



ANNUAL REPORT
2011-2012

Taking science
to the next level

भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान कोलकता

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH KOLKATA

(An Autonomous Institute under Ministry of Human Resource Development, Government of India)



ANNUAL REPORT

2011-2012

**INDIAN INSTITUTE OF
SCIENCE EDUCATION AND RESEARCH
KOLKATA**

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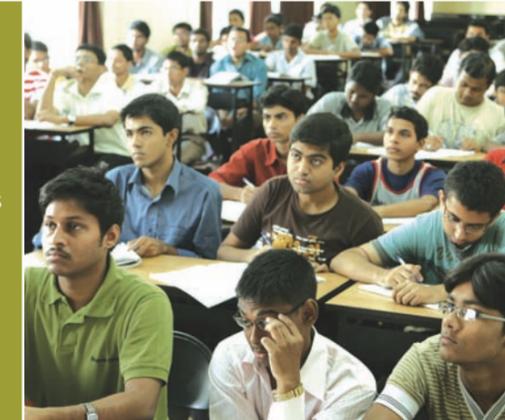
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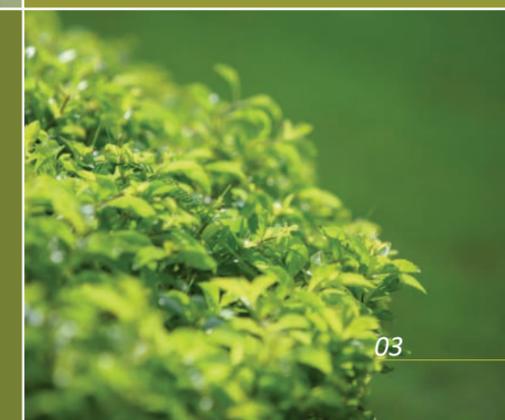
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Foreword

It is a privilege for me to write this Foreword, as I took charge of IISER Kolkata only recently – February 01, 2012. I have immense pleasure in presenting the Annual Report of this Institute for 2011-2012, reflecting the achievements, academic programs and academy-related activities.

IISER Kolkata has completed five years of existence and has entered the sixth year. The first batch of students – 38 of them – of our BS-MS (Bachelor of Science and Master of Science) dual degree program have completed in 2011. Notably, about 80% of our first-batch of BS-MS students have booked their places in some of world's best research institutes, including top-notch North American and European Universities, in addition to joining premier research institutes in India. We continue to excel by focusing on the vision of IISER Kolkata to provide both quality teaching and exposing students to excitements of research in basic sciences with a borderless and flexible education program in an integrated manner, thus nurturing both curiosity and creativity. Creating research infrastructure is one of our top priorities. And hence we are continuing to add to the already existing excellent experimental facilities.

Like previous years, we have been able to attract an increased number of students to our programs. During the reporting period, IISER Kolkata had 406 students in the BS-MS program, 39 in the Post-BSc-Integrated PhD (PBIP) program, and 150 in the PhD program. We were having 78 young Assistant Professors, 9 Associate Professors and 8 Professors, supported by 34 non-teaching staff members. IISER Kolkata aims to have a strong core faculty, selected on a highly competitive basis, who will be supported by attractive start up and matching research grants. It is very satisfying to put on record that our family has attracted funding for 60 sponsored research projects amounting to around Rs. 27 Crores. The Institute plans to develop a synergistic network with other academic institutions both in India and abroad, addressing fundamental issues related to science education in India.

It is disheartening to note that IISER Kolkata is still functioning in the transit campus of Bidhan Chandra Krishi Viswavidyalaya (BCKV) and West Bengal University of Animal and Fishery Sciences (WBUAFS). Even though our focus of attention has always been to build the permanent campus, for various reasons the construction activities did not achieve the expected momentum. However, I am delighted to share the good news that things have started to move in the right direction and we expect a hostel and dining hall facility for 400 students to be made available to us by March 2013. Another hostel of similar size is in an advanced stage of its completion. Our Laboratory Complex and Lecture Theatres are also expected to be ready by next year-end.

In essence, IISER-K is full with academic activities. I am happy to put on record that the faculty members have started publishing their research contributions in journals of international repute, based on work done at IISER-K. Some of our young faculty members have excelled in research and have been recognized with national and international fellowships/awards. Apart from engaging in scientific activities, students and faculty of IISER-K are also involved in various social and co-curricular activities. We are trying our best to fulfill our social commitment through various outreach programs. We all—the members of IISER-K family—feel proud of being a part of this budding Institute.

We look forward to exciting and fruitful years ahead.

Finally, I would like to congratulate the editorial committee led by Prof. Soumitro Banerjee for bringing out this comprehensive report.

R. N. Mukherjee
Director



The Institute

The Indian Institute of Science Education and Research Kolkata (IISER Kolkata) was established in 2006 by the Ministry of Human Resource Development (MHRD), Government of India with the aim of integrating education with research. The principal authority governing the Institute is the Board of Governors. The Director is the principal academic and executive officer of the Institute.



**The IISER-K
Community**

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2.1 Staff Members

Faculty Members

Professors

Rabindra Nath Mukherjee

(Director)

Inorganic Chemistry and Bioinorganic Chemistry

PhD - Chemistry

(University of Calcutta, 1983)

FNA, FASc, FRSC (UK)

Narayan Banerjee

Gravitation & Cosmology

PhD - Physics

(Jadavpur University, 1986)

Soumitro Banerjee

Nonlinear Dynamics

PhD - Electrical Engineering

(Indian Institute of Technology Delhi, 1987)

FNA, FASc, FNAE

Chanchal Das Gupta

Biology

PhD - Biology

(Saha Institute of Nuclear Physics, Kolkata, 1974)

FNA, FNASc, FASc

Somnath Dasgupta

Geochemistry, Petrology

PhD - Geology

(Jadavpur University, Kolkata, 1979)

FNA, FNASc, FASc, FTWAS

Amitava Datta

High Energy Physics

PhD - Physics

(Visva Bharati, Santiniketan, 1974), FNA

Sushanta Dattagupta

(On long leave on FST)

Condensed Matter and Statistical Physics (Theory)

PhD - Physics

(St. John's / Brookhaven National Laboratory, 1973/74)

FNA, FNASc, FASc, FTWAS

Prasanta Panigrahi

Field Theory

PhD - (University of Rochester, 1988)

Bidyendu Mohan Deb

Theoretical Chemistry, Chemical Physics

D.Phil (Oxon, 1969)

FNA, FASc, FTWAS

Adjunct Professor

Associate Professors

Tarun Kumar Dalai

Isotope and Trace Element Geochemistry

PhD - Geology

(Physical Research Laboratory/ Maharaja Sayajirao University of Baroda, 2001)

Jayasri Das Sarma

Neural Cell Biology, Neuro- Science

PhD - Immunology/Chemistry

(Jadavpur University, Kolkata, 1995)

Supriyo Mitra

Earthquake Seismology, Continental Tectonics

PhD - Geophysics

(University of Cambridge, 2004)

Asok K. Nanda

Reliability, Statistics

PhD - Statistics

(Panjab University, Chandigarh, 1998)

Vadlamani Ravikant

Crustal Evolution, Isotope Geochemistry and Geochronology

PhD - Earth Science

(National Geophysical Research Institute / Osmania University, Hyderabad, 2002)

Joyanto Routh

(till 16.05.2011)

Biogeochemistry, Organic Geochemistry

PhD - Geochemistry

(Texas A&M University, 1998)

Prasanta Sanyal

Stable Isotopes Geochemistry

PhD – Geology

(Physical Research Laboratory, Ahmedabad/ Maharaja Sayajirao University of Baroda, 2004)

Supratim Sengupta

Complex Systems, Computational Biology & Bioinformatics, Biophysics

PhD – Physics

(Institute of Physics, Bhubaneswar, 2000)

Tapas Kumar Sengupta

RNA Stability, Gene Regulation, Bioremediation

PhD - Biology

(University of Calcutta, 1996)

Assistant Professors

Saugata Bandyopadhyay

Partial Differential Equations, Differential Inclusions and Calculus of Variations
PhD - Mathematics
(École Polytechnique Fédérale de Lausanne, 2007)

Subhajit Bandyopadhyay

Photochromic Materials; Biomimetic Chemistry
PhD - Chemistry
(University of Victoria, British Columbia, 2004)

Anirban Banerjee

Spectral Graph Theory, Structure & Evolution of Biological Networks, Human Brain Functional Networks
PhD - Mathematics
(Max Planck Institute, University of Leipzig, 2008)

Ayan Banerjee

Precision Optical Spectroscopy; Optical Sensors (Experimental)
PhD - Physics
(Indian Institute of Science, Bangalore, 2005)

Bhavtosh Bansal

Condensed Matter Physics (Experimental)
PhD – Physics
(Indian Institute of Science, Bangalore, 2005)

Punyasloke Bhadury

Molecular Ecology, Climate Change, Nano-biology
PhD - Biological Science
(University of Plymouth, 2005)

Anuradha Bhat

Community Ecology, Biodiversity and Conservation, Zebrafish Behavioural Ecology
PhD- Biology
(Indian Institute of Science, Bangalore, 2002)

Kathakali Bhattacharyya

Structural Geology
PhD - Earth Science
(University of Rochester, 2010)

Rangeet Bhattacharyya

Methodological Developments in Liquid and Solid State Nuclear Magnetic Resonance (Experimental)
PhD - Physics
(Indian Institute of Science, Bangalore, 2005)

Sayan Bhattacharyya

Materials Chemistry, Nanotechnology
PhD - Chemistry
(Indian Institute of Technology Kanpur, 2006)

Robert John Chandran

Terrestrial Ecology

PhD – Biology

(Indian Institute of Science, Bangalore, 2001)

Devapriya Chattopadhyay

Invertebrate Paleontology

PhD - Geological Sciences

(University of Michigan, Ann Arbor, 2009)

Debansu Chaudhuri

Organic Semiconductors

PhD - Chemistry

(Indian Institute of Science, Bangalore, 2006)

Koel Das

Computational Neuroscience, Visual Perception,

Brain-Computer Interface

PhD - Pattern recognition

(University of California, Irvine, 2007)

Ananda Dasgupta

Quantum Phenomena (Theory)

PhD - Physics

(Saha Institute of Nuclear Physics,

Kolkata / Jadavpur University, 2001)

Jyotirmayee Dash

Organic Chemistry

PhD - Chemistry

(Indian Institute of Technology Kanpur, 2003)

Partha Pratim Datta

Structural & Molecular Biology

PhD - Molecular Biology

(Indian Institute of Chemical Biology,

Kolkata /Jadavpur University, 2002)

Rupak Datta

Biochemistry, Molecular Cell Biology

PhD – Biology

(Indian Institute of Chemical Biology,

Kolkata/ Jadavpur University, 2006)

Supratim Datta

Biochemical Engineering and Bio-energy,

Bioinorganic Chemistry

PhD- Biology

(Boston University, Boston, 2005)

Priyadarsi De

Polymer Chemistry

PhD - Chemistry

(Indian Institute of Science, Bangalore, 2002)

Rumi De

Theoretical Biological Physics; Soft Condensed Matter;

Nonlinear Dynamics

PhD – Nonlinear Dynamics

(Indian Institute of Science, Bangalore, 2006)

Pradip Kumar Ghorai

Computer Simulation,

Diffusion in Porous Solids and Liquids,

Electron Transfer, Self-assembly

PhD - Chemistry

(Indian Institute of Science, Bangalore, 2005)

Amit Ghosal

Condensed Matter Physics (Theory)

PhD - Physics

(Tata Institute of Fundamental Research, Mumbai, 2001)

Anandamohan Ghosh

Nonlinear Dynamics,

Mathematical and Theoretical Biology

PhD - Physics

(National Chemical Laboratory, Pune /

University of Pune, 2004)

Nirmalya Ghosh

Optics & Spectroscopy, Biophotonics

PhD - Physics

(Raja Ramanna Centre for Advanced Technology,

Indore/ Devi Ahilya Vishwavidyalaya, Indore, 2005)

Debasish Haldar

Supramolecular Bio-organic Chemistry

PhD - Chemistry

(Indian Association for the Cultivation of Science,

Kolkata/Jadavpur University, 2005)

Golam Mortuza Hossain

Gravitation & Cosmology (Classical and Quantum)

PhD- Physics

(Institute of Mathematical Sciences, Chennai/

University of Madras, 2006)

Manoj Jaiswal

Geomorphology, Quaternary Geochronology,
Palaeoseismics and Palaeoclimatic Studies
PhD - Geology
(Physical Research Laboratory, Ahmedabad/ Maharaja
Sayajirao University of Baroda, Vadodara, 2006)

Sachindranath Jayaraman

(till 09.12.2011)
Functional Analysis,
PhD - Mathematics
(Indian Institute of Technology Madras, 2008)

Sumit Khanra

Molecular Magnetism,
Bioinorganic Organometallic Chemistry
PhD - Chemistry
(Max-Planck Institute for Bioinorganic Chemistry,
Mülheim, 2005)

Debasis Koley

Computational Chemistry
PhD - Chemistry
(Max-Planck Institute for Coal Research, Mülheim, 2005)

Arindam Kundagrami

Theoretical Soft Condensed Matter Physics
PhD - Physics
(University of Pennsylvania, Philadelphia, 2003)

Siddhartha Lal

Low-dimensional Quantum Condensed Matter Systems,
Strongly Correlated Systems (Theory)
PhD - Physics
(Indian Institute of Science, Bangalore, 2003)

Venkataramanan Mahalingam

Luminescent Nanomaterials and Nanocomposites
PhD - Chemistry
(Indian Institute of Technology Madras, 2001)

Sankar Maiti

Actin Cytoskeleton
PhD - Biology
(Institute of Microbial Technology, Chandigarh, 2003)

Prasun K. Mandal

Single Molecule Spectroscopy
PhD - Chemistry
(University of Hyderabad, 2006)

Swadhin K. Mandal

Organometallic Catalytic Transformations,
Nanomaterials
PhD - Chemistry
(Indian Institute of Science, Bangalore, 2002)

Chiranjib Mitra

Quantum Information Processing, Quantum
Magnetism, Strongly Correlated Electron Systems and
Magneto-optics
PhD - Physics
(Tata Institute of Fundamental Research, Mumbai,
2001)

Partha Mitra

Magnetism in Mesoscopic Systems and Spintronics
Applications
PhD - Physics
(University of Florida, 2006)

Arindam Mukherjee

Metal Complexes, Magnetism, DNA Cleavage,
Anti-cancer Agents, Metalloproteins, Microcalorimetry
PhD - Chemistry
(Indian Institute of Science, Bangalore, 2005)

Goutam Dev Mukherjee

Experimental Condensed Matter Physics
PhD - Physics
(University of Hyderabad, 1997)

Balaram Mukhopadhyay

Synthetic Organic Chemistry (Carbohydrate),
Glyco-nanotechnology
PhD - Biological Chemistry
(Jadavpur University, 2001)

Dhananjay Nandi

Laser-Electron-Molecule Collisions,
Photoelectron/Photoion Imaging Spectroscopy,
Ultrafast Electron Dynamics
PhD - Physics
(Tata Institute of Fundamental Research, Mumbai,
2004)

Dibyendu Nandi

Astrophysical Magnetohydrodynamics, Sun-Earth-
System Science, Space Science (Theory)
PhD - Physics
(Indian Institute of Science, Bangalore, 2003)

Rajesh Kumble Nayak

General Theory of Relativity,
Relativistic Astrophysics and Cosmology
PhD - Physics
(Indian Institute of Astrophysics, Bangalore, 2002)

Bipul Pal

Ultrafast Optical Spectroscopy and Semiconductor
Nanostructure
PhD - Physics
(Tata Institute of Fundamental Research, Mumbai,
2004)

Shree Prakash Pandey

Molecular Ecology, Systems Biology, small-RNA
Mediated Gene Regulation
PhD - Biology
(Max Planck Institute for Chemical Ecology, Jena, 2007)

Mohit Prasad

Cell and Developmental Biology
PhD - Biology
(Center for Cellular and Molecular Biology, Hyderabad/
Jawaharlal Nehru University, New Delhi, 2005)

Pradipta Purkayastha

Photochemistry and Spectroscopy
PhD - Chemistry
(Jadavpur University, Kolkata, 2002)

Satyabrata Raj

Condensed Matter Physics (Experimental)
PhD - Physics
(Institute of Physics, Bhubaneswar / Utkal University,
Bhubaneswar, 2001)

C. Malla Reddy

Supramolecular Chemistry, Crystal Engineering
PhD - Chemistry
(University of Hyderabad, 2006)

Partho Sarothi Ray

Molecular Biology,
Translational Control, RNA-Protein Interaction
PhD - Biology
(Indian Institute of Science, Bangalore, 2005)

Sujata Ray

Soil Mechanics and Environmental Engineering
PhD - Environmental Engineering
(Princeton University, 2007)

Amlan Kusum Roy

Theoretical Chemistry
PhD - Chemistry
(Panjab University, Chandigarh, 1998)

Sasanka Roy

Computational Geometry, Algorithms, Graph Theory
PhD - Computer Science
(Indian Statistical Institute, Kolkata, 2007)

Soumyajit Roy

Materials Science (Experimental)
PhD - Chemistry
(University of Bielefeld, 2005)

Srimonti Sarkar

(till 01.09.2011)
Cell Biology,
PhD - Biology
(Pennsylvania State University, 2001)

Raja Shunmugam

Synthetic Macromolecules,
Drug Carriers, Self-assembling Nanomaterials, Sensors
PhD - Chemistry
(Indian Institute of Technology Madras, 2003)

Subrata Shyam Roy

Operator Theory
PhD - Mathematics
(Indian Statistical Institute, Bangalore, 2009)

Ritesh Kumar Singh

High Energy Physics (Theory)
PhD - Physics
(Indian Institute of Science, Bangalore, 2005)

Bidisha Sinha

Biophysics
PhD - Biology
(National Centre for Biological Sciences – Tata Institute
of Fundamental Research, Bangalore, 2007)

Kaneenika Sinha

Number Theory, Arithmetic of Modular Forms, Multiple
Zeta Values
PhD - Mathematics
(Queen's University, Kingston, 2006)

Subhasis Sinha

Condensed Matter Physics (Theory)
PhD - Physics
(Institute of Mathematical Sciences, Chennai/
University of Madras, 2001)

Rituparna Sinha Roy

Engineering Biomimetics for Therapeutic Interests,
Nanobiotechnology
PhD – Biology
(Indian Institute of Science, Bangalore 2005)

P. A. Sreeram

Quantum Many Body Theory
PhD - Physics
(Institute of Physics, Bhubaneswar/ Utkal University,
Bhubaneswar, 2000)

Annagiri Sumana

Animal Behaviour and Ecology,
PhD - Biology
(Indian Institute of Science, Bangalore, 2002)

Malancha Ta

Stem Cell Biology
PhD - Biology
(National Institute of Immunology, New Delhi, 2000)

Ashwani Kumar Tiwari

Theoretical Reaction Dynamics
PhD - Chemistry
(Indian Institute of Technology Kanpur, 2007)

Prashanth C Upadhya

Terahertz Spectroscopy, Ultrafast Phenomena in
Condensed Matter and Nanophotonics
PhD - Physics
(University of Cambridge, 2004)

Sanjio S. Zade

Organic Electronics Materials
PhD - Chemistry
(Indian Institute of Technology Mumbai, 2004)

Assistant Professors (On Contract)

Veerandra V. Awasthi

Algebraic Topology
PhD - Mathematics
(Harish-Chandra Research Institute, Allahabad, 2008)

Sriram Balasubramanian

Functional Analysis
PhD - Mathematics
(University of Florida, 2010)

Melinda Kumar Bera

Sedimentology, Sequence Stratigraphy, Stable Isotope
Geochemistry
PhD - Geology
(Indian Institute of Technology, Kharagpur, 2011)

Satyaki Mazumder

Outlier Detection in High Dimension, Spatial Trimming
PhD - Statistics
(University of Texas at Dallas, 2010)

Himadri Mukherjee

Algebraic Geometry, Commutative Algebra
PhD - Mathematics
(Northeastern University, Boston, 2008)

Abhijit Pal

Geometric Group Theory
PhD - Mathematics
(Indian Statistical Institute, Kolkata, 2011)

Jitendra Kumar Pattanaik

Application of Cosmogenic Radionuclides in
Geosciences
PhD - Earth Sciences
(Pondicherry University, 2010)

Priyanka Shukla

Fluid Mechanics, Nonlinear Dynamics, Hydrodynamic
Stability, Granular Flows, Pattern Formation
PhD - Mathematics
(Jawaharlal Nehru Centre for Advanced Scientific
Research, Bangalore, 2011)

IISER Fellows

Manua Banerjee

(till 01.03.2012)

Metamorphic Petrology and Structural Geology

PhD - Structural Geology

(University of Calcutta, 2000)

Anindita Bhadra

Animal Behaviour, Evolution, Ecology

PhD - Animal Behaviour,

(Indian Institute of Science, Bangalore, 2008)

Parna Gupta Bhattacharaya

Synthetic Inorganic Chemistry

PhD - Chemistry

(Jadavpur University, 2004)

Mousumi Das

Computational and Theoretical Chemistry

PhD - Chemistry

(Indian Institute of Science, Bangalore, 2006)

Pradip Khatua

Giant Magneto-resistance, Spintronics in

Semiconductors, Mesoscopic Physics in

Superconductors

PhD - Physics

(Indian Institute of Technology Kanpur, 2006)

Visiting Faculty

Alok Kumar Mazumdar

Condensed Matter (Experiments)

PhD (Carnegie Mellon University, USA, 1971)

S. N. Bhattacharya

Earth Science

PhD (University of Delhi, 1973)

Ramanujan Fellow

Sutapa Bose

Soil and Crop Science, Soil Pollution and Solid Waste

Management, Heavy Metal Pollution and

Phyto-remediation

PhD (Jawaharlal Nehru University, New Delhi, 2005)

Senior Scientific Officers

Uday Kumar

Physics

PhD (University of Bombay, 2003)

K. Srikanth

Chemistry

PhD (Indian Institute of Technology Bombay, 2001)

Administrative Staff

Joydeep Sil

Registrar

Prakash Hazarika

Deputy Registrar

N. Muruganatham (till 14.02.2012)

Project Engineer-cum-Estate Officer

Sushmita Bhattacharjee

Assistant Registrar (Admin. & Academics)

Sanad Kumar Shukla

Assistant Registrar (Purchase Section)

Devakivada Govinda Rao

Assistant Registrar (Finance & Accounts)

Siladitya Jana

Assistant Librarian

Rana Bhadra

Technical Officer

Arnab Kumar Sadhukhan

Technical Officer

Immanuel Alexander

Private Secretary to Director

Debabrata Majumder

Assistant Engineer (Electrical)

Shibajee Das

Assistant Engineer (Civil)

Biswajit Das

Accountant

Shibnarayan Pal

Accountant

Arnab Chattopadhyay
Technical/Scientific Assistant

Rajan Thomas
Personal Assistant

Saberi Sen
Personal Assistant

Sanjib Das
Technical/Scientific Assistant

Sunita Basak
Technical/Scientific Assistant

Rajni Marrick
Technical/Scientific Assistant

Sushanta Kumar Roy
Library and Information Assistant

Arup Kumar Saha
Office Superintendent

Suraj Narayan Bordoloi
Office Superintendent

Himanshu Ghosh
Office Assistant (MS)

Puskar Das
Office Assistant (MS)

Raju Sethi
Office Assistant (MS)

Mitali Pal
Office Assistant (MS)

Ashok Das
Office Assistant (MS)

Surashree Dutta
Office Assistant (MS)

Sudip Mitra
Laboratory Technician

Pintu Das
Laboratory Assistant

Subhas Malo
Attendant

2.2 Achievements/ Honours/ Awards of Staff Members

Faculty Members

Department of Biological Sciences



Rituparna Sinha Roy. Ramalingaswamy Fellowship, DBT, New Delhi, India



Supratim Datta. ICT-DBT Energy Bioscience Fellowship for outstanding research contribution.



Rupak Datta. 'Young Investigator Award' at International Congress of Human Genetics (ICHG), Montreal, October, 2011 and Ramalingaswamy Fellowship, DBT, New Delhi, India

Department of Chemical Sciences



Prasun Kumar Mandal. Young affiliate, International Union of Pure and Applied Chemistry (IUPAC)

Department of Earth Sciences



Supriyo Mitra. Associate of the Indian Academy of Sciences, Bangalore (2011 - 2014).



Sutapa Bose. Ramanujan Fellowship, DST, New Delhi, India.

Department of Mathematics and Statistics



Koel Das. Ramalingaswamy Fellowship, DBT, New Delhi, India



Soumitro Banerjee. Fellowship of West Bengal Academy of Science and Technology.

Department of Physical Sciences



Dibyendu Nandi. Karen Harvey Prize from the American Astronomical Society, Solar Physics Division *in recognition for a significant contribution to the study of the sun, early in a person's professional career and for his advances in the use of kinematic dynamo models to elucidate the typical and atypical solar cycle, and for his outstanding leadership within the solar physics and space climate communities.*



Goutamdev Mukherjee. Fullbright Fellowship.

2.3 Student Publications

Independent Publications

Collaboration with Other Institutes

Ghosh, Debasish Kumar. 2011. "SET domain and altered SET domain histone methyl transferases in cancer: A detailed insight." *International Journal of Review in Life Sciences*, 1(3): 112-130.



Majumder, Barun. 2011. "Black Hole Entropy and the Modified Uncertainty Principle: A Heuristic Analysis." *Physics Letters B*, 703: 402-405.

Majumder, Barun. 2011. "Dilaton Cosmology and the Modified Uncertainty Principle." *Physical Review D*, 84: 064031.

Majumder, Barun. 2011. "Effects of GUP in Quantum Cosmological Perfect Fluid Models." *Physics Letters B*, 699: 315-319.

Majumder, Barun. 2011. "Quantum Black Hole and the Modified Uncertainty Principle." *Physics Letters B*, 701: 384-387.

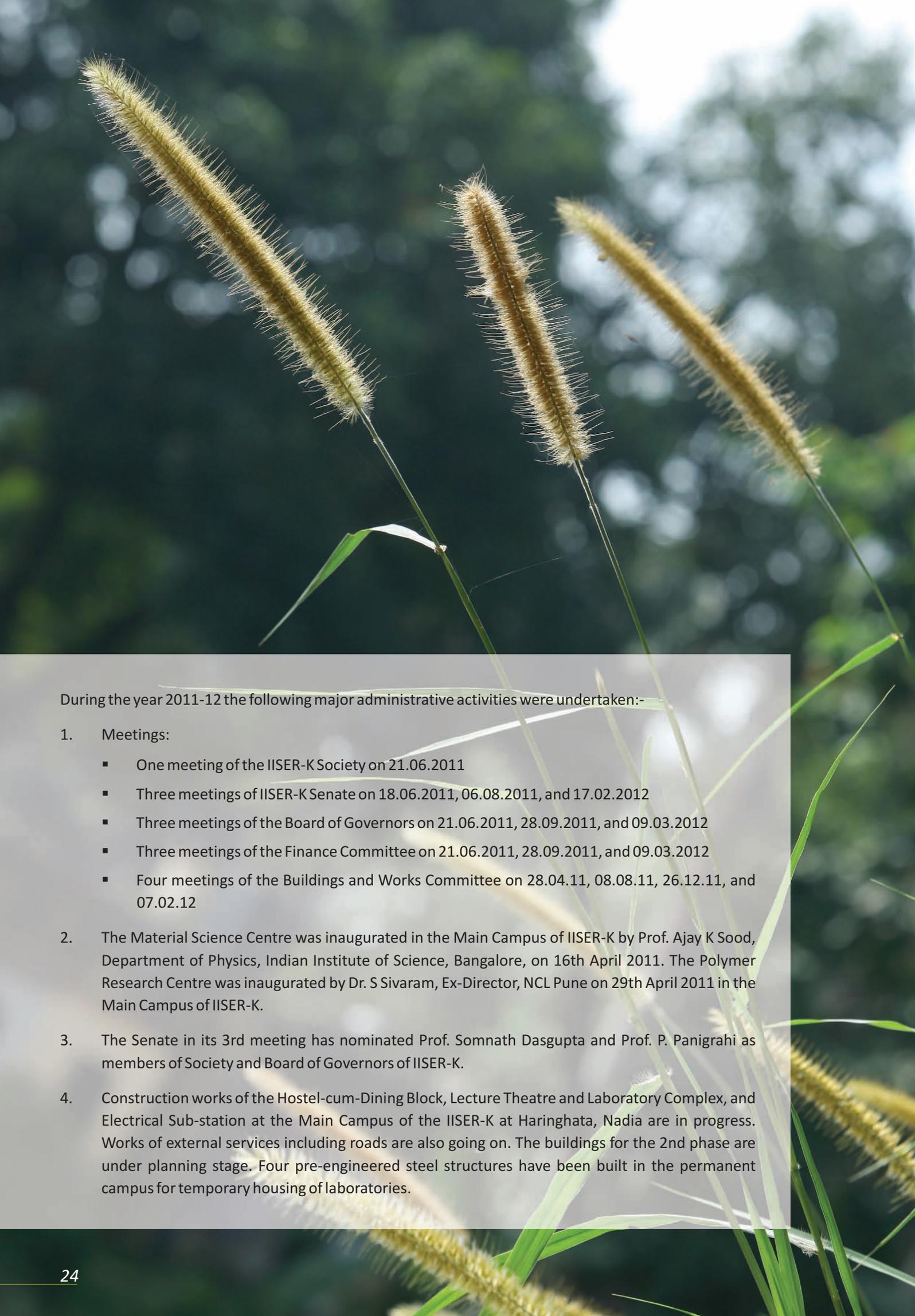
Majumder, Barun. 2011. "The Generalized Uncertainty Principle and the Friedmann equations." *Astrophysics and Space Science*, 336 (2): 331-335.

Majumder, Barun. 2012. "Effects of the Modified Uncertainty Principle on the Inflation Parameters." *Physics Letters B*, 709: 133-136.

Gupta B.K., **V. Rathee**, T. N. Narayanan, P. Thanikaivelan, A. Saha, Govind, S. P. Singh, V. Shanker, A. A. Marti, and P. M. Ajayan. 2011. "Probing a bifunctional luminomagnetic nanophosphor for biological applications: a photoluminescence and time-resolved spectroscopic study." *Small*. 7 (13): 1767-73.

Vyas, Vivek M., T. Soloman Raju, and T. Shreecharan. 2011. "Classical solutions for Yang-Mills-Chern-Simons field coupled to an external source." *Mod. Phys. Lett.*, A 26, 2357





During the year 2011-12 the following major administrative activities were undertaken:-

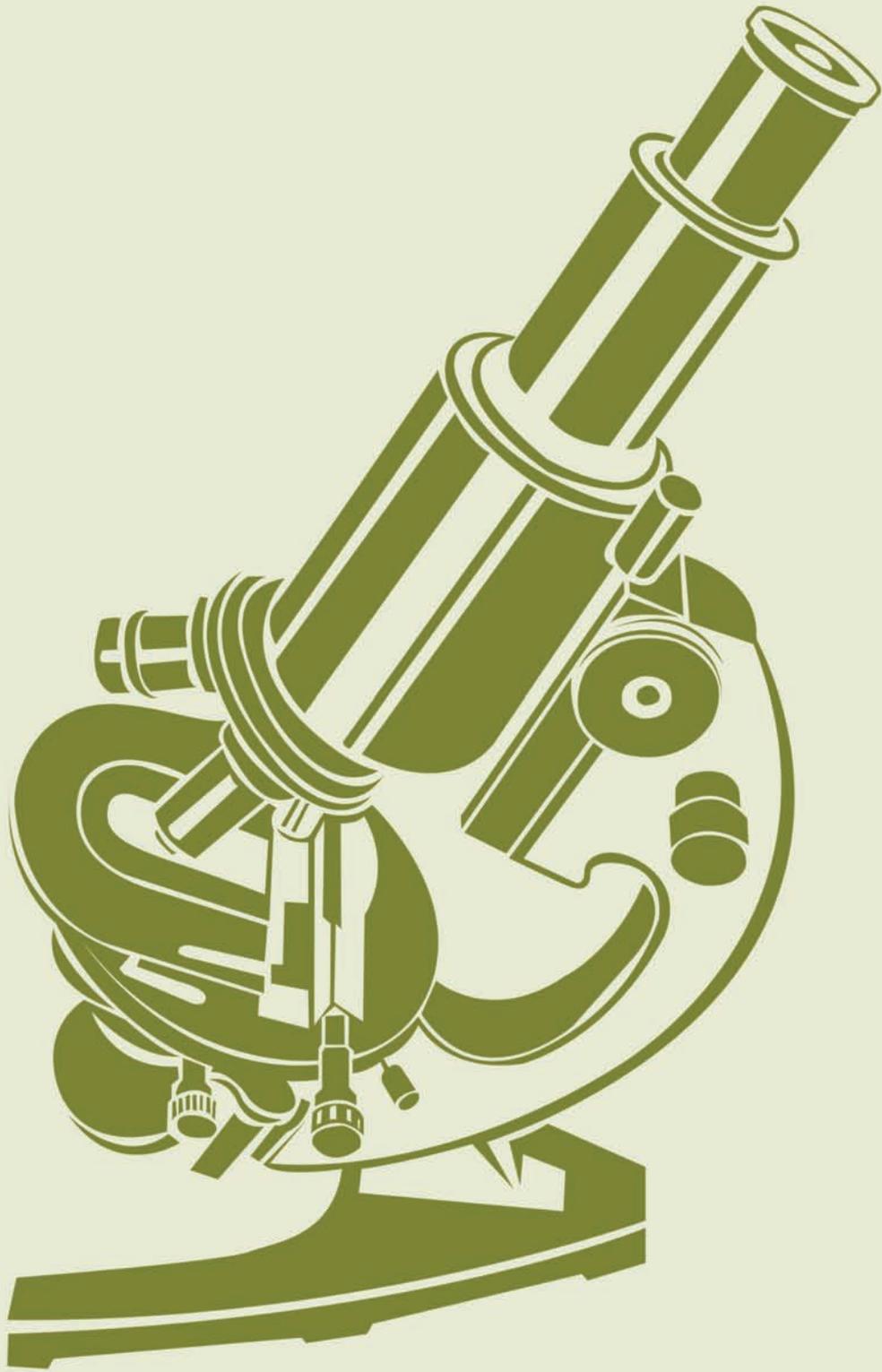
1. Meetings:

- One meeting of the IISER-K Society on 21.06.2011
- Three meetings of IISER-K Senate on 18.06.2011, 06.08.2011, and 17.02.2012
- Three meetings of the Board of Governors on 21.06.2011, 28.09.2011, and 09.03.2012
- Three meetings of the Finance Committee on 21.06.2011, 28.09.2011, and 09.03.2012
- Four meetings of the Buildings and Works Committee on 28.04.11, 08.08.11, 26.12.11, and 07.02.12

2. The Material Science Centre was inaugurated in the Main Campus of IISER-K by Prof. Ajay K Sood, Department of Physics, Indian Institute of Science, Bangalore, on 16th April 2011. The Polymer Research Centre was inaugurated by Dr. S Sivaram, Ex-Director, NCL Pune on 29th April 2011 in the Main Campus of IISER-K.

3. The Senate in its 3rd meeting has nominated Prof. Somnath Dasgupta and Prof. P. Panigrahi as members of Society and Board of Governors of IISER-K.

4. Construction works of the Hostel-cum-Dining Block, Lecture Theatre and Laboratory Complex, and Electrical Sub-station at the Main Campus of the IISER-K at Haringhata, Nadia are in progress. Works of external services including roads are also going on. The buildings for the 2nd phase are under planning stage. Four pre-engineered steel structures have been built in the permanent campus for temporary housing of laboratories.

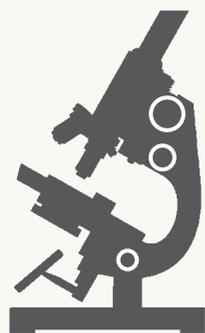


**Research &
Teaching**

4

4.1. Activities

4.1.1 Department of Biological Sciences



Year 2011-2012 is another significant year for the Department of Biological Sciences (DBS). During this period, the Department of Biological Sciences made considerable progress in teaching, research and outreach programs.

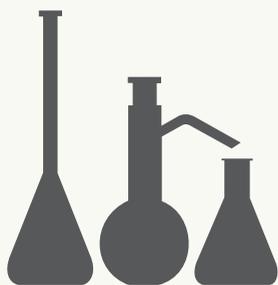
At present, with the addition of five more faculty members during the year 2011-2012, the DBS has eighteen core faculty members and five adjunct faculty members who are experts in different branches of Biological Sciences like Ecology, Evolutionary biology, Behavioural Biology, Plant Biology, Marine Biology, Microbiology, Biodiversity, Genetics, Developmental Biology, Biochemistry, Cell and Molecular Biology, Structural Biology, Neurobiology, Stem Cell Biology, Systems Biology, Mechanobiology, Computational Biology, Bioinformatics and Biophysics. With this strong and diversified expertise of faculty members, the DBS has extended both the teaching and research programs to a significant extent in the year 2011-2012.

In the year 2011-2012, the Research Program of DBS gained its strength due to progress of ongoing research on cell biology, neurobiology, microbiology, structural biology, developmental biology, cancer biology, ecology and behavioural biology. Moreover, addition of new faculty members with expertise in the fields of plant molecular biology, applied biochemistry, stem cell biology and cell biophysics further strengthened the research areas of DBS and initiated a number of interdisciplinary research projects. Among the new faculty members Dr. Shree Prakash Pandey has research interests in Plant Molecular Biology and Systems Biology, Dr. Rituparna Sinha Roy has research interests in Biomolecule Engineering and Nanobiotechnology, Dr. Supratim Datta has research interest in Biochemical Engineering, Dr. Malancha Ta has research interest in Stem Cell Biology and Dr. Bidisha Sinha has research interest in Cell Biophysics.

During this period, DBS has further extended its research facility with the procurement of instruments like Flow Cytometer, Lyophilizer, HPLC, Phosphor Imager and Real Time PCR. During this period, Institutional Ethics Committee was formed following the guidelines of ICMR, India for using human tissues and subjects for research purpose. At present, DBS represents itself as a well funded department with a total extramural grant amount of about Rs. 8.5 crores. During the year 2011-2012, apart from ongoing research grants, Dr. Sankar Maiti has received grants from DBT and CSIR, Dr. Jayasri Das Sarma has received grant from DBT, Dr. Punyasloke Bhadury received grants from MES and Bombay Natural History Society, Dr. Shree Prakash Pandey's group has received grants from the Department of Science and Technology (DST, India) and Max Planck Society (Germany) under Max Planck-DST Partner Program, and the DBT Research Associateship grant.

At present, 27 BS-MS major, 13 Integrated PhD students, 27 PhD, 7 project fellows and one postdoctoral fellow are pursuing their research projects on different fields of Biological Sciences under the supervision of DBS faculty members.

4.1.2 Department of Chemical Sciences



From the beginning, the Department of Chemical Sciences (DCS) has incarnated the Institute's mission of excellence in both research and teaching. Now the DCS is one of the most populous departments having almost 90 PhD students, 41 BS-MS major students, 15 PBIP students and 23 faculty members. The DCS has appreciable strength in the core areas of physical, organic and inorganic chemistry as well as in interdisciplinary research areas at the boundaries with physics, biology, earth science and materials science. A wide range of state-of-the-art instrumentations is available in different research groups to carry out the DCS research activity.

The Department of Chemical Sciences has strong and vibrant research groups engaged in a wide range of activities spanning from basic to applied research in chemistry. The prime research interests of each group falls under one of the following major areas of research: (1) Photochemistry and Photophysics, (2) Synthetic Organic and Supramolecular Chemistry, (3) Inorganic and Organic Materials Chemistry, (4) Inorganic and Organometallic Catalysis, (5) Chemical Biology, (6) Chemistry of Macromolecules and Polymers, (7) Theoretical and Computational Chemistry.

Currently, the DCS has 29 ongoing externally funded projects. The DCS has published more than 100 research papers during the academic year 2011-2012 in the peer-reviewed international journals with good impact factors.

4.1.3 Department of Earth Sciences



The Department of Earth Sciences has 14 regular faculty members: 1 Professor, 4 Associate Professors, 5 Assistant Professors, 2 Assistant Professors on contract, 1 Visiting Professor, and 1 Ramanujan Fellow. We have 2 Honorary Professors who visit us once every year and lecture on specialized topics (for about a week) and interact with our students and faculty members.

The DES has been offering undergraduate, postgraduate, doctoral and postdoctoral training programs ranging from general Earth Sciences to more specialized fields of study and research. At present the DES has 56 BS-MS major students. The Department has 7 PhD students who are either sponsored by CSIR/UGC fellowship or by IISER-K fellowship.

The department offers two introductory courses on Planetary, Earth and Environmental Sciences and Earth System Processes to the 2nd year BS-MS students. For the Earth Sciences major students of 3rd, 4th, and 5th year BS-MS program, the department offers 10 core theory courses, 8 core laboratory courses and 4 interdisciplinary courses. The core theory and laboratory courses are structured to develop a process based understanding of the Earth as a system. Interdisciplinary courses are designed to highlight studies in overlapping areas of other basic and applied sciences with Earth Science.

Our goal is to develop a modern center for Earth Science Education and Research in four core areas:

1. Isotope Geochemistry
2. Solid Earth Studies

3. Paleoclimatic, Paleo-environmental and Paleoecologic Studies
4. Environmental and Ecological Studies in Modern Systems

The existing faculty members synergistically collaborate with each other to form specialized groups in each of the themes.

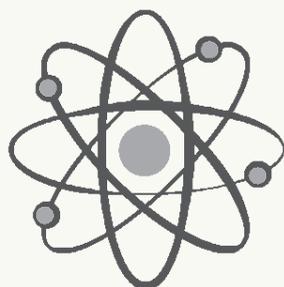
4.1.4 Department of Mathematics and Statistics



The Department of Mathematics and Statistics is committed to excellence in research and teaching. Apart from providing strong mathematical training to undergraduate and postgraduate students, it strives to form strong and self-supported research groups in pivotal areas of theoretical and applied Mathematics. In the academic year 2011-2012, The Department has taken some crucial steps towards achieving these goals. The department has 14 faculty members, out of which 6 joined us after April, 2011. These members have added new research specialties to our department, namely theoretical computational sciences, fluid mechanics, nonlinear dynamics, mathematical biology, geometric group theory and functional analysis. At present, the Department has 13 BS-MS major, 1 PBIP and 8 PhD students.

In the autumn semester of 2011, 12 of our faculty members taught a total of 16 core, elective as well as inter-disciplinary courses offered by the department. In the spring semester of 2012, 12 of our members taught a total of 17 courses. In addition, the Department supervised 5 final year theses and 3 projects for fourth year BS-MS and PBIP students.

4.1.5 Department of Physical Sciences



The most important event during the Year 2011-12 is the passing out of the first batch of the Five Year Integrated BS-MS programme. Eleven students in the first batch had Physics Major, all of them did quite well in the course work and the Final Year project. The most satisfying fact is that ten students out of the eleven choose research in Physics as their career option. They secured admission to the premier institutes in India and abroad. One student received the prestigious Rhodes Scholarship. Presently, the Department has 31 faculty members, 27 PhD, 2 integrated PhD and 57 BS-MS major students.

The department started a review of the syllabus after the first five years, and decided to modify that for the first two years so that the department can serve the two fold purpose of giving an exposure to the students who would take up other branches of basic science as major as well as to give sufficient training to those would go to Physics major. One new elective course on Biological Physics has been introduced for the Fourth Year students.

The department organized two scientific meetings. One was a workshop on Nonequilibrium phenomena, meant for PhD students and Post-Doctoral workers. It was well attended by researchers from throughout the country and the lectures were given by eminent scientists from the country and abroad. The other was a three-day meet for faculty and PhD students from all IISERS – Inter-IISER Physics Meet. The idea was to know what colleagues at different IISERS are working on. This was also a successful meeting where faculty had a chance to exchange ideas.



Important experimental facilities introduced

Physical Properties Measurement System

This is a commercial system manufactured by Cryogenic, UK, comprising a 12T superconducting magnet and a Variable Temperature Insert (VTI) with a range of 1.6 to 300K. This is a completely cryogen-free system based on pulsed tube cryo coolers. The temperature range can be extended further down to 300mK with a He-3 insert for resistivity, magnetoresistance and Hall effect measurement. In addition there are inserts for heat capacity, thermal conductivity and magnetic ac susceptibility that operate in the standard VTI temperature range. The system is equipped with sensitive signal measurement units like DSP lockin amplifier, nano voltmeters, precision AC/DC current sources and source-measure units that are interfaced with the VTI temperature and magnet controller via Labview based control software.



Profilometer

This is the model Alpha Step D-100 surface profiler manufactured by KLA-TENCOR, USA primarily used for measuring step heights and surface profiles over large distances. The system comes standard with a stylus of 2.5 microns, sixty degree radius and can scan up to 30mm along the sample with a vertical range of up to 800 microns and 6 angstrom step height repeatability. The profiler nicely compliments the measurement range of AFMs where the scan length and vertical range are typically limited to 100 micron and 5 micron respectively. Thus profilometers are well suited for measuring step heights of thick films e.g. photoresists and other polymers or in situations where films thickness falls off continuously rather than having a sharp step. The stylus force can be varied between 0.03 to 15 mg depending on the sample stiffness.



Spin Process Station

This is a high-end programmable spin coater with microprocessor controller, manufactured by Laurell Technologies USA. The unit is mounted on a laminar flow wet bench inside the clean room and has a corrosion proof configuration (no exposed metal parts) with a solid NPP body and clear ECTFE lid, compatible with most chemicals including strong acids and bases. The spinning speed can be programmed in the range of 100 - 10000 rpm with an acceleration up to 13000 rpm/s and accuracy of 0.5 rpm. The spinner comes with several sizes of vacuum chucks capable of holding substrates in the range of 5mm to 125 mm squares. This spin coater is primarily used for coating substrates with photo resists for lithography and in principle can be used for any other polymers.



Class-100 clean room

Primarily designed for device fabrication, this 120 sq ft Class 100 clean room facility delivers high quality dust free (max 100 particles per cubic feet, bigger than 0.5 micron) laminar air flow inside and has special yellow lighting for photo lithography application. The room can be accessed only by wearing special suits to minimize human contamination. This clean room houses several important equipments like Mask Aligner, Profilometer, sputtering chamber and spin coater.

Mask Aligner for photolithography

We have a state-of-the-art manual mask aligner, model MJB4 manufactured by SUSS MICROTEC, Germany that is used for contact photolithography. A typical lithography process involves coating the substrate with a photo-resist (photosensitive polymers), exposure in uniform UV light source through a mask and finally developing the pattern with appropriate chemicals. The resolution of the patterns generated is limited by diffraction effects. Under special conditions our system is configured for a best possible pattern resolution of 0.6 micron (vacuum contact mode) and typically resolution of 2 micron is easily achievable.



4.2 Sponsored Research

Department	Sanctioned Amount (₹)
Department of Biological Sciences	9,10,43,948.00
Department of Chemical Sciences	6,54,14,400.00
Department of Earth Sciences	3,20,06,000.00
Department of Mathematics and Statistics	74,50,000.00
Department of Physical Sciences	7,80,58,200.00

Department of Biological Sciences

Projects Funded by Different Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Understanding aggression and its correlates in the Indian feral dog <i>Canis familiaris</i>	Anindita Bhadra	INSA	01.08.2010 to 31.07.2013	1,50,000.00
2.	Behavioural ecology of the Indian stray dog	Anindita Bhadra	CSIR	10.05.2010 to 09.05.2013	18,00,000.00 (approx)
3.	Direct oligodendrocyte infection by mouse hepatitis virus mediates demyelination	Jayasri Das Sarma	The Children's Hospital of Philadelphia Research Institute (CHOP)	01.11.2009 to 30.09.2013	11,20,380.00
4.	Understanding the cellular consequences of Axonal loss and demyelination in viral infection in vitro myelination system	Jayasri Das Sharma	CSIR	09.03.2011 to 08.03.2014	7,56,000.00
5.	Understanding the mechanisms of viral induced axonal loss and demyelination in an experimental animal model	Jayasri Das Sarma	DBT	12.10.2011 to 11.10.2014	46,13,024.00
6.	Studies on the mechanisms of the translational regulation of the cold shock response genes in human entero-pathogenic bacteria	Partha Pratim Datta	DBT	21.07.2011 to 20.07.2014	18,89,000.00
7.	Assessment of impact of climate change on phytoplankton community of Sunderban eco-region	Punyasloke Bhadury	World Wide Fund for Nature-India	February 2010 to June 2011	3,37,150.00

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
8.	Meiobentic studies in three olive ridley turtle rookeries along the coast of Orissa	Punyasloke Bhadury	Wildlife Institute of India (WII)	18.08.2010 to 31.12.2011	4,71,500.00
9.	Survey of marine turtles along the coast of West Bengal : distribution status, Threats and management implications	Punyasloke Bhadury	WWF-India	15.03.2011 to 14.07.2011	1,00,000.00
10.	Barcoding Southern Ocean nematodes : an integrated approach to test hypotheses of marine nematode diversity	Punyasloke Bhadury	MoES	08.07.2011 to 07.07.2012	16,58,000.00
11.	Study of benthos of selected sites of coastal Konkan	Punyasloke Bhadury	Bombay Natural History Society (BNHS, India)	06.03.2012 to 07.03.2013	3,51,000.00
12.	Role of formin in neurite initiation and synapse formation	Sankar Maiti	DBT	23.11.2011 to 22.11.2014	40,10,000.00
13.	Functional analysis and regulation of dishevelled in planer cell polarity pathway	Sankar Maiti	CSIR	14.02.2012 to 13.02.2015	1,50,000.00
14.	The role of small-RNA pathways in plant defense against insect herbivores	Shree Prakash Pandey	DST and Max Planck Institute for Chemical Ecology	01.08.2011 to 31.07.2015	68,00,000.00 (approx.)
15.	Indo German DST MPG (Max Planck Society) Partner Group (PG) on Chemical Ecology (Plants-insect interaction)	Shree Prakash Pandey	DST	01.08.2011 to 31.07.2014	37,27,680.00 (partial, extendable for two more years)

Projects under Fellowships

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Molecular intersections in the Post-transcriptional regulations of inflammatory gene expression	Partho Sarathi Ray	Welcome Trust DBT India Alliance	01.05.2011 to 30.04.2016	3,38,57,714.00

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
2.	Cellular and molecular dynamics of direction-sensing in collective cell migration (part of Ramalingaswami Fellowship 2009-2010)	Mohit Prasad	DBT	01.04.2010 to 31.03.2015	73,60,000.00
3.	Ramalingaswamy Fellowship	Rituparna Sinha Roy	DBT	02.05.2011 to 01.05.2016	74,42,500.00
4.	Ramalingaswamy Fellowship	Rupak Datta	DBT	01.06.2011 to 31.05.2016	74,50,000.00
5.	ICT-DBT Energy Bioscience Overseas Fellowship	Supratim Datta	DBT	01.09.2011 to 31.08.2016	70,00,000.00

Department of Chemical Sciences

Projects Funded by Different Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Metal complexes of nitrogen mustard derivatives as nucleases and anticancer agents	Arindam Mukherjee	DST	23.02.2011 to 22.02.2014	25,67,000.00
2.	Transition metal polynuclear complexes of multidentate ligands as molecular magnets	Arindam Mukherjee	CSIR	01.07.2011 to 30.06.2014	4,00,000.00
3.	Dynamics of water dissociation on metal surfaces and on nano-particles	Ashwani Kumar Tiwari	DST	29.12.2011 to 28.12.2014	13,45,000.00
4.	Synthesis hexasaccharide repeating unit of the O-antigen from E. coli O35 and tetrasaccharides related to the capsular polysaccharide repeating unit of vibrio cholerae serogroup O31 NRT36S	Balaram Mukhopadhyay	CSIR	14.07.2010 to 13.07.2013	10,00,000.00 (approx)

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
5.	Synthesis of the oligosachharides related to the repeating units of the O-antigens from shigella boydii Type-16 and Type-17 and further vaccine designing	Balaram Mukhopadhyay	DST	04.01.2010 to 31.03.2013	22,65,000.00
6.	Crystal engineering of biotin (vitamin B7) co-crystals	C. Malla Reddy	DST	20.04.2010 to 19.04.2013	19,40,000.00
7.	Molecular recognition and self-assembly of chromophore based smart materials : a novel sensor	Debashish Haldar	DST	13.04.2010 to 12.04.2013	19,86,000.00
8.	Peptide based self-assembled systems as delivery vehicles and controlled release	Debashish Haldar	CSIR	27.06.2011 to 26.06.2014	12,50,000.00
9.	A diversity oriented synthetic approach toward functionalized thiazoles	Jyotirmayee Dash	DST	01.04.2010 to 31.03.2013	18,90,000.00
10.	Design synthesis and structural basis of G-quadruplex DNA binding small molecules	Jyotirmayee Dash	CSIR	14.07.2010 to 13.07.2013	9,75,000.00 (approx)
11.	Differential recognition of G-Quadruplex DNA binding small molecules using dynamic combinatorial chemistry	Jyotirmayee Dash	DBT	19.12.2011 to 18.12.2014	66,79,600.00
12.	Theoretical and computational study of opto-electronic and charge transport properties in quantum systems	Mousumi Das	DST	18.08.2010 to 17.08.2013	19,43,000.00
13.	Pt-group metal complexes with substituted biopyridine : DNA-binding agents to sensing materials	Parna Gupta Bhattacharyya	DST	01.03.2010 to 28.02.2013	19,45,000.00
14.	Eu(II)/Os(II)-sugar complexes as pet biosensors of lectins and potential therapeutics	Parna Gupta Bhattacharyya	CSIR	06.02.2012 to 05.02.2015	11,20,000.00
15.	Design and synthesis of amino acid based macromolecular architectures	Priyadarsi De	DST	18.03.2011 to 17.03.2014	41,47,000.00
16.	Green synthesis of novel degradable polyperoxides	Priyadarsi De	CSIR	30.08.2011 to 29.08.2014	7,00,000.00
17.	Computational study of diffusion in nanoporous media and in liquids	Pradip Kumar Ghorai	DST	26.07.2010 to 26.07.2013	18,55,000.00

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
18.	Turn on sensors for arsenic threats in drinking water	Raja Shunmugam	DST	24.11.2009 to 23.11.2012	13,50,000.00
19.	Fluorometric sensor for cadmium in drinking water	Raja Shunmugam	DST	04.01.2011 to 03.01.2013	46,06,400.00
20.	Contractors for Acquisition of Research Services (CARS)	Raja Shunmugam	DRDO	23.09.2011 to 22.09.2012	9,50,000.00
21.	Sensing of chemical warfare agents with naobornene based polymers	Raja Shunmugam Sanjio Shankarrao Zade	DRDO	01.05.2011 to 30.04.2014	17,47,000.00
22.	Development of cyclopental[c]heterol-based conjugated systems for Dye-Sensitized Solar Cells (DSSCs)	Sanjio Shankarrao Zade	DST	26.10.2010 to 25.10.2013	31,29,600.00
23.	Development of photochromic molecules as molecular switches for potential application in logic devices with photonic inputs and outputs	Subhajit Bandhopadhyay	DST	07.10.2011 to 06.10.2014	30,90,000.00
24.	Design and synthesis of heterometallic catalysts : olefin polymerization, copolymerization and tandem catalysis	Swadhin K. Mandal	DST	13.04.2009 to 12.04.2012	19,44,000.00
25.	Design and synthesis of green catalysts for hydroamination reactions	Swadhin K. Mandal	CSIR	23.07.2010 to 22.07.2013	12,80,000.00 (approx)
26.	Template assisted synthetic methods to develop new luminescent nanoarchitecture and their applications	Venkataraman Mahalingam	DST	09.03.2011 to 08.03.2012	36,80,000.00
27.	On development of thermo-resistant, high-stress and high-tensile strain resistant materials for safes	Soumyajit Roy	Gunnebo India Private Limited	01.12.2011 to 30.11.2014	23,29,800.00

Project under Fellowship

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Ramanujan Fellowship	Raja Shunmugam	DST	14.07.2010 to 13.07.2015	73,00,000.00

Department of Earth Sciences

Projects Funded by Different Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Calcretes on metamorphosed rocks of the precambrian Eastern Ghats mobile belt, Orissa: genesis and implications to climate	Prasanta Sanyal	CSIR	06.07.2011 to 05.07.2012	18,00,000.00
2.	Investigation of trace metal geochemistry anthropogenic inputs in the Ganga (Hooghly) river estuary	Tarun Kumar Dalai	MES	02.04.2009 to 01.04.2014	84,56,000.00
3.	Lode gold mineralization in the southern granite terrain, Kerala : geochemical and petrological constraints on their genesis	V Ravikant	DST	29.11.2010 to 28.11.2013	2,10,000.00
4.	Seismic velocity structure of the north-western and north-eastern Himalaya and its implications for earthquake hazard assessment	Supriyo Mitra	UKIERI	01.03.2012 to 01.03.2014	21,30,000.00

Projects under Fellowship

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Ramanujan Fellowship	Sutapa Bose	DST (SERB)	16.12.2011 to 15.12.2016	73,00,000.00
2.	J C Bose Fellowship	Somanath Dasgupta	DST	02.07.2007 to 01.07.2012	1,21,10,000.00

Department of Mathematics and Statistics

Project under Fellowship

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Ramalingaswamy Fellowship	Koel Das	DBT	06.12.2011 to 05.12.2016	74,50,000.00

Department of Physical Sciences

Projects Funded by Different Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Electrical conductivity measurements of silicate minerals and transition metal oxides at high pressures and temperatures and its implications	Goutam Dev Mukherjee	DST	21.04.2010 to 20.04.2013	28,81,000.00
2.	Physical properties of elemental solids, their compounds and oxides, and mineral phases at extreme conditions of pressure and temperatures an experimental and theoretical study	Goutam Dev Mukherjee	MES	13.07.2011 to 12.07.2016	6,04,27,200.00
3.	Linear and nonlinear optical study of Er-doped ZnO nanocrystals and thin films	Bipul Pal	INSA	10.05.2010 to 09.05.2013	1,50,000.00

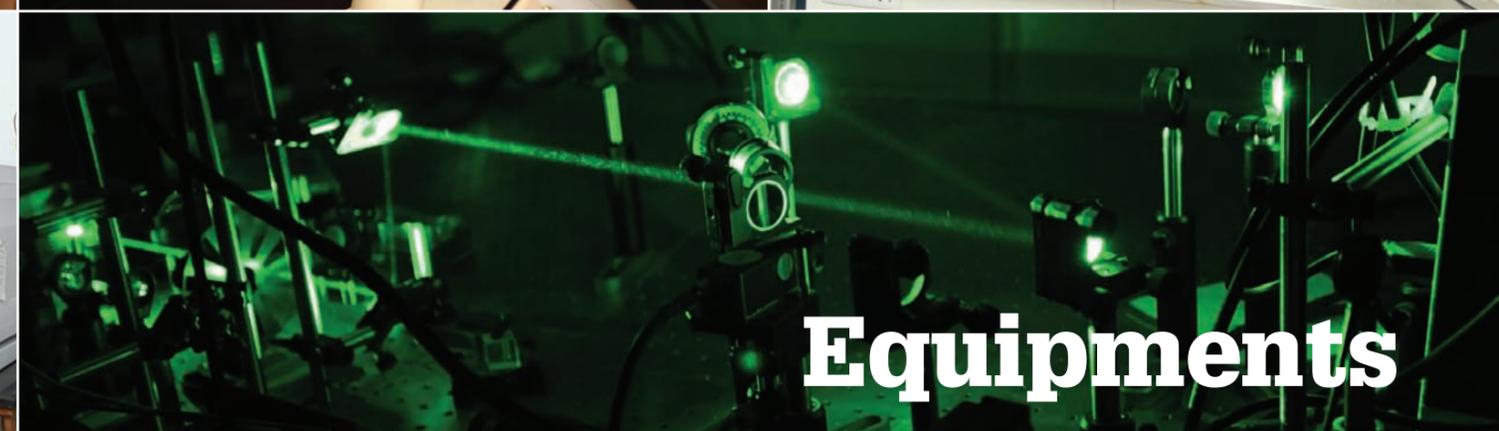
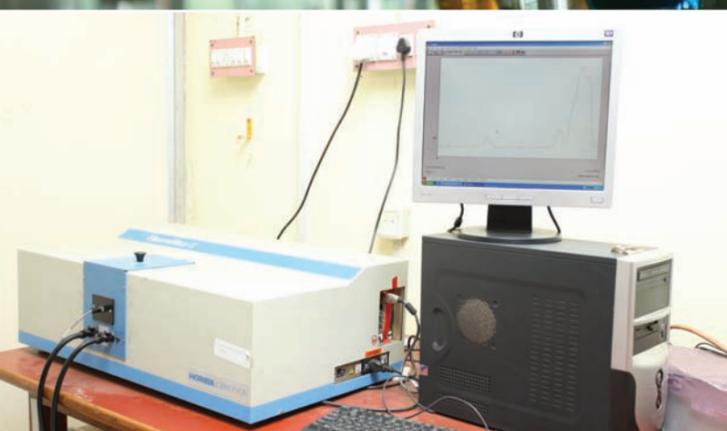
Projects under Fellowship

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Ramanujan Fellowship	Dibyendu Nandi	DST	01.08.2009 to 31.07.2014	73,00,000.00
2.	Ramanujan Fellowship	Siddhartha Lal	DST	20.10.2010 to 19.10.2015	73,00,000.00

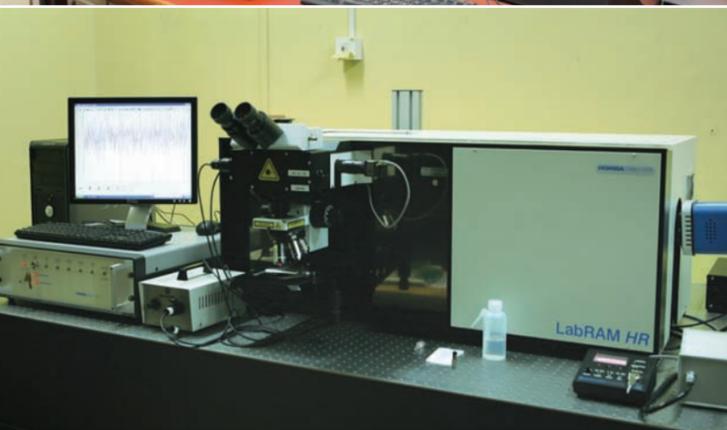
4.3 Equipments Procured

The Institute procured the following scientific instruments in the reporting period to give impetus to the research activities undertaken by its faculty members, research scholars and the students.

Sl. No.	Item	Supplier
1	100m W Power CW488nm Laser System Model 14963 with All Accessories	Newport Corporation, Standard
2	6x6 Multicell Peltier Series II with All Standard Accessories	Agilent Technologies Singapore (Sales) Pte. Ltd., Singapore
3	7500 Fast Real Time PCR System Laptop SY with All Standard Accessories	Life Technologies Holdings Pte. Ltd., Singapore
4	Accessories for Tunable Amplified Femtosecond Laser System	Photonics Technologies Pte. Ltd., Singapore
5	Accessories for X Series 2 Inductivity Coupled Plasma Mass Spectrometer (ICPMS) Bench Top System	Thermo Fisher Scientific, Austria
6	Acton SP-2156 Imaging Spectrograph Model ARC-SP 2556 with All Standard Accessories	Princeton Instruments, USA
7	Acton SP-2556 Imaging Spectrograph Model ARC-SP 2556 with All Standard Accessories	Princeton Instruments, USA
8	Anton Paar Microwave Sample Preparation Platform System with All Standard Accessories	Anton Paar GmbH, Austria
9	Bench Top Microprocessor Controlled Freeze Dryer Lyophilizer with All Standard Accessories	Labconco Corporation, USA
10	Buchi Rotavapor R-215/V Advanced with Vacuum Pump with All Standard Accessories	Buchi Labortechnik AG, Switzerland
11	CD Spectrometer with Magnetic CD Accessory Model: J-815 (450-L) with All Standard Accessories	Jasco International Co. Ltd., Japan
12	Complete Plate DAC & Diamond Anvil with All Standard Accessories	Almax Industries, Belgium
13	Consumable for the Earth Science Laboratory	Savillex Corporation, USA
14	Diode Laser System with All Standard Accessories	Coherent Inc., USA
15	Dual Phase DSP Lock In Amplifier, Voltage Preamplifier, Optical Chopper, Laser Shutter System	Stanford Research Systems, USA
16	EMCCDS Camera with All Standard Accessories	Andor Technology, Northern Ireland
17	Enhanced Performance Continuous Benchtop Modular Spectrofluorometer with All Standard Accessories	Photon Technology International, USA
18	Eppendorf Refrigerated Centrifuge 5810 R with All Standard Accessories	Eppendorf AG, Germany



Equipments

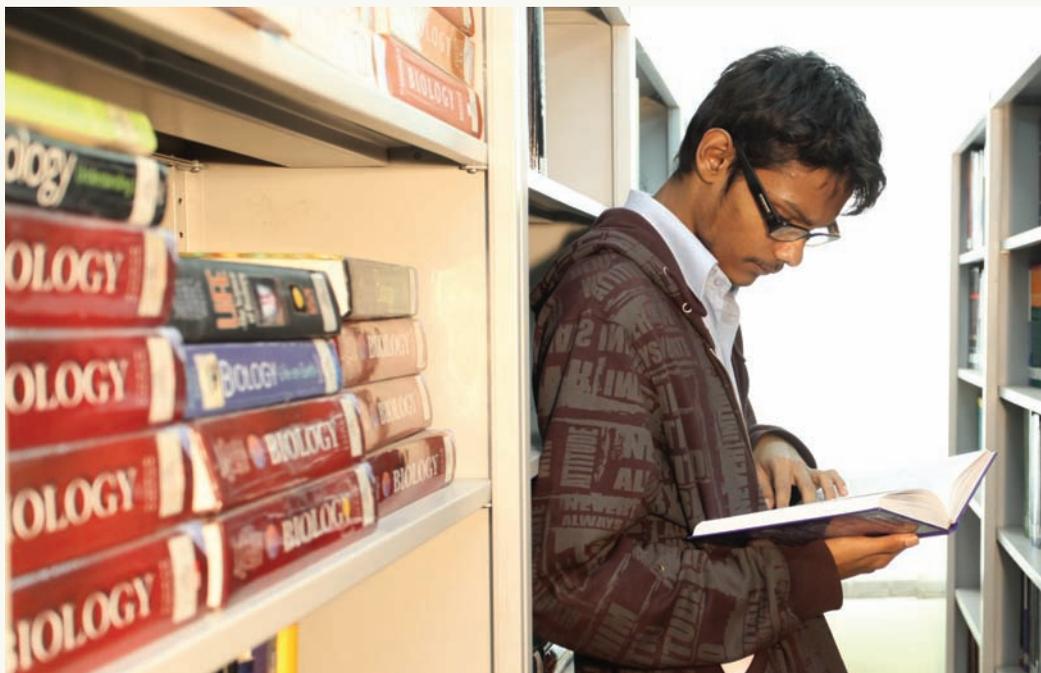


Sl. No.	Item	Supplier
19	Evercool MPMS Cold Head System with Scroll Pump Diaphragm Pump Cold Head Absorber with All Standard Accessories	Quantum Design, USA
20	Eyela Vacuum Concentrator / Centrifugal Evaporator with All Standard Accessories	Tokyo Rikakikai Co. Ltd., Japan
21	Fiber Coupled 375nm Diode Laser Module with All Standard Accessories	RGB Lase LLC, USA
22	Fluorescence Spectrometer Model: FluroMax-4CP, FluroMax-P with All Standard Accessories	Horiba Jobin Yvon Inc., USA
23	Frantz Magnetic Barrier Laboratory Separator Model LB-1 with All Standard Accessories	AKV Enterprise, Canada
24	Gel Doc XR+ Molecular Imager Gel Documentation System with All Standard Accessories	Bio Rad Pacific Limited, Hong Kong
25	INCA 250 EDS with X-MAX 20mm Detector with All Standard Accessories	Oxford Instruments Nano Analysis, United Kingdom
26	Linkam Heating Stage for Temperature Range 196 Deg to 420 Deg Liquid Crystal Application Model LTSE120	Linkam Scientific Instruments Ltd., United Kingdom
27	Lock In Amplifier, Voltage Preamplifier, Optical Chopper System with All Standard Accessories	Stanford Research Systems, USA
28	Low Power CW532nm Laser System with All Standard Accessories	Newport Corporation, USA
29	Modular Spectrofluorometer Model FL3-2iHR Double Grating Excitation Nanochromator with All Standard Accessories	Horiba Jobin Yvon Inc., USA
30	Multipurpose Imaging System with All Standard Accessories	GE Healthcare Bio Sciences Ltd., Singapore
31	Nitrogen Generator with Compressor Model NG6/1 with In Built Compressor with All Accessories	La Maison Des Service, France
32	Olympus Fluorescence Microscope with Photomicrography Model: BX53 with All Standard Accessories	Olympus Singapore Pte. Ltd., Singapore
33	Optical Table Assembly with All Standard Accessories	Newport Corporation, USA
34	Optics and Optomechanical Items for the Physics Laboratory	Mels Impex America Inc., USA
35	P/N C10373-02, Cooled Housing Including Power Supply with All Standard Accessories	Horiba Jobin Yvon IBH Ltd., United Kingdom
36	P4 Miniprotean Minivertical Electrophoresis System with All Standard Accessories	Bio-Rad Pacific Limited, Hong Kong
37	Polarizing Petrological Microscope Student Model E200POL with All Standard Accessories (12 Nos.)	Nikon Corporation, Japan
38	PP3000T Cryo SEM Work Station TURBO PUMPED with All Standard Accessories	Quorum Technologies, United Kingdom
39	Preparative Cum Analytical Binary Gradient HPLC System with All Standard Accessories	Shimadzu (Asia Pacific) Pte. Ltd., Singapore

Sl. No.	Item	Supplier
40	Rotavapor, Vacuum Controller and Vacuum Pump with All Standard Accessories	Buchi Labortechnik AG, Switzerland
41	RS4000 Series Optical Table Model: M-RS4000-510-12 with All Standard Accessories	Newport Corporation, USA
42	Sp Gradient Pump with Degas with All Standard Accessories	Ameritech Scientific Corporation, USA
43	Stage Top Frame Z PIEZO with All Standard Accessories	Carl Zeiss MicroImaging GmbH, Germany
44	Stereo Zoom Trinocular Microscope Model SZX16 with All Standard Accessories	Olympus Singapore Pte. Ltd., Singapore
45	Sub Boiling Distillation Set with All Standard Accessories	Milestone S.r.L., Italy
46	SUPRA 55VP Field Emission Scanning Electron Microscope with All Standard Accessories	Carl Zeiss NTS GmbH, Germany
47	Thermo Brand Nanodrop 2000 Spectrophotometer with All Standard Accessories	Thermo Electron Scientific Instrument LLC, USA
48	Thermo Heraeus CO ₂ Incubator Model: HERAcCell 150i with All Standard Accessories	Thermo Electron LED GmbH, Germany
49	Thermo Heraeus High Speed Table Top Refrigerated Centrifuge Model Multifuge X1R with All Standard Accessories	Thermo Electron LED GmbH, Germany
50	Trace Clean Automatic Acid Reflux System with All Standard Accessories	Milestone S.r.L., Italy
51	Tunable Amplified Femtosecond Laser System with All Standard Accessories	Coherent Inc., USA
52	Turbomolecular Pumping Station HiCube Classic 400 with All Standard Accessories	Pfeiffer Vacuum GmbH, Germany
53	Upright Freeze Dryer with Shell Freezer Model: FDB 5503 with All Standard Accessories	Operon Co. Ltd., South Korea
54	UV-VIS Spectrophotometer Model U-2900 with All Standard Accessories	Techcomp Macao Commercial Offshore Limited, Japan
55	Veriti 96 Well Thermal Cycler with All Standard Accessories	Applied Biosystems International, USA
56	Viscotek 2500 UV-VIS Detector with All Standard Accessories	Malvern Instruments Limited, United Kingdom
57	X Series 2 Inductivity Coupled Plasma Mass Spectrometer (ICPMS) Bench Top System with All Standard Accessories	Thermo Fisher Scientific, Austria

4.4 Library

During 2011-2012, IISER Kolkata Library added 576 printed documents to its collection. The total printed book collection now stands at 15,302. The Library continued to augment its journal, e-book, and database collection in this financial year as well. This success came in part due to the collective effort of the IISER Consortium to start subscribing common resources. It helped the Institute to purchase/subscribe these resources at a discounted rate. From this collective effort, the Library purchased/subscribed Royal Society of Chemistry (RSC) archive, a few selected journals and their archives of the Nature Publishing Group (NPG), archives of Mathematics and Physics journals of Springer, Oxford University Press (OUP) Science archive, Cambridge University Press (CUP) e-books, etc.



This year the Library developed a comprehensive collection on Mathematics by starting to purchase/subscribe e-books and journal archives from various publishers like Elsevier, Springer, Wiley, Taylor and Francis, Society for Industrial and Applied Mathematics (SIAM). Apart from subscribing various flagship mathematics journals, the Library also started to subscribe various journals available through the *Project Euclid* platform; Institute of Mathematics, Polish Academy of Sciences (IMPAN); Institute of Mathematical Statistics (IMS); Applied Probability Trust (APT), etc. The Library also placed Standing Orders for several important book series published by American Mathematical Society (AMS).



IISER Consortium Meet at the Mohanpur Campus from 23-24 November 2011. Several important decisions on common subscription of journals and databases were taken in this meeting.

As part of its document delivery service, the Library provided 29,259 number of photocopies/printouts to its patrons.

The Mohanpur Campus Library is open everyday from 9.00 to 24.00 hrs. except weekends when it is open from 10.00 to 24.00 hrs. The Main Campus Library is open on weekdays from 9.00 to 17.00 hrs.

The Library also started to subscribe some more new journals from several other prominent publishers like The Company of Biologists, Royal Society of Chemistry (RSC), etc. The Library also purchased some other important journal archives such as *Physics Today*, *AIP Conference Proceedings* etc. The Library successfully organised the fourth (4th)



4.5 Student Enrolment

YEAR/COURSE	BS-MS	MS by Thesis	PBIP	PhD
2006-07	38	-	-	-
2007-08	67	-	-	17
2008-09	46	1	-	37
2009-10	87	-	7	33
2010-11	78	-	11	21
2011-12	90	-	21	42

4.6 Graduating Students

5 Year BS-MS Dual Degree Program, 2006

Major: Biological Sciences

Sl. No.	Name	Current Affiliation/Position
1.	Ujani Chakraborty	Doctoral Student at Cornell University
2.	Mrinal Chayengia	Doctoral Student at University of Freiburg
3.	Shubham Dipt	Doctoral Student at Max Planck Institute for Dynamics and Self-Organization, Göttingen
4.	Ashish Goyal	Doctoral Student at German Cancer Research Center (DKFZ) Heidelberg
5.	Salman Hasan	Doctoral Student at John Hopkins University
6.	Debashis Hira	
7.	Kaushik Kant Panda	Graduate Research Associate at The Ohio State University
8.	C. Raghu	Doctoral Student at Stazione-Zoologica, Italy

Major: Chemical Sciences

Sl. No.	Name	Current Affiliation/Position
1.	Manish Roshan Aind	Government Job
2.	Abhiket Gaurav	Junior Analyst at HeyMath!

Sl. No.	Name	Current Affiliation/Position
3.	Vipin Kumar Kabra	Scientist C at Bhaba Atomic Research Centre
4.	Abhinav Kumar	Master of Business Administration Student at Faculty of Management Studies, University of Delhi
5.	Dharam Raj Kumar	Honeywell UOP
6.	Pankaj Kumar	
7.	Ritesh Kumar	Master of Business Administration Student at IIM Indore
8.	Sonu Kumar	Doctoral Student at IISER Kolkata
9.	Sunil Kumar	Environmental Pollution Control Board, Government of Rajasthan
10.	Alok Kumar Mallik	Project Manager at Idax Consulting & Research Group, Bhubaneswar
11.	Rahul Kumar Mishra	Doctoral Student at Bar Ilan University, Ramat Gan, Israel
12.	Arghya Modak	Doctoral Student at University of Oxford
13.	Priyadarshi Ranjan	Doctoral Student at Weizmann Institute of Science
14.	Nayan Sharma	Master of Business Administration Student at IMT Nagpur

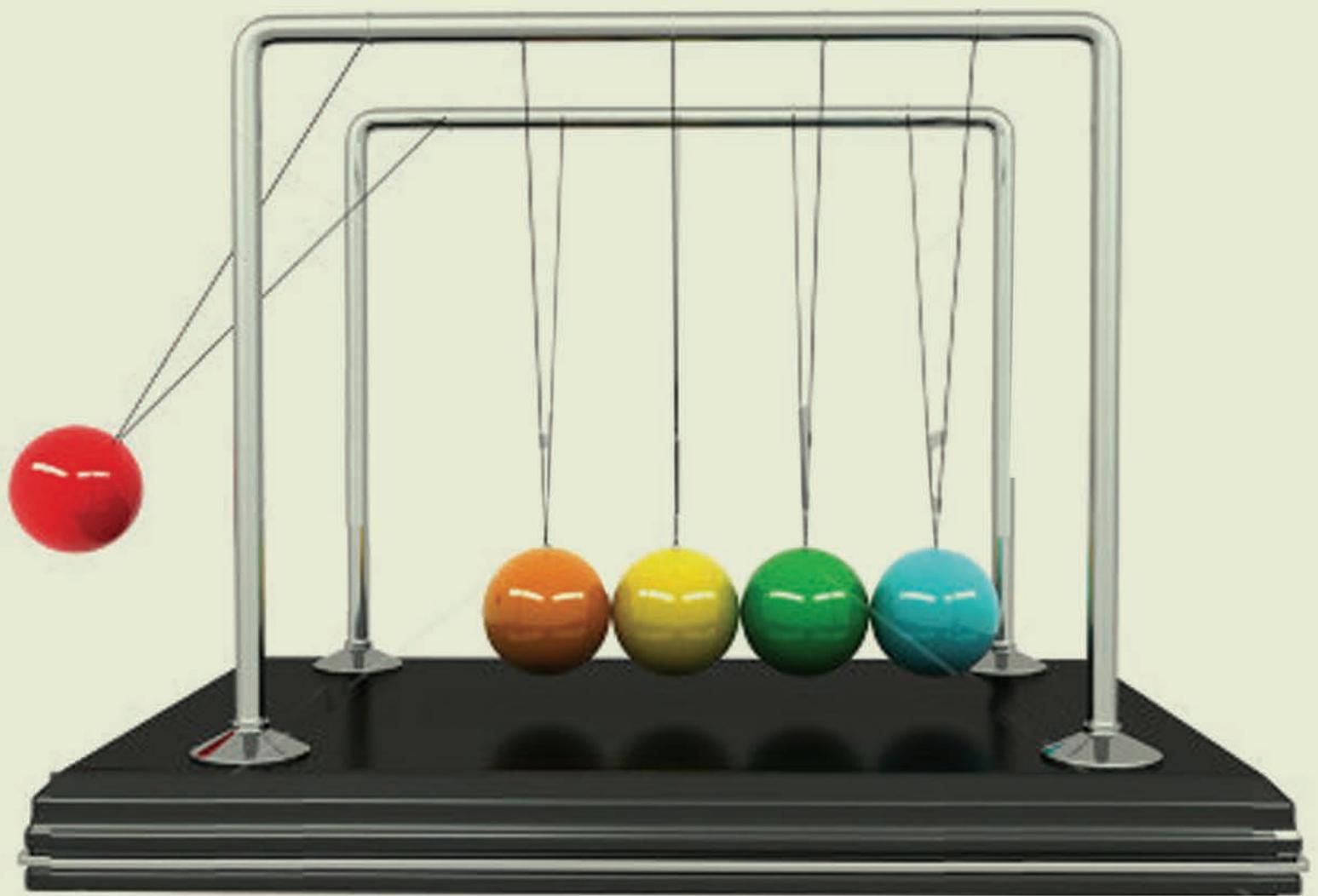
Major: Mathematical Sciences

Sl. No.	Name	Current Affiliation/Position
1.	Kapil Dev	Works at HeyMath!
2.	Nishant Kumar	Master of Business Administration Student at IIT Delhi
3.	Anish Mallick	Doctoral Student at Institute of Mathematical Science Chennai
4.	Gouri Shankar Seal	Doctoral Student at Northeastern University, Boston
5.	Abhishek Shukla	Doctoral Student at University of Warwick

Major: Physical Sciences

Sl. No.	Name	Current Affiliation/Position
1.	Aabhaas Vineet Mallik	Doctoral Student at Indian Institute of Science, Bangalore
2.	Abhishek Dasgupta	Doctoral Student at University of Oxford

Sl. No.	Name	Current Affiliation/Position
3.	Anshul Saini	Doctoral Student at University of Buffalo
4.	Arijit Halder	Doctoral Student at Indian Institute of Science, Bangalore
5.	Asit Singh	Qualified CSIR NET as JRF
6.	Bradraj Pandey	Doctoral Student at Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore
7.	Challenger Mishra	Doctoral Student at University of Oxford as Rhodes Scholar
8.	Ebad Kamil	Doctoral Student at University of Göttingen
9.	Ipsita Satpathy	Scientist Trainee at Inter-University Accelerator Centre (IUAC), New Delhi
10.	Sambit Bikas Pal	Doctoral Student at National University of Singapore
11.	Sayan Choudhury	Doctoral Student at Cornell University



**Seminars &
Colloquia**

5

Department of Biological Sciences

Sundarbans Pavilion International Workshop jointly with WWF-India to facilitate trans-boundary cooperation between India and Bangladesh on scientific issues related to the Sundarbans mangroves from 13th-14th April, 2011 at IISERK, Mohanpur Campus.

“Kickoff workshop” and international meeting on 'Bioinformatics and Genomics: Agriculture, Ecology and Health', December 11th – 14th 2011.

National Symposium on 'Frontiers in Modern Biology' on February 4-5, 2012.

Department of Chemical Sciences

Dr. Ranjit Biswas (S. N. Bose National Centre for Basic Sciences, Kolkata): Heterogeneity in solution structure: impact on simple chemical events, 06.04.2011

Dr. Tanusri Saha Dasgupta (S.N. Bose National Centre for Basic Sciences, Kolkata): Correlation effects in real material, 04.05.2011

Dr. Subhasis Panja (India Institute for Plasma Research, Gandhinagar): Information on excited states of molecular dianions from lifetime measurements and absorption spectroscopy, 17.08.2011

Prof. B. M. Deb (IISER Kolkata): Journey to the magical land of chemistry, 29.08.2011

Prof. Uday Maitra (Department of Organic Chemistry, Indian Institute of Science, Bangalore): Supramolecular gels: functions and possible applications, 30.09.2011

Dr. Santanu Bag (Department of Photovoltaic Science and Technology, IBM T. J. Watson Research Centre, Yorktown Hts, NY): Solution processed chalcogenides: mesostructured semiconductors, chalcogels and thin-film solar cells, 19.10.2011

Prof. S. S. Krishnamurthy: Phosphorus ligands anchored to calix[4]arene scaffold and their transition metal complexes, 19.10.2011

Prof. Suresh Valiyaveetil (Department of Chemistry, National University of Singapore): Molecular engineering for functional materials, 28.10.2011

Prof. S. Ramakrishnan (Department of Inorganic and Physical Chemistry, Indian Institute of Science, Bangalore): Title: Branching in polymers: boon or bane?, 4.11.2011

Symposium on Polymer Science (SPS-2011), 10.12.2011

Dr. Shamik Chakraborty (Chemical Resources Laboratory, Tokyo Institute of Technology, Japan): Laser spectroscopy in gas phase: probing intrinsic properties of bio-molecules, 17.12.2011

Department of Earth Sciences

Professor B. R. Jagirdar (Department of Inorganic & Physical Chemistry, Indian Institute of Science, Bangalore): Hydrogen: our efforts towards its activation, cleavage, generation, and storage, 10.01.2012

Dr. Somdatta Ghosh Dey (Department of Inorganic Chemistry, Indian Association for the Cultivation of Science, Kolkata): The potential role of three key amino acid residues of amyloid β peptides in Alzheimer's disease, 11.01.2012

Prof. P. K. Saraswati (IIT, Bombay): The amazing world of microfossils and proxies for their life history.

Prof. B. S. Mazumdar (ISI, Kolkata): Can one make inference of palaeo-flow conditions of an ancient stream from grain-size distributions left by the flow?

Dr. Hirok Chaudhury (VECC Kolkata): Terrestrial helium a tool for earthquake prediction.

Dr. Debasish Ghose (VECC Kolkata): Helium odyssey in a geothermal area.

Prof. Mrinal K. Sen (UTIG, Austin): Computational methods for forward and inverse problems of seismology.

Prof. Tapas Bhattacharya (University of Calcutta): Iceland geodynamics: Icing on the melt.

Dr. Aninda Mazumdar (NIO, Goa): Gas hydrate exploration and allied research at National Institute of Oceanography.

Dr. Pawan Devangan (NIO, Goa): Marine gas hydrates - an untapped non-conventional energy resource.

Dr. Indra Sen (Woods Hole Oceanographic Institution): Osmium isotopes and platinum group element geochemistry: a tale from earth's mantle to atmospheric aerosols.

Amit Padhi (University of Wyoming): Pre-stack seismic waveform inversion: some practical application.

Dr. Prosenjit Ghosh (Indian Institute of Science, Bangalore): Damping of atmospheric convection and enhance river discharge during ENSO of 2009.

Dr. Rajesh Goteti (Dalhousie University, Halifax, Canada): Can uneven sedimentation initiate salt minibasins.

Dr. G. Srinivasan (Indian Institute of Science, Bangalore): Constraints on Solar Nebula Evolution from ^{26}Al & ^{10}Be Distribution in CAIs

Department of Mathematics and Statistics

Dr Ujjwal Koley (Basque Center for Applied Mathematics, Basque Country, Spain): Error estimate for convection-diffusion equations, 06.04.2011

Dr Priyanka Shukla (Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore): Nonlinear stability, bifurcation and mode interaction in granular plane Couette flow, 20.04.2011

Dr Rama Mishra (IISER Pune): Knots and polynomials, 09.05.2011,

Prof. Debasis Kundu (IIT Kanpur): Generalized exponential distribution, 09.06.2011

Dr Apratim Guha (University of Birmingham, UK): Mutual information and a two-sample Test, 20.07.2011

Dr Sumona Mondal (Clarkson University, USA): Tolerance regions and tolerance factors for some multivariate set up, 27.07.2011

Dr Santo Banerjee (Politecnico di Morino, Italy): Chaos synchronization and cryptography, 27.07.2011

Prof. S.K. Adhikari (HRI, Allahabad): Weighted sums in finite abelian groups, 17.08.2011

Dr Imran H Biswas (Centre for Applicable Mathematics, TIFR, Bangalore): Regularization by $1/2$ -Laplacian and vanishing viscosity limit for HJB equations, 02.09.2011

Dr Rajesh Srivastava (IISc, Bangalore): Coxeter system of lines are sets of injectivity for twisted spherical means, 07.09.2011

Dr Swagata Sarkar (Indian Statistical Institute, Kolkata): Degrees of maps between Grassmann manifolds, 14.09.2011

Dr Sujit Kumar Samanta (Technical University of Lisbon, Spain): A simple analysis of the GI=D MSP=1 queuing system using roots, 14.09.2011

Dr Chandrasekhar Bhamidipati (Instituto de Fisica, Universidade de Sao Paulo, Brazil): Black hole entropy, partition function and topological sigma models, 28.09.2011

Dr Areejit Samal (Univ. Paris Sud 11, France and Max Planck Institute for Mathematics in the Sciences, Germany): Large scale structure of metabolic networks: role of biochemical and functional constraints, 11.01.2012

Dr Dilip Maiti (BITS, Pilani): Numerical study on vortex shedding and aerodynamic characteristics, 18.01.2012

Prof. Shashi Mohan Srivastava (Indian Statistical Institute, Kolkata): Some applications of logic to algebra and geometry, 29.02.2012

Dr Arnab Chakraborty (Indian Statistical Institute, Kolkata): Games and mathematics, 07.03.2012

Dr Amar Prasad Misra (Visva-Bharati University, Santiniketan): Mathematical theory and structure of nonlinear waves in plasmas, 28.03.2012

The Department organised the following colloquium in the past academic year:

22nd December 2011 (National Mathematics Day and 125th Birth Anniversary of Srinivasa Ramanujan), Professor M. Ram Murty (Queen's Research Chair and Professor at Queen's University in Kingston, Canada, Fellow of INSA and Fellow of Royal Society of Canada), The mathematical legacy of Srinivasa Ramanujan

The Department organised the following workshop in the last academic year:

IISER Kolkata Winter School in Mathematics 2011 on Ramanujan and the Circle Method: 20-24th December 2011 (Sponsored by National Board of Higher Mathematics, India)

Motivated by the success of the 2010 Winter School on Number Theory, the Department organized a Winter School in Mathematics at IISER Kolkata from December 20-24, 2011. This time, the focus was on Ramanujan and the circle method.

The speakers in this winter school were:

Professor M. Ram Murty (Queen's University, Canada)

Dr Gautami Bhowmik (Université de Lille I, France)

Dr Roman Holowinsky (Ohio State University)

Department of Physical Sciences

Dr Bobby Ezhuthachan (HRI, Allahabad): Strings at strong coupling, 13.04.2011.

Prof Amitava Datta (IISER Kolkata): Future SUSY search strategies in the light of LHC 7 TeV and tevatron experiments, 11.05.2011.

Dr Subhadeep De (Joint institute of National institute of Standard and Technology(NIST), Gaithersburg and University of Maryland, USA): Facility to produce ultra-cold degenerate Bose and Fermi gasses, 22.05.2011.

Dr Prabuddha Sanyal (Univ. of Hyderabad): A tale of two oxides: Novel ground state phase transitions!, 01.06.2011.

Prof Debabrata Goswami (Center for Laser Technology, IIT Kanpur): Towards Using Molecular Ions as Qubits: Femtosecond control of molecular fragmentation with multiple knobs, 06.07.2011.

Dr Amreesh Chandra (Department of Physics and Meteorology, IIT Kharagpur): Phase transition studies in anisotropic ceramic $Pb(1-x)Ca(x)TiO_3$, 08.07.2011.

Dr. Somnath Bhattacharyya (Tata Institute of Fundamental Research): Transmission electron microscopy: solving problems at nano scale, 18.07.2011.

Dr Sudeshna Chattopadhyay (Northwestern University): Surfaces and interfaces of solid-liquid: basic sciences and application in energy storage materials, 03.08.2011

Dr Mukul Kabir (Massachusetts Institute of Technology, Cambridge, USA): Multiscale materials modeling toward sustainable energy applications, 17.08.2011

Dr Amit Kumar Agarwal (Scuola Normale Superiore, Pisa): Collective excitations in a strongly spin-orbit coupled twodimensional electron gases, 07.09.2011

Prof Markus Münzenberg (I. Physikalisches Institut, Universität Göttingen, Germany): Hot spin physics, 14.09.2011

Dr. Siddarth Karumanchi (Institute of Mathematical Sciences, Chennai): In how many ways can quantum information be split?, 21.09.2011

Prof. Chandan Dasgupta (IISc, Bangalore): Phenomenological theory of high-temperature superconductivity in the cuprates, 18.11.2011

Dr Amit Ghosal (IISER Kolkata): BCS superconductivity in plain English, 23.11.2011

Vivek Vyas (IISER Kolkata): Gauge invariance, mass and superconductivity: An appreciation of work of Schwinger and Anderson, 30.11.2011

Prof Prasanta Panigrahi (IISER Kolkata): Anyons, statistics and superconductivity, 25.01.2012

Dr Peter M. Oppeneer (Uppsala University): Ab initio study of metal-organic spintronic materials, 08.02.2012

First Inter IISER Physics meeting, 17-19 February 2012.

Dr. Indranil Chattopadhyay (Aryabhata Research Institute for observational Sciences, Manora Peak, Nainital): How plasma composition affects the relativistic flow solutions, 22.02.2012

Dr. Yeshpal Singh (University of Birmingham): Optical clocks: unprecedented precision, 14.03.2012



Publications

6

6.1 Faculty Publications

Department of Biological Sciences

Journal

Balasubramanian, S., P. Venugopal, S. Sundarraj, Z. Zakaria, A.S. Majumdar, **M. Ta.** 2012. "Comparison of chemokine and receptor gene expression between Wharton's jelly and bone marrow- derived mesenchymal stromal cells." *Cytotherapy*. 14, 26-33.

Bhadra, Anindita. 2011. "Woof! Smells like Cancer! A review of cancer detection by dogs." *Current Science*. 101, 480-483.

Bhadury, P and C. Annapurna. 2011. "Marine barcoding- how will it help Indian marine benthic studies?" *Indian Journal of Geomarine Sciences*. 40, 645-647

Bhadury, P, H. Bik, P.J.D. Lamshead, M.C. Austen, G.R. Smerdon and A.D. Rogers. 2011. "Molecular diversity of fungal phylotypes co-amplified alongside nematodes from coastal and deep-sea marine environments." *PLoS One*. 6(10), e26445.

Bhadury, P, B.K. Song and B.B. Ward. 2011. "Intron features of key functional genes mediating nitrogen metabolism in marine phytoplankton." *Marine Genomics*. 4, 207-213

Bozorov, T. †, **S.P. Pandey †,** T.S Dinh, S. Kim, M. Heinrich, K. Gase, I.T. Baldwin. 2012. "Dicer-like proteins and their role in plant-herbivore interactions in *Nicotiana attenuata*." *Journal of Integrative Plant Biology*. 54, 189-206. (†Equal Contribution)

Das, A., J. Ghosh, A. Bhattacharya, D. Samanta, D. Das and **C. Das Gupta.** 2011. "Involvement of mitochondrial ribosomal proteins in ribosomal RNA mediated protein folding." *Journal of Biological Chemistry*. 286, 43771-43781.

Datta, S., R. Saprana. 2011. "Celluloses and hemicelluloses for biomass degradation: An Introduction in "Chemical and Biochemical Catalysis for Next Generation" *Biofuels, RSC Energy and Environment Series No. 4 Royal Society of Chemistry*, 115-35.

Gould, C.J., **S Maiti,** A. Michelot, B.R. Graziano, L. Blanchoin and B.L. Goode. 2011 "The Formin DAD Domain Plays Dual Roles in Autoinhibition and Actin Nucleation." *Curr. Biol*. 21, 384-90.

Ouellet, M., **S Datta,** D Dibble, P.R. Tamrakar, P.I. Benke, C. Li, S. Singh, K. Sale, P.D. Adams, J.D. Keasling, B.A. Simmons, B.M. Holmes, A. Mukhopadhyay. 2011. "Impact of ionic liquid pretreated plant biomass on *S. cerevisiae* growth and biofuel production." *Green Chem*. 13, 2743-2749

Pal, Sunirmal, Amit Das, **Sankar Maiti** and Priyadarsi De. 2012. "Synthesis and characterization of a biodegradable polymer prepared *via* radical copolymerization of 2-(acetoacetoxy) ethyl methacrylate and molecular oxygen." *Polym. Chem*. 3, 182-189.

Prasad, M., X. Wang, L. He, and D.J. Montell. 2011. "Border Cell Migration: A Model System for Live Imaging and Genetic Analysis of Collective Cell Movement." *Methods Mol Biol*. 769, 277-286.

Ray, U, **P.S. Ray** and S. Das. 2012. "Ribosome-RNA interaction: a potential target for developing antiviral against hepatitis C virus." *Curr. Sci*. 102, 405-412.

Sinha Roy, Rituparna, B. Roy, S. Sengupta. 2011. "Emerging technologies for enabling proangiogenic therapies." *Nanotechnology*. 49, 494004.

Samanta, D., A. Das, D. Das, A. Bhattacharya, A. Basu, J. Ghosh, and **C. Das Gupta**. 2011. "Ribosome assisted protein folding : Some of its biological implications." *Proteomics Research Journal*. 1, 223-245

Shindler, K. S., D. Chatterjee, K. Biswas, A. Goyal, M. Dutt, M. Nassrallah, R. S. Khan, and **Das Sarma, J.** 2011. "Macrophage-mediated optic neuritis induced by retrograde axonal transport of spike gene recombinant mouse hepatitis virus". *J Neuropathol Exp Neurol* 70, 470-480.

Soni, Jalpa, Gregor P. Jose, Sayantan Ghosh, Asima Pradhan, Tapas K. Sengupta, Prasanta K. Panigrahi and Nirmalya Ghosh. 2011. "Probing Tissue Multifractality Using Wavelet based Multifractal Detrended Fluctuation Analysis: Applications in Precancer Detection." *IEEE Explore*. 1, 452-456.

Vijaykameswara Rao, N.; Shivshankar, M.; Abhinoy, K.; **Das Sarma, J;** Shunmugam, R. 2012. "Norbornene Derived Doxorubicin Copolymers as Drug Carriers with pH Responsive Hydrazone Linker" *Biomacromolecules*. 13, 221-230.

Whiteley, Andrew R., **Anuradha Bhat**, Emilia P. Martins, Richard L. Mayden, M. Arunachalam, Silva Uusi-Heikkilä, A. T. A. Ahmed, Jiwan Shrestha, Matthew Clark, Derek Stemple and Louis Bernatchez. 2011. "Population genomics of wild and laboratory zebrafish (*Danio rerio*)" *Molecular Ecology*. 20, 4259-4276.

Yao, P., A.A. Potdar, A. Arif, **P.S. Ray**, Mukhopadhyay R., Willard B., Xu Y., Yan J., Saidel G.M. and Fox, P.L. 2012. "Coding region polyadenylation generates a truncated tRNA synthetase that counters translation repression." *Cell*. 30, 88-100.

Book Review

Bhadra, Anindita. 2011. "Book review: Annual review of Entomology, Vol 56, 2011." *Current Science*. 101, 794-795.

Department of Chemical Sciences

Azhakar, R., S. P. Sarish, G. Tavcar, H. W. Roesky, J. Hey, D. Stalke and **D. Koley**. 2011. "Formation of Silicon Centered Spirocyclic Compounds: Reaction of N-Heterocyclic Stable Silylene with Benzoylpyridine, DiisopropylAzocarboxylate, and 1,2-Diphenylhydrazine." *Inorg. Chem*. 50, 3028.

Bag, P. P., M. Patni and **C. M. Reddy**. 2011. "A kinetically controlled crystallization process for identifying new co-crystal forms: fast evaporation of solvent from solutions to dryness." *CrystEngComm*, 13, 5650.

Journal

Bedi, A., S. P. Senanayak, S. Das, K. S. Narayan and **S. S. Zade**. 2012. "Cyclopenta[c]thiophene oligomers based solution processable D-A copolymers and their application as FET materials." *Poly. Chem*. 3, 1453-1460.

- Bhattacharyya, S.**, D. Zitoun and A. Gedanken. 2011. "Electron Paramagnetic Resonance Spectroscopic Investigation of Manganese Doping in ZnL (L = O, S, Se, Te)." *Nanocrystals, Nanosci. Nanotech. Lett.* 3, 541.
- Bhattacharyya, S.**, D. Zitoun and A. Gedanken. 2011. "Magnetic Properties of $Cd_{1-x}Mn_xTe$ / C Nanocrystals." *Nanotechnology* 22, 075703.
- Biswas, B., A. Pal, G. R. Krishna, **C. M. Reddy**, F. Tuna and R. Ghosh. 2011. "An antiferromagnetically coupled dimeric Ni(II) complex anion and its counter cationic monomeric Ni(II) complex, and some other mononuclear transition metal compounds using some neutral ligands." *Polyhedron* 30, 2032.
- Das, M.** 2011. "Static Linear Polarizabilities and First Hyperpolarizabilities of Thiophene Derivatives: Potential Materials for Nonlinear Optics." *Nonlinear Optics, Quantum Optics* 42, 79.
- Das, S., A. Bedi, G. R. Krishna, **C. M. Reddy** and **S. S. Zade**. 2011. "Cyclopenta[c]selenophene based cooligomers and their polymers: comparative study with thiophene analogues." *Org. Biomol. Chem.* 9, 6963.
- Das, S., S. Mandal, **B. Mukhopadhyay** and **S. S. Zade**. 2012. "Synthesis of carbohydrate-functionalized thiophene-capped cyclopenta[c]thiophene for concanavalin A recognition." *Tetrahedron Lett.* 53, 1464-1467.
- Das, S., S. P. Senanayak, A. Bedi, K. S. Narayan and **S. S. Zade**. 2011. "Synthesis and charge carrier mobility of a solution-processable conjugated copolymer based on cyclopenta[c]thiophene." *Polymer*, 52, 5780.
- Das, S., Satyaprasad P. Senanayak, A. Bedi, K. S. Narayan and **S. S. Zade**. 2011. "Synthesis and charge carrier mobility of a solution-processable conjugated copolymer based on cyclopenta[c]thiophene." *Polymer* 52, 5780-5787.
- Dash, J.**, A. J. Patil, R. N. Das, F. L. Dowdall and S. Mann. 2011. "Supramolecular hydrogels derived from silver ion-mediated self-assembly of 5'-guanosine monophosphate." *Soft Matter* 7, 8120-8126.
- Dash, J.**, G. C. Midya, S. Paladhi and K. Dhara. 2011. "Iron Catalyzed Highly Regioselective Dimerization of Terminal Aryl Alkynes." *Chem. Commun.* 47, 6698.
- Dash, J.**, R. N. Das, N. Hegde, G. D. Pantos, P. S. Shirude and S. Balasubramanian. 2012. "Synthesis of bis-indole carboxamides as G-quadruplex stabilizing and inducing Ligands." *Chem. Eur. J.* 18, 554.
- Dash, J.**, Z. A. E. Waller, G. Dan Pantos and S. Balasubramanian. 2011. "Synthesis and binding studies of novel diethynyl-pyridine amides with genomic promoter DNA G-quadruplexes." *Chem. Eur. J.* 17, 4571-4581.
- Dash, J.**, Z. A. E. Waller, G. Dan Pantos and S. Balasubramanian. 2011. "Synthesis and Binding Studies of Novel Diethynyl-pyridine Amides with Genomic Promoter DNA G-quadruplexes." *Chem Eur. J.* 17, 4571.
- Dhara, K., S. Paladhi, G. C. Midya and **J. Dash**. 2011. "Synthesis of spirocyclic thiazolidinedione derivatives using ring-closing metathesis and one-pot sequential ring-closing/cross metathesis." *Org. Biomol. Chem.* 9, 3801-3807.
- Dhara, K., S. Paladhi, G. C. Midya and **J. Dash**. 2011. "Synthesis of Spirocyclic Thiazolidinedione Derivatives Using Ring-Closing Metathesis and One-Pot Sequential Ring-Closing/Cross Metathesis." *Org. Biomol. Chem.* 9, 3801.
- Dota, K., M. Garg, **A. K. Tiwari**, J. A. Dharmadhikari, A. K. Dharmadhikari and D. Mathur. 2012. "Intense 2-cycle laser pulses induced time-dependent bond hardening in a polyatomic molecule." *Phy. Rev. Lett.* 108, 073602.
- Garg, M., **A. K. Tiwari** and D. Mathur. 2012. "Quantum dynamics of proton migration in H_2O dications: formation of H_2^+ on ultrafast timescales." *J. Chem. Phys.* 136, 024320.
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Department of Physical Sciences

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Ghosh, Nirmalya and I. Alex Vitkin. 2011. "Tissue polarimetry: concepts, challenges, applications and outlook." *Journal of Biomedical Optics*, 16, 110801 (Invited review article)

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Ghosh, Sayantan, Jalpa Soni, Harsh Purwar, Jaidip Jagtap, Asima Pradhan, **Nirmalya Ghosh**, and **Prasanta K. Panigrahi**. 2011. "Differing self-similarity in light scattering spectra: a potential tool for pre-cancer detection." *Optics Express*, 19, 19717 (highlighted in virtual journal).

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Paul, S., **G.D. Mukherjee**, A. Ghosh, S. Oishi and S. Raj. 2011. "Temperature dependent X-ray diffraction study of lightly-doped Na_xWO_3 ." *Appl. Phys. Lett.* 98, 121910.

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Soni, Jalpa, Gregor P. Jose, Sayantan Ghosh, Asima Pradhan, **Tapas K. Sengupta**, **Prasanta K. Panigrahi** and Nirmalya Ghosh. 2011. "Probing Tissue Multifractality Using Wavelet based Multifractal Detrended Fluctuation Analysis: Applications in Precancer Detection." *IEEE Proceedings of 4th International Conference on Biomedical Engineering and Informatics (BMEI)*, 452.

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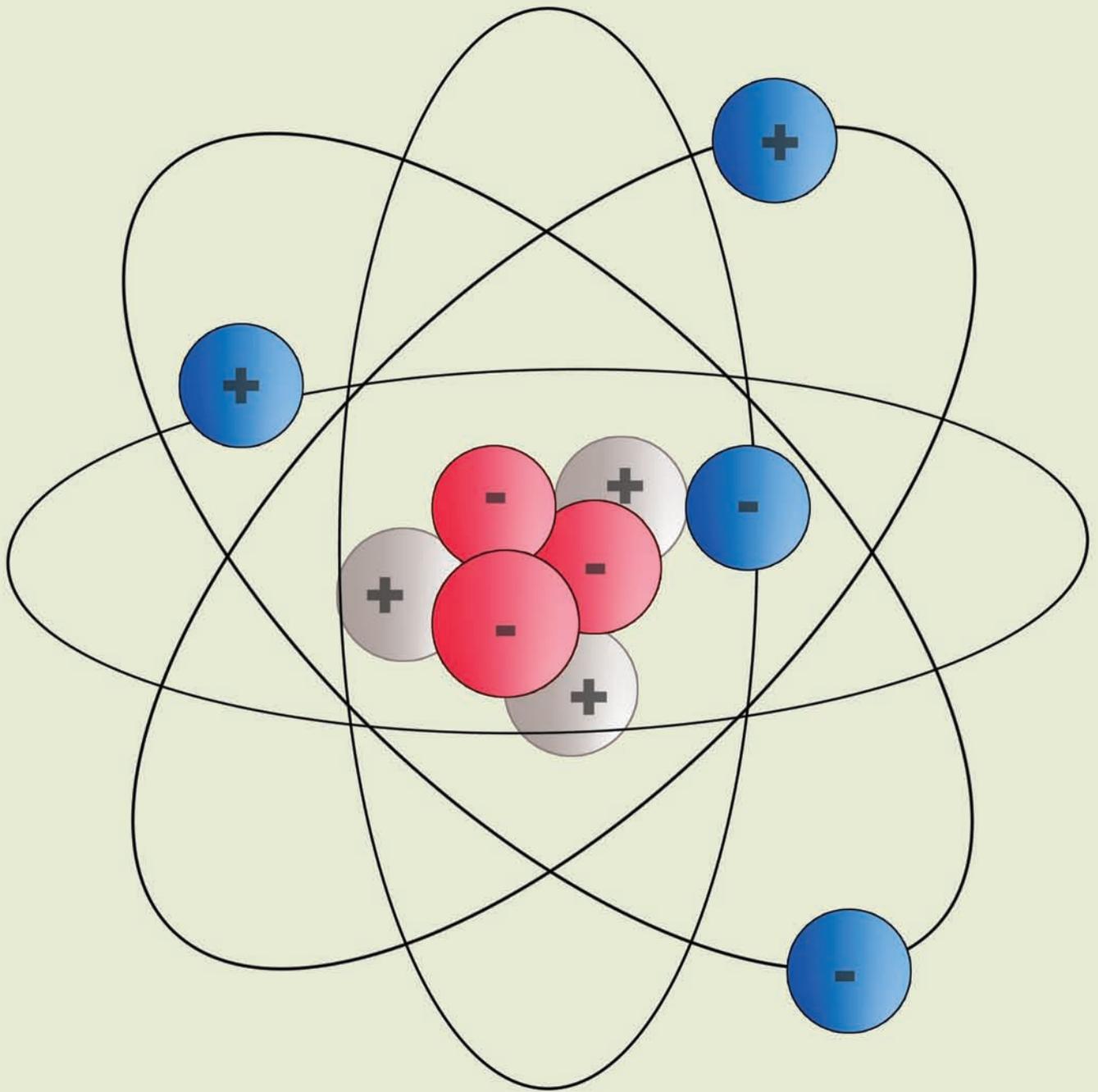
6.2 Staff Publications

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Jana, Siladitya, Subir K. Sen and Hari Prasad Sharma. (2012). "Informational Alternative to Technological Innovation: a demonstration." In *Open Access: Gateway to Open Innovation*. edited by Narayan Chandra Ghosh, 5-15. New Delhi: Society for Information Science (SIS).

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**Student
Activities**

7



Inquivesta

Most premier institutions that have existed for decades have created their own brand of student festivities. Many institutions hold cultural fests annually. In addition, the IITs host technical fests and the IIMs host management fests. The IISERs being the first system of institutes specifically geared towards the basic sciences, we had the challenge of creating a new system of competitive student activity. The students came up with the idea of a Science Fest.

Since 2011, the IISER-Kolkata has initiated the Science Fest, called "Inquivesta". It is a unique event, as no other science fest is organized in the educational institutions of the country. We had to plan all the events without any precedence to follow and had to execute them. This year the Fest was held on 10-12 February, and our students have come out with flying colours in that endeavour. The Fest contains innovative events like "Thrust" (water rocket competition), Crime Scene Investigation, Rubics Cube solving competition, Codathon (programming contest), Art-in-a-Culture (creating artwork with bacterial culture in a petri-dish), etc.

Initiatives Undertaken

8



National Knowledge Network

The National Knowledge Commission under the Govt. of India has initiated an effort to inter-connect all institutions of higher learning in the country. As a part of these efforts, IISER Kolkata has been connected to National Knowledge Network (NKN) through optical fibre link since July 2011. This connectivity has become the core internet link of IISER Kolkata to the world at large. The provisioned bandwidth of this link is 100 Mbps at present.

Virtual Classroom

Concept and Purpose: As an application to use the high-speed connection provided through National Knowledge Network, a Virtual Classroom has been set up at IISER Kolkata. This Virtual Classroom facility is meant to bridge the physical distance between teachers and students who are at different physical locations. For example, students at IISER Kolkata can attend a class that is being held at IISER Trivandrum and ask live questions to the teacher there and vice-versa.

The Virtual Classroom facility, which is capable of transmitting and receiving interactive high-definition video classes across the globe through internet, was inaugurated on 16th February 2012 at IISER Kolkata by Prof. R. N. Mukherjee, the Director of the institute.





**The Key
Committees**

9

9.1 Members of the Society

The membership of the Society is drawn from different strata of the Country like Universities, Scientific Institutions etc. Along with the Government of India nominated members, it also includes the Chief Secretary of the Government of West Bengal, eminent educationists, and scientists from different parts of the Country. The following are the members of IISER Kolkata Society:

Dr. R.A. Mashelkar FRS, *Chairman*

Bhatnagar Fellow & President,
Global Research Alliance
National Chemical Laboratory, Pune 411 008

Shri Samar Ghosh, *IAS Member*

Chief Secretary
Office of Chief Secretary
Government of West Bengal, Kolkata

Secretary (S & HE), *Member*

Ministry of HRD
Government of India,
Shastri Bhawan, New Delhi 110001

Secretary, *Member*

Department of Science & Technology
Technology Bhavan, New Mehrauli Road,
New Delhi - 110016

Prof. Sanjay Govind Dhande, *Member*

Director
Indian Institute of Technology Kanpur
Director's Office
Indian Institute of Technology, Kanpur 208016

Chairman, *Member*

University Grants Commission
Bhadur Shah Zafar Marg
New Delhi 110 002

Prof. Sunil Sarangi, *Member*

Director
National Institute of Technology, Rourkela 769008

Prof. Sibaji Raha, *Member*

Director
Bose Institute,
93/1, Acharya Prafulla Chandra Road, Kolkata 700009

Secretary, *Member*

Department of Expenditure
Government of India
Ministry of Finance, North Block, Central Secretariat
New Delhi 110 001

Secretary, *Member*

Department of Biotechnology
Government of India
Block No. 2, CGO Complex, Lodi Road,
New Delhi 110 003

Secretary, *Member*

Department of Atomic Energy
Anushakti Bhavan, Chatrapathi Shivaji Maharaj Marg,
Mumbai 400 001

Chairman (or his nominee not below the rank of *Jt. Secretary, GOI*), *Member*

Defence Research & Development Organization
Government of India
Ministry of Defence, New Delhi 110 011

Secretary, *Member*

Department of Space
Lok Nayak Bhavan
3rd Floor, Khan Market, New Delhi 110003

Director General, *Member*

Council of Scientific and Industrial Research
Anusandhan Bhawan,
2, Rafi Ahmed Kidwai Marg, New Delhi 110001

Prof. R.N. Mukherjee, *Member*

Director
Indian Institute of Science Education & Research,
Kolkata, Regd. Office: DC 35/1, Sector-I,
Salt Lake, Kolkata 700064

Prof. Somnath Dasgupta, *Member*

Department of Earth Sciences
Indian Institute of Science Education and Research
Kolkata, Regd. Office: DC 35/1, Sector-I,
Salt Lake, Kolkata 700064

Prof. Prasanta Panigrahi, *Member*

Department of Physical Sciences
Indian Institute of Science Education and Research,
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Salt Lake, Kolkata 700064

Prof. Pramod Tandon, Member

Vice Chancellor
North-Eastern Hill University, Permanent Campus,
Umshing Mawkynroh, Shillong 793022

Prof. D. P. Singh, Member

Vice Chancellor
Banaras Hindu University, Varanasi 221 00

Prof. P. Balaram, Member

Director
Indian Institute of Science, Bangalore 560 012

Prof. K. N. Ganesh, Member

Director
Indian Institute of Science Education & Research Pune
First floor, Central Tower, Sai Trinity Building, Garware
Circle, Sutarwadi, Pashan, Pune 411021

Mr. Joydeep Sil, Non Member Secretary

Registrar
Indian Institute of Science Education and Research,
Kolkata, Regd. Office: DC 35/1, Sector-I,
Salt Lake, Kolkata 700064

9.2 Board of Governors

The Board is entrusted with the general superintendence, direction and control of the affairs of the Institute. The membership of the Board includes nominees of the Government of India of both Secretaries of different Departments as well as eminent scientists, Chief Secretary of the Government of West Bengal, Directors of different eminent Scientific Institutions, and two Professors of the Institute nominated by the Senate. The following are the members of the Board of Governors:

Dr. R.A. Mashelkar FRS, Chairman

Bhatnagar Fellow & President, Global Research Alliance
National Chemical Laboratory
Pune 411 008

Secretary (S & HE), Member

Ministry of HRD
Government of India, Shastri Bhawan,
New Delhi 110001

Shri Samar Ghosh, IAS, Member

Chief Secretary
Office of Chief Secretary
Government of West Bengal, Kolkata

Prof. R.N. Mukherjee, Member

Director
Indian Institute of Science Education & Research
Kolkata
Regd. Office: DC 35/1,
Sector-I, Salt Lake,
Kolkata 700064

Prof. P. Balaram, Member

Director
Indian Institute of Science,
Bangalore 560 012,

Prof. K. N. Ganesh, Member

Director
Indian Institute of Science Education and Research
Pune, First floor, Central Tower, Sai Trinity Building,
Garware Circle, Sutarwadi, Pashan, Pune - 411021

Prof. Sanjay Govind Dhande, Member

Director
Indian Institute of Technology Kanpur
Director's Office,
Indian Institute of Technology, Kanpur - 208 016

Secretary, Member

Department of Biotechnology
Government of India
Block No. 2, CGO Complex, Lodi Road,
New Delhi - 110 003

Secretary, Member

Ministry of Earth Sciences
Government of India, Block-12, Mahasagar Bhawan,
C.G.O. Complex Lodhi Road, New Delhi 110003

Secretary, Member

Ministry of New and Renewable Energy
Block No.14, C.G.O. Complex, Lodi Road,
New Delhi 110003

Prof. Somnath Dasgupta, Member
Department of Earth Sciences
Indian Institute of Science Education and Research
Kolkata, Regd. Office: DC 35/1, Sector-I, Salt Lake,
Kolkata - 700064

Prof. Prasanta Panigrahi, Member
Department of Physical Sciences
Indian Institute of Science Education and Research
Kolkata, Regd. Office: DC 35/1, Sector-I, Salt Lake,
Kolkata - 700064

Prof. B.K. Mishra, Member
Director
Institute of Minerals and Materials Technology
(Formerly Regional Research Laboratory),
Council of Scientific & Industrial Research,
Bhubaneswar - 751 013

Dr. Pawan Kapur, Member
Director
Central Scientific Instruments Organization,
Sector - 30/C, Chandigarh - 160 030

Prof. Sankar K. Pal, Member
Ex-Director
Indian Statistical Institute,
203 Barrackpore Trunk Road,
Kolkata 700108

Prof. Kankan Bhattacharyya, Member
Director and Chair Professor (on lien)
Department of Physical Chemistry
Indian Association for the Cultivation of Science,
2A & 2B, Raja S.C. Mullick Road,
Jadavpur, Kolkata - 700 032

Mr. Joydeep Sil, Non Member Secretary
Registrar
Indian Institute of Science Education & Research
Kolkata, Regd. Office: DC 35/1,
Sector-I, Salt Lake, Kolkata - 700064

9.3 Finance Committee

The following are the members of the Finance Committee:

Dr. R.A. Mashelkar, FRS, Chairman
Bhatnagar Fellow & President,
Global Research Alliance,
National Chemical Laboratory, Pune 411 008

Prof. R.N. Mukherjee, Member
Director, Indian Institute of Science Education &
Research Kolkata, Regd. Office: DC 35/1, Sector-I,
Salt Lake, Kolkata 700064

Shri A.N. Jha, Member
Joint Secretary & Financial Adviser
Department of Higher Education
Ministry of Human Resource Development
Room No. 118, 'C' Wing,
Shastri Bhawan, New Delhi 110001

Shri R. Srinivasan, Member
Director (Mgt.)
Department of Higher Education, Ministry of HRD,
Government of India, Room No. 205, 'C' Wing,
Shastri Bhawan, New Delhi 110 001

Prof. Kalyan B Sinha, Member
CSIR Bhatnagar Fellow
Jawaharlal Nehru Centre for Advanced Scientific
Research (JNCASR)
Jakkur Campus, P.O. Jakkur, Bangalore - 560 064

Prof. Avinash Khare, Member
Raja Ramanna Fellow
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Pune
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Garware Circle, Sutarwadi, Pashan
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Shri Joydeep Sil, Non Member Secretary
Registrar
Indian Institute of Science Education & Research
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Salt Lake, Kolkata – 700064

9.4 Senate

The Senate is the principal academic body of the Institute. Among other functions, it is entrusted to (i) plan and co-ordinate the research activities of the Institute; (ii) to exercise general supervision over academic work of the Institute and to give direction regarding methods of instructions, evaluation or research or improvements in academic standards; (iii) to make arrangements for the conduct of examinations in conformity with the byelaws; (iv) to decide on admission procedure of the Institute, etc. The Director is the *ex officio* Chairman and the Registrar is the *ex officio* Secretary of the Senate. The following are the members of the Senate:

Prof. R.N. Mukherjee, *Chairman*

Director
Indian Institute of Science Education & Research
Kolkata
Regd. Office: DC 35/1, Sector-I, Salt Lake,
Kolkata - 700064

Prof. T.K. Chandrasekhar, *Member*

Director
National Institute for Science Education & Research
Institute of Physics Campus, Sachivalaya Marg,
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Dr. G. Balakrish Nair, *Member*

Director
National Institute of Cholera and Enteric Diseases
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Kolkata - 700 010

Prof. Debasish Mukherjee, *Member*

Ex-Director, Indian Association for the Cultivation of
Science (Phys. Chem)
Dept. of Raman Center for Atomic, Mol and Optical Sc.,
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Indian Institute of Chemical Biology
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Ex-faculty, Indian Institute of Science Education &
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Prof. Suranjan Das, *Member*

Vice Chancellor
University of Calcutta
Senate House, 87 /1 College Street, Kolkata - 700 073

Prof. Ashok Ranjan Thakur, *Member*

Vice Chancellor
West Bengal State University
Barasat, North 24 Parganas, Berunanpukuria, P.O.
Malikapur, North 24 Parganas, Kolkata 700126

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Prof. Soumitro Banerjee, *Member*

Dean of Students' Affairs
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Kolkata - 700064

Prof. Narayan Banerjee, *Member*

Dean of Faculty Affairs
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Dr. Sanjio S. Zade, Member

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Dr. P.A. Sreeram, Member

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Dr. Asok Nanda, Invitee

Chairperson, Department of Mathematics & Statistics
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Dr. Ananda Dasgupta, Invitee

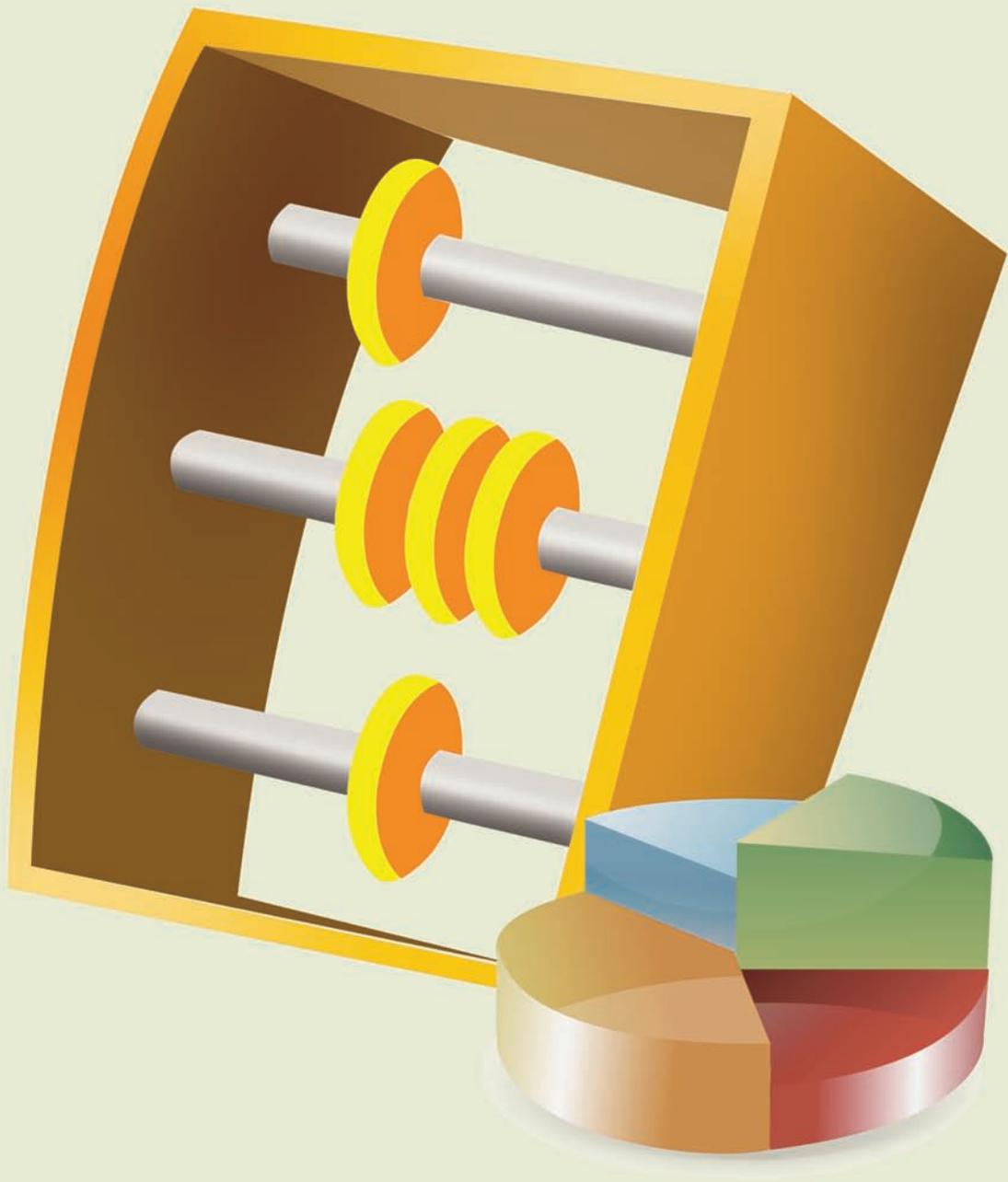
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Dr. Balaram Mukhopadhyay, Invitee

Department of Chemical Sciences
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Kolkata - 700064

Shri Joydeep Sil, Secretary

Registrar
Indian Institute of Science Education & Research
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Summary of Institute Accounts

10

Balance Sheet

as at 31st March, 2012

(Amount in ₹)

Sl.No.	Particulars	Current Year (2011-2012)	Previous Year (2010-2011)
	LIABILITIES		
I	CORPUS/CAPITAL FUND	1881233244	1262504766
II	RESERVE AND SURPLUS	297063492	257688495
III	EARMARKED/ENDOWMENT FUNDS AND INSTITUTE DEVELOPMENT FUND	91197332	24805028
IV	SECURED LOANS & BORROWINGS	0	0
V	UNSECURED LOANS & BORROWINGS	0	0
VI	DEFERRED CREDIT LIABILITIES	0	0
VII	CURRENT LIABILITIES AND PROVISIONS	86866495	27103927
VIII	OTHERS	0	0
	NEW PENSION SCHEME FUND	36382223	20944859
	TOTAL	2392742786	1593047075
	ASSETS		
I	FIXED ASSETS	1504163268	1262504766
II	INVESTMENT- FROM EARMARKED/ FUND ENDOWMENT	7063749	0
III	INVESTMENT- OTHERS	170671335	0
IV	CURRENT ASSETS, LOANS, ADVANCES ETC.	674462211	309597450
V	OTHERS	0	0
	NEW PENSION SCHEME (ASSETS)	36382223	20944859
	TOTAL	2392742786	1593047075
	SIGNIFICANT ACCOUNTING POLICIES		
	CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS		

Income and Expenditure Account

for the year ended 31st March, 2012

(Amount in ₹)

Sl.No.	Particulars	Current Year (2011-2012)	Previous Year (2010-2011)
	INCOME		
I	Income from Sales / Services	322950	58450
II	Grants/Subsidies	237800000	325690263
III	Fees/Subscriptions	11331781	5777450
IV	Income from Investments	0	0
V	Income from Royalty, Publication etc.	0	0
VI	Interest Earned	18302858	7181383
VII	Other Income	3764327	2698103
VIII	Increase/(decrease) in stock of Finished goods and works-in-progress	0	0
IX	Reserve and Surplus as on 1.04.10	0	79907746
X	Depreciation (adjusted) for the year to be adjusted with Capital Fund	212771665	120158783
	TOTAL (A)	484293581	541413728
	EXPENDITURE		
I	Establishment Expenses	113793641	92073611
II	Other Administrative Expenses etc.	125793389	112986611
III	Expenditure on Grants, Subsidies etc.	0	0
IV	Interest	0	0
V	Depreciation (adjusted) (Net Total at the year end - corresponding to Schedule 8)	212771665	120158783
	TOTAL (B)	452358695	325219005
	Balance being excess of Income over Expenditure (A-B) Transferred to Reserve and Surplus	31934886	216194723
	SIGNIFICANT ACCOUNTING POLICIES CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS		

Receipts and Payments

for the year ended 31st March, 2012

(Amount in ₹)

Sl.No.	Receipts	Current Year (2011-2012)	Previous Year (2010-2011)
I	Opening Balance	275190287	36774684
II	Grant-in-aid from Govt. of India	940000000	900000000
III	Encashment of Investment	130070685	0
IV	Income on Investments from	2087055	23991
V	interest Received	8973306	7181383
VI	Other Income	13924097	5260597
VII	Other Receipts	410591356	265450225
	TOTAL	1780836786	1214690880

(Amount in ₹)

Sl.No.	Payments	Current Year (2011-2012)	Previous Year (2010-2011)
I	Expenses		
	a) Establishment Expenses	98836248	79437000
	b) Administrative Expenses	102200748	87244496
II	Investments and deposits made	300000000	0
III	Expenditure on Fixed Assets	460953086	530639585
IV	Other Payments	444941213	242179512
V	Closing Balances	373905491	275190287
	TOTAL	1780836786	1214690880





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Published by:

Director, Indian Institute of Science Education and Research Kolkata

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