrBi2Ta2O9) (1-x) –(La0.67Sr0.33MnO3) x composite

By Shanta Singha and B. B. Khatua

J. Alloys Compd.

No 4, 83, pp. 15 (2010)

74. Thermal and Rheological Properties of Biodegradable Poly[(butylene succinate)-co-adipate] Nanocomposites

By Debasish Saha, M. Behera and S. Ram

International conference on multifunctional materials

by A. A. Prasanna and S. Ram,

International conference on advances in polymer science and technology

M. G. University, Kolkata, (2010)

75. Bismuth oxide nanostructures by evaporation and annealing of bismuth, By S. Srivastava and C. Jacob

International Symposium on Materials Education

(ISME-2011)

Pune, (2011)

76. Combustion synthesis of a Cr2O3-ZrO2 nanocomposite with camphor, By A. Sengupta and S. Ram

DAE-BRNS 3rd International symposium on materials chemistry

BARC, Mumbai, (2010)

77. Comparative study of the synthesis of copper oxide nanostructures using different deposition methods, By C. Yadala, R. K. Sahoo and C. Jacob

International Conference on Fundamentals and Applications of Nanotechnology (ICFANT-2010)

Kolkata, (2010)

78. Compatibilized edpm nanocomposites containing different type nanoclays, By Asish Malas, Chapal Kumar Das, K.N.Pandey,

Polychar-19

Nepal, (2011)

79. Deposition and control of morphology of iron nanoparticles for use as catalyst for CNT growth, By S. Ghosh and C. Jacob

International Symposium on Materials Education

(ISME-2011)

Pune, (2011)

80. Development and characterization of fullerene C60-based nanofluids with gold nanoparticles in presence of poly(vinyl pyrrolidone) molecules in an organic medium, By M. Behera and S. Ram

International conference on advances in polymer science and rubber technology

IIT, Kharagpur, (2011)

81. Development of Co-Continuous Phase Morphology in Highly Asymmetric Composition of PP/HDPE Blend By Using Nanoclay, By Anup K. Dhibar, Brajesh Kumar Singh and B. B. Khatua

National Conference on Advances in Chemical Engineering (ACHEM’2011)

Thapar University, Patiala, Punjab, India, (2011)


82. Semi-fluorinated high performance polymers: their scope, By S. Banerjee, Colloquium on perspectives in polymer science & technology, IACS, Jadavpur, Kolkata, (2010)

83. Simple approaches to nanostructure growth of semiconductors, By C. Jacob, IUPAC 6th International Symposium on Novel Materials and Synthesis (NMS-VI), Wuhan, China, (2010)

84. Soft chemistry of one-dimensional nanostructures for different sensors, By S. Ram, 16th National seminar on physics and technology of sensors, Lucknow University, Lucknow, (2011)


86. Statistical analyses of the conductance transients to address the selectivity issue of nano-crystalline magnesium zinc ferrite sensors, By A. Maity, K. Mukherjee, and S. B. Majumder, International Symposium on Advances in Nanomaterials, CG&RI, Kolkata, (2010)


88. Successive phase transitions and inverse magnetocaloricy in Ni41-xMn50Sn9+x Heusler alloys, By A. A. Prasanna, S. Ram, V. Ganesan, and K. Kamal, National conference on magnetic materials and applications, SNBNCBS, Kolkata, (2011)

89. Superacaparator application of c3-mwcnts nano composite with dopped poly-pyrrole, By C. K. Das, ISME-2011, Pune, (2011)

90. Superacaparator application of hybrid nanocomposites, By Soumen Giri, Chapal Kumar Das, Polychar-19, Nepal, (2011)

91. Surface modified magnetic and electrical properties in nanostructured Fe3BO6 antiferromagnets, By K. Kumari, S. Ram, and R. K. Kotnala, National conference on magnetic materials and applications, SNBNCBS, Kolkata, (2011)

92. Synthesis and characterization of n-alkyl functionalized copolymers and their impedance analysis, By Shyamo Chatterjee, Susanta Banerjee, International Conference on Advances in Polymer science and rubber Technology (APSRT), IIT Kharagpur, (2011)


95. Synthesis and electrochemical characterization of modified graphene/polyaniline nanocomposites, By Sumanta Sahoo, Ganesh Chandra Nayak, Chapal Kumar Das, Polychar-19, Nepal, (2011)


101. Synthesis of lithium zinc ferrites (Li0.5Fe0.5)1-xZnxFe2O4 (x ≤ 1.0) of nanoplates, By S. Misra, B. Dasgupta, R. S. Shinde, and S. Ram, International conference on magnetic materials, SINP, Kolkata, (2010)


103. Synthesis of silicon containing copolyimides, By S. Ram, National conference on sensors and actuators: science to technology, CGCRI, Kolkata, (2011)


105. Synthesis, characterization and gas transport properties of new poly(ether amide)s, By Parthasarathi Bandyopadhyay, Susanta Banerjee, International Conference on Advances in Polymer science and rubber Technology (APSRT), IIT Kharagpur, (2011)


111. The challenges of developing and teaching a course in nanotechnology and nanomaterials, By C. Jacob, International Symposium on Materials Education (ISME-2011), Pune, (2011)

Department of Metallurgical & Materials Engineering

Head
Prof. Sanat Kumar Roy

Professors
Chakraborti, Nirupam  Ph.D. (Univ. of Washington, USA), Computational Materials Science Genetic Algorithms Extractive Metallurgy
Chakraborty, Madhusudan  Ph.D. (IIT Kharagpur), Solidification Processing, Scanning Electron Microscopy, Failure Analysis, Metal Matrix Composites
Chatterjee, Uday Kumar  Ph.D. (IIT Kharagpur), Corrosion
Godkhindi, Mahadev Malhar  Ph.D. (IIT Bombay), Powder metallurgy Ceramics
Manna, Indranil  Ph.D. (IIT Kharagpur), Physical Metallurgy, Phase transition, Nanostructured materials, Thermodynamic modeling, Surface engineering by laser and plasma
Pabi, Shyamal Kumar  Ph.D. (IIT Kharagpur), Nanostructured materials Phase transformations Composites Modelling and simulation
Panigrahi, Sarat Chandra  Dr. Tech.Sc. (Krakow, Poland), Metal casting, Composites, Energy cons.

Associate Professors
Acharya, Narendra Nath  Ph.D. (IIT Kharagpur), Artificial Intelligence, Powder Metallurgical Applications, Multimedia, Educational Technology, Photography
Dutta Majumdar, Jyotsna  Ph.D. (IIT Kharagpur), Surface Engineering, Corrosion and Environmental Degradation, Laser Materials Processing, Biomaterials, Advanced Processing of Materials
Sant, Sudhindra B  Ph.D. (Queen's Univ., Canada), 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  Ph.D. (Cambridge Univ., UK), Physical metallurgy of steel

Assistant Professors
Aich, Shampa  Ph.D. (Univ. of Nebraska, USA), Rapid Solidification, Magnetic Materials, Shape Memory Alloys, Surface Modifications, Biomaterials
Bhaduri, Amit  M.Tech. (IIT Kharagpur), STRUCTURE-PROPERTY RELATIONSHIP
Biswa Koushik
Ph.D. (Univ. of Stuttgart, Germany), 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
Ph.D. (Univ. of Birmingham, UK), 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
Ph.D. (TU Dresden, Germany), Solidification and Non-equilibrium Processing, Metastable and Nanostructured Alloys, High Temperature Oxidation, Structure-Property Relationship, Phase Transformation
Datta, Bidyut Kanti
Ph.D. (IIT Kharagpur),
Kar, Sujoy Kumar
Ph.D. (The Ohio State Univ.), Physical and Mechnical 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
Ph.D. (Lulea Univ. of Tech, Sweden), Atomistic Simulation, Extractive Metallurgy, Computational Fluid Dynamics, Mineral processing
Laha, Tapas
Ph. D. (Florida Int. Univ., Miami), 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

Chair Professor
Sen, P.K. Ph.D. (Jadavpur University) Process Metallurgy

Faculty Retirement
Sarat Chandra Panigrahi Professor

New Academic Programmes
M. Tech in Steel technology â€’ 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 A2O3 reinforced Ni3Al thorough 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 aluminium 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.)
3. Aditya Kr. Lohar : Processing and Characterization of Aluminium and Scandium Alloys and Composites(Ph.D)
5. Anjit 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.)
9. S. N. Alam : Development of Tungsten Heavy Alloys Through Mechanical Alloing Route(Ph.D.)
10. Gautam Mukhopadhyay : Strength and Fracture Behaviour of Spot Welds on Interstitial Free Steel Sheets(Ph.D)

**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
5. Biswas, Koushik, Life Member - The Indian Institute of Metals
6. Biswas, Koushik, Life Member - 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, Jyotshna, 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 Minerals 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) Adjunct Professorship, Graduate Institute of Ferrous Technology, POSTECH, Korea
5. Chakraborti, Nirupam (0) Docent (Honorary Professorship), Åbo Akademi University, Finland
6. Laha, Tapas (2010) IEI Young Engineers Award

**Awards & Honours**

1. Singh, Shiv Brat (2011) 2011 Endeavour Executive Award
2. Chakraborti, Nirupam (0) Adjunct Professorship, Graduate Institute of Ferrous Technology, POSTECH, Korea
5. Chakraborti, Nirupam (0) Docent (Honorary Professorship), Åbo Akademi University, Finland
6. Laha, Tapas (2010) IEI Young Engineers Award

**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 Abatament 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.25.00 Lakhs)
9. Development of ducile 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. Forming and Coating Behaviour of TRIP Aided Steels (Department of Science and Technology, N. Delhi, Rs.0.00 Lakhs)
20. Generation of semi-solid slurries through one step processing of liquid metal for rheocasting (Naval Materials Research Organization, Rs.28.00 Lakhs)
21. 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)
22. High Strength TRIP-aided Steel for Automobiles (Tata Steel, Rs.11.68 Lakhs)
23. Innovative heat treatment of cast microalloyed steels for improving the properties. (Funded by: CSIR, New Delhi. (HTS), Rs.15.00 Lakhs)
24. Life estimation and microstructural damage of irradiated and unirradiated Cu-Cr-Zr alloy (NFP-BRFST, Ahmedabad, Rs.30.38 Lakhs)
25. Machinary Development in Tea Processing Industry (Tea Board, Rs.360.00 Lakhs)
26. Mechnosynthesis and mechanical thermal synthesis of in-situ aluminium based nanocomposites and their characterization (DST, Rs.43.15 Lakhs)
27. Microstructure-Texture-Toughness relations in High Strength Automotive Steel. (Funded by: DST, New Delhi. (HAS), Rs.28.00 Lakhs)
28. 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. **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)

34. **Study of correlation between Processing â€’ Microstructure â€’ Microtexture & Property in a beta Titanium alloy Ti-5553** (IIT Kharagpur (ISIRD Project), Rs.5.00 Lakhs)

35. **Synthesis and properties of electrodeposited Nickel/Ceria nano composites** (IREL, Rs.27.81 Lakhs)

36. **Synthesis and properties of electrodeposited nickel/zirconia nanocomposites** (NRB, Rs.48.28 Lakhs)

37. **Synthesis and Thermo-mechanical characterization of MoSi2â€“SiCâ€“ZrO2 nano-composites** (ISIRD, IIT Kharagpur, Rs.5.00 Lakhs)

38. **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)

39. **Testing of Tungsten Carbide Tips** (Office of the Comissioner of Customs, Govt. of India, Rs.66.00 Lakhs)

40. **Visits Abroad by Faculty Members**

1. Chakraborti, Nirupam - Research Interaction (Å…bo Akademi University, Finland, ) Summer 2010
2. Roy, Sanat Kumar - Member of the Academic Delegation (GIFT and POSTECH, 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
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. Mitra, Rahul - 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, Massachusetts, 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 lecture at the University of Beyruth (Bayreuth, Germany, ) June 16-17, 2010
15. Ray, Kalyan Kumar - To deliver an invited lecture at the Brno University of Technology (Brno, Czech Republic, ) June 10, 2010
16. Ray, Kalyan Kumar - To deliver an invited lecture at the Technische Universitat Wien (Vienna, Austria, ) June 11, 2010

Invited Lectures by Faculty Members

1. Steel Product Quality: Emerging Trends by Ghosh, R N (RINL,Vishakhapatnam)
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, Prodid Kumar (Jamshedpur)
5. Materials Study through the eyes of Simulation and Characterization by Kar, Sujoy Kumar (Defence Metallurgical Research Lab (DMRL), Hyderabad)
6. Microstructure based property modeling and Microstructure 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), Jamshedpur)
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 Chakraborti, 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 Chakraborti, D (Application of thermo-mechanical simulation in advanced materials research. Sponsored by DST. IIT Roorkey)
11. Mixed grain structures in HSLA steels by Dutta Majumdar, Jyotsna (Karlsruhe Institute of Technology, Karlsruhe, Germany) by
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 Material and Materials Technology (CSIR), Bhubaneswar)
14. Macrostructure 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 Scieence 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 Polygon-Metal Interface by Laha, Tapas (Tata Steel, Jamshedpur)

Books Published

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

Papers Presented in Conferences


42. 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)
43. 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)
52. Study of Microwave assisted sintered yttria stabilized zirconia toughened alumina (YSZ-TA) composite for biomedical application, 
Centre for Oceans, Rivers, Atmosphere and Land Sciences

Head
Prof. Debabrata Sen

Assistant Professors

Behera, Mukunda Dev  
Ph.D. (IIRS, DehraDun), Land/ Vegetation Cover/ River Basin Dynamics, Biodiversity Monitoring and Modeling, Forest Biomass and Carbon Sequestration, Remote Sensing and Geoinformation Technology

Chakraborty, Arun  
Ph.D (IIT Delhi), Numerical Modeling of Oil Spill, Ocean Dynamics and Ocean Circulation Modeling, Data Assimilation

Dash, Mihir Kumar  
Ph.D. (Gujarat University), Satellite Oceanography, Mesoscale Ocean Modeling, Cryospheric Studies

Mandal, Manabottam  
Ph.D. (IIT Delhi), Observations and Modeling of Thunderstorm, Modeling of Extreme Weather Events, Regional Climate Modeling, Cloud Microphysics, Mesoscale Data Assimilation

Satyanarayana, Achanta Naga Venkata  
Ph.D (BHU), Observations and Modeling of PBL dynamics and Thunderstorms, Parameterization of Land Surface Processes, Air-Sea Interactions

Shaji, C  
Ph.D. (IIT Delhi), Ocean Modeling and Analysis, Coastal Processes, Monsoon Oceanography

Emeritus Professor

Pandey, Prem Chand  
Ph.D. (Allahabad Univ.), Atmospheric and Ocean Dynamics Satellite Oceanography, Climate Change and Polar Research

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
4. Chakraborty, Arun (2011) Associate Editor - Geoscience Research
6. Pandey, Prem Chand (2011) Member Editorial Board-Subject Specialist - Mausam

Awards & Honours

1. Pandey, Prem Chand (2010) Rekha Nandi and Bhupesh Nandi Prize

Sponsored Research Projects

1. Assessment and Modelling of Forest Biomass and Carbon Dynamics using remote Sensing and GIS in Katerniaghat 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 Atomic Research, 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 Antarctic (National Centre for Antarctic and Ocean Research (MOES), Goa, Rs.45.00 Lakhs)
15. Simulation of Bay-of-Bengal Circulation Features using OCEANSAT-II Scatterometer Wind and OCM (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 Bengal 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 Mesoscale 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 (to deliver a lecture at KIIT, Bhubaneswar under INSPIRE Prgramme of DST)
3. Polar Science by Pandey, Prem Chand (New Delhi)
4. Foundation Day Lecture by Pandey, Prem Chand (IITM, Pune)
5. SARAL AltiKa workshop, Member Science Working Group by Pandey, Prem Chand (SAC, Ahmedabad)
6. Discussion with IMD and lead talk on Polar science Brainstorming 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)
12. Use of Technology in Biodiversity and Climate Change Studies by Behera, Mukunda Dev (British Council) Bhubaneswar

Papers Published in Journals

4. High Plant Diversity in Sub-tropical forests of Subansiri region, Eastern Himalaya (Accepted) By MD Behera and SPS Kushwaha Tropical Ecology (0)
Papers Presented in Conferences


4. Barrier Layer Thickness using two different climatology atlas for the Bay of Bengal, By Naresh Krishna V., Satyanarayan A.N.V., Prasad Kumar B., National Conference TROPMET 2010:: Advances in Weather and Climate Services, India Meteorological Department, Kolkata, (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)


17. Regional warming or cooling over India due to land use and land cover changes, By M. Mandal, S. Nayak and S. Bhanja, TROPOMET 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)


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 TROPOMET 2010:: Advances in Weather and Climate Services, India Meteorological Department, Kolkata, (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 TROPOMET 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 elastic 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.


**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

8. Sha, Om Prakash (2009) Editorial Board Member - International Journal of Naval Architecture and Ocean Engineering (JNAOE),
Korea

Sponsored Research Projects
Invited Lectures by Faculty Members

1. Weld Induced Distortion Analysis of 3-D Large Ship Structures (DST, New Delhi, Rs.13.44 Lakhs)
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 Kenraparaha 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, Kalapakkam, 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 (Manaksa 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 & Development of Trimarans and Delta Hull Forms (NSTL Vizag, Rs.21.15 Lakhs)
8. Hydrodynamic Design of high speed light weight torpedo (NISTL, DRDO, India, Rs.22.25 Lakhs)
9. Impact of Storm Surge, Wind Waves and Seiches on the design of proposed Kalpasar Dam (Government of Gujarat, Rs.10.00 Lakhs)
10. Modeling of half moon bay (Ali Wasset, Rs.2.50 Lakhs)
11. 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 (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 Jambheswar 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)
Papers Presented in Conferences


Seminars, Conferences and Workshops Organised

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

Short-Term Courses, Training Programmes and Workshops organised


Papers Published in Journals

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)
16. Retrieval of Ocean Parameter using Genetic Algorithm By S.Koteswar Rao and B. Prasad Kumar *Journal of Ship Technology* Accepted (0)


Rural Development Centre

Head
Prof. P B Singh Bhadoria

Associate Professors
Bhowmick, Pradip Kumar  Ph.D., D.Litt., Tribal & Rural Development
Lahiri, Debabrata  Ph.D. (BHU, Varanasi), Economics of Renewable Energy Economics of Microfinance Monitoring & Evaluation Technology Transfer
Mahapatra, Subhash Chandra  Ph.D. (IIT Kharagpur), 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

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 GoI, 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


Papers Presented in Conferences

2. Tribal Women and MNREGA, By Pradip K. Bhowmick, Tribal Women in Transition, Bidisa, Narayangarh, (0)
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 Norvey 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)
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

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, Modelling 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

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)
4. Imperfect Repair Proportional Intensity Models for Maintained Systems By Syamsundar and Naikan V.N.A IEEE Transactions on Reliability Accepted (2011)
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)

Papers Presented in Conferences

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)
Rajiv Gandhi School of Intellectual Property Law

Head
Prof. Indrajit Dube

Assistant Professors
Bandyopadhyay, Tapas Kumar

Basu, Arindam

Chugh, Archana
Ph.D.(Univ. of Delhi), Nanobiotechnology, Plant Molecular Biology, Intellectual Property Rights

Dube, Dipa
Ph.D.(Calcutta University), Victimization of Women, Police Investigation and reforms

Dube, Indrajit
Ph.D.(Calcutta University), Corporate Law & Governance, Environmental Governance

M. Padnavati
Ph.D.(Central Univ. Hyderabad), Plant Metabolic Pathways Recombinant Drug regulation TK and Biodiversity Agriculture Inventions

Raju, K. D.

Shankar, Uday

Shreya, Matilal
LL.M.(Case Western), Economics of Basic Structure Doctrine

Subramanian
LL.M. Euro-Master (Germany), International law, International Human Rights law, International Investment law

Faculty Resignation
Archana Chugh Assistant Professor

Brief Description of on-going activities
Research in diverse issues of Intellectual Property Law and Policy framework under the Microsoft Centre of Excellence in Intellectual Property Research and Technology Policy

TIFAC Eastern Region "Women Scientist Scholarship Scheme" Program

Research in corporate legal affairs with special reference to Corporate Governance under the IICA


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
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

**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 Dhuliyan (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, ) 7 Days
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 Bandopadhyay, Tapas Kumar (Kolkata)
10. Copyright and Trademark Basics by Shreya, Matilal (Bangalore)

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

5. Environmental Governance - Future Directions By Dr. Indrajit Dube Chartered Secretary October (2010)

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)
4. Is Corporate Governance the answer to Corporate Structure Failure, By Dr. Indrajit Dube, Corporate Law Teachers Associations, Brisbane, (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 Dhrubes Biswas

Professors
Biswas, Dhrubes  

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 Kurviioli visited RMSoEE campus and
addressed the students of RMSoEE on entrepreneurship and innovation scenario in Finland. They discussed about various international collaborative research.

**Academic Performances**

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awards &amp; Honours</td>
<td>1</td>
</tr>
<tr>
<td>Member-Professional Bodies</td>
<td>3</td>
</tr>
<tr>
<td>Member-Editorial Board</td>
<td>2</td>
</tr>
<tr>
<td>Visits Abroad by Faculty Members</td>
<td>4</td>
</tr>
<tr>
<td>Lectures by Visiting Experts</td>
<td>5</td>
</tr>
<tr>
<td>Short term Course and Training Programs Organized</td>
<td>1</td>
</tr>
</tbody>
</table>
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


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.)
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 Nano-clays 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.)
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
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
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
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)
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.15.11 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 Polyeurethane Laponite clay nano composites for fire and flammability (ISRO, Bangalore, Rs.10.52 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)
Papers Published in Journals


4. Smart \&\textup{click} Acrylate \& ABA Triblock Copolymer bearing Reactive Functionality via Atom Transfer Radical Polymerization (ATRP) \[\text{Demonstration of a a\textup{click}Click Reaction}\] \[\text{in Thermoreversible Property}\] \[\text{By Kavalith A. and Singha*}, Nikhil K.\] \textit{Macromolecules} 43(7), 3193-3205 (2010)


Invited Lectures by Faculty Members

1. Polymer Blends, Science and Technology \[\text{by Khastgir, Dipak}\] (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 (Bow Chemicals, Freeport, Houston, USA)

8. Structure-Property relationship on the Thermoplastic Polyurethane -modified Laponite Clay Nanocomposites by Nando, Golok Behari (University of Auckland, 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)

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 Environment 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


8. Chaki, Tapan Kumar - To present paper in the XIX International Symposium on Processing and fabrication of advanced Materi (University of Auckland, New Zealand, 14-17 January, 2011)
Papers Presented in Conferences


4. Controlled Radical Polymerization of an Acrylate Bearing a Bicyclic Ring in its Pendant Group, By Nilikh K. Singha*, *International Conference on Advances in Polymer Science and Rubber Technology (APSRT)*, Indian Institute of Technology Kharagpur, (2011)


33. Polymer@Nanosilica@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)


37. Random and Block Copolymers of 2- Ethylhexylacrylate and Styrene via Atom Transfer Radical Polymerization (ATRP), By Bishnu P Koiry, S. Ata, Nikhil K Singh, International Conference on Advances in Polymer Science and Rubber Technology (APSRT), Indian Institute of Technology 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)


51. TPEs and TPVs derived from Waste Polypropylene and Natural Rubber, By G.B.Nando, Anag 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, Kharagpur, (2011)


54. Vibration damping and energy loss in bromobutyl rubber â€“ 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  
Ph.D. (Univ. of Toronto), Extreme Value Theory Applications in Operations Scheduling

Ghosh, Ranjan  
D.Sc. (Columbia Univ.),

Guin, Kalyan Kumar  
B.Tech. (IIT Kharagpur), Marketing Research, Quant Modelling of Business Strategy, Entrepreneurship

Mukerjee, Prithwis  
Ph.D. (Texas),

Sinha, Gautam  
Ph.D. (IIT Kharagpur), Operations Management/ SCM

**Associate Professors**
De, Sadhan Kumar  
Ph.D. (UK), Information Systems, E-Business/E-Commerce, Management of Technology

Rajib, Prabina  
Ph.D. (IIT Kharagpur), Derivatives (Financial & Commodity), Indian Capital Market, Corporate Finance

**Assistant Professors**
Arunprasad, P  
Ph.D. (IIT Madras),

Bhattacharya, Sujoy  
Ph.D. (IIT&Mgt, Gualior),

Datta, Biplab  
Ph.D. (IIT Delhi), Marketing Management, Leadership and Teamwork

Madhavan, Vinodh  
D.B.A. (USA), Credit Default Swap Indices, Long-Term Dependence, Nonlinear Time Series Analysis

Malik, Aradhna  
Ph.D. (Univ of Denver), Communication Disorders, Intercultural Communication, Human Technology Interaction, Management of Public Health

Mishra, Chandra Sekhar  
Ph.D. (Utkal University), Financial Reporting and Analysis, Mergers and Acquisitions, Business Valuation, Financial Markets

Misra, Arun Kumar  

Mukhopadhyay, Susmita  
Ph.D. (Calcutta Univ.), Organizational Health and spiritual health, Human Resource Management, Business Ethics, Microfinance, Competency Mapping

Pradhan, Rudra Prakash  
Ph.D. (IIT Kharagpur), Financial Markets, Infrastructure Finance, Econometric Modelling

Sahney, Sangeeta  
Ph.D. (IIT Delhi), Marketing Management, Consumer Behavior, Services Marketing, Sales and Distribution Management, Organizational Behavior, Services Quality, Quality in Education

Sarkar, Ashutosh  
Ph.D. (IIT Kharagpur),

**Visiting Facultys**
Chattopadhyay, Siddhartha  
Ph.D. (Univ. at Albany, SUNY),

Ghosh, Kunal Kanti  
M.Tech. (IIT Kharagpur), Supply chain management

**Faculty Resignation**
P. Arunprasad  
Assistant Professor

**New Academic Programmes**
Dual Degree Postgraduate programme in Financial Engineering with interested departments at IIT Kharagpur.

Launched 3-Year Executive MBA (EMBA) Programme in Kolkata and Bhubaneswar in July-September 2010.

**Brief Description of on-going activities**

Currently offering M.B.A. and Ph.D. degrees.


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 (AV 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 Bhattarjee (Associate Professor, Dept. 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
Member - Editorial Board

5. Mukhopadhyay, Susmita (2009) reviewer - Psybernews
8. Pradhan, Rudra Prakash (0) Editorial Board Member - Australian Journal of Business and Management Research
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
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
17. Pradhan, Rudra Prakash (0) Editorial Board Member - Pragyaan
18. Pradhan, Rudra Prakash (0) Reviewer - Malaysian Journal of Economic Studies
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
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 - The International Journal of Business and Information
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 - Globysn Management Journal
37. Sahney, Sangeeta (2010) Member of Review Committee - The International Journal of Organizational Analysis

Awards & Honours

1. Madhavan, Vinodh (2010) 2009-2010 Outstanding Graduate Student â€“ Doctor of Business Administration Program, Golden Gate University, San Francisco

Fellowships

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 (IISRD, 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 [TMTC] 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 [TMTC] 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. Misra, Arun Kumar - International Conference Organised by IEEE (Singapore, ) 3 days
6. Pradhan, Rudra Prakash - Conference (Egypt, ) 2011

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


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 Modelling and Risk Management (4 Days)
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**

6. Defect Reduction Justification by Quantifying Hidden Costs in Bearing Production By Tapan P Bagchi *IJOOM USA* Accepted (2011)

**Papers Presented in Conferences**


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
Ph.D.(IIT Kharagpur), Food Biotechnology, Bioenergy, Enzymology & its Biotechnological applications, Protein Chemistry

Bhadoria, P B Singh
Ph.D.(IIT Kharagpur), Development and transfer of rural technology, Soil Science & Plant nutrition

Das, Susanta Kumar
Ph.D.(IIT Kharagpur), Mechanized Food processing Food Engineering

Datta, Ashis Kumar
Ph.D.(Pennsylvania), Dairy and Food Process Engineering

Dutta Gupta, Snehasish
Ph.D.(Kalayani Univ), Plant Tissue Culture & Biotechnology

Ghosh, Bijoy Chandra
Ph.D.(IIT Kharagpur), Soil less culture Organic farming Tea production and processing

Goswami, Tridib Kumar

Jha, Madan Kumar
Ph.D.(IIT Kharagpur), Soil and Water Conservation Engineering, Watershed Management

Mal, Bimal Chandra
Ph.D.(IIT Kharagpur), Cold Storage, CA and MA storage of fruits and vegetables

Mallick, Nirupama
Ph.D.(BHU, Varanasi), Microalgal Biofuel, Biodegradable Polymers (Polyhydroxyalkanoates), Bioremediation, Bioactives from Microalgae

Mishra, Hari Niwas
Ph.D.(IIT Kharagpur), RTE Health Foods & Nutraceuticals, Innovative Food Processing Technologies, Horticulural & Plantation Crop Products Processing, Food Safety & Quality Control, High pressure processing of high value perishables

Panda, Rabindra Kumar
Ph.D.(IARI Delhi), Watershed Management, Non-point Source Pollution of Soil & Water, Climate Change Effect on Agriculture, Rainwater Management

Panda, Sudhindra Nath
Ph.D.(PAU, Ludhiana), Water Resources Management, Rainwater Conservation and Recycling

Pandey, Keshaw Prasad
Ph.D.(IIT Kharagpur), 1 Tractor power systems 2. Traction modelling 3. Precision agriculture

Raghuwanshi, Narendra Singh
Ph.D.(California), Irrigation and Water Management, Hydrological Modelling, Watershed Management

Raheman, Hifjur
Ph.D.(AIT Bangkok), Development of farm Implements, Biofuel production and hybrid power generation

Singh, Rajendra
Ph.D.(IIT Kharagpur), Hydrological Modelling, Irrigation System Management

Tewari, Virendra Kumar
Ph.D.(IIT Kharagpur), Farm Machinery & Power, Ergonomics & Safety

Tiwari, Kamlesh Narayan
Ph.D.(IARI Delhi), Micro Irrigation Greenhouse Technology Remote sensing & GIS application in Watershed Mgt

Associate Professors
Chatterjee, Chandranath

Das, Bhabani Sankar
Ph.D.(Kansas), Spectral characterization of soils, Rice hydrology, Measurement and modeling of water and nutrient status in soil, Pedotransfer functions

Majumdar, Gautam Chandra
Ph.D.(IIT Kharagpur), Food Process Engineering

Mitra, Adinpunya
Ph.D.(East Anglia UK), Metabolic Phytochemistry & Molecular Biology, Plant Natural Products Biotechnology

Mitra, Arunabha
Ph.D.(Calcutta Univ), Waste utilization in aquaculture, Ecology and environmental pollution, Chemical-free farming, Mind and consciousness, Stress management and control, Value based education

Thomas, E V
Ph.D.(IIT Kharagpur), Farm Machinery & Power, Rice Transplanter, Tea Process machinery


**Assistant Professors**

- **Das, Madhusweta**
  - Ph.D. (Jadavpur Univ), Functional Foods, Starch based edible and biodegradable film

- **Guha, Proshanta**

- **Mishra, Ashok**
  - Ph.D. (IIT Kharagpur), Hydrological modelling & Watershed management, Crop yield modelling, Climate change analysis & applications in water and crop management

- **Mukherjee, Chanchal Kumar**
  - MS (SIT New Jersey), Cage for mariculture

- **Shrivastava, Shanker Lal**
  - Ph.D. (IIT Kharagpur), Dairy & Food Process Engineering, Development of low cost - farm level processing equipment

- **Srinivasa Rao, Pavuluri**
  - Ph.D. (IIT Kharagpur), Aquacultural Engineering, Post Harvest & Food Engineering, High Pressure Processing

- **Srivastav, Prem Prakash**
  - Ph.D. (IIT Kharagpur), Food Science and Technology

- **Swain, Dillip Kumar**
  - Ph.D. (IIT Kharagpur), Crop simulation, Climate change impact assessment on crops, Agronomy for sustainable agriculture

**Senior Lecturer**

- **Moulick, Sanjib**
  - Ph.D. (IIT Kharagpur), Aeration Technology, Water quality modelling and management, Biofiltration Technology

**Senior Scientific Officer**

- **Singh, Manindra Nath**
  - Ph.D. (BHU), Grain Storage Technology

**Scientific Officer**

- **Pandey, Manorath**
  - Ph.D. (IIT Kharagpur),

**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 xanthones, 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 conveyor 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 machinery and process technology for cereals & pulses based snacks, Development of rice transplanter, Development of a continuous chhana making device, Development of jacketted scraped surface vessel for kneading, heating and concentration of high viscosity liquids and pastes, Development of endless chain pressure dryer for orthodox tea, Design of a centrifugal press for semicontinuous production of paneer, Development of Cashew nut sheller and Cashew peeler, Evaluation of cosmetic properties of Aloe vera L., Flow and solute transport in sub-surface environment, Food Packaging, High pressure processing of high value perishables, Hydrological modelling of small watersheds, Imaging photosynthesis of micropropagated plants, Integration of surface irrigation and two-dimension infiltration model, Machinery systems and ergonomics, Microalgal biofuel, Microbial degradation of plant phenolics for value-added products, Micropropagation and cryopreservation of endangered medicinal plants, Microwave assisted drying of high moisture food, Nutrient management,
Polyhydroxyalcanoates 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 (Spectraanalyzer), Zeutec 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

ALTEERRA-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 cellulosic 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 (Eichinocholoa frumentacea) and formulation of millet-wheat composite flower(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. Niranjan 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. Baranu - Development of slip sensing and control system for two wheel drive tractors (Ph.D)
9. Arabindu 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)
17. Anish Kumar - Development of a physically based distributed hydrological modelling system (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
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, Ashish, Regular - Indian Dairy Association
8. Datta, Ashish, Member - Engineering - American Society of Agricultural and Biological Engineers
9. Datta, Ashish, Member - Life - All India Council for Technical Education
10. Dutta Gupta, Snehashish, Regular - Floriculture and Ornamental Biotechnology
11. Dutta Gupta, Snehashish, Regular - Society for In Vitro Biology, USA
12. Dutta Gupta, Snehashish, Regular - European Federation of Biotechnology
13. Dutta Gupta, Snehashish, Life - Indian Society for Plant Physiology
14. Dutta Gupta, Snehashish, 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, Reghular - 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 Scientists & 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 Biology
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, Arunantha, Life Member - Zoological Society of India
38. Mitra, Arunantha, Regular - World Aquaculture Society, USA
39. Mitra, Arunantha, Life Member - Inland Fisheries Society of India
40. Mitra, Arunantha, Full Founding Member - Asian Fisheries Society, Philippines
41. Mitra, Arunantha, 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, Rabintra Kumar, Life Member - Indian Society of Agro-meteorologist
47. Panda, Rabintra Kumar, Associate Member - American Society of Agricultural and Biological Engineers
48. Panda, Rabintra Kumar, Life Member - Indian Society of Agricultural Engineers
49. Panda, Rabintra Kumar, Life Member - Indian Society of Water Management
50. Panda, Rabintra 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 Agricultura and 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**

2. Dutta Gupta, Snehasish (2011) Associate Editor - Journal of Plant Genomics
4. Dutta Gupta, Snehasish (2011) Associate Editor - Journal of Crop Science
9. Mishra, Hari Niwas (0) Member, Editorial Board - Indian Food Packer
10. Mishra, Hari Niwas (0) Member, Editorial Board - Journal of 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

**Awards & Honours**

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
10. Goswami, Tridib Kumar (2010) Conferred with best poster presentation award for the paper entitled &quot;Effect of modified atmosphere packaging system for fruits using enzyme kinetics based respiration model.&quot; by S.Mangaraj and T.K.Goswami in the 44th Indian Society of Agricultu
12. Mishra, Hari Niwas (2010) Expert Member, Approval Committee on Task Force on Food and Nutritional Security, Department of Biotechnology, Govt. of India.
14. Banerjee, Rintu (2011) Received Recognition Award from the National Academy of Agricultural Sciences, New Delhi for outstanding contribution in the area of Agricultural Engineering & Technology
15. Raheman, Hiljur (2010) Jyoti Award by ICAR for outstanding research in the field of seeding equipments
16. Raghuvanshi, 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, Flavourings, 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.,
22. Goswami, Tridib Kumar (2011) N.N. Mohan Memorial Award for 2009 for best research paper conferred by All India Food Processorsâ€™ Association, New Delhi - 16
23. Mishra, Hari Niwas (2010) RMC Member, Mission REACH (TIFAC, DST) in Food Technology at Techno India, Kolkata

Fellowships

3. Raghuvanshi, 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. 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)
6. BioCO2: An integrated multidisciplinary project using solar energy for production of renewable hydrogen combined with CO2 capture, to address global w (Indo-Norwegian-Sweedish Collaborative Research Project, Rs.0.00 Lakhs)
7. Biodepolymerization of low grade lignite to Biomethane and Humic acid (ONGC, New Delhi, Rs.248.00 Lakhs)
8. Bioved Research Institute of Agriculture & Technology. Fellowship award, Allahabad
9. Bioderpylomerization of low grade lignite to Biomethane and Humic acid (ONGC, New Delhi, Rs.248.00 Lakhs)
10. Bioved Research Institute of Agriculture & Technology. Fellowship award, Allahabad
11. 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)
12. Change climate and rice-based crop production system of eastern and south eastern India: Impact assessment and risk management through simulation (C-MMACS, CSIR, Bengaluru, Rs.15.72 Lakhs)
13. Characterization of soil reflectance in the visible and near-infrared region for the iron-rich soils of eastern India (SERC, DST, New Delhi, Rs.15.50 Lakhs)
14. Climate change and rice-based crop production system of eastern and south eastern India: Impact assessment and risk management through simulation (C-MMACS, CSIR, Bengaluru, Rs.15.72 Lakhs)
15. Dev. of Solar Dryer for multipurpose drying, NRDC (NRDC, Rs.1.00 Lakhs)
Consultancy Projects

1. Agriculture Farming System and Management (HMV 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)

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 (ICSR, New Delhi, Rs.3.00 Lakhs)
19. Development of Reclorocylatory Aquaculture System Based on Bioremediation ad 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 methoxylaldehyde 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, 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 (Min 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 â€œPrecision Farming Technologies :â€ in Production Agricultureâ€ (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 Plasticallutrition in Horticulture, Min. of Agriculture, Govt. of India, Rs.250.00 Lakhs)
44. Production and performance evaluation of of biodiesel from tree based oils (with high free fatty acids) and their mixtures (Petroleum Conservation Research Association, Rs.11.62 Lakhs)
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-El (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.8.10 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.80.10 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)
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 Millers’s 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. Performance evaluation of ploughs (prototype) (National Bank for Agricultural & Rural Development (NABARD), Rs.0.14 Lakhs)
10. Performance Evaluation of power weeder and vertical conveyor reaper (Bengal Tools Ltd., Rs.0.52 Lakhs)
11. Probable maximum flood estimation for Nagarjunasagar Dam (SE, N.S. Dam Circle, Govt. of Andhra Pradesh, Rs.29.10 Lakhs)
12. Rainwater Harvesting at Alumina Refinery, Damanjodi (National Aluminium Company Lt. (NALCO), Rs.2.81 Lakhs)
13. Rainwater Harvesting in Guali Iron Ore Mines (Triveni Industries, Rs.1.69 Lakhs)
14. Study of effect of mining activities on water quality in surrounding areas (Tata Steel, Noamundi, Rs.15.00 Lakhs)
15. Testing of Rice Mills (TORM) (Rice Millers, Rs.1.00 Lakhs)
16. Tractive performance of bias- ply and radial-ply tyres (Apollo Tyres Ltd, Vadodara, Rs.19.85 Lakhs)
17. Vermicomposting (Greenfield Agrotech, Rs.0.25 Lakhs)

Technology Transferred

1. Midnapore Cultural and Welfare Association, Midnapore, 2010. - a€œEnzymatic debittering of cashew apple juice : Rs. 0.00 Lakh
2. RKM Nimpeeth - Biomgas production technology : Rs. 0.00 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 Jetha Pahar Village in Mallarpur Block of Birbhum District (WB) - Design of Rainwater Conservation and Reuse Structures : Rs. 0.00 Lakh
5. Satyabhamma 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. 0.00 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 opeated 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. Biodipolymerization 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 (4-8), 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 (Dublinn, Ireland, ) 14 - 17 November 2010
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)
7. Precision Farming Technologies in Horticultural Development by Tiwari, Kamlesh Narayan (Bidyut 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. Optimising of on-farm reservoir for various cropping systems in rainfed uplands of easter India by Panda, Sudhindra Nath (AICTE/QIP Short Term Course on Green Infrastructure, Dept. of Civil Engg., IIT Kharagpur)
26. Study and Research Opportunity for Agricultural Engineering Students in NIT, IIT and Abroad by Panda, Sudhindra Nath (CAET, OUAT, Shibaneswar)
27. 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)
28. 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)
29. Modern Trend in refrigeration of Agriculture and Horticulture products & Marketing of Potato by Goswami, Tridib Kumar (Park Hotel, Kolkata.)
30. 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 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 University, 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 vegetables by Goswami, Tridib Kumar (Department of Agricultural Engineering under School of Technology in Assam University, Silchar.)
39. Rural Technologies for livelihood by Bhadoria, P B Singh (Kathmandu Nepal)
40. Traction Theory, 2. Design and selection of tyres for agricultural tractors by Pandey, Keshaw Prasad (TVS Srichakra Ltd, Madurai)

Books Published


Seminars, Conferences and Workshops Organised

1. 1st Indo-German Workshop on HydroRiceTech
2. Annual workshop and review of progress of NGOs on RuTAG
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 â€“ July 23rd 2010)
3. Engineering & Management in Fisheries and Aquaculture (08-16 Dec 2010)
4. Engineering & Management in Fisheries and 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))
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 â€“ 17 September 2010)
17. Refresher Course In Food Technology - II (January 31 - February 4, 2011)
18. Refresher Course in Food Technology-II (31 January â€“ 4 February 2011)
20. Use of plasticiculture in Horticultural crops (January 6-7, 2011)
21. Vermicompost Short Term Courses of RuTAG-EI (15 days)
22. Vermicompost and soil nutrient management Short Term Courses at Barasat (2 days)
23. Vermicompost Short Term Courses at Sundarban (2 days)

Papers Published in Journals

Papers Presented in Conferences

6. Application of image analysis for evaluation of plant growth in a future climate, By S Dutta Gupta, 8th All India Peoples Technology Congress, Kolkata, (2011)
9. Assessment of nutritional content as a food ingredient and, By M. Meghwali and T.K. Goswami, National symposium on emerging innovative technologies for assurance of quality and safety in processed food, IIT Kharagpur, (2011)
12. CA/MA storage of fruits and vegetables, By Goswami, T.K., 45th ISAE Convention, Nagpur, (2011)
15. Culture of non-traditional varieties of fishes in small multi-use ponds in Pascim Medinipore district, West Bengal, India, By Dr.Anubhava Mitra, Diversification of aquaculture through locally available fish species, Central Institute of Fisheries Education, (2010)
16. Design, development and evaluation of chironji nut decorticating, By Kumar, J Srivastav, PP Bhowmick, PK, 45th Annual Convention of ISAE and International symposium on water for agriculture, Dr. PDKV, Akola, (2011)
17. Design of LPG burner for hot air puffing machine, By Jaybhaye, RV Srivastav, PP, 45th Annual Convention of ISAE and International symposium on water for agriculture, Dr. PDKV, Akola, (2011)
18. Design, development and field performance evaluation of a power tiller operated fully automatic vegetable transplanter, By Prasanna Kumar G.V. and H. Raheman. 45th annual convention of the ISAE, Dr. PDKV, Nagpur, (2011)
Alumni Affairs and International Relations

Dean
Prof. Amit Patra, Electrical Engineering

Managing Director, Institutional Development Program
Chinna Boddipalli

Standing Committee on Alumni Affairs & International Relations:

Dean (P & C) and Professor-In-Charge of Information Cell
Prof. B.K. Mathur, Physics

Professor-In-Charge of News Letters / Publications
Prof. Joy Sen, Architecture & Regional Planning - Chief Editor

Technology Alumni Association Secretariat
Prof. Goutam Bandyopadhyay, Aerospace Engineering -President
Dr. Dilip. K. Nanda, Computer Informatics Centre-Secretary
Prof. Kajal Biswas, Mechanical Engineering-Joint Secretary
Prof. Joy Sen, Architecture & Regional Planning-Treasurer

Office of AA & IR
Assistant Registrar - C. Annamalai

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. Kallias 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. Bandypadhyay, 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 Bengston, Professor and Head, Department of Paleobiology, Swedish Natural History Museum, Stockholm, Sweden. Topic: “Early Life on Earth”


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: Dr. Anil K Rajvanshi, Director Nimbkar Agricultural Research Institute (NARI), Maharashtra. Topic: “Natural Radionuclide’s in Aqueous Systems: Tracing and Timing Biogeochemical processes and particle Dynamics”


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 Brahmcharchi, President, Dev Sangha Seva Pratishthan, 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 Mohanagopal, alumnus, Tokyo Institute of Technology.
Advanced Technology Development Centre

Head
Prof. P.P. Chakrabarti

Associated Faculty

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

Associate Professor
Dr. T.K. Bhattacharyya, E&ECE Ph.D., Microelectronics, VLSI, MEMS
Dr. Chacko Jacob, Mat. Sc. Ph.D., Wide Bandgap Semiconductors/ Nanomaterials/ Direct Fluorination of Materials/Oxide semiconductors
Dr. A. Dhar, Physics Ph.D., Condensed matter Physics, nanotechnology
Dr. S. Das, SMST & ATDC Ph.D., Microsystem Technology, BIOMEMS, Electrophysiological characterisation of biospecies, Medical electronics.
Dr. P. Mandal, E & ECE Ph.D., Design Automation of CMOS Analog circuits and Systems, Analog Circuit Design.

Senior Scientific Officer
Dr. Pranabendu Gangopadhyay Ph.D., Microphotronics, Integrated Optics, Fiber Optics, MOEMS, Microelectronics.

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, micromotion 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, Brussica 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 As₂ and As₄ both the allotropes. The presence of cracker cell gives us the flexibility to maintain As₂:As₄ ratio for optimizing the Gallium Arsenide growth along with reloading of As without disturbing the chamber vacuum. Also the machine has both Ammonia (NH₃) and plasma N₂ sources for Gallium Nitride growth. Ammonia will be used for thick film growth and plasma N₂ 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 -irst. 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  PhD (IIT Kharagpur), IT Infrastructure Management and Operations, Application Software & Numerical Techniques
Goswami, Partha  M.Tech (IIT Kharagpur), Enterprise & Optical transport network
Roy, Devshri  PhD (IIT Kharagpur), Artificial Intelligence, DBMS
Das, Surid Kumar  M.Tech (Rajasthan Vidyapith Deemed University), Hardware, Compute Network
Chattopadhyay, A.  M.S (IIT Kharagpur), Hardware, OS, Network Security & Applications
Das, Sudipto  M.Tech (Rajasthan Vidyapith Deemed University), 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:
a) All distribution switches will be connected to dual core switches through 10 Gbps link.
b) Access link will be 10/100/1000 Mbps to support the present network interface card of the computers.
c) A Wi-Fi network will be overlaid in all Hostels and all departments (locations mentioned above) to avoid any further adhoc UTP cable laying.
d) All network switches located at various locations will be housed in a structured fashion.
e) 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:
1. The Network requirements will span the entire campus
2. This will implement a state of the art “Quadruple Play” services integrating Data, Voice, Video and Wireless.
3. 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

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<tr>
<th>Courses</th>
<th>No. of participants</th>
<th>Remarks</th>
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<tr>
<td>1. QIP (AICTE) Short Term Courses</td>
<td>12</td>
<td>402</td>
</tr>
<tr>
<td>2. Sponsored/Self finance Short term courses</td>
<td>80</td>
<td>3692</td>
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<tr>
<td>Total =</td>
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<td>4094</td>
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M. Tech Programme organised by the Unit

<table>
<thead>
<tr>
<th>Name of the Subject</th>
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<tbody>
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<td>1. Electrical Engineering</td>
<td>31</td>
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<tr>
<td>2. Electronics and Electrical Communication Engineering</td>
<td>47</td>
<td>3 Years</td>
</tr>
<tr>
<td>3. Information and Communication Technology</td>
<td>18</td>
<td>3 years</td>
</tr>
</tbody>
</table>

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 - In charge, Optical Microscopy (w.e.f. 1.12.09)
Prof. B. K. Dhindaw - In charge, Optical Microscopy (up to 30.11.09)
Prof. A.K. Ghosh - In charge, SPM
Prof. K. Das - 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.

Brief descriptions of on-going activities

Life Science Division

(I) 2D GEL Laboratory: Two-dimensional gel electrophoresis system: this equipment is used for analyzing protein samples (qualitative and quantitative) provided by investigators (students, scholars and faculty of the department of Biotechnology, SMST, and ALPGE).

(II) DNA Sequencer; Real time Polymeric Cyclic Reaction (PCR) analyzer, 2-Dimensional gel electrophoresis Laboratory: This equipment is use to determine nucleotide sequence of DNA samples provided by different investigators (students, scholars and faculty of the department of Biotechnology, SMST, ALPGE and AgFE).

(III) Real Time PCR machine Laboratory: this machine is used to analyze gene expression level (quantitative) in different tissue samples provided by investigators (students, scholars and faculty of the department of Biotechnology, SMST, ALPGE).

(IV) FACS Laboratory: the BD FACSCalibur™ system is four-color, dual-laser, bench top system capable of both cell analysis and sorting. This machine is designed specifically to support a wide range of applications like immunophenotyping, absolute counting, residual white blood cell enumeration, stem cell analysis and isolation by sorting. Recent Experiments carried out with this instrument include drug delivery, detection of apoptotic
cell death by TUNEL Assay, interaction between cell and fluorescent labeled toxin molecules, and cell cycle analysis.

(V) **High Pressure Liquid Chromatography Laboratory**: HPLC is an efficient technique used for the separation of macro/micro molecules such as organic compound, amino acids, nucleotides, aroma/fragrance, enzymes and proteins etc. This equipment has quaternary pumps, along with different detectors like Refractive Index (RI) and Photo diode array at variable wavelengths, manual injecting valves, ports as well as various columns for separating different molecules.

(VI) **MALDIToF 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 007HF X-ray generator is equipped with RaxisIV++ detector and X-steam cryo for X-ray diffraction studies of protein crystals to determine their 3D structure in atomic resolution. Three dimensional structures of proteins from pathogenic organisms like M. tuberculosis and S. aureus have been determined.

(VIII) **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.

(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 its 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 cryogens for the operation of the MPMS SQUID VSM. It offers $1 \times 10^{-8}$ 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.

Assistant Librarian
Uma Shankar M.Lib.I.Sc., M.A.
Mazumdar, Kamal Ph.D., M.Lib.I.Sc., B.Com, CPDA

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.

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 our faculty members. Twice a week the Digital Library organizes User Education Programme so as to train the students to 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

<table>
<thead>
<tr>
<th>Category</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>Invited Lectures</td>
<td>3</td>
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<tr>
<td>Research Publication</td>
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</table>
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 Pannel Bio-reactor.
15) Heat sink.
16) Fabrication of fixtures for experiments.
17) Fabrication of Impellors.

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., Flask 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

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Faculty Table</td>
<td>11 Nos.</td>
</tr>
<tr>
<td>2) Office Table</td>
<td>10 Nos.</td>
</tr>
<tr>
<td>3) Computer Table (Special/Ordinary)</td>
<td>64 Nos.</td>
</tr>
<tr>
<td>4) Laboratory Table</td>
<td>63 Nos.</td>
</tr>
<tr>
<td>5) Reading Table (With / Without partition)</td>
<td>40 Nos.</td>
</tr>
<tr>
<td>6) Book Shelf / File Rack</td>
<td>02 Nos.</td>
</tr>
<tr>
<td>7) Students’ model of different shape</td>
<td>02 Nos.</td>
</tr>
<tr>
<td>8) Replacement of top of reading table</td>
<td>16 Nos.</td>
</tr>
<tr>
<td>9) Incumbency Board</td>
<td>01 Nos.</td>
</tr>
<tr>
<td>10) Wooden Box of different shape</td>
<td>08 Nos.</td>
</tr>
<tr>
<td>11) Repair of Rack</td>
<td>02 Nos.</td>
</tr>
<tr>
<td>12) Name Plate</td>
<td>47 Nos.</td>
</tr>
<tr>
<td>13) Repair of Stool</td>
<td>01 Nos.</td>
</tr>
<tr>
<td>14) Podium</td>
<td>01 Nos.</td>
</tr>
<tr>
<td>15) Platform</td>
<td>01 Nos.</td>
</tr>
<tr>
<td>16) First Aid Box</td>
<td>06 Nos.</td>
</tr>
<tr>
<td>17) Foot Rest</td>
<td>01 Nos.</td>
</tr>
<tr>
<td>18) Stool</td>
<td>02 Nos.</td>
</tr>
<tr>
<td>19) Modification of Lab. Table</td>
<td>05 Nos.</td>
</tr>
<tr>
<td>20) Notice Board</td>
<td>02 Nos.</td>
</tr>
<tr>
<td>21) Repair of Notice Board</td>
<td>01 No.</td>
</tr>
<tr>
<td>22) Lamination of Board</td>
<td>01 No.</td>
</tr>
</tbody>
</table>
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
5. Spinot Heater - Biotechnology [2Nos.]
6. Water circulating bath - Chemistry
7. Compound Microscope - AgFE
9. Heater / Magnetic stirrer - Biotechnology
10. Microwave Oven switch - Biotechnology
11. System digital technometer - R.D.C.
13. Power combiner PCB - E & ECE
15. Digital Lux Meter - RDC
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.

Publications 1
Centre for Theoretical Studies

Convenor
Prof. Pratim Kumar Chattaraj

Associated Faculty

Sudeb Kumar Prasant Pal
Ph.D (IISc Bangalore), Computer Sc. and Engg. (Computational geometry, Design and analysis of algorithms.)

Soumitro Banerjee
Ph.D (IIT Delhi), Electrical (Nonlinear Dynamics, Chaos / Bifurcation Theory.)

A. Taraphder
Ph.D (IISc Bangalore), Physics (Theoretical Condensed Matter Physics)

Somnath Bharadwaj
Ph.D (IISc Bangalore), Physics (Theoretical Astrophysics and Cosmology)

Sayan Kar
Ph.D (IIT Kanpur), Physics (Relativity and High Energy Physics)

S. Pratik Khastgir
Ph.D (IOP, Bhubaneswar), Physics (Mathematical Physics and Integral Models)

Anirvan DasGupta
Ph.D (Kanpur), Mechanical (Dynamics, Control and Robotics.)

P. K. Chattaraj
Ph.D (IIT Bombay), Chemistry (Theoretical Chemistry, Quantum Chaos)

Sanjoy Bandyopadhyay
Ph.D (IISc Bangalore), Chemistry (Computational Chemistry, Molecular Modelling)

Somesh Kumar
Ph.D (IIT Kanpur), Statistical Decision Theory and Inference, Quantum Computing

Suman Chakraborty
Ph.D, Microfluidics and Nanofluidics, Interfacial Phenomena, Transport Phenomena in Materials Processing, Computational Fluid Dynamics (CFD)

G.P. Raja Sekhar
Ph.D (Hyderabad Univ), Boundary integral methods for viscous flows, Mass transfer in porous biological pellets

Pratima Panigrahi
Ph.D (Bangalore), Combinatorics, Graph Theory

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. Nirjar 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.
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
Biswa, 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 Encompassion
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. Suvarnajyoti Das Ph.D Cryogenic Engg
Dr. T. K. Nandi Ph.D Cryptography, VLSI, Embedded systems for Cryptographic Systems, Side Channel Analysis

Dr. Debdeep Mukhopadhyay Ph.D Sensor Design & Development of Instrumentation system and Study of Fractional Order systems


Dr. B. Samanta Ph.D Mine planning, Geostatistics, Mine environment and ventilation

Chair Professor

Dr. B. K. Sarkar Ph.D RF & Microwave Engineering

Visiting / Adjunct Faculty

Prof. Kalyan Bandyopadhyay Ph.D Satellite Communication
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
7. On An Algorithm for Boundary Estimation of Commonly Occurring 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
15. Effects of correlated interferers on packet data in presence of voice in cellular CDMA
16. Resource allocation for data in presence of voice in cellular CDMA with correlated interferers
17. Estimation of Antenna Factor of Wire Antenna as EMI Sensor Fusion
18. An Evolutionary Algorithm based approach to Automated Design of Analog and RF circuits using Adaptive Normalized Cost Functions
19. Image – based classification of Defects in Frontal Surface of Fluted Ingot
20. Impedance Calculation of Broadwall Longitudinal Slot on Rectangular Waveguide
21. Harmonic Suppression and Miniaturization of Microstrip Branch Line Couplers
22. Method of Moment Analysis of Arbitrary Length Longitudinal Slot on Broadwall of Rectangular Waveguides
23. Analysis of Longitudinal Slot Antennas in the Broadwall of Standard and Non-standard Rectangular Waveguides
24. Planar Compact, Wideband Bandpass Filters with Wide Upper Stopband
25. Estimation of EMI from Waveguide Joints and Analysis of Thick Rectangular windows and Open-end of a Rectangular Waveguide as EMI Sensors
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
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
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

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
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

<table>
<thead>
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<th>Date</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 Jul 10</td>
<td>Tree Plantation</td>
</tr>
<tr>
<td>21 Aug 10</td>
<td>Sadbhavana Run</td>
</tr>
<tr>
<td>05 Dec 10</td>
<td>Donated dry rations &amp; fresh rations to the Seema Center (Charitable Organisation)</td>
</tr>
</tbody>
</table>

Social awareness activities

<table>
<thead>
<tr>
<th>Date</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 Aug 10</td>
<td>Save energy drive</td>
</tr>
<tr>
<td>23 Oct 10</td>
<td>Anti Dowry &amp; Anti Female Foeticide Pledge</td>
</tr>
<tr>
<td>14 Nov 10</td>
<td>Lecture on Anti Drug</td>
</tr>
<tr>
<td>30 Jan 10</td>
<td>National Anti Leprosy Awareness Rally</td>
</tr>
</tbody>
</table>

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 footwear. 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 orgabized 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 January, 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 (Till 30.9.2010)
Prof. U. C. Gupta (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 website**

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.
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 carry out 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 multidisciplinary 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 I/Os, 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
• Aunwesha 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. Jyvaskyla 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:

<table>
<thead>
<tr>
<th>Course/Degree</th>
<th>No. of students registered</th>
<th>No. of students placed</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.Tech. (Hons.)</td>
<td>380</td>
<td>357</td>
</tr>
<tr>
<td>B.Arch. (Hons.)</td>
<td>025</td>
<td>025</td>
</tr>
<tr>
<td>M.Sc.</td>
<td>207</td>
<td>151</td>
</tr>
<tr>
<td>Dual Degree M.Tech.</td>
<td>264</td>
<td>250</td>
</tr>
<tr>
<td>M.Tech./MCP</td>
<td>657</td>
<td>438</td>
</tr>
<tr>
<td>M.B.M.</td>
<td>080</td>
<td>078</td>
</tr>
<tr>
<td>Ph.D./MS</td>
<td>022</td>
<td>022</td>
</tr>
<tr>
<td>Total</td>
<td>1635</td>
<td>1321</td>
</tr>
</tbody>
</table>

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 likes 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

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 Meet. 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, NIIT 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 & Technoloy 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.

KSHTIJ ’11
Kshiti – 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>
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<tr>
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<th>ADMISSION OFFERED</th>
<th>ACTUALLY REGISTERED</th>
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|          | Total (D) | 206 | 108 | 62 | 30 | 406 | 227 | 76 | 68 | 41 | 412(4) | 221 | 76 | 67 | 37 | 401(4) |
|          | Total (A + B + C + D) | 677 | 362 | 201 | 101 | 1341 | 769 | 249 | 221 | 115 | 1354(11) | 717 | 247 | 205 | 105 | 1274(10) |

* The grand total includes 3% of total seats i.e. 40 seats reserved under PD category
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## 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)

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Rate: Pocket Allowance Rs.250/- p.m. plus Free Messing

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# MEDALS AND PRIZES : 2010-2011 : Under-graduate

## 1. INSTITUTE GOLD MEDALS:

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<th>CGPA</th>
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<tbody>
<tr>
<td>1.</td>
<td>President Of India Gold Medal</td>
<td>Gautam Kumar</td>
<td>07CS1021</td>
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<td>2.</td>
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## 2. ENDOWMENT GOLD MEDALS:

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## 3. SILVER MEDALS:

### A. 4-YEAR B. TECH.(HONS.) COURSES:

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## B. 5-YEAR B. ARCH.(HONS.) COURSE:

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### E. M. SC. (2-YEAR) COURSES

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### Naval Architecture

#### B. 5-YEAR B. ARCH. (HONS.) COURSE:

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5. Physics  Siddharth Gokuldas Prabhu  06PH2009  8.48  1,000.00
6. Statistics & Informatics  Manish Raj  06SI2006  6.91  1,000.00

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<td>Debajit Saha</td>
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<td>Trisha Nath</td>
<td>09PH4006</td>
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### Table A-7

**STUDENTS AWARDED SCHOLARSHIPS BY EXTERNAL AGENCIES**

**(2010-2011)**

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<th>Sl. No.</th>
<th>Awarding Organization</th>
<th>No. of Recipients</th>
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<tbody>
<tr>
<td>1.</td>
<td>National Council of Educational Research &amp; Training, Sri Aurobinda Marg, New Delhi 16</td>
<td>68</td>
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<tr>
<td>2.</td>
<td>INSPIRE Scholarship awarded by Department of Science &amp; Technology, Govt. of India, New Delhi to the students of 5-Yr. Int. M.Sc.Course (Science stream only- Except Economics Branch)</td>
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<td>3.</td>
<td>Rajrashree Shahu Maharah Merit Scholarship, Director of Social Welfare, Maharashtra State, Pune.</td>
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<td>4.</td>
<td>CSR Scholarship awarded by Shipping Corporation of India, Mumbai for SC/ST students of O.E. &amp; Naval. Arch. Department</td>
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<tr>
<td>5.</td>
<td>Merit-cum-Means Scholarship from Education Director (Scholarship &amp; Stipend Section) Govt. of West Bengal, Kolkata (for 2-Yr. M.Sc. students)</td>
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<td>6.</td>
<td>Steel Authority of India Ltd., Durgapur, Rourkela, (RSP-4 Nos. + VSP-4 Nos.) Vishakhapatnam Steel Plant, Bokaro</td>
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<td>7.</td>
<td>Aditya Birla Scholarship, Aditya Birla Group, Aditya Birla Management Corporation, Mumbai</td>
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<td>8.</td>
<td>Post Matric Scholarship, Social welfare Deptt. Lucknow, Govt. of Uttar Pradesh</td>
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</tr>
<tr>
<td>9.</td>
<td>Directorate of Higher Education, Chattisgarh</td>
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</tr>
<tr>
<td>10.</td>
<td>Institute of Engineers, Calcutta.</td>
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<tr>
<td>11.</td>
<td>Jagadish Chandra Bose National Talent Search, Calcutta (JBNSTS) (Fresh – 11 + Renewal-28</td>
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<td>12.</td>
<td>National Board of Higher Mathematics, Deptt. of Atomic Energy, Govt. of India, Mumbai (for students of 2-Yr. M.Sc. course, Deptt of Math.)</td>
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<td>13.</td>
<td>Indian Oil Corporation Ltd., New Delhi.</td>
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<td>14.</td>
<td>G.O.I. Scholarship, Govt. of Tamilnadu</td>
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<td>15.</td>
<td>Post Matric Scholarship to SC/ST Students, Govt. of Bihar</td>
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<td>16.</td>
<td>MCM Scholarship for Minorities Communities, Ministry of Minority Affairs, New Delhi</td>
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<td>17.</td>
<td>KVPY Scholarship, IISc, Bangalore</td>
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<td>18.</td>
<td>Indira Gandhi Single Girl Child PG Scholarship to the girl students of 2-Year M.Sc. course University Grant Commission, New Delhi</td>
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<td>PG Merit Scholarship to the students of 2-Year M.Sc. course University Grant Commission, New Delhi</td>
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Table A-8

STUDENTS ON ROLL – UNDERGRADUATE (B.TECH/B.Arch./M.Sc./DUAL DEGREE) COURSES AT THE BEGINNING OF THE SESSION 2010 – 2011

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<th>2&lt;sup&gt;nd&lt;/sup&gt; yr.</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; yr.</th>
<th>4&lt;sup&gt;th&lt;/sup&gt; yr.</th>
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<td>M</td>
<td>F</td>
<td>M</td>
<td>F</td>
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<td>02</td>
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<td>06</td>
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<td>17</td>
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<td>06</td>
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<td>08</td>
<td>19</td>
<td>03</td>
<td>15</td>
<td>01</td>
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<tr>
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<td>02</td>
<td>20</td>
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### Table A-9

**STATEMENT OF RESULTS (UNDERGRADUATE) 2010-2011**

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## INDIAN INSTITUTE OF TECHNOLOGY, Kharagpur

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<td>Investments and deposits made</td>
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<td>a) Out of Earmarked/Endowment funds</td>
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<td>b) Out of Instt. Dev. Fund</td>
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<td>c) Out of Own Funds &amp; Others</td>
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<td>III</td>
<td>Income on Investments from</td>
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<td>IV</td>
<td>Expenditure on Fixed Assets &amp; Capital Work-in-progress</td>
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<td>b) Recoverable Advances</td>
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