



ANNUAL REPORT 2013-14

भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान कोलकाता
INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH KOLKATA
ESTD-2006

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH KOLKATA
भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान कोलकाता
(An Autonomous Institute under Ministry of Human Resource Development, Government of India)



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INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH KOLKATA

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Preface



It is my great pleasure to present you the Annual Report of Indian Institute of Science Education and Research (IISER) Kolkata for the Financial Year 2013-2014, which will give you a comprehensive account of our many activities, developments, and accomplishments.

IISER Kolkata has completed seven years of existence and has entered the eighth year. Focusing on the vision of IISER Kolkata, to provide quality teaching and exposing the students early on to the excitements of research in basic sciences with a borderless and flexible education program in an integrated manner, we continue to excel. The Institute, through active support of the Ministry of Human Resource Development (MHRD), has moved towards creating a holistic institution for higher education. Since its inception, IISER Kolkata has come a long way and made its presence felt in the region, in the country and abroad.

Our quest since 2006 to work towards creation of infrastructure, develop meaningful academic programs and attract quality-faculty for teaching and cutting-edge research as well as non-teaching cadres to support academic and administrative activities at IISER Kolkata has been accomplished to a large extent.

The year 2013 scheduled the first convocation of IISER Kolkata on 8 July 2013, awarding degrees to the first-batch (2006-2011; 38 in number), second-batch (2007-2012; 66 in number) and third-batch (2008-2013; 45 in number) of BS-MS dual-degree students and the first-lot of IPhD students (9 in number), and the first lot (16 in number) of PhD students. All members of IISER Kolkata community watched this event with pride. The first convocation conferred (announcement was made but the event took place later on) honorary doctorate degree – *Honoris Causa* – to Professor C.N.R. Rao, the Chief Architect of all IISERs. Hereafter, the cycle of students graduating and new faces taking their place will repeat each year but the first convocation is a special moment in the history of any institute. It is a matter of great satisfaction that most of our BS-MS students have booked their places in some of world's best research

institutes – Cambridge, Oxford, Cornell, Yale, Göttingen, and the Max Planck Institutes, in addition to joining premier research institutes in India – IISc, NCBS, other IISERs and IITs, IIM. Not only that, many students won prestigious international and national scholarships, such as, Rhodes, Clarendon, Commonwealth etc.

Like previous years, we have been able to attract an increased number of students to our programs. Currently, IISER Kolkata has 494 students in our BS-MS and 95 in Post-BSc-Integrated PhD (IPhD), 189 in PhD, 3 MS-by research programs and 4 as post-doctoral fellows. Our immediate goal is to increase the number of PhD students and the post-doctoral fellows.

IISER Kolkata is able to attract talented and promising faculty members, strengthening the academic and research activities of the Institute. IISER Kolkata aims to have a strong core faculty selected on a highly competitive basis and supported by attractive start-up and matching research grants. Currently, IISER Kolkata has faculty strength of 77: Assistant Professor: 40 (one is on lien); Associate Professor: 33; Professor: 4 (one is on deputation) spread over five departments – Biological Sciences, Chemical Sciences, Earth Sciences, Mathematics and Statistics and Physical Sciences. In addition to regular faculty, we have 5 Assistant Professors (on contract) and 2 Ramanujan- and 2 INSPIRE-fellows, to show-case their potential by participating in teaching and doing independent research. The faculty and the students are supported by 63 administrative and scientific staff members.

Creating research infrastructure is one of our top priorities. The Institute has state-of-the-art research laboratories equipped with sophisticated modern equipments. Faculty members are given adequate support for setting up their laboratories. Specific need-based strengthening of experimental facilities in the laboratories in different areas (teaching as well as individual laboratories) and augmentation of computational facilities is a continuing process, requiring regular upgradation. This process will form a major component of the activities during the coming years. The current Financial Year witnessed addition of a few high-end equipments to promote quality research. Our state-of-the-art EPR and high-resolution mass spectrometer have already started functioning. Notably, the faculty members are attracting significant support for their research activities from both national and international funding agencies. In fact, till date a total of 120 sponsored-research projects, amounting to ~Rs. 46 Crore, have been sanctioned to implement innovative research ideas. During the Financial Year 2013-14 approval of 32 sponsored projects were obtained and we received a sanctioned support of ~Rs. 16 Crore, including support for a 'Center of Excellence in Space Sciences India (CESSI)', a multi-institutional Center, funded by the MHRD, under the scheme of setting up "Centers for Training and Research in Advance Areas of Science and Technology'.

We continue to support the UG and PG students attending national and international conferences. We also support summer research programs for outside students.

The steady and positive growth in research in different scientific areas being carried out by the faculty and the students at IISER Kolkata are evident from the quality and the quantum of research work in terms of total number of publications and the publications in high-quality, peer-reviewed national and international journals (194 in 2013-14 alone), as well as 8 book chapters in 2013-14. Moreover, a sizeable number of presentations were made in national and international conferences.

In order to provide an encouraging environment for teaching and learning, the existing video-conferencing facility and e-classroom were further strengthened. Several eminent scientists/scholars from India and abroad spanning different fields were invited to deliver special lectures on topics of wide interest to keep the students and the faculty updated with recent developments. A new in-house 'Faculty Seminar Series' has been initiated. This has given us a platform to share the research accomplishments of a laboratory with other groups. Like previous year 2012-2013, this year also we celebrated the annual 'Department Days'.

IISER Kolkata's fully residential campus is coming up on 201 acres of land at Mohanpur, Dist. Nadia. The Electrical Sub-station, the first building constructed in the permanent campus was energized in July 2013 and a hostel block – Netaji Subhas Chandra Bose (NSCB) Hall – of the first hostel of IISER Kolkata to accommodate 400 students and a dining hall were inaugurated by Shri M.K. Narayanan, the Hon'ble Governor of West Bengal, Chief Guest – first convocation of IISER Kolkata – on the day of our first convocation on 8 July 2013, in the presence of Shri Pankaj Patel, present Chairperson, Board of Governors (BoG) of IISER Kolkata. NSCB Hall was occupied on 26 July 2013 and the other block – Ishwar Chandra Vidyasagar (ICV) Hall – to accommodate an additional 400 students was occupied on 29 November 2013. The first-floor of the dining hall was transformed to a new classroom-cum-seminar hall and has been in use. The basement of the Dining Hall is being used for essential commercial shops for hostel-dwellers. The construction of the lecture hall complex, research complex and another sub-station are nearing completion. Construction of research complex extension, admin-cum-academic block, a hostel for girls, visitor's hostel, Director's residence, housing for faculty and non-teaching staff, animal house, biome facility, auditorium, sports complex and school are likely to be completed by August-September of 2015. The next financial year will witness shifting of most, if not all, of our activities from the transit campus at the premises of BCKV and WBUAFS to the permanent campus. All in all, we expect a strong growth in the intensity of teaching and research program as more facilities will become available.

Relocating ourselves in the new campus has started and as a united community, we are braving the odds. The task is onerous. The faculty and students have been very supportive. The formative years are always difficult but they also establish milestones and landmarks, and embed several institutional historical processes. The experience is mixed but evidence points to the fact that we are on the move.

Every year we celebrate the 'Hindi Diwas' to ensure use of Hindi in more areas of administration and official communications. In the current Financial Year 2013-14 we observed the 'Hindi Diwas' on 13 September 2013. Work done by the Hindi Implementation Committee of IISER Kolkata has been recognized by 'RAJBHASHA SHIELD' awarded by MHRD for the year 2013 for best implementation of official language.

It is gratifying to note that the financial resources provided to us have been optimally used and also accounted for through both internal and statutory audit.

We have a very good support system with officers and staff members, who have been relentlessly helping the Institute in its pursuit of excellence in science.

The 'Foundation Day' of the Institute was celebrated on 19 September 2013. Dr. T. Ramasami, Secretary, Department of Science and Technology delivered his lecture on the topic 'Science for Managing Creative People'. The event was very successful.

IISER Kolkata honoured eminent scientist Prof. C.N.R. Rao with the *Honoris Causa* on 9 October 2013; the announcement of which was made during our first convocation. Prof. Rao delivered the 'Distinguished Lecture' on the topic 'Inorganic Analogues of Graphene'. The citation and the degree were handed over to Prof. Rao by Shri Pankaj Patel, Chairperson, BoG of IISER Kolkata. The event was a grand success and a memorable one.

Apart from engaging in scientific activities, students and faculty of IISER Kolkata are also involved in various social and co-curricular activities to reach out to the community not only in and around Mohanpur but also in India and abroad.

IISER Kolkata was honoured to be invited to be a part of a road-show organized by 'DWIH New Delhi – Excellence on Tour' by the German House for Research and Innovation (DWIH) New Delhi in Science City Kolkata during 22-28 March 2014. The Director, IISER Kolkata was invited to act as Guest of Honour and was invited as a Keynote Speaker at the Inaugural Event. IISER Kolkata was also a part of the closing ceremony. Student and faculty participation from IISER

Kolkata made our presence felt in this road-show. Notably, a German team visited our campus on 24 March 2014, as a part of our outreach activity.

IISER Kolkata aims to be the leading center for research and education in basic sciences in the eastern region. The Institute is developing a synergetic network with other academic institutions both in India and abroad, addressing fundamental issues of science education in India, holds regular conferences, seminars and symposia in diversified research areas.

With our focus on academic programs, IISER Kolkata has accomplished the task of establishing itself as an institution reaching out to all levels of science education and research.

The smooth implementation of the Twelfth Five-Year Plan will be a major agenda for IISER Kolkata in the next couple of years. The exemplary support received from MHRD has to be matched by unstinted devotion from all members of IISER Kolkata fraternity and collective effort and coordination between academic and administrative personnel to ensure timely acquisition and establishing new facilities and infrastructures and delivering science-output, at the highest level.

I thank the members of various selection committees, who have given the Institute excellent faculty and non-teaching staff members that have made IISER Kolkata what it is today. Thanks are due to a number of internal committees, which are a vehicle of collective decision-making. I sincerely thank all the Head of the Departments, Deans of Academic, Faculty, Research and Development and Students, and last but not the least the Registrar and his team for the hard-work they have collectively put in to run the Institute on a structured mode.

I express my deep sense of gratitude to the Chairperson of the BoG and all other members, and members of Building Works Committee, Senate and Finance Committee for their guidance and cooperation.

Finally, I would like to congratulate all the members of the Annual Report team for bringing out this comprehensive report.

We look forward to exciting and fruitful years ahead.



R. N. Mukherjee
Director



THE IISER KOLKATA COMMUNITY

1.1

Staff Members

Faculty Members

Professors

R. N. Mukherjee

Director
Inorganic Chemistry and Bioinorganic Chemistry
PhD - Chemistry
(University of Calcutta, 1983)
FNA, FASc, FRSC (UK)

Prasanta Panigrahi

Field Theory
PhD - (University of Rochester, 1988)
FNASc

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, TWAS, Fellow IEEE

Asok K. Nanda

Reliability, Statistics
PhD - Statistics
(Panjab University, Chandigarh, 1998)

Somnath Dasgupta

(on lien/deputation w.e.f. 22.06.2012)
Geochemistry, Petrology
PhD - Geology
(Jadavpur University, Kolkata, 1979)
FNA, FNASc, FASc, FTWAS

Amitava Datta

(Superannuated on 31.07.2013)
High Energy Physics
PhD - Physics
(Visva Bharati, Santiniketan, 1974)
FNA

Associate Professors

Jayasri Das Sarma

Neural Cell Biology, Neuroscience
PhD - Immunology/Chemistry
(Jadavpur University, Kolkata, 1995)

Tapas Kumar Sengupta

RNA Stability, Gene Regulation, Bioremediation
PhD - Biology
(University of Calcutta, 1996)

Supriyo Mitra

Earthquake Seismology, Continental Tectonics
PhD - Geophysics
(University of Cambridge, 2004)

Ravikant Vadlamani

Crustal Evolution, Isotope Geochemistry and
Geochronology
PhD - Earth Science
(National Geophysical Research Institute / Osmania
University, Hyderabad, 2002)

Tarun Kumar Dalai

Isotope and Trace Element Geochemistry
PhD - Geology
(Physical Research Laboratory/ Maharaja Sayajirao
University of Baroda, 2001)

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)

Sanjio S. Zade

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

Ananda Dasgupta

Quantum Phenomena (Theory)
PhD - Physics
(Saha Institute of Nuclear Physics, Kolkata / Jadavpur
University, 2001)

Bipul Pal

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

Balaram Mukhopadhyay

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

Dibyendu Nandi

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

Amlan Kusum Roy

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

Subhasis Sinha

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

Chiranjib Mitra

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

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)

Goutam Dev Mukherjee

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

C. Malla Reddy

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

Debasish Haldar

Supramolecular Bio-organic Chemistry
PhD - Chemistry
(Indian Association for the Cultivation of Science,
Kolkata/Jadavpur University, 2005)

Subhajit Bandyopadhyay

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

Pradipta Purkayastha

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

Ayan Banerjee

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

Arindam Mukherjee

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

Nirmalya Ghosh

Optics & Spectroscopy, Biophotonics
PhD - Physics
(Raja Ramanna Centre for Advanced Technology,
Indore/ Devi Ahilya Vishwavidyalaya, Indore, 2005)

Swadhin K. Mandal

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

Priyadarsi De

Polymer Chemistry
PhD - Chemistry
(Indian Institute of Science, Bangalore, 2002)

Satyabrata Raj

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

Venkataramanan Mahalingam

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

Raja Shunmugam

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

Rajesh Kumble Nayak

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

Sumana Annagiri

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

Punyasloke Bhadury

Marine Microbiology, Climate Change and Ocean
Acidification, Microbial Ecology
PhD - Biological Science
(University of Plymouth, Plymouth 2005)

Assistant Professors

Partho Sarothi Ray

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

Saugata Bandyopadhyay

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

Partha Mitra

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

Sumit Khanra

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

Dhananjay Nandi

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

Partha Pratim Datta

Structural & Molecular Biology
PhD - Molecular Biology
(Indian Institute of Chemical Biology, Kolkata /Jadavpur University, 2002)

Mohit Prasad

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

Prasun K. Mandal

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

Arindam Kundagrami

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

Manoj Jaiswal

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

Bhavtosh Bansal

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

Sayan Bhattacharyya

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

Devapriya Chattopadhyay

Invertebrate Paleontology
PhD - Geological Sciences
(University of Michigan, Ann Arbor, 2009)

Siddhartha Lal

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

Anuradha Bhat

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

Anandamohan Ghosh

Nonlinear Dynamics,
Mathematical and Theoretical Biology
PhD - Physics
(National Chemical Laboratory, Pune /
University of Pune, 2004)

Subrata Shyam Roy

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

Sujata Ray

(On lien w.e.f. 07.10.2013)
Soil Mechanics and Environmental Engineering
PhD - Environmental Engineering
(Princeton University, 2007)

Golam Mortuza Hossain

Gravitation & Cosmology (Classical and Quantum)
PhD- Physics
(Institute of Mathematical Sciences, Chennai/
University of Madras, 2006)

Rangeet Bhattacharyya

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

Rumi De

Theoretical Biological Physics; Soft Condensed Matter;
Nonlinear Dynamics
PhD – Nonlinear Dynamics
(Indian Institute of Science, Bangalore, 2006)

Ashwani Kumar Tiwari

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

Robert John Chandran

Terrestrial Ecology
PhD – Biology
(Indian Institute of Science, Bangalore, 2001)

Ritesh Kumar Singh

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

Anirban Banerjee

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

Rupak Datta

Biochemistry, Molecular Cell Biology
PhD – Biology
(Indian Institute of Chemical Biology,
Kolkata/ Jadavpur University, 2006)

Debasis Koley

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

Soumyajit Roy

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

Sankar Maiti

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

Rituparna Sinha Roy

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

Debansu Chaudhuri

Organic Semiconductors
PhD - Chemistry
(Indian Institute of Science, Bangalore, 2006)

Malancha Ta

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

Shree Prakash Pandey

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

Kathakali Bhattacharyya

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

Prashanth C Upadhyaya

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

Supratim Datta

Biochemical Engineering and Bio-energy,
Bioinorganic Chemistry
PhD - Chemistry
(Boston University, Boston, 2005)

Bidisha Sinha

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

Koel Das

Computational Neuroscience, Visual Perception,
Brain-Computer Interface
PhD - Pattern recognition
(University of California, Irvine, 2007)

Satyaki Mazumder

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

Sriram Balasubramanian

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

Shibananda Biswas

Operator Theory
PhD - Mathematics
(ISI Bangalore, 2010)

Assistant Professor (On Contract)

Veerandra V. Awasthi

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

Himadri Mukherjee

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

Jitendra Kumar Pattanaik

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

Mousumi Das

(w.e.f. 16.12.2013)
Computational and Theoretical Chemistry
PhD - Chemistry
(Indian Institute of Science, Bangalore, 2006)

Anindita Bhadra

(w.e.f. 11.03.2014)
Animal Behaviour, Evolution, Ecology
PhD - Animal Behaviour,
(Indian Institute of Science, Bangalore, 2008)

Melinda Kumar Bera

(Upto 31.12.2013)
Sedimentology, Sequence Stratigraphy, Stable Isotope
Geochemistry
PhD - Geology
(Indian Institute of Technology, Kharagpur, 2011)

Priyanka Shukla

(Upto 04.03.14)
Fluid Mechanics, Nonlinear Dynamics, Hydrodynamic
Stability, Granular Flows, Pattern Formation
PhD - Mathematics
(Jawaharlal Nehru Centre for Advanced Scientific
Research, Bangalore, 2011)

Ramanujan Fellow

Sutapa Bose

Soil and Crop Science, Soil Pollution and Solid Waste
Management, Heavy Metal Pollution and
Phyto-remediation
PhD - Environmental Science
(Jawaharlal Nehru University, New Delhi, 2005)

Guha Dharmarajan

Population Biology, Disease Ecology
PhD-Biology
(Purdue University, 2008)

Inspire Faculty Fellow

Argha Banerjee

Modeling and Field Studies of Glaciers
PhD-Physics
(Tata Institute of Fundamental Research, Mumbai, 2011)

Mithun Mukherjee

Inclusion Systems and Amalgamated Product of
Product Systems of Hilbert Spaces
PhD (ISI Bangalore, 2010)

Honorary Professors

Prof. Partha Pratim Majumder

Director, National Institute of Biomedical Genomics
Netaji Subhas Sanatorium
N.S.S., Kalyani, West-Bengal, India

Prof. Sankar Adhya

Chief, Developmental Genetics Section
Laboratory of Molecular Biology, NCI, NIH
Bethesda, Maryland, USA

Pandit Ajoy Chakraborty

ITC Sangeet Research Academy
Tollygunge, Kolkata, India

Dr. Sankar Chatterjee

Paul Whitfield Horn Professor of Geosciences & Curator
of Palaeontology
Museum of Texas Tech University
Lubbock, Texas, USA

Prof. Supriyo Datta

Thomas Duncan Distinguished Professor of
Electrical and Computer Engineering
School of Electrical & Computer Engineering
Purdue University
Indiana, USA

Prof. Raghavendra Gadagkar

INSA S N Bose Research Professor and
J C Bose National Fellow
Centre for Ecological Sciences
Indian Institute of Science
Bangalore, India

Prof. Jibamitra Ganguly

Department of Geosciences
University of Arizona
Tucson, Arizona, USA

Prof. Jainendra K. Jain

Erwin W. Mueller Professor
Department of Physics
The Pennsylvania State University
Pennsylvania, USA

Prof. Ram Murthy

Professor and Queen's Research Chair
Department of Mathematics
Queen's University
Kingston, Ontario, Canada

Prof. Kalyan B. Sinha

Jawaharlal Nehru Centre for Advanced Scientific
Research (JNCASR)
Bangalore, India

Prof. Ajay K. Sood

Department of Physics
Indian Institute of Science
Bangalore, India

Prof. Mriganka Sur

Paul E. Newton Professor of Neuroscience
Head, Department of Brain and Cognitive Sciences
Massachusetts Institute of Technology (MIT)
Massachusetts, USA

Visiting Professors

Prof. Nibir Mandal

INSA, Department of Geological Sciences
Jadavpur University
Kolkata, India

Prof. Suresh Chandra Santra

Department of Environment Science
University of Kalyani
Nadia, West Bengal, India

Senior Scientific Officers

Dr. Uday Kumar

Physics
PhD (University of Bombay, 2003)

Dr. K. Srikanth

Chemistry
PhD (Indian Institute of Technology Bombay, 2001)

Scientific Officers

Dr. Parna Gupta Bhattacharayya

Synthetic Inorganic Chemistry
PhD - Chemistry
(Jadavpur University, 2004)

Indrajit Chatterjee

MSc, Physics

Administrative Staff

Joydeep Sil
Registrar

Prakash Hazarika
Deputy Registrar (Finance & Accounts)

Shahid Ali Farooqui
System Administrator

Siladitya Jana
Assistant Librarian

Sanad Kumar Shukla
Assistant Registrar

Sushmita Bhattacharjee
Assistant Registrar (Academics)

Santanu Das Mahapatra
Assistant Registrar (SA)

Chinmay Sarkar
Assistant Registrar (F&A)

Rana Bhadra
Technical Officer

Arnab Kumar Sadhukhan
Technical Officer

Sunita Bhattarjee
Technical Officer (Civil)

Partha Banerjee
Technical Officer (Electrical)

Somraj Gupta
Medical Officer

Dew Prasad Ghosh
Chief Security Officer

Suraj Narayan Bordoloi
Office Superintendent & Officiating Assistant Registrar, R&D

Immanuel Alexander
Private Secretary to Director

Shibajee Das
Assistant Engineer (Civil)

Debabrata Majumder
Assistant Engineer (Electrical)

Arup Kumar Saha
Office Superintendent (Admin)

Mettu Vasudev
Physical Education Instructor

Shibnarayan Pal
Accountant

Ganga Ram Roy
Accountant

Saberi Sen
Personal Assistant

Mitali Pal
Personal Assistant

Arnab Chattopadhyay
Technical/Scientific Assistant

Sanjib Das
Technical/Scientific Assistant

Rajni Marick
Technical/Scientific Assistant

Santosh Ch. Das
Scientific Assistant

Ritabrata Ghosh
Scientific Assistant

Subhankar Das
Technical Assistant (Civil)

Gopal Shankar Mukherjee
Technical Assistant (Electrical)

Sushanta Kumar Roy
Library Information Assistant

Pitambar Naskar
Library Information Assistant

Abhinaba Basu
Software Assistant

Puskar Das
Office Assistant (MS)

Raju Sethi
Office Assistant (MS)

Himanshu Ghosh
Office Assistant (MS)

Ashok Das
Office Assistant (MS)

Surashree Dutta
Office Assistant (MS)

Prasanta Kumar Bhui
Office Assistant (MS)

Sukhendu Chatterjee
Office Assistant (MS)

Sharmistha Ghosh
Office Assistant (MS)

Sudip Mitra
Laboratory Technician

Debabrata Sutradhar
Laboratory Technician

Rupan Chandra Rakshit
Laboratory Technician

Piyali Bose
Laboratory Technician

Gour Gopal Paul
Laboratory Technician

Purabi Mondal
Nursing Assistant (MS)

Deepak Kumar Panigrahi
Nursing Assistant (MS)

Pintu Das
Laboratory Assistant

Sudhansu Maity
Laboratory Assistant

Saroj Kumar Nayak
Laboratory Assistant

Aveek Chattopadhyay
Laboratory Assistant

Subhas Malo
Attendant

Sanjith Kumar Singh
Attendant

Ajay Kumar Das
Attendant (MS)

K.Dharma Rao
Attendant (MS)

Sujit Kumar
Attendant (MS)

Shyamal Sana
Attendant (MS)

1.2 Achievements of Staff Members

Faculty Members



Prof. Soumitro Banerjee

Elected IEEE Fellow



Dr. Anindita Bhadra

Elected as SERB Women Excellence Awardee in recognition of her selection as Young Medal winner of Indian National Science Academy, New Delhi.



Dr. Goutam Dev Mukherjee

His work on “Reappearance of ferroelectric soft modes in the paraelectric phase of $\text{Pb}_{1-x}\text{Ca}_x\text{TiO}_3$ at high pressures: Raman and X-ray diffraction studies” appeared in the Science Day collection of Institute of Physics, UK.



Dr. Melinda Kumar Bera

Elected as Associate of Indian Academy of Sciences, Bangalore.



Dr. Supriyo Mitra

Awarded NASI-Scopus Young Scientist Award for 2012 in the category “Earth, Oceanographic and Environmental Science”.



Dr. Dibyendu Nandi

Received the “Showcase Odisha” award in the category “Science & Technology”.
Nominated as a Co-Leader in the scientific committee on Solar-Terrestrial Physics (under ICSU).
Selected as the foreign Co-Principal Investigator in the NASA grand challenge proposal.
Elected as a Vice-Chairman of COSPAR (2012-2016) panel on space weather.
Received ABP Ebela Patrika’s “Ami Amar Moton” award for 2013.



Dr. Bidisha Sinha

Received the Wellcome trust/DBT India Alliance’s fellowship for the project titled “Understanding cell membrane homeostasis during cell stretch”.

Non Faculty Members



Shri Gopal Shankar Mukherjee

Technical Assistant (Electrical)
Honoured Chartered Engineer (India) from The Institution of Engineers (India) in 2013.

1.3 Student Achievements



T. Ajaay

Department of Earth Sciences
Presented his work at the *American Geophysical Union Fall meeting*, 9-13 December 2013, San Francisco, USA.



Swapnil Barmase

Department of Chemical Sciences
Selected for the Ph. D. program in Financial Mathematics in IESE Business School, USA.



Sudipta Bhattacharyya

Department of Chemical Sciences
Awarded Fulbright Postdoctoral Fellowship.



Debdeep Dasgupta

Department of Biological Sciences
Presented a talk on "Biofilm and its implication in bioremediation" at the National Conference on Energy Environment and Biotechnology Research, 5-6 October 2013, Ghaziabad, India.



Soumyajit Ghosh
Department of Chemical Sciences
Received DST Young Scientist award.



Arup Mukherjee
Department of Chemical Sciences
Awarded Fulbright Postdoctoral Fellowship.



Sridip Pal
Department of Physical Sciences
Secured All India rank of 2 in NET (June 2013).



Himangshu Paul
Department of Earth Sciences
Presented a talk on "Source mechanisms of 2011 Sikkim earthquake and its aftershocks" at the American Geophysical Union Fall Meeting, 9-13 December 2013, San Francisco, USA.

**Mainak Sadhukhan**

Department of Chemical Sciences

Awarded Newton Fellowship for postdoctoral research.

**Arindam Saha**

Department of Physical Sciences

Presented a poster on “Dynamical stability analysis of neural networks with mixed dissipation” at the 8th Conference on Nonlinear Systems and Dynamics, 11-14 December 2013, Indore, India.

**Debashis Saha**

Department of Physical Sciences

Presented posters on “Gate teleportation using series entanglement distributions on arbitrary remote states” at.

- 1. Asian Quantum Information Science Conference, 25-30 August 2013, Chennai, India.*
- 2. International Program of Quantum Information, 17-28 February 2014, Bhubaneswar, India.*

**Jitendra Saini**

Department of Earth Sciences

Received Ph. D. scholarship from International Max Planck Research School.



Anindya Sengupta

Department of Physical Sciences

Secured All India rank of 7 in the National Eligibility Test (NET, June 2013) and All India rank of 3 in JEST (2014).



Santosh Sundaresan

Department of Physical Sciences

Young India Fellowship.



Vivek Vyas

Department of Physical Sciences

Commonwealth Fellowship, Canada.

Amit Kumar, Arghya Mondal and Harshit Lakhotia from Department of Physical Sciences were awarded the “SPIE Photonics Education Scholarship for 2013”, valid from 01.06.2013 to 31.05.2014. Another four students (Sumanta Bandyopadhyay, Soubhik Kumar, Anirban Mukherjee and Debashis Saha) from the Department of Physical Sciences were ranked within 75 in the National Eligibility Test conducted by UGC in June 2013.

1.4 Institute Achievement

IISER Kolkata won the “RAJBHASHA Shield” for the year 2013 for best implementation of official language in the office.

ADMINISTRATIVE REPORT



2.1 Administrative Report

The major administrative activities of the Institute during the year 2013-14 are highlighted as follows:

1. Meetings:
 - (i) Three meetings of the Board of Governors were held on 7 July 2013, 9 October 2013 and 19 February 2014.
 - (ii) Three meetings of the Finance Committee were held on 7 July 2013, 8 October 2013 and 19 February 2014.
 - (iii) Four meetings of the Senate were held on 21 June 2013, 10 September 2013, 23 December 2013 and 27 March 2014.
 - (iv) Four meetings of the Building and Works Committee were held on 19 June 2013, 23 July 2013, 1 October 2013 and 13 January 2014.
2. The First Convocation of the Institute was held on 8 July 2013 at the permanent campus of IISER Kolkata. The Hon'ble Governor of West Bengal, Shri M. K. Narayanan graced the occasion as the Chief Guest. All the passed out students of 06, 07 and 08 batches of BS-MS programme, Integrated PhD programme, MS by Research programme and PhD programme received their degrees at the First Convocation. Special medals were also awarded to the best performing students (Boys and Girls), based on their academic and extra-curricular performances. Prof. C N R Rao, FRS, Founder President of JNCASR, Bangalore and the First Chairman of the Board of Governors of IISER Kolkata has been conferred with the Doctor of Science (*Honoris Causa*) in the First Convocation of the Institute.



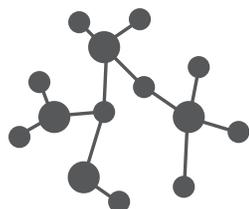
3. Prof. C N R Rao received the *Honoris Causa* degree on 9 October 2013 and also delivered a special lecture.
4. Dr. T Ramasami, Secretary, Department of Science and Technology, Government of India, delivered the Foundation Day lecture of IISER Kolkata on 19 September 2013.
5. Prof. K. VijayRaghavan, FRS, a noted biologist and Secretary of Department of Biotechnology, has delivered an Institute Colloquium lecture on 7 January 2014.
6. Construction of an '800 bed' Hostel-cum-Dining Block was completed during the year under report at the permanent campus of IISER Kolkata. All students of the BS-MS programme were moved in to the new hostel from the renovated hostels in the transit campus.
7. Tenure of Agreement with M/s Suresh Goel & Associates (architect for the permanent campus) was extended for another two and half years with effect from 25 July 2013 as per decision of the 22nd meeting of the Board of Governors held on 7 July 2013.
8. The revised Master Plan of the IISER Kolkata was approved in the 23rd meeting of the Board of Governors held on 9 October 2013.
9. Annual Performance Appraisal Report (APAR) for the non-teaching staff members was introduced from the year 2012-13.
10. Prof. Ajoy Kumar Ray, Vice Chancellor, Bengal Engineering and Science University (BESU) and Prof. Nilanjana Gupta, Professor, Department of English, Jadavpur University, were nominated as members in the Senate of IISER Kolkata as per clause 14(d) of the NIT (Amendment) Act 2012.



RESEARCH & TEACHING

3.1 Activities

3.1.1 Department of Biological Sciences



The department currently comprises of 16 regular faculty members, 01 Assistant Professor-on-Contract and 01 Ramanujan Fellow. We have 4 staff members in various capacities to assist us in day-to-day administrative, research and teaching duties. Presently, there are 51 PhD students and 20 Integrated PhD students and they are at the centre of our research activities. Four students from the department will be receiving the PhD degrees. Many of our graduating MS students have been offered positions in renowned universities around the world.

A substantial amount of resources were procured for equipping the teaching laboratories. This enables a larger number of students to enhance their experience of learning biology through a hands-on approach. Two new tools have been acquired this year to improve our Central Imaging Facility: the first one is a Reflection Interference Contrast Microscopy (Nikon) and the second is an Apotome (Zeiss).

Our externally funded research activity totals close to about 26 crores over the years with the addition of newly acquired funding of about 6.5 Crores in the current financial year. The faculty continue to excel, attracting honours including the prestigious DBT Wellcome-Trust India Alliance Fellows, Ramanujan and Ramalingaswamy Fellows. This year a total of 25 articles have been published by faculty members in the department; of which 14 are based entirely on the work conducted at our Institute together with our students. As the years roll by, our laboratories mature, it is expected that these numbers would increase.

This year also provided scopes for interactions with a large number of researchers from diverse fields in Biological Sciences through various departmental seminars as well as the Frontiers in Modern Biology (FIMB) meeting. The latter has now become an annual event. FIMB showcased invited lectures by eminent scientists and inspiring teachers of Biology from across the country. This provided an opportunity for our students and faculty members to get useful feedback on the research work being conducted in-house.

This year also provided an opportunity for introspection and planning for our future, encompassing new faculty, new research and teaching facilities. The search for new faculty members was reinitiated. From a large number of applicants (approximately 164), 3 candidates have been offered faculty positions. Plans for two new facilities namely, the Animal House and the Biome have been formulated; the architectural designs have been approved and the

construction of these facilities in the main campus is scheduled to begin soon. We believe the addition of these facilities, along with existing infrastructural facilities and modest new procurements will significantly enhance our research activities.

New Experimental Facilities Introduced- Department of Biological Sciences

Reflection Interference Contrast Microscopy

The Department of Biological Sciences has installed an inverted optical microscope (Nikon Motorized Inverted Microscope) that has been adapted to be used for Reflection Contrast Interference Microscopy (RICM) as well as high resolution fluorescence microscopy. It is equipped with all standard objectives and is coupled to a highly sensitive EM CCD (Evolve Delta, Back Illuminated EM-CCD, Photometrics). The microscope in this configuration is useful for high resolution fluorescence imaging as well as nanometer scale resolution of height fluctuation of samples (e.g., basal cell membranes) in the close vicinity (few microns) of the imaging substrate (glass or PDMS).

The Biome Facility

The Biome Facility is a novel research infrastructure that has been planned at IISER Kolkata in order to facilitate controlled experiments in ecology and evolutionary biology. The Biome Facility comprises of 4 interrelated components: (1) Environmental chambers - these are climate controlled rooms for behavioural, ecological and evolutionary experiments involving small organisms (e.g., insects) (2) Mesocosms - these are climate controlled Plexiglas structures that will be used for controlled experiments utilizing aquatic organisms and plants (3) Macrocosm - this will be a single large prefabricated structure with movable internal partitions to carry out experiments at the community scale in order to elucidate inter-specific interactions (e.g., competition, predation and parasitism) (4) Wet lab - the laboratory space has been planned to carry out basic molecular biology, microscopy, tissue culture work, and also has some space set aside for computing and data analyses. The Biome Facility has been initially planned to accommodate the research needs of six faculty/fellows, and the major research themes will include insect behavior and sociobiology, fish behavior and ecology, plant ecology and evolution, microbial ecology and evolution, and host-parasite co-evolution.



Central Imaging Facility

The central imaging facility (CIF) is a central core facility of IISER Kolkata, open to all the departments and also to outsiders. Recently the CIF acquired a structured illumination microscopy system i.e., Apotome from Zeiss. Apotome, a fully motorized setup that will help researchers to capture optical sections of biological samples and kind of ease the load on our existing confocal microscope. Besides, it also enables one to capture optical sections of thick samples.

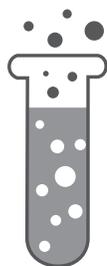
Animal House

In addition, we are initiating the process of building a state-of-the-art Animal House facility at IISER Kolkata. An animal house is a basic necessity for any institution, which conducts research in the frontline areas of biological sciences and drug discovery. After several rounds of deliberations, the floor plan of the animal house has been approved and forwarded to CPWD for implementing the civil construction.



3.1.2

Department of Chemical Sciences



Since the inception of the institute, the Department of Chemical Sciences has endeavoured to uphold the standard of quality teaching and research at par with other premier institutions of our country and abroad. Our courses are designed to cater to a wide range of students from all branches of science. Courses such as Bioinorganic Chemistry, Medicinal Chemistry, Bioorganic Chemistry, Single and Multiphoton Spectroscopy, Computational Methods, Chemistry of Macromolecules, Structure & Dynamics, Group Theory, etc., along with the traditional Inorganic, Organic, Physical Chemistry courses are taught to provide the students with a good grasp of the fundamentals.

Research in the Department is multi-dimensional and focuses on different aspects of inorganic, organic, physical, materials, polymer and biochemistry, as well as in the interdisciplinary research areas at the interface of Physics, Biology and Earth Sciences. Our Department has well-equipped instrumentation facility for carrying out cutting-edge research. 500 MHz and 400 MHz NMR facility, QToF Micromass, Single Crystal X-ray, X-ray Powder Diffraction, Atomic Force Microscopy, Scanning Tunnelling Microscopy to name a few. In addition, the department has a good Computational facility and a well-equipped undergraduate laboratory with all modern instruments.

Currently the Department of Chemical Sciences is one of the largest departments having more than 85 PhD students, 28 Integrated PhD students, 50 BS-MS (third year onwards), 2 Scientific Officers, and 22 faculty members. It is a matter of great satisfaction that the Department's BS-MS students have joined some of the best research institutions as PhD students both, within and outside the country. Some have joined R&D labs in reputed industries. To date, 14 PhD students have graduated from this department and are continuing with their postdoctoral research work in reputed institutions around the world.

The department has been highly productive in terms of research papers, not merely in terms of the number, but also in terms of citation and quality, with publications in *Nature*, *Journal of the American Chemical Society*, *Angewandte Chemie*, and *Advanced Materials* among others. The department is generously funded by various national funding agencies such as the Department of Science and Technology, Department of Biotechnology, Defence Research and Development Organization, and Council of Scientific and Industrial Research. In addition, the department has strong collaborations with industries and foreign universities.

New Important Research Facilities Introduced

1. Mass Spectroscopy (MALDI-ToF, Nano-LC, ESI-MS)
Bruker
2. Single Crystal X-Ray Diffractometer
Agilent Technologies
3. EPR spectrometer (X and Q band)
Bruker
4. Circular Dichroism (J-815)
Jasco
5. Rheometer
T A Instruments



3.1.3

Department of Earth Sciences



The Department of Earth Sciences has eight regular faculty members: one Professor, four Associate Professors, three Assistant Professors. Additionally, the department has three teaching and research persons: one Assistant Professor on contract, one Ramanujan Fellow, and one DST INSPIRE Fellow. The department has thirty six BS-MS students, nine IPhD students, and twelve PhD students. It offers twenty one Theory courses, three Interdisciplinary courses, and nine Laboratory courses that are designed to train students in core areas of Earth Sciences, along with overlapping areas with other basic and applied sciences. During this academic year, the department has introduced four additional introductory courses to the second year BS-MS students.

The research areas of the DES Faculty members include (a) Isotope Geochemistry, (b) Solid Earth Studies, (c) Paleoclimate, Paleoenvironment and Paleocological studies, and (d) Environmental and Ecological studies in modern system. During this academic year, the faculty members have developed seven new research facilities, viz., (a) Stable Isotope Ratio Mass Spectrometer (b) Micromill sample preparation device (c) Multi Collector Inductively Coupled Plasma Mass Spectrometer (d) Advanced image analysis facility (e) Dark Room Sample Processing Facility for Luminescence Dating (f) Microstructural and Strain Analyses Facility and (g) Environmental Science Laboratory. At present, the Department has six externally funded projects from DST, CSIR, MoES and UKIERI.

The department organized its 2nd Annual Department Day, *Convergence*, on 15th March, where distinguished Geoscientists, from various Institutes of India, presented their research work and interacted with students. The DES PhD students made oral presentations of their research work. The BS-MS students, along with students from external Universities and Institutes, also presented their work in a poster session.

This year, the department attracted eight IPhD students to join the Program. It is gratifying to see that four graduating BS-MS students (2008 Batch) qualified CSIR-NET, and three students qualified the GATE. The students are also offered PhD Fellowships from prestigious Institute; both from India and abroad. Dr. Supriyo Mitra was the recipient of NASI Scopus Young Scientist Award during this academic year.

New Experimental Facilities Introduced

A. Stable Isotope Laboratory

A state-of-the-art laboratory is being set up for analysing stable isotopic ratios (D/H, $^{13}\text{C}/^{12}\text{C}$, $^{15}\text{N}/^{14}\text{N}$, $^{18}\text{O}/^{16}\text{O}$, $^{34}\text{S}/^{32}\text{S}$) in natural compounds. We have installed MAT 253 stable isotope ratio mass spectrometer with peripherals Kiel Carbonate IV, Gas bench II, Elemental Analyser Flash 2000 and GC combustion unit Trace GC Ultra. Stable isotopic ratios obtained from these machine care used for understanding both modern and past climate, ecology and biodiversity.



MAT 253 with Gas Bench II; Gas bench is for water sample processing



Kiel Carbonate IV: For processing carbonate samples



Flash 2000: For processing organic matter samples

These facilities are being used to address the following research problems.

1. **Understanding the vapour sources of Indian Monsoonal rainfall:** $^{18}\text{O}/^{16}\text{O}$ and D/H ratios of rainwater collected from various stations across India are measured using **Gas Bench II** to understand the vapour sources of monsoonal rain.

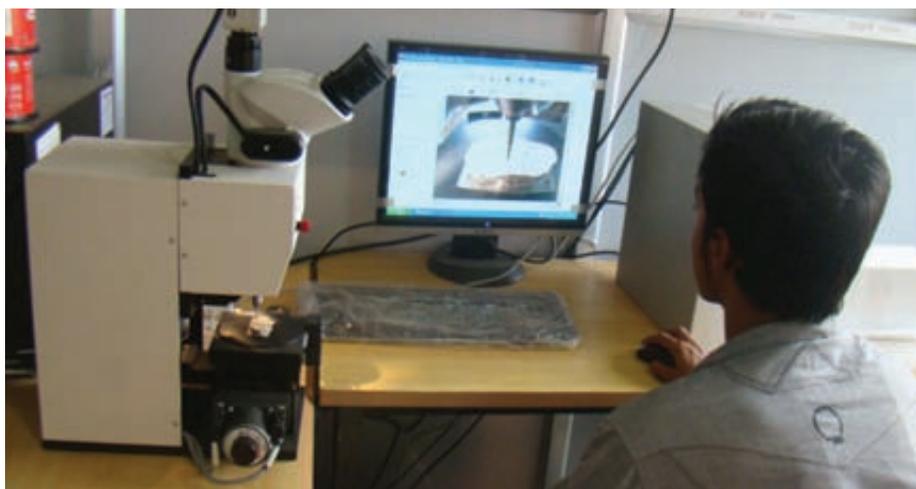


Trace GC Ultra: For separation of individual molecule before their isotopic ratios are measured in MAT 253

2. **Reconstruction of the past monsoonal variations and understanding forcing factors on it:** $^{18}\text{O}/^{16}\text{O}$ of soil carbonate will be measured in soil carbonate to reconstruct past monsoonal rainfall variations using **Kiel Carbonate IV**.
3. **Reconstruction of vegetation and atmospheric CO_2 :** $^{13}\text{C}/^{12}\text{C}$ ratio in residual organic matter from paleosols will be measured in bulk as well as molecular level using elemental analyser Flash 2000 and Trace GC ultra respectively to understand the past vegetation and atmospheric CO_2 .

B. Micromill Sample Preparation Device

Micromill sample preparation device, designed for high resolution milling to recover sample powder for chemical and isotopic analysis, was installed. The combination of submicron stage resolution and positional accuracy, real-time video observation and a custom designed software system, allows sampling of different phases in rocks at micron level and also allows to sample accretionary growth structures in skeletal and crystalline materials.



Micromill sample preparation device

C. MC-ICPMS (Multi Collector Inductively Coupled Plasma Mass Spectrometer) Laboratory

This instrument is capable of measuring high precision isotope composition of traditionally used radiogenic isotopes (Sr, Nd, Pb, U, Hf etc.) as well as stable isotopes of metals (Cr, Mo, Ni, Zn, Fe etc.) that find applications in earth, oceans and atmospheric processes. Recently some of the isotopes (e.g., Fe and Ca) have been used in biomedical applications as well.

The instrument was recently installed, and procedures of chemical purification are underway for routine analysis of some of the isotopes.



D. Advanced image analysis facility

This facility is equipped with DSLR camera, light arrangement, stereozoom microscope and professional image analysis software. This facility will be used primarily for documentation, digitization and morphometric analysis of paleontological specimens.



E. Dark Room Sample Processing Facility for Luminescence Dating

The events dated by this method are the last heating/daylight exposure of naturally occurring minerals, i.e., quartz and feldspar present in variety of sediments and samples of archaeological importance. Luminescence dating started as a complimentary method to C-14, but now it is a widely used method to date late Quaternary sediments of various origins e.g., fluvial, aeolian, glacial and the events associated with various geological processes in late Quaternary. The age range is from recent to 300 ka, which is much larger than C-14 having an upper bound up to 40-50 ka. The samples are collected in galvanized iron or PVC pipes and brought to the lab for extracting quartz and feldspar. Sample collected for luminescence dating needs to be processed in a dark room condition to avoid any daylight exposure to the sediment. A dark room laboratory for this purpose has been developed with all the necessary equipment e.g., fume-hood, hot air oven, sieve shaker for sieving of sand, ultrasonic bath, magnetic stirrer, high precision weighing machine and necessary glassware.

F. Microstructural and Strain Analyses Facility

This facility is equipped with (a) one Trinocular polarising microscope for transmitted and reflected illumination, (b) one Digital Camera system with 5 MP resolution, (c) one Desktop, (d) Image Analysis Software, and (e) an Automatic Point counting stage. This facility enables us to observe and quantify the various microstructures, and operative deformation mechanisms at grain-scale from deformed rocks. Additionally, the facility is being used to quantify the finite strain from deformed rocks.



G. Environmental Science Laboratory

This laboratory is equipped with a Multiparameter analyzer, Incubator, Centrifuge and Laminar airflow for the analysis of basic water and soil physico-chemical and biological parameters. Additionally, the lab is dealing with the natural and anthropogenic contaminants (pesticides, arsenic in ground water and food grains, heavy metals etc.) processing for quantification and its bio-removal.



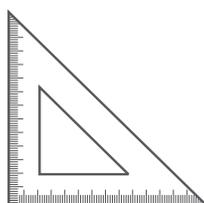
Instrument for measuring pH, Oxidation/Reduction potential and Electrical conductivity



Reflux set up for Nitrogen Estimation via Kjeldhal setup

3.1.4

Department of Mathematics and Statistics



The year gone by was a particularly exciting year for us. It was a year focused on the growth of the department. One faculty member was upgraded to full Professor, which was the first of its kind since the inception of the Institute. The department recruited one Assistant Professor and one INSPIRE Fellow whereas two faculty members were made permanent as Assistant Professor. The department which consists of one Professor, nine Assistant Professors and one INSPIRE Fellow, is a department of interdisciplinary nature which strives for its excellence both in teaching and research. The department provides its undergraduate and postgraduate students with an intellectually vibrant atmosphere for doing future research in the frontier areas of Mathematics and Statistics through its flexible teaching programmes. The research interests of the faculty members of the department are again diversified having expertise in different areas *viz.*, algebraic geometry, algebraic topology, analysis, computational neuroscience, differential equations, evolution of biological networks, image processing, operator theory, outlier detection, reliability, etc., to name a few.

The faculty members of excellent academic repute are devoted towards excellent teaching and research by offering the students an atmosphere for high-quality research. The students graduated from the department have joined different internationally reputed Institutes both in India and abroad. Among the PhD students of the department, there are Shyamaprasad Mukherjee (SPM) fellow and the fellows of the Council of Scientific and Industrial Research (CSIR) and University Grants Commission (UGC), Government of India.



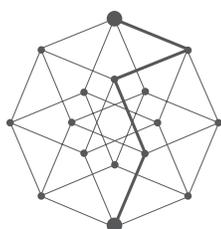
Apart from the regular teaching programme which borderlines on being somewhat heavy due to relatively smaller size of the department and the diverse bouquet of courses it offers, the department faculty members have kept themselves actively engaged in research through different sponsored Projects. The department is happy to mention that one of the faculty members of the department has become the convener (of the Node representing Eastern India) of the Project on National Network for Mathematical and Computational Biology sponsored by Science and Engineering Research Board (SERB), Government of India. The aim of this project is to popularize Mathematical and Computational Biology in India at all levels, especially among the undergraduate students to make them aware of the exciting research opportunities that exist in this field.

In addition to the regular weekly seminars/colloquia, the department organized a symposium on March 22, 2014. Some of the stalwarts in their respective fields were invited for the symposium to share their views with the departmental students and faculty members. The students and the faculty members of the department also shared their views with others through presentation of their research work in the symposium.

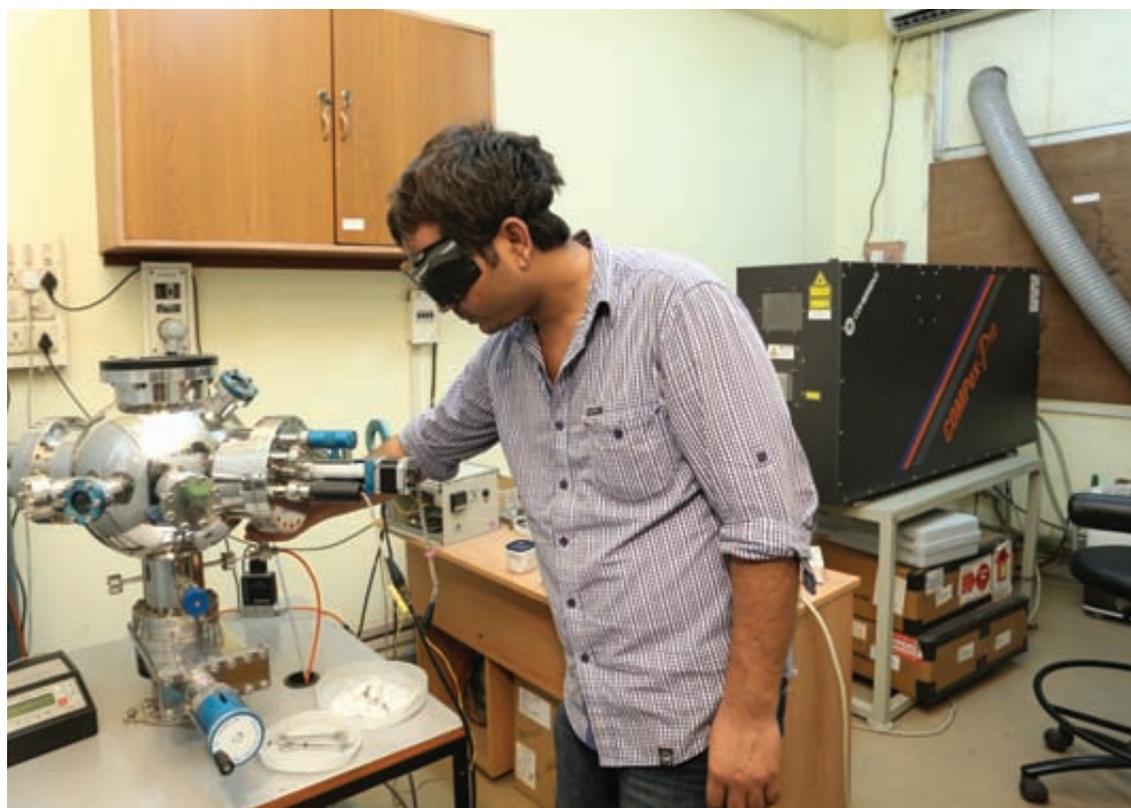
In a nutshell, the department is determined to put its ladder higher and higher through active participation of its students and faculty members in all academic endeavours.

3.1.5

Department of Physical Sciences

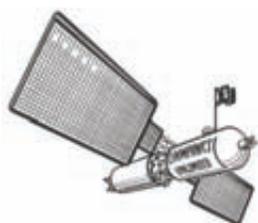


The Department of Physical Sciences (DPS) of IISER Kolkata devotes itself to frontline research and quality teaching, where the students are exposed to the research environment early on. DPS comprises of 26 faculty members and one senior Scientific Officer, divided almost equally between theory and experiments. The research areas of specialization broadly include astrophysics and space science, atomic, molecular, and optical physics, biophysics, complex systems, condensed matter physics (including soft matter physics), gravitation and cosmology, high energy physics, mathematical physics, and nonlinear dynamics. The BS-MS students start specializing in physics from third year, after two years of core course work, which exposes them to the five areas of specialization at IISER-Kolkata. A number of teaching assistants, drawn from a pool of doctoral and selected 5th year students, assist the young students in problem solving and clarify their doubts in weekly tutorials. The course work comprises of both theory and hands on experiments, where the students are encouraged to implement innovations. Students get exposure to high end research in the research laboratories and participate in projects, often resulting in research publications. The IPhD students, joining the Institute after the B.Sc, are judiciously advised in their course choice. Both the IPhD and 5th year BS-MS students carry out a year long project, for in depth study and exposure to modern areas of research. IISER Kolkata, with its interdisciplinary character, encourages students to take courses of their interest in other departments. The doctoral students participate in journal club activities, departmental seminars and colloquia, apart from fulfilling their core course requirement. The department regularly conducts national and international workshops and encourages its faculty to participate in academic meets of repute. Departmental faculty have received global recognition for their research and are leading new initiatives such as the Centre for Study of Materials under High Pressure and the MHRD Centre of Excellence in Space Sciences.



3.1.6

Center of Excellence in Space Sciences India (CESSI)



The Center of Excellence in Space Sciences India (CESSI) is a multi-institutional Center of excellence hosted by IISER Kolkata. CESSI was established through funding by the Ministry of Human Resource Development and aims to explore the Sun's activity, generate the understanding necessary for space weather forecasting, assess the Sun's role in climate change, hunt for gravitational waves, support national space science initiatives, participate in international capacity building activities and pursue public-private partnerships in the space sciences. The Center will take advantage of high-performance computing facilities, cloud computing and the National Knowledge Network grid to achieve its goals. CESSI faculty are drawn from IISER Kolkata, IISER Pune, Indian Institute of Astrophysics (Bangalore), Udaipur Solar Observatory-Physical Research Laboratory (Udaipur) and the Indian Space Research Organization (Bangalore). The Center is envisaged to function with administrative and financial autonomy under the overall umbrella of IISER Kolkata.

CESSI initiated its academic activities with its first batch of 3 PhD students in the autumn semester of 2013 and in addition accommodates Integrated MS students and Integrated PhD students from the Department of Physical Sciences with which the Center closely cooperates in running its academic program. Over the past year, CESSI also hosted a number of project students from other Institutes in an effort to be of benefit to others beyond our immediate domain. An ongoing lecture and colloquia series ensures that students and faculty have ample opportunity to assimilate diversity in thoughts and scientific practices. Last year, we also reached out to students, science enthusiasts and citizens of the city by hosting a public lecture at Science City Kolkata by a NASA engineer – who designed the entry, descent and landing system for the Mars rover Curiosity. This lecture saw an attendance of over 3000 school children and members of the general public.

CESSI faculty are involved in large-scale astrophysics and space science projects of national importance. This includes planning for the Laser Interferometer Gravitational Wave Observatory (LIGO)-India detector for which site survey and instrument development are in preliminary stages. The direct detection of gravitational waves remains an outstanding challenge and CESSI is expected to play a significant role in data analysis and science delivery from the LIGO-India observatory while it hunts for astrophysical gravitational waves. CESSI faculty are leading the development of India's first solar space mission Aditya. The Aditya satellite will carry a suite of instruments that will observe the Sun's activity including solar magnetic storms, and characterize space environmental conditions that lead to adverse space weather. Space weather impacts satellite mission lifetimes, poses a hazard to satellite operations, communication and global positioning systems, electric power grids and air-traffic on polar routes. CESSI is also planning a space sciences laboratory for the development of novel instrument prototypes for astrophysical observations.

In the context of global capacity building in the space sciences, CESSI faculty are involved in diverse international projects and community building exercises. Such involvement spans leading a global working group of the International

Astronomical Union (IAU) which seeks to characterize the environment of the solar system and other Sun-like stars where habitable planets may exist, to co-leading the Space Weather Panel of the Committee on Space Research (COSPAR) and global coordination of research programs for the Scientific Committee on Solar-Terrestrial Physics (SCOSTEP).



3.2

Research and Development Activities

This year has been an exciting year for research activities in the Institute. A summary of major new initiatives and a research performance summary are outlined below.

An Electroencephalography (EEG) laboratory was established to explore the neural mechanisms behind complex visual-perceptual tasks. The Central Imaging Facility acquired a Reflection Interference Contrast microscope and Apo Tome set-up which utilizes structured illumination microscopy. These instruments will be primarily used to image biological specimens and augment the existing Confocal Microscope. A Matrix-Assisted Laser Desorption/Ionization (MALDI) Mass Spectrometry system was installed this year which allows for the analysis of large molecules that are fragile and fragment when ionized by more conventional ionization methods. An Electron Paramagnetic Resonance (EPR) instrument was installed which can offer insight on several species and processes in chemistry, experimental biology and physics.

A Pulsed Electron Spin Resonance (ESR) facility to explore physics with low temperatures and magnetic field was set up for characterization of novel materials in the microwave regime. A supersonic molecular jet facility to study molecular dynamics induced by electron collisions was built. To study semiconductors at very low temperatures down to 4 degrees Kelvin, a low temperature photoluminescence setup was created. A Mueller matrix polarimetry facility was also put in place. A thin film deposition facility was established and a nanoscience research facility is in the planning stages.

Broadband seismograph systems are being deployed to understand seismic hazards in the North-Western Himalayan regions and study the Earth's crust and upper mantle structure. Thermo-Luminescence (TL) and Optically Stimulated Luminescence (OSL) dating instruments (based on retrospective dosimetry) are being procured for dating a variety of sediments which are relevant in studies of climate change and Earth surface processes.

The Ministry of Human Resource Development funded Center of Excellence in Space Sciences India (CESSI) was established and started functioning this year. CESSI aims to explore the Sun's activity, develop theoretical and computational models to facilitate space weather predictions, design and build space instrument prototypes for astrophysical observations and aid in the search for gravitational waves.

Plans were initiated to build a state-of-the-art Animal House Facility and Biome in campus. The Animal House is envisaged to facilitate research in the biological sciences and support drug discovery initiatives. The Biome will be a unique facility where controlled experiments in behaviour, ecology and evolutionary biology will be conducted in an environment that allows interplay between different components of the ecosystem.

The Office of Research and Development also initiated the Funding Innovation in Research and Education (FIRE) scheme to seed fund novel ideas originating from groups of faculty. This initiative is targeted to motivate discoveries which are either of fundamental importance or of high practical relevance. A few proposals were selected for funding and the projects are currently ongoing.

The performance markers this year for research and development – as measured through externally sponsored research activities and publications – have been very encouraging. This year has been our best till date in terms of attracting external research funding. Figure 1 brings out the general upward trend in competitive research funding won over the years. Our faculty have also done well in research publications output (depicted in Figure 2). We are happy to note these significant upward trends and continue to work towards establishing a more vibrant, relaxed and supportive environment for creative pursuits.

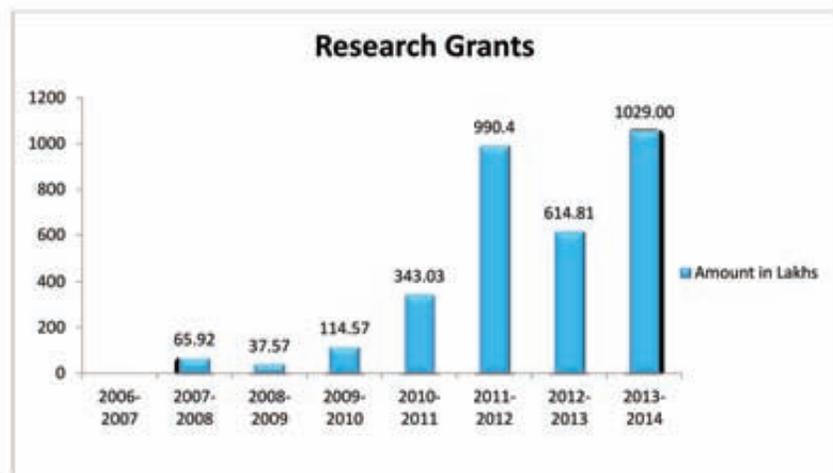


Figure 1

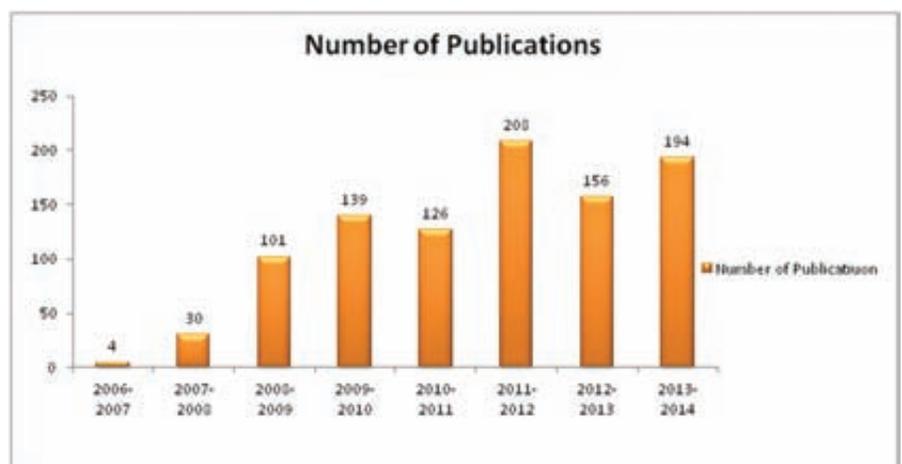


Figure 2

3.3

Sponsored Research

Department	Sanctioned Amount (Rs.)	Grant Received during the FY 2013-2014 (Rs.)
Department of Biological Sciences	25,75,39,529	5,32,23,657
Department of Chemical Sciences	9,97,37,499	1,88,76,277
Department of Earth Sciences	5,00,13,728	51,06,682
Department of Mathematics and Statistics	2,60,10,428	69,39,200
Department of Physical Sciences	8,83,46,200	71,60,000
Centre of Excellence in Space Sciences India (CESSI)	4,15,95,069	1,15,95,069
Total	56,32,42,453	10,29,00,885

Department of Biological Sciences

Projects Funded by National Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
1.	Behavioural ecology of the Indian stray dog (Sanctioned Amount: Rs. 18,00,000 Approx.)	Dr. Anindita Bhadra	CSIR	10-05-2010 to 31-03-2014	6,15,662
2.	Understanding aggression and its correlates in the Indian feral dog <i>Canis familiaris</i> (Sanctioned Amount: Rs. 1,50,000)	Dr. Anindita Bhadra	INSA	01-08-2010 to 31-07-2013	50,000
3.	Parental care and social dynamics in free-ranging dogs in India (Sanctioned Amount: Rs. 14,00,000)	Dr. Anindita Bhadra	SERB	17-09-2013 to 16-09-2016	5,00,000
4.	Mating dynamics, territoriality and social organization in the Indian free-ranging dog, <i>Canis Lupus familiaris</i> (SERB WEA) (Sanctioned Amount: Rs. 18,00,000)	Dr. Anindita Bhadra	SERB	08-10-2013 to 07-10-2016	6,00,000

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
5.	Understanding the cellular consequences of axonal loss and demyelination in viral infection using <i>in vitro</i> myelination System (Sanctioned Amount: Rs. 15,00,000)	Dr. Jayasri Das Sarma	CSIR	09-03-2011 to 31-10-2013	4,53,125
6.	Understanding the mechanisms of viral induced axonal loss and demyelination in an experimental animal model (Sanctioned Amount: Rs. 46,13,024)	Dr. Jayasri Das Sarma	DBT	12-10-2011 to 11-10-2014	7,17,000
7.	Development of a unique animal model to understand the etiology of human central nervous system autoimmune disease multiple sclerosis (MS) (Sanctioned Amount: Rs. 29,94,012)	Dr. Jayasri Das Sarma	DBT	01-04-2012 to 31-03-2017	*
8.	Basic characterization and analysis of growth factors secreted by Wharton's jelly mesenchymal stem cells under conditions of hypoxia (Sanctioned Amount: Rs. 32,75,200)	Dr. Malancha Ta	DBT	31.03.2014 to 30.03.2016	7,00,000
9.	Characterizing the role of Pak3 collective cell movement using the model of border cell migration in <i>Drosophila</i> ovary (Sanctioned Amount: Rs. 15,00,000)	Dr. Mohit Prasad	CSIR	01-06-2013 to 31-05-2016	5,00,000
10.	Understanding collective cell migration using the model of border cells in <i>Drosophila</i> oogenesis (Sanctioned Amount: Rs. 43,94,000)	Dr. Mohit Prasad	SERB	10-07-2013 to 09-07-2016	18,00,000

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
11.	Studies on the mechanisms of the translational regulation of the cold shock response genes in human entero-pathogenic bacteria (Sanctioned Amount: Rs. 18,89,000)	Dr. Partha Pratim Datta	DBT	21-07-2011 to 20-07-2014	*
12.	Meiobenthic studies in three Olive Ridley turtle rookeries along the coast of Orissa (Sanctioned Amount: Rs. 12,23,500)	Dr. Punyasloke Bhadury	Wildlife Institute of India (WII)	18-08-2010 to 27-03-2014	*
13.	Barcoding Southern Ocean nematodes: an integrated approach to test hypotheses of marine nematodes diversity (Sanctioned Amount: Rs. 16,58,000)	Dr. Punyasloke Bhadury	MoES	22-05-2012 to 21-05-2013	*
14.	Study of benthos of selected sites of coastal Konkan (Sanctioned Amount: Rs. 3,51,000)	Dr. Punyasloke Bhadury	Bombay Natural History Society (BNHS, India)	06-03-2012 to 07-03-2013	18,000
15.	Taxonomy and barcoding of marine nematodes (Sanctioned Amount: Rs. 60,00,000)	Dr. Punyasloke Bhadury	MoES	01-10-2012 to 30-09-2017	*
16.	Marine faunal diversity along the West Bengal coast with special reference to nematodes (Sanctioned Amount: Rs. 79,50,000)	Dr. Punyasloke Bhadury	MoES	01-10-2012 to 30-09-2017	13,90,000
17.	Monitoring Harmful Algal Bloom (HAB) along the coasts of West Bengal (Sanctioned Amount: Rs. 55,00,000)	Dr. Punyasloke Bhadury	MoES	09-10-2012 to 08-10-2017	*
18.	Engineered nature-inspired hybrid nanomedicine for wound healing (Sanctioned Amount: Rs. 22,92,000)	Dr. Rituparna Sinha Roy	CSIR	30.01.2013 to 29-01-2016	*

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
19.	Engineered novel lipopeptide detergents for structural studies of Integral Membrane Proteins (RGYI) (Sanctioned Amount: Rs. 46,58,000)	Dr. Rituparana Sinha Roy	DBT	06-08-2013 to 05-08-2016	31,36,000
20.	Engineering lipid-peptide conjugated nanoscale delivery system for delivering siRNA (Sanctioned Amount: Rs. 44,13,400)	Dr. Rituparana Sinha Roy	DBT	27-11-2013 to 26-11-2016	18,50,200
21.	Functional study of <i>Drosophila</i> β -glucuronidase for developing a fly model of mucopolysaccharidosis VII (RGYI) (Sanctioned Amount: Rs. 15,99,000)	Dr. Rupak Datta	DBT	24-07-2013 to 23-07-2017	7,57,000
22.	Role of formin in neurite initiation and synapse formation (Sanctioned Amount: Rs. 40,10,000)	Dr. Sankar Maiti	DBT	23-11-2011 to 22-11-2014	5,83,000
23.	Functional analysis and regulation of dishevelled in planer cell polarity pathway (Sanctioned Amount: Rs. 15,50,000)	Dr. Sankar Maiti	CSIR	14-02-2012 to 13-02-2015	2,65,503
24.	The role of small-RNA pathways in plant defense against insect herbivores (Sanctioned Amount: Rs. 1,05,27,680 approx.)	Dr. Shree Prakash Pandey	Max Planck Partner Group in India	01-08-2011 to 31-07-2015	20,29,800
25.	Understanding the mechanisms of Non-Host Resistance (NHR) against rust and blast in rice and wheat (Sanctioned Amount: Rs. 80,01,803)	Dr. Shree Prakash Pandey	ICAR	01-04-2013 to 31-03-2016	61,90,160
26.	Behaviour and inter-colony dynamics in a queenless ant (Sanctioned Amount: Rs. 14,70,000)	Dr. Sumana Annagiri	DST	16-05-2012 to 15-05-2015	*

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
27.	Engineering enzymes to overcome biomass recalcitrance. (RGYI) (Sanctioned Amount: Rs. 50,60,000)	Dr. Supratim Datta	DBT	11-01-2013 to 10-01-2016	*

Projects under Fellowships/Awards

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
1.	Understanding cell membrane homeostasis during cell stretch (Wellcome Trust/DBT India Alliance Intermediate Fellowship) (Sanctioned Amount: Rs. 3,52,69,036)	Dr. Bidisha Sinha	WT DBT	01-10-2013 to 30-09-2018	1,22,82,904
2.	Ramanujan Fellowship (Sanctioned Amount: Rs. 73,00,000)	Dr. Bidisha Sinha	DST	25-07-2012 to 25-07-2013	*
3.	Ramanujan Fellowship (Sanctioned Amount: Rs. 73,00,000)	Dr. Guha Dharmarajan	DST	30-08-2012 to 29-08-2017	7,30,000
4.	Cellular and molecular dynamics of direction-sensing in collective cell migration (Ramalingaswami Fellowship) (Sanctioned Amount: Rs. 73,60,000)	Dr. Mohit Prasad	DBT	01-04-2010 to 31-03-2015	14,90,000
5.	Molecular interactions in the post-transcriptional regulation of inflammatory gene expression (Wellcome Trust/DBT India Alliance Intermediate Fellowship) (Sanctioned Amount: Rs. 3,38,57,714)	Dr. Partho Sarothi Ray	WT DBT	01-05-2011 to 30-04-2016	32,65,000

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
6.	Engineered peptide lipid modular nanostructure for siRNA delivery (Ramalingaswami Fellowship) (Sanctioned Amount: Rs. 74,42,500)	Dr. Rituparna Sinha Roy	DBT	02-05-2011 to 01-05-2016	14,90,000
7.	Causes and consequences of impaired Autophagy in mucopolysaccharidoses (Ramalingaswami Fellowship) (Sanctioned Amount: Rs. 74,50,000)	Dr. Rupak Datta	DBT	12-08-2011 to 11-08-2016	14,87,000
8.	Engineering enzymes for lignocellulose degradation and biofuel production (Energy Bioscience Overseas Fellowship) (Sanctioned Amount: Rs. 70,00,000)	Dr. Supratim Datta	DBT	01-09-2011 to 31-08-2016	14,00,000

Project Funded by International Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
1.	Direct oligodendrocyte infection by mouse hepatitis virus mediates demyelination (Sanctioned Amount: Rs. 11,20,380)	Dr. Jayasri Das Sarma	The Children's Hospital of Philadelphia Research Institute (CHOP)	01-11-2009 to 30-09-2013	*
2.	Deciphering phytohormone signaling in modulation of resistance to spot blotch disease for identification of novel resistance components for WHEAT improvement (Sanctioned Amount: Rs. 69,45,280 approx.)	Dr. Shree Prakash Pandey	CIMMYT	01-08-2012 to 31-07-2015	52,13,259
3.	Arsenic biogeochemical cycling in groundwater aquifers of the Bengal Delta Plains (West Bengal, India): Early detection and remediation issues (Sanctioned Amount: Rs. 4,00,00,000 approx.)	Dr. Punyasloke Bhadury	Swedish Research Links Program	01-01-2010 to 31-12-2013	12,97,995

Consultancy Projects

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
1.	Validation of differentiated neural cells in culture (Sanctioned Amount: Rs. 10,00,000)	Dr. Jayasri Das Sarma	Hi-Media Consultancy	08-11-2013 to 07-11-2014	4,61,124
2.	Inventorizing Benthic faunal assemblages in the Chilika lagoon (Sanctioned Amount: Rs. 39,15,000)	Dr. Punyasloke Bhadury	CDA-ICZMP	26-03-2013 to 25-03-2015	19,50,925

Department of Chemical Sciences

Projects Funded by National Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
1.	Metal complexes of nitrogen mustard derivatives as nucleases and anticancer agents (Sanctioned Amount: Rs. 25,67,000)	Dr. Arindam Mukherjee	DST	23-02-2011 to 22-02-2014	7,00,000
2.	Transition metal polynuclear complexes of multidentate N,O donor and radical containing ligands as molecular magnets (Sanctioned Amount: Rs. 9,00,000)	Dr. Arindam Mukherjee	CSIR	01-07-2011 to 30-06-2014	3,14,412
3.	Dynamics of water dissociation on metal surfaces and on nanoparticles (Sanctioned Amount: Rs. 13,45,000)	Dr. Ashwani Kumar Tiwari	DST	29-12-2011 to 28-12-2014	1,00,000
4.	Synthesis of hexasaccharide repeating unit of the O-Antigen from <i>E. coli</i> 035 and Tetrasaccharides related to the capsular polysaccharide repeating unit of vibrio cholerae serogroup 031 NRT36S (Sanctioned Amount: Rs. 10,00,000 approx.)	Dr. Balaram Mukhopadhyay	CSIR	14-07-2010 to 13-07-2013	*
5.	Crystal engineering of biotin (vitamin B7) co-crystals (Sanctioned Amount: Rs. 19,40,000)	Dr. C. Malla Reddy	DST	20-04-2010 to 19-04-2013	*

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
6.	Design of mechanochromic luminescent materials: Crystal engineering (Sanctioned Amount: Rs. 20,42,000)	Dr. C. Malla Reddy	CSIR	01-11-2013 to 31-10-2016	*
7.	Peptide based self-assembled systems as delivery vehicles and controlled release (Sanctioned Amount: Rs. 17,50,000)	Dr. Debasish Halder	CSIR	27-06-2011 to 26-06-2014	1,48,237
8.	Understanding the mechanisms of important transition-metal catalyzed chemical transformations: A computational investigation (Sanctioned Amount: Rs. 24,95,000)	Dr. Debasis Koley	SERB	09-07-2012 to 08-07-2015	*
9.	Computational investigation of abnormal-N-heterocyclic carbene (aNHC) mediated cross-coupling reactions: the nature and role of the catalytic species involved (Sanctioned Amount: Rs. 13,96,000)	Dr. Debasis Koley	CSIR	01-11-2013 to 31-10-2016	*
10.	Development of graphene-polynorbornene novel composite material for aircraft applications (Sanctioned Amount: Rs. 25,10,000)	Dr. Madhumita Mukherjee	SERB	09-07-2013 to 08-07-2016	13,15,000

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
11.	Theoretical and computational study of opto-electronic and charge transport properties in quantum systems (Sanctioned Amount: Rs. 19,43,000)	Dr. Mousumi Das	SERB	18-08-2010 to 17-08-2013	1,00,000
12.	Pt-group metal complexes with substituted bipyridine: DNA-binding agents to sensing materials (Sanctioned Amount: Rs. 19,45,000)	Dr. Parna Gupta Bhattacharyya	DST	23-03-2010 to 22-03-2013	*
13.	Ru (II) /Os (II)-sugar complexes as PET biosensors of lectins and potential therapeutics (Sanctioned Amount: Rs. 11,20,000)	Dr. Parna Gupta Bhattacharyya	CSIR	06-02-2012 to 05-02-2015	5,87,473
14.	Computational study of diffusion in nanoporous media and in liquids (Sanctioned Amount: Rs. 18,55,000)	Dr. Pradip Kumar Ghorai	DST	26-07-2010 to 26-07-2013	*
15.	Investigation of molecular mechanism for solute dynamics in aqueous micellar and reverse micellar solutions containing ionic liquid (Sanctioned Amount: Rs. 13,14,000)	Dr. Pradip Kumar Ghorai	CSIR	09-07-2013 to 08-07-2016	13,14,000

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
16.	Nanosystem based host-guest chemistry: Characterization using fluorescence spectroscopy (Sanctioned Amount: Rs. 48,40,000)	Dr. Pradipta Purkayastha	SERB	25-07-2012 to 24-07-2015	5,00,000
17.	Probing the phenomenon of interaction between lipids and surfactants using fluorescence spectroscopy (Sanctioned Amount: Rs. 16,50,000)	Dr. Pradipta Purkayastha	CSIR	15-01-2013 to 14-01-2016	*
18.	Spectral and temporal fluorescence studies of red emitting dyes in tris (pentafluoroethyl) trifluorophosphate (FAP) anion containing Imidazolium room temperature ionic liquids (Sanctioned Amount: Rs. 24,95,000)	Dr. Prasun Kumar Mandal	SERB	22-05-2012 to 21-05-2015	3,50,000
19.	Design and synthesis of amino acid based macromolecular architectures (Sanctioned Amount: Rs. 41,47,000)	Dr. Priyadarsi De	SERB	18-03-2011 to 17-03-2014	7,00,000
20.	Polymer chains with inorganic nano objects (Sanctioned Amount: Rs. 19,40,000)	Dr. Priyadarsi De	DRDO	03-10-2012 to 02-10-2015	4,54,031
21.	Green synthesis of novel degradable polyperoxides (Sanctioned Amount: Rs. 13,00,000)	Dr. Priyadarsi De	CSIR	30-08-2011 to 29-08-2014	3,00,000

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
22.	Fluorometric sensor for cadmium in drinking water (Sanctioned Amount: Rs. 46,06,400)	Dr. Raja Shunmugam	DST	04-01-2011 to 03-06-2013	43,200
23.	Sensing of chemical warfare agents with norbornene based polymers (Sanctioned Amount: Rs. 17,47,000)	Dr. Raja Shunmugam	DRDO	01-05-2011 to 30-04-2014	4,51,862
24.	Development of nano scale conducting polymers for field effect transistor and facility set up at NPOL (CARS 2) (Sanctioned Amount: Rs. 9,60,000)	Dr. Raja Shunmugam	DRDO	04-02-2013 to 03-02-2014	5,76,000
25.	Development of cyclopenta [c] heterol-based conjugated systems for Dye-Sensitized Solar Cells (DSSCs) (Sanctioned Amount: Rs. 31,29,600)	Dr. Sanjio Shankarrao Zade	DST	18-10-2010 to 17-10-2013	*
26.	Poly (Cyclopenta [c] Chalcogenophene) and related polymers: Synthesis and applications in bulk heterojunction organic photovoltaic devices (Sanctioned Amount: Rs. 27,29,000)	Dr. Sanjio Shankarrao Zade	DRDO	04-05-2012 to 03-05-2015	*
27.	New conjugated polymers for polymer solar cells (Sanctioned Amount: Rs. 16,70,000)	Dr. Sanjio Shankarrao Zade	CSIR	12-04-2013 to 11-04-2016	9,70,000

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
28.	Magnetic and Mössbauer spectroscopic studies of exchange biased nano-structures (Sanctioned Amount: Rs. 16,92,000)	Dr. Sayan Bhattacharyya	CSIR	15-01-2013 to 14-01-2016	4,09,769
29.	Photonic and magnetic interactions of nanoparticles inside carbon nano-tubes channels (Sanctioned Amount: Rs. 40,74,600)	Dr. Sayan Bhattacharyya	SERB	17-06-2013 to 16-06-2016	23,50,000
30.	Seleno and Telluro salen type ligands: Complexation with transition metals and study of the catalytic properties of the complexes (Sanctioned Amount: Rs. 26,80,000)	Dr. Snigdha Panda	SERB	23-05-2012 to 22-05-2015	5,50,000
31.	Oxometalate based 'Reactor-on-a-Glass – Slide' (RAG) using Colloid and 'Opto-Chemistry' (Sanctioned Amount: Rs. 20,84,600)	Dr. Soumyajit Roy	SERB	21-08-2012 to 20-08-2015	*
32.	Dynamic assembly of soft-oxometalates using optochemistry (Sanctioned Amount: Rs. 13,35,175)	Dr. Soumyajit Roy	BRNS DAE	25-03-2013 to 21-03-2016	5,28,900
33.	Development of photochromic molecules as molecular switches for potential application in logic devices with photonic inputs and outputs (Sanctioned Amount: Rs. 30,90,000)	Dr. Subhajit Bandyopadhyay	DST	07-10-2011 to 06-10-2014	*

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
34.	Glycosidase mimics using general acid-base catalysis and catalysis by metal complexes (Sanctioned Amount: Rs. 9,40,000)	Dr. Subhajit Bandyopadhyay	CSIR	17-04-2013 to 16-04-2016	*
35.	Design and synthesis of green catalysts for hydroamination reactions (Sanctioned Amount: Rs. 12,80,000 Approx)	Dr. Swadhin K. Mandal	CSIR	23-07-2010 to 22-07-2013	96,752
36.	Abnormal N-heterocyclic carbene: Development of organometallic chemistry to design homogeneous catalysts (Sanctioned Amount: Rs. 46,19,000)	Dr. Swadhin K. Mandal	SERB	05-07-2013 to 04-07-2016	20,00,000
37.	Template-assisted synthetic methods to develop new luminescent nanoarchitectures and their applications (Sanctioned Amount: Rs. 36,80,000)	Dr. Venkataramanan Mahalingam	DST	09-03-2011 to 08-03-2014	7,00,000
38.	Development of synthetic routes to make water dispersible upconverting nanocrystals and their applications (Sanctioned Amount: Rs. 23,92,000)	Dr. Venkataramanan Mahalingam	CSIR	17-04-2013 to 16-04-2016	13,85,750

Project under Fellowship/Awards

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
1.	Ramanujan Fellowship (Sanctioned Amount: Rs. 73,00,000)	Dr. Raja Shunmugam	DST	14-07-2010 to 13-07-2015	*

Consultancy Projects

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
1.	Carbohydrate chemistry: Application in food (Sanctioned Amount: Rs. 10,43,150)	Dr. Balaram Mukhopadhyay	Unilever	27-12-2012 to 26-12-2013	2,34,709
2.	Photophysical & photochemical studies of UV- absorbing molecules (Sanctioned Amount: Rs. 10,43,150)	Dr. Pradipta Pur- kayastha	Unilever	27-12-2012 to 26-12-2013	2,34,709
3.	On development of thermo- resistant, high-stress and high-tensile strain resistant materials for safes (Sanctioned Amount: Rs. 23,29,800)	Dr. Soumyajit Roy	Gunnebo India Private Limited	19-12-2011 to 18-12-2014	*
4.	Photostable photochromatic UV-responsive molecules (Sanctioned Amount: Rs. 10,43,150)	Dr. Subhajit Bandyopadhyay	Unilever	27-12-2012 to 26-12-2013	4,59,429
5.	Invictus Oncology Private Limited (Sanctioned Amount: Rs. 2,88,000 @ Rs. 3000/ hour)	Dr. Swadhin K. Mandal	Invictus Oncology	19-03-2013 to 18-03-2014	3,15,170

Project Transferred from other Institutes

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
1.	Mechanistic investigation of plant growth stimulation by water soluble carbon nano-tubes. (Sanctioned Amount: Rs. 14,86,874)	Dr. Shweta Tripathi	SERB	06-08-2013 to 31-05-2015	6,86,874

Department of Earth Sciences

Projects Funded by National Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
1.	Response of molluscan community to climate variation: A case study from Miocene of Kutch (Sanctioned Amount: Rs. 26,00,000)	Dr. Devapriya Chattopadhyay	SERB	20-03-2013 to 19-03-2016	*
2.	Spatial and temporal evolution of the MCT zone in eastern Sikkim Himalaya: Implications on lateral variation in structural evolution of the MCT in Darjeeling-Sikkim Himalaya (Sanctioned Amount: Rs. 25,00,000)	Dr. Kathakali Bhattacharyya	SERB	11-02-2014 to 10-02-2017	*
3.	Calcretes on metamorphosed rocks of the Precambrian eastern Ghats mobile belt, Orissa: Genesis and implications to climate (Sanctioned Amount: Rs. 18,00,000)	Dr. Prasanta Sanyal	CSIR	06-07-2011 to 05-07-2014	8,05,699
4.	Investigation of trace metal geochemistry anthropogenic inputs in the Ganga (Hooghly) River Estuary (Sanctioned Amount: Rs. 84,56,000)	Dr. Tarun Kumar Dalai	MoES	19-09-2011 to 01-04-2014	8,44,000
5.	Lode gold mineralization in the southern Granulite terrain, Kerala: geochemical and petrological constraints on their genesis (Sanctioned Amount: Rs. 2,10,000)	Dr. Ravikant Vadlamani	DST	29-11-2010 to 31-03-2014	1,00,000

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
6.	Constraining Tectonic setting of the Paleoproterozoic Krishna province Metagneous rocks: Implications for the geodynamic history of the active eastern Dharwar Cratonic Margin (Sanctioned Amount: Rs. 14,92,000)	Dr. Ravikant Vadlamani	CSIR	03-10-2013 to 02-10-2016	*

Projects under Fellowship/Awards

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
1.	Ramanujan Fellowship (Sanctioned Amount: Rs. 73,00,000)	Dr. Sutapa Bose	DST	22-12-2011 to 21-12-2016	17,00,000
2.	J C Bose Fellowship to (Sanctioned Amount: Rs. 1,21,10,000)	Prof. Somnath Dasgupta	DST	02-07-2007 to 01-07-2017	10,00,000
3.	Inspire Faculty Award (Sanctioned Amount: Rs. 86,27,423 Approx.)	Dr. Argha Banerjee	DST	01-02-2013 to 13-01-2018	*

Project transferred from other Institute

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
1.	Chemical weathering of black shales: Implications for release of CO ₂ to the atmosphere and trace metals to the rivers (Sanctioned Amount: Rs. 19,84,000)	Dr. Tarun Kumar Dalai	DST	02-04-2009 to 01-04-2013	*

Project Transferred to other Institutes

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
1.	Stable isotope tracing of oligocene atmospheric pCO ₂ concentration from Himalayan foreland: implications to tectonics-climate connection (Sanctioned Amount: Rs. 5,40,000)	Dr. Melinda Kumar Bera	DST	16-05-2012 to 15-05-2015	1,00,000

Projects Funded by International Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
1.	Effective teaching practices in modern pale biology using museum and laboratory specimens (Sanctioned Amount: Rs. 2,64,300)	Dr. Devapriya Chattopadhyay	UKIERI	27-11-2012 to 31-08-2013	*
2.	Seismic velocity structure of the north-western and north-eastern Himalaya and its implications for earthquake hazard assessment (Sanctioned Amount: Rs. 21,30,000)	Dr. Supriyo Mitra	UKIERI	01-03-2012 to 31-12-2014	5,56,983

Department of Mathematics and Statistics

Projects Funded by National Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
1.	National network for mathematical and computational biology (Sanctioned Amount: Rs. 52,37,000)	Dr. Anirban Banerjee	SERB	28-11-2013 to 27-11-2016	18,00,000
2.	Neural correlates of cooperative decisions in humans (Sanctioned Amount: Rs. 43,00,000)	Dr. Koel Das	DST	01-07-2013 to 30-06-2016	30,09,200
3.	Pullback equation for differential forms (Sanctioned Amount: Rs. 3,96,000)	Dr. Saugata Bandyopadhyay	SERB	11-11-2013 to 10-11-2016	2,30,000

Project under Fellowship/Awards

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
1.	Neural correlates of cognitive and behavioural performance in humans (Ramalingaswami Fellowship) (Sanctioned Amount: Rs. 74,50,000)	Dr. Koel Das	DBT	06-12-2011 to 05-12-2016	*
2.	Inspire Faculty Award (Sanctioned Amount: Rs. 86,27,423)	Dr. Mithun Mukherjee	DST	01-02-2013 to 31-01-2018	19,00,000

Department of Physical Sciences

Projects Funded by National Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
1.	Linear and nonlinear optical study of Er-doped ZnO nanocrystals and thin films (Sanctioned Amount: Rs. 1,50,000)	Dr. Bipul Pal	INSA	10-05-2010 to 31-03-2014	50,000
2.	Time resolved nonlinear optical spectroscopy in transition-metal-doped ZnO nanoparticles and thin films (Sanctioned Amount: Rs. 19,44,000)	Dr. Bipul Pal	SERB	28-05-2012 to 27-05-2015	*
3.	Development of novel velocity map imaging technique for the study of molecular dynamics (Sanctioned Amount: Rs. 15,00,000)	Dr. Dhananjay Nandi	INSA	13-08-2013 to 12-08-2016	3,00,000
4.	Electrical conductivity measurements of silicate minerals and transition metal oxides at high pressures and temperatures and its implications (Sanctioned Amount: Rs. 28,81,000)	Dr. Goutam Dev Mukherjee	DST	21-04-2010 to 20-04-2013	*
5.	Physical properties of elemental solids, their compounds and oxides, and mineral phases at extreme conditions of pressure and temperature: an experimental and theoretical study (Sanctioned Amount: Rs. 6,04,27,200)	Dr. Goutam Dev Mukherjee	MoES	13-07-2011 to 12-07-2016	25,00,000

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
6.	Exploring novel concepts in spintronics with organic materials: Generation, detection and manipulation of pure spin currents using completely electrical scheme (Sanctioned Amount: Rs. 23,00,000)	Dr. Partha Mitra	SERB	11-07-2013 to 10-07-2016	17,70,000
7.	Visual influences on taste and understanding the neural mechanisms on cross-modal information integration (WOS A) (Sanctioned Amount: Rs. 21,20,000)	Dr. Pei liang	DST	01-06-2013 to 31-05-2016	7,40,000
8.	Study of electronic structure of strongly correlated systems by X-ray Emission Spectroscopy (Sanctioned Amount: Rs. 24,24,000)	Dr. Satyabrata Raj	SERB	25-05-2012 to 24-05-2015	2,00,000

Projects under Fellowship/ Awards

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
1.	Ramanujan Fellowship (Sanctioned Amount: Rs. 73,00,000)	Dr. Dibyendu Nandi	DST	01-08-2009 to 31-07-2014	15,00,000
2.	Ramanujan Fellowship (Sanctioned Amount: Rs. 73,00,000)	Dr. Siddhartha Lal	DST	20-10-2010 to 19-10-2015	1,00,000

Centre of Excellence in Space Sciences India (CESSI)

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Grant Received during the FY 2013-2014 (Rs.)
1.	Establishment of Centre of Excellence in frontier area in science and technology (Sanctioned Amount: Rs. 4,00,00,000)	Dr. Dibyendu Nandi	MHRD	08-05-2013 to 07-05-2017	1,00,00,000
2.	US Asian Office of Aerospace Research and Development (Sanctioned Amount: Rs. 15,95,069)	Dr. Dibyendu Nandi	US AOARD	2013-2014	15,95,069

**Fund not received during the financial year 2013-2014*

3.4 Equipment 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 students.

SL. No.	Item	Supplier
1	Brookfield LVDV-III+C/P Ultra Rheometer Model: Brookfield Rheometer LVDV-III+Ultra Cone & Plate with All Standard Accessories	Brookfield Engineering Laboratories Inc., USA
2	Julabo Refrigerated and Heating Circulator Model F32-MA with All Standard Accessories	Julabo Labortechnik GmbH, Germany
3	ILMVAC Laboratory Vacuum System Model: LVS 105T 10ef with All Standard Accessories	ILMVAC GmbH, Germany
4	2 Liter Refrigerated Centrifuge Model: 5810R with All Standard Accessories	Eppendorf AG, Germany
5	Refrigerated Incubator Shaker Innova 42 R 3/4+ Universal Platform with All Standard Accessories	New Brunswick Scientific Co. Inc., USA
6	Olympus Stereo Zoom Trinocular Microscope Model: SZX16 with All Standard Accessories	Olympus Corporation, Japan
7	Refrigerator Uniequip 900 with All Standard Accessories	GE Healthcare Bio Science Ltd., Hong Kong
8	AKTA Purifier 10 with All Standard Accessories	GE Healthcare Bio Science Ltd., Hong Kong
9	Wrist Action Shaker with All Standard Accessories	VWR International Inc., USA
10	V-670 UV/VIS/NIR Spectrophotometer with All Standard Accessories	Jasco International Co. Ltd., Japan
11	Refrigerated Incubator Shaker Innova 42 R 3/4+ Universal Platform with All Standard Accessories	New Brunswick Scientific Co. Inc., USA
12	Digital Autoclave Model: SX-700 with All Standard Accessories	Tomy Digital Biology Co. Ltd., Japan
13	Buchi Rotavapor with All Standard Accessories	Buchi Labortechnik AG, Switzerland
14	Fiber Coupled 880nm Laser Module with Power Supply and All Accessories	RGB Lase LLC, USA
15	SHG Unit for Ti: Sapphire Femtosecond Laser with All Standard Accessories	Avesta Limited, Russia
16	SGC 120 Plant Growth Chamber with All Standard Accessories	Weiss Technik UK Limited, UK
17	High Temperature Laboratory Tube Furnace Model: LTF 12/50/610 with All Standard Accessories	Lenton, United Kingdom
18	Ultimate 3000 Analytical Ultra High Performance Liquid Chromatography System with All Standard Accessories	Dionix Softron GmbH, Germany
19	Ultimate HiPack Turbo Drag Pump with All Standard Accessories	Pfeiffer Vacuum GmbH, Germany
20	Pulsed Up Gradation of Existing Vector Network Analyzer with All Standard Accessories	Rohde & Schwarz GmbH & Co. KG, Munchen

SL. No.	Item	Supplier
21	Precision Motorized X-Y-Z Stage for the Inverted Microscope Model: IX71	Applied Scientific Instrumentation Inc., USA
22	Acousto Optic Modulator and Drivers with All Standard Accessories	Brimrose Corporation of America, USA
23	Water Purification System with All Standard Accessories	Millipore SAS, France
24	UV Transilluminator for Gel Documentation System	Synoptics Limited, UK
25	Turbo Pump with Proper Oil Free Backing Pump with All Standard Accessories	Pfeiffer Vacuum GmbH, Germany
26	Transmissive Spatial Modulator SLM with All Standard Accessories	Holoeye Photonics AG, Germany
27	Spectrophotometer for Micro Volume Detecting Range with All Standard Accessories	Biotek Instruments Inc., USA
28	Protein Gel Apparatus with All Standard Accessories	Hoefer Inc., USA
29	Motic Advance Research Compound Microscope Model: BA210 with All Standard Accessories	Speedfair Co. Ltd., Hong Kong
30	Incubator Shaker Refrigerated Type with All Standard Accessories	Jeio Tech Co. Ltd., Korea
31	Ice Making Machine with All Standard Accessories	Sigma Div. Della Frimont S.p.A., Italy
32	High Temperature Muffle Furnace with All Standard Accessories	Thermo Fisher Scientific (Asheville) LLC, USA
33	Gel Documentation System with All Standard Accessories	Synoptics Limited, UK
34	FTIR Spectrometer with All Standard Accessories	Bruker Optik GmbH, Germany
35	EPLC Systems with All Standard Accessories	GE Healthcare Bio-Science Ltd., Singapore
36	Electromagnet with All Standard Accessories	GMW Associates, USA
37	DNA and RNA for Gel Documentation System	Synoptics Limited, UK
38	Digital Delay Generator with All Standard Accessories	Stanford Research Systems, USA
39	Cold Cabinet 1400L - 1500L and 600L - 700L with All Standard Accessories	Thermo Fisher Scientific (Asheville) LLC, USA
40	Camera for Gel Documentation System	Synoptics Limited, UK
41	Bio-Flim-Cell and Pump with All Standard Accessories	Bio Surface Technologies Corp., USA
42	80 Deg Freezer with All Standard Accessories	ESCO Micro Pte. Ltd., Singapore
43	Laminar Air Flow with All Standard Accessories	ESCO Micro Pte. Ltd., Singapore
44	Gauges and Angels Valve with All Standard Accessories	Pfeiffer Vacuum GmbH, Germany
45	Time Correlated Single Photon Counting System Model: DCS120 with All Standard Accessories	Becker & Hicki GmbH, Germany
46	Motorized Inverted Research Microscope with All Standard Accessories	Carl Zeiss Microscopy GmbH, Germany

SL. No.	Item	Supplier
47	Ultrasonic Cell Disrupter with All Standard Accessories	Sonic & Materials Inc., USA
48	Spectrograph with All Standard Accessories	Andor Technology, UK
49	High Voltage Programmable Power Supply with All Standard Accessories	Ametek Programmable Powers, USA
50	CMG-3T Boadbrand Sismograph System with All Standard Accessories	Guralp Systems Limited, UK
51	Cell Culture Incubator with All Standard Accessories	Thermo Fisher Scientific (Hong Kong) Limited, Hong Kong
52	Autoclave with All Standard Accessories	Tomy Digital Biology Co. Ltd., Japan
53	Spectrograph with EMCCD with All Standard Accessories	Andor Technology, UK
54	Innova 42R Stakeable On Or Under Bench Incubator Shaker with Refrigeration with All Standard Accessories	Eppendorf AG, Germany
55	Centrifuge 5418 Refrigerated and Centrifuge 5702 with All Standard Accessories	Eppendorf AG, Germany
56	Spatial Light Modulator with All Standard Accessories	Holoeye Photonics AG, Germany
57	Refrigerated Centrifuge 5430R with All Standard Accessories	Eppendorf AG, Germany
58	Gel Documentation System with All Standard Accessories	Gold-Sim (Beijing) International Co. Ltd., China
59	Floor Standing Preparative Ultracentrifuge Model: OPTIMA XE-100 with All Standard Accessories	Beckman Coulter International S.A., Switzerland
60	Lexsyg Smart Automated TL OSL Reader with All Standard Accessories	Freiberg Instruments GmbH, Germany
61	4K Pulse Tube Close Cycle Cryostat Model: PTSHI-4-5 with All Standard Accessories	Janis Research Company LLC, USA
62	Temperature Controller Model: 24-C-240 with All Standard Accessories	Cryogenic Control Systems Inc., USA
63	Spatial Light Modulator with All Standard Accessories	Holoeye Photonics AG, Germany
64	Liquid Crystal Variable Retarder with All Standard Accessories	Laser Physics UK Limited, United Kingdom
65	Cool SNAP MYO CCD Camera with All Standard Accessories	Photometrics, USA
66	Thermo Scientific Locator Jr. Plus with All Standard Accessories	Thermo Fisher Scientific (Asheville) LLC, USA
67	Microwave High Temperature Furnace Model: Hamilab DS1500 with All Standard Accessories	Synotherm Corporation, China
68	ECL and GEL Documentation System with All Standard Accessories	Synoptics Limited, United Kingdom
69	Deuterium Lamp for Hitachi UV VIS NIR System	Techcomp (Macao Commercial Offshore) Limited
70	Win Dias 3 Image Analysis System Model: WD-S3-230 with All Standard Accessories	Delta T Devices Limited, United Kingdom

SL. No.	Item	Supplier
71	Table Top Gas Chromatography Mass Spectrometer with All Standard Accessories	Bruker Daltonics Inc., USA
72	Plympys Inverted Microscope Model: CKX41 with All Standard Accessories	Olympus Corporation, Japan
73	Julabo FT902 Imersion Cooler with All Standard Accessories	Julabo GmbH, Germany
74	Beta Spectroscopy System with All Standard Accessories	Phywe Systeme GmbH & Co. KG, Germany

3.5 Library

The library is open on all seven days of the week.

Library Hours:

Mohanpur Campus Library

Weekdays: 9.00 to 23.00 hrs.

Saturdays and Sundays: 10.00 to 23.00 hrs.

Main Campus Library

Weekdays: 9.00 to 17.00 hrs.

With some changes in availing the resources from the INDEST Consortium, the year under report (2013-2014) was a phase in consolidating and reassessing the electronic resources subscribed by the Library. The Institute Library has started to subscribe many resources by itself that were provided by the INDEST Consortium prior to this reporting period. In some cases, the negotiations were done by the INDEST Consortium. Apart from that, the Library purchased the *ACS Legacy Archive*, the ubiquitous resource for chemists, this year. It will, surely, give a new fillip to the chemistry fraternity of the Institute in pursuing their study and research. The Institute also started to subscribe two important journals from this year: *Nature Communications*, published by Nature Publishing Group and *Journal of Fluid Mechanics*, published by Cambridge University Press. Because of the efforts of the IISER Consortium, all the IISERs shall be able to subscribe more online journals published by Wiley from this year. To serve the users, the Library took steps to procure a new tool *Chamo* from VTLS Inc. to help them to discover the newly added resources it is continuously procuring to augment its collection. It will help the users to find out their relevant resources using this new tool with élan. Over and above of just searching the Library catalogue, it has many new feature, like enabling the Library users to receive Rich Site Summary (RSS) of new books added on her/his favourite subject areas. This tool also provides a smart phone or tablet enabled site. Any user, henceforth, can access the Library catalogue in her/his smart phone or tablet using the *Mobile Chamo* feature of this tool.

During this period, the Library has added 427 printed books to its collection. The total printed book collection now stands at 16,451. As part of its document delivery service, the Library provided 6,188 number of photocopies/printouts to its patrons.



3.6 Student Enrolment

Registered students at IISER, Kolkata (as on 31st March 2014)

PhD

Biological Sciences	Chemical Sciences	Earth Sciences	Mathematical Sciences	Physical Sciences	Total
45	82	12	8	42	189

PhD thesis submitted but yet to graduate

Biological Sciences	Chemical Sciences	Earth Sciences	Mathematical Sciences	Physical Sciences	Total
-	1	-	-	-	1

IPhD

Biological Sciences	Chemical Sciences	Earth Sciences	Mathematical Sciences	Physical Sciences	Total
27	28	9	7	24	95

BS-MS

1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
146	103	88	76	81	494

Major-wise distribution for 3rd Year onward BS-MS students

Batch	Biological Sciences	Chemical Sciences	Earth Sciences	Mathematical Sciences	Physical Sciences
MS11	24	9	8	4	43
MS10	17	16	17	6	20
MS09	12	20	13	5	31
Total	53	45	38	15	94

3.7 Graduating Students

Graduating students PhD (as on 31.03.2014)

PhD

DBS	DCS	DES	DMS	DPS	Total
2	12	-	-	2	16

Department of Biological Sciences

Sl.	Roll No	Name	Graduation Date	Current Affiliation
1	07RS002	Debdeep Dasgupta	08.01.2014	Postdoc at St. John's Research Institute, Bangalore
2	07RS003	Sumana Banerjee	15.01.2014	Not known

Department of Chemical Sciences

Sl.	Roll No	Name	Graduation Date	Current Affiliation
1	07RS006	Mainak Sadhukhan	02.05.2013	Postdoc at University of Bristol, Bristol, UK
2	07RS011	Subhankar Santra	25.06.2013	R&D Executive at Techno Wax Chem Pvt. Ltd.
3	07RS019	Tamal Kumar Sen	08.11.2013	Postdoc at Technion, Israel Institute of Technology, Israel
4	08RS001	Sanjib Kr Sardar	11.11.2013	Visiting faculty at Techno India University, Kolkata
5	08RS002	Pradip Kumar Dutta	24.09.2013	Scientist at Invictous Oncology Laboratory, New Delhi
6	08RS009	Prashant Ranjan Verma	17.12.2013	Postdoc at University of Lund, Lund, Sweden
7	08RS011	Rama Krishna Rao Gamidi	14.02.2014	Postdoc at University of Limerick, Limerick, Ireland
8	08RS012	Partha Pratim Bag	05.11.2013	Postdoc at Fujian Research Institute, Fuzhou, China
9	09RS002	Soumyajit Ghosh	30.12.2013	DST-Young Scientist, IISc, Bangalore

Sl.	Roll No	Name	Graduation Date	Current Affiliation
10	09RS012	Prasun Ghosh	03.03.2014	Teacher at Bhaluka High School, Bhaluka, Nadia
11	09RS018	Somnath Mukherjee	11.04.2013	Postdoc at Shaanxi Normal University, Xi'an, China
12	09RS036	Sunirmal Pal	09.10.2013	Postdoc at University of Florida, Gainesville, USA

Department of Physical Sciences

Sl.	Roll No	Name	Graduation Date	Current Affiliation
1	07RS020	Vyas Vivek Maheshkumar	22.05.2013	Postdoc at Institute of Mathematical Sciences, Chennai
2	09RS004	Barun Majumder	11.04.2013	Asst Professor at IIT Gandhinagar, Ahmedabad

Graduating students IPhD (as on 31.03.2014)

IPhD

DBS	DCS	DES	DMS	DPS	Total
0	0	0	0	0	0

Graduating students BS-MS (as on 31.03.2014)

BS-MS

DBS	DCS	DES	DMS	DPS	Total
8	14	14	1	12	49

List of graduating students BS-MS(as on 31.03.2014)

Department of Biological Sciences

Sl.	Roll No	Name	Major	Current Affiliation
1	08MS09	Khemchand Kumar Dayal	Biological Sciences	Not known
2	08MS16	Bappa Shona Baroi	Biological Sciences	MBA Program, IIM Calcutta, Kolkata
3	08MS17	Parijat Sarkar	Biological Sciences	PhD Program, CSIR- Centre for Cellular & Molecular Biology, Hyderabad

Sl.	Roll No	Name	Major	Current Affiliation
4	08MS32	Vineet Augustine	Biological Sciences	PhD Program, California Institute of Technology, Pasadena, USA
5	08MS45	Tulika Sharma	Biological Sciences	The University of Connecticut, USA
6	08MS55	K Anoop	Biological Sciences	PhD Program, IISER Kolkata, Kolkata
7	08MS60	Vineeta	Biological Sciences	Not known
8	08MS61	Pallabi Sengupta	Biological Sciences	Not known

Department of Chemical Sciences

Sl.	Roll No	Name	Major	Current Affiliation
1	07MS66	Satyam Singhal	Chemical Sciences	Not known
2	08MS04	Kaustuv Patra	Chemical Sciences	PhD Program, Universität Siegen Siegen, Germany
3	08MS05	Alok Shaurya	Chemical Sciences	University of Victoria, BC Canada
4	08MS07	Armita Dash	Chemical Sciences	PhD Program, University of Victoria, Victoria, Canada
5	08MS11	Khusnud Shahidi	Chemical Sciences	Not known
6	08MS22	Arobendo Mondal	Chemical Sciences	PhD Program, Technische Universität Berlin, Germany
7	08MS24	Md Ezaz Hasan Khan	Chemical Sciences	PhD Program, University of Massachusetts, Lowell, USA
8	08MS26	S Nitya Sai Reddy	Chemical Sciences	PhD Program, University of Illinois Urbana Campaign, USA
9	08MS28	Swapil Paliwal	Chemical Sciences	Intern, SHELL Technology Centre, Bangalore
10	08MS30	Rahul Gairola	Chemical Sciences	Not known
11	08MS35	Garima Lal	Chemical Sciences	PhD Program, University of Calgary, Calgary, Canada
12	08MS44	Vishwas Srivastava	Chemical Sciences	PhD Program, University of Chicago, Chicago, USA
13	08MS50	Rohit Gupta	Chemical Sciences	PhD Program, University of Massachusetts, Amherst, USA
14	08MS52	Pratik Kumar	Chemical Sciences	PhD Program, Stony Brook University, Stony Brook, USA

Department of Earth Sciences

Sl.	Roll No	Name	Major	Current Affiliation
1	07MS49	Anirban Mandal	Geological Sciences	PhD Program, National Geophysical Research Institute (NGRI), Hyderabad
2	08MS10	Himanshu Yadav	Geological Sciences	Not known
3	08MS13	Jayprakash Jindal	Geological Sciences	PhD Program, NGRI, Hyderabad
4	08MS14	Prem Chand Kisku	Geological Sciences	PhD Program, IISER Kolkata, Kolkata
5	08MS19	Rishabh Jha	Geological Sciences	Masters Program, Tata Institute of Social Sciences, Tuljapur
6	08MS21	Vikas Agrawal	Geological Sciences	PhD Program, West Virginia University, Morgantown, USA
7	08MS25	T Ajaay	Geological Sciences	Project Fellow, IISER Kolkata, Kolkata
8	08MS29	Marreddi Anvesh	Geological Sciences	IISER Kolkata, Kolkata
9	08MS31	Suraj Ranjan Prasanjit	Geological Sciences	Deputy Manager, Orissa Mining Corporation Limited
10	08MS36	Prakash Bediya	Geological Sciences	PhD Program, Central Institute of Mining & Fuel Research, Dhanbad
11	08MS43	Rahul Kumar	Geological Sciences	Not known
12	08MS47	Jitu Doley	Geological Sciences	Not known
13	08MS54	Kodi Abhishek	Geological Sciences	Masters Program, Missouri University of Science & Technology, Rolla, USA
14	08MS58	Nikhil Kumar Raj	Geological Sciences	Not known

Department of Mathematical Sciences

Sl.	Roll No	Name	Major	Current Affiliation
1	08MS04	Amit Kumar	Mathematical Sciences	JRF, IISER Kolkata, Kolkata

Department of Physical Sciences

Sl.	Roll No	Name	Major	Current Affiliation
1	07MS20	Shubhankar	Physical Sciences	Not known
2	08MS01	Dibyajyoti Maity	Physical Sciences	Not known
3	08MS02	Debsankha Manik	Physical Sciences	PhD Program, Max Planck Institute for Dynamics and Self-Organization Network Dynamics, Göttingen, Germany
4	08MS12	Nitin Kaushal	Physical Sciences	PhD Program, University of Tennessee, Knoxville, USA
5	08MS33	Gokul PM	Physical Sciences	Research Assistant, Bharathidasan University, Tiruchirappalli
6	08MS34	Abhranil Das	Physical Sciences	PhD Program, University of Texas, Austin, USA
7	08MS38	Abhishek Kumar	Physical Sciences	PhD Program, University of Florida, Gainesville, USA
8	08MS42	Vimal Rathee	Physical Sciences	Phd Program, University of Michigan, Ann Arbor, USA
9	08MS51	Santosh Sundaresan	Physical Sciences	Young India Fellowship Pro. 2013-14 University of Pennsylvania, Hershey, USA
10	08MS56	Gyan Prakash Dwivedi	Physical Sciences	Not known
11	08MS57	Sourav Sen	Physical Sciences	PhD Program Duke University, Durham, USA
12	08MS59	Shampy Mansha	Physical Sciences	PhD Program, Nanyang Technological University, Singapore



SEMINARS & COLLOQUIA

4. Seminars & Colloquia

4.1 Department of Biological Sciences

Seminars

Date	Speaker	Title
03.04.2013	Prof. Indrani Bose, Bose Institute, Kolkata	Routes to binary gene expression
05.04.2013	Dr. Sudha Rajamani, IISER Pune, Pune	Origin and replication of informational molecules on prebiotic earth
08.05.2013	Dr. Mallikarjun Shakarad, University of Delhi, Delhi	Is bigger better?
21.08.2013	Dr. Saurabh Chattopadhyay, The Lerner Research Institute, Cleveland Clinic, Cleveland, Ohio, USA	Dual roles of IRF-3 in antiviral defense
25.09.2013	Dr. Sarosh N. Fatakia, University of Pittsburgh, Pittsburgh, USA	Identification of class A G- protein-coupled receptor ligand binding pocket
09.10.2013	Dr. Raja Banerjee, West Bengal University of Technology, Kolkata	Peptide motifs: Present and future
31.10.2013	Dr. Suvendra Nath Bhattacharyya, CSIR-Indian Institute of Chemical Biology, Kolkata	GW182 proteins and HuR reciprocally regulate target dependent exosomal export and arbitrate cellular miRNA level
31.12.2013	Dr. Purnima Singh, Vyas Dental College & Hospital, Jodhpur	A study of the Regulation of IL-10 by Nitric Oxide in the kidney
26.03.2014	Dr. Md. Siddiqur Rahman, Bangladesh Agricultural University, Mymensingh, Bangladesh	Status of brucellosis, parvovirus and influenza virus in dog in Bangladesh

First Department Day

The Department of Biological Sciences organized the 3rd Frontiers in Modern Biology Symposium (FIMB) from 9th-10th November, 2013 in Mohanpur Campus. The speakers included:

Speaker	Title
Dr. Anish Sen Mazumdar, Stempeutics Research Pvt. Ltd.	Stem cells, regenerative medicine and development of Stempeucel®: The road travelled

Speaker	Title
Prof. Maharaj Pandit, University of Delhi, Delhi	Number game: deciphering patterns in ecology
Dr. K.A. Subramaniam, Zoological Survey of India (ZSI), Kolkata	Spatial distribution patterns of dragonflies in the Indian sub-continent
Prof. Sanghamitra Bandyopadhyay, Indian Statistical Institute (ISI), Kolkata	The microRNAs-TF-gene regulatory network: Studies in breast and colorectal cancer
Prof. Gautam Basu, Bose Institute, Kolkata	Negative electrostatic design in biology
Prof. Sanjeev Galande, IISER Pune, Pune	Signaling to chromatin: Tale of a genome organizer
Mr. Sandipan Dasgupta, IISER Kolkata, Kolkata	Understanding how proteins target to endoplasmic reticulum: the signal recognition particle (SRP) independent pathway
Dr. Sibani Chakraborty, West Bengal State University, Kolkata	Screening inhibitors of human meprins: Insights from analysis of binding sites by molecular dynamics simulation
Mr. Saurabh Datta, IISER Kolkata, Kolkata	What triggers cannibalism in drilling gastropods: a case study on <i>Natica tigrina</i>
Mr. S. Mandal, National Institute of Cholera and Enteric Diseases, Kolkata	Analysis of transcriptional activity of human MUC5AC gene under the influence of <i>Vibrio cholerae</i> chitin-binding protein GBPA
Ms. Sudeshna Mukherjee, University of Calcutta, Kolkata	Pomegranate protects liver from methotrexate-induced oxidative stress by modulating ROS-mediated apoptotic pathways
Ms. Seema Nath, Saha Institute of Nuclear Physics, Kolkata	"KNOT" and "CAGE" – two new dimensions in protein structures
Mr. Dhiman Sankar Pal, IISER Kolkata, Kolkata	<i>Leishmania major</i> beta carbonic anhydrase is physiologically important and is a potential drug target against Leishmaniasis
Mr. Bidubha Parasar, IISER Kolkata, Kolkata	pH dependent multifunctional and multiply-configurable logic gate systems based on small molecule G-quadruplex DNA recognition
Mr. Dipak Kumar Poria, IISER Kolkata, Kolkata	Interplay between microRNA-21 and the RNA-binding protein HuR in the translation regulation of the pro-inflammatory tumor suppressor gene programmed cell death 4 (PDCD4)
Mr. Aresh Sahu, IISER Kolkata, Kolkata	Studying the role of Inx-2 in border cell migration and follicle morphogenesis

4.2 Department of Chemical Sciences

Seminars

Date	Speaker	Title
13.09.2013	Prof. Ashok K. Ganguly, Institute of Nanoscience and Technology, Mohali	Controlling the size, assembly and shape of nanostructures using microemulsions for energy and environmental applications
04.10.2013	Prof. Jagadese J. Vittal, National University of Singapore, Singapore	Design and photoreactivity of coordination polymers
30.10.2013	Prof. Pradyut Ghosh, IACS, Kolkata	Covalent and self-assembled supramolecular capsules as anion receptors
06.11.2013	Dr. Prantik Maity, ICIQ, Tarragona, Spain	From peptidomimetics to transition metal catalysis
11.11.2013	Prof. Ashok K. Mishra, IIT Madras, Madras	1-naphthol as a fluorescent molecular probe: Remarkable abilities of a rather common molecule
21.11.2013	Dr. Angshuman Nag, IISER Pune, Pune	Colloidal all-inorganic nanocrystals for optoelectronics
06.01.2014	Prof. Robert A. Field, John Innes Centre, Norwich, UK	Sugars and nanotechnology: Food, health and bioterrorism
14.02.2014	Prof. Kumar Biradha, IIT Kharagpur, Kharagpur	Crystal engineering of functional materials
21.02.2014	Prof. S. P. Rath, IIT Kanpur, Kanpur	Unfolding mystery of multi-heme cytochromes: Effect of inter-macrocyclic interactions
27.02.2014	Prof. Markus Meuwly, University of Basel, Basel, Switzerland	Atomistic simulations of spectroscopy and reactive processes in the gas and condensed phase
28.02.2014	Prof. Pierre H. Dixneuf, University of Rennes 1, Rennes, France	Ruthenium, catalysis and green chemistry: Activation of alkynes and C-H bonds
04.03.2014	Prof. Asit K. Chakraborti, NIPER, Mohali	Sustainable chemistry in drug discovery and process development
05.03.2014	Dr. Arijit K. De, University of California, Berkeley, CA, USA	Probing ultrafast coherent dynamics by incoherent fluorescence detection: towards a spatiotemporal approach
19.03.2014	Dr. Moumita Majumdar, Universität des Saarlandes, Saarbrücken, Germany	Chemistry of homonuclear multiple bonds among main group elements and among transition metals
21.03.2014	Prof. Jitendra K. Bera, IIT Kanpur, Kanpur	Organometallic catalysts for sustainable chemistry

Department Day

The Department Day was held on December 11th, 2013. This year the programme was dedicated in honour of Prof. R. N. Mukherjee's 60th birthday. The speakers included:

Speaker	Title
Prof. Santanu Bhattacharya, Indian Institute of Science (IISc), Bangalore	Chemical biology of bioactive transporters
Dr. Rajeev Gupta, University of Delhi, Delhi	Metallosupramolecular chemistry: Designed architectures and functional materials
Prof. Christoph Schneider, Universität Leipzig, Leipzig, Germany	Rapid assembly of molecular complexity through vinylogous Mannich and Michael reactions
Dr. Swadhin Mandal, IISER Kolkata, Kolkata	Main group organometallics: Some reality and more dreams
Dr. Venkataramanan Mahalingam, IISER Kolkata, Kolkata	Lanthanide doped luminescent colloidal nanocrystals: Synthesis, properties and applications
Mr. Bhaskar Pramanik, IISER Kolkata, Kolkata	Bifunctional luminescent dye single ion magnet and hexanuclear Cr ₆ cage compound
Mr. Alok Kumar, IISER Kolkata, Kolkata	Mononuclear metal complexes of a quinine forming ligand: studies on DNA binding and cytotoxic effect on cancer cell lines
Mr. Anustup Sadhu, IISER Kolkata, Kolkata	Enhanced low field magnetoresistance in La _{0.71} Sr _{0.29} MnO ₃ nanoparticles synthesized by non-aqueous sol-gel route
Ms. Preethi Thomas, IISER Kolkata, Kolkata	Self-assembly of mesoscopic materials to form controlled and continuous patterns by thermo-optically manipulated laser induced microbubbles
Mr. Anjan Bedi, IISER Kolkata, Kolkata	Zn(II) and Cu(II) complexes of thiophene based salphen-type new ligand: Solution processable high-performance field effect transistor materials

4.3 Department of Earth Sciences

Seminars

Date	Speaker	Title
10.07.2013	Dr. Subhabrata Paul, University of South Florida, Tampa, USA	Unveiling the timing and magnitude of the late neogene extinction
27.11.2013	Prof. R. Shankar, Institute of Mathematical Sciences, Chennai	The response of Himalayan glaciers to climate change

Date	Speaker	Title
07.03.2014	Dr. Jeffrey Wilson, University of Michigan, Ann Arbor, USA	India before himalayas: When snakes ate dinosaurs
02.04.2014	Prof. Nigel Hughes, University of California, Riverside, USA	Dissecting factors controlling growth and development in an ancient fossilized arthropod: the case of the silurian trilobite <i>Aulacopleura koninckii</i>

Department Day

The Department organized its 2nd Annual Department Day, **Convergence**, on 15th March where distinguished Geoscientists, from various Institutes of India, presented their research work and interacted with students. The DES PhD students made oral presentations of their research work. The BS-MS students, along with students from external Universities and Institutes, also presented their work in a poster session.

Speaker	Title
Dr. Navin Juyal, Physical Research Laboratory (PRL), Ahmedabad	Towards understanding the past and present glacier fluctuation in himalayas
Dr. Suryendu Dutta, IIT Bombay, Mumbai	Molecular composition of cenezoic amber of India-Insights into evolution of asian dipterocarps.
Dr. Ramananda Chakraborty, IISc, Bangalore	Non-traditional stable isotopes: applications from cosmos to benthos
Mr. Anamika Shrivastava, IISER Kolkata, Kolkata	Assessment of arsenic and other heavy metals in soil and paddy irrigated with arsenic contaminated water
Mr. Sayak Basu, IISER Kolkata, Kolkata	Influence of vapor source on stable isotopes in precipitation: A case study from south bengal
Mr. Sambit Ghosh, IISER Kolkata, Kolkata	Molecular level isotopic characterization of Siwalik paleosol organic matter: implication to paleovegetation and paleoclimate
Mr. Saumik Samanta, IISER Kolkata, Kolkata	Dissolved barium in the hooghly estuary: Non conservative behaviour, sources and fluxes
Mr. Himangshu Paul, IISER Kolkata, Kolkata	Utilizing rupture directivity to ascertain the fault plane of the 18th September 2011 Sikkim earthquake
Mr. Deepjay Sarkar, IISER Kolkata, Kolkata	Diversity of Indian marine bivalves
Mr. Chiranjeeb Chatterjee, IISER Kolkata, Kolkata	Association of metavolcanic rocks with banded magnetite-barite: Implication for genesis and tectonic setting

4.4 Department of Mathematics & Statistics

Seminars

Date	Speaker	Title
03.04.2013	Mr. Sutanu Roy, Mathematics Institute, Georg-August-Universität Göttingen, Göttingen, Germany	Twisted tensor product of C^* -algebras
06.05.2013	Dr. Kumarjit Saha, ISI, Delhi	Random directed forests and the Brownian web
10.07.2013	Dr. Ujjwal Koley, Würzburg University, Würzburg, Germany	Operator splitting methods for Korteweg De-vries (KDV) equation
17.07.2013	Dr. Sameer Chavan, IIT Kanpur, Kanpur	U-Invariant Kernel
07.08.2013	Dr. Sushil Gorai, ISI, Bangalore	Polynomial convexity of compact subsets of totally-real submanifolds of \mathbb{C}^n
07.08.2013	Dr. Mousomi Bhakta, Technion, Haifa, Israel	Semilinear elliptic equations admitting similarity transformations
14.08.2013	Dr. Swarnendu Sil, École polytechnique fédérale de Lausanne, Lausanne, Switzerland	Calculus of variations with differential forms
21.08.2013	Dr. Subrata Shyam Roy, IISER Kolkata, Kolkata	Reproducing kernel for a class of weighted Bergman space on the symmetrized polydisc
04.09.2013	Dr. Pradipto Banerjee, ISI, Kolkata	On the distance of a polynomial from an irreducible polynomial and a related open problem from elementary number theory
11.09.2013	Dr. Shibananda Biswas, ISI, Kolkata	Geometric invariants for submodules of analytic hilbert modules
25.09.2013	Dr. Prosenjit Roy, University of Zurich, Switzerland	Asymptotic analysis for eigenvalue problems with mixed boundary type data
16.01.2014	Dr. Subhroshekhar Ghosh, Princeton University, Princeton, NJ, USA	Large deviations for zeroes of random polynomials with i.i.d. exponential coefficients
05.02.2014	Mr. Ranjit Mehatari, IISER Kolkata, Kolkata	Some graph operations and the L-spectra of graphs
12.02.2014	Dr. Anil Kumar Ghosh, ISI, Kolkata	A distribution-free two-sample run test applicable to high dimensional data
19.02.2014	Dr. Suparna Sen, ISI, Kolkata	Roe-Strichartz theorem on some two step nilpotent lie groups
26.02.2014	Dr. Satadal Ganguly, ISI, Kolkata	The Riemann hypothesis and large sieves

Date	Speaker	Title
11.03.2014	Prof. M.S. Raghunathan, IIT Bombay, Mumbai	Mathematics - Art would rather be science
19.03.2014	Dr. Gyula Csato, TIFR-Center for Applicable Mathematics, Bangalore	Non-existence theorems for harmonic Fields

Department Day

Speaker	Title
Prof. B.V. Rao, Chennai Mathematical Institute, Kelambakkam	Simple urn models of probability theory
Ms. Priya Das, IISER Kolkata	Hilbert-Samuel multiplicity of a class of bipartite graph
Prof. K.B. Sinha, JNCASR, Bangalore	Story of two projections in a hilbert space
Mr. Krishanu Deyasi, IISER Kolkata	Communication on structure of biological networks
Dr. Satyaki Mazumder, IISER Kolkata	Prediction in chirp signal: Bayesian paradigm

4.5 Department of Physical Sciences

Seminars

Date	Speaker	Title
17.04.2013	Dr. Debraj Roy, SN Bose National Centre for Basic Sciences, Kolkata	Aspects of gravity and curvature from flat spacetime
25.04. 2013	Dr. Jaya Maji, IOP, Bhubaneswar	--
16.05.2013	Prof. Krishnendu Sengupta, IACS, Kolkata	Dynamics of ultracold atoms in an optical lattice
22.05.2013	Dr. Hiranmaya Mishra, PRL, Ahmedabad	Chiral symmetry breaking in strong magnetic fields
12.06.2013	Dr. Sanjit Das, The Institute of Mathematical Sci- ences, Chennai	Geometric flows in dimension 3 and 4

Date	Speaker	Title
26.06.2013	Dr. Aveek Sarkar, The University of New Hampshire, Durham, NH, USA	Solar corona and the solar wind: Puzzles and some resolutions
04.07.2013	Dr. Semanti Chakraborty, Loughborough University, Leicester, UK	Tomographic imaging of all orthogonal components of displacements in the volume of scattering materials using wavelength scanning interferometry
31.07.2013	Prof. Subhasish Dutta Gupta, University of Hyderabad, Hyderabad	Novel optics with whispering gallery modes
21.08.2013	Dr. Anand Kamalpure, TIFR, Mumbai	Emergent inhomogeneity and the pseudogap state in a strongly disordered s-wave superconductor probed through scanning tunneling spectroscopy measurements
22.08.2013	Prof. Lokesh C. Tribedi, TIFR, Mumbai	--
04.09.2013	Prof. Bikas K. Chakrabarti, SINP, Kolkata	Econophysics of income & wealth distributions in societies
11.09.2013	Prof. Sambandamurthy Ganapathy, University at Buffalo, Buffalo, NY, USA	Nanoscale Investigations of strongly correlated materials: New physics and applications
12.09.2013	Dr. Sourin Das, University of Delhi, New Delhi	Role of pancharatnam's geometric phase and quantum metric in transport across two dimensional topological insulators
18.09.2013	Prof. A Prasanna, PRL, Ahmedabad	Gauge theories of gravity
09.10.2013	Dr. Pratap Raychaudhuri, TIFR, Mumbai	Disordered Superconductors: A TIFR Story
22.10.2013	Dr. Monojoy Goswami, Oak Ridge National Laboratory, Oak Ridge, TN, USA	Design of advanced polymeric materials, Can computer simulation help?
23.10.2013	Prof. Sudhansu S. Mandal, IACS, Kolkata	Unconventional fractional quantum hall effect in the lowest landau level
24.10.2013	Prof. Utpal Sarkar, PRL, Ahmedabad	Faster-than-light particles
30.10.2013	Prof. Anita Mehta, S. N. Bose National Centre For Basic Sciences, Kolkata	Perceiving, learning and forgetting - a physicist's take
06.11.2013	Mr. Jishnu Das, Cornell University, Ithaca, NY, USA	Protein interactome networks as molecular determinants of human disease and evolution
13.11.2013	Dr Raja Paul, IACS, Kolkata	Tug-of-war between opposing molecular motors explains chromosomal oscillation during mitosis
08.01.2014	Dr. Debanjan Bhowmik, University of California, Berkeley, CA, USA	Spin hall effect based control of magnetic domain walls with applications in magnetic memory and logic.

Date	Speaker	Title
29.01.2014	Prof. Priya Mahadevan, S. N. Bose National Centre For Basic Sciences, Kolkata	Magnetism where you least expect it
05.02.2014	Dr. Tathagata Mukherjee, Seagate Technology, Minneapolis, MN, USA	Thermodynamics of magnetic multilayers
19.02.2014	Dr. Biswajit Paul, S. N. Bose National Centre For Basic Sciences, Kolkata	Gauge symmetries in higher derivative theories
26.02.2014	Dr. Sivarama Krishnan, TIFR, Mumbai	Ultrafast meets ultrasmall: Emergent collective dynamics in nanoscale plasmon and superfluid systems.
26.02.2014	Prof. Subhasis Dutta Gupta, University of Hyderabad, Hyderabad	Quantum plasmonics
05.03.2014	Prof. Arti Garg, SINP, Kolkata	Doping a correlated band insulator: a new route to half-metallicity
12.03.2014	Prof. Parongama Sen, University of Calcutta, Kolkata	Random walks: new aspects and applications
26.03.2014	Dr. Parimal Kar, Michigan State University, East Lansing, MI, USA	Multiscale modeling of biological systems: surmounting the challenge of bridging the scales

Department Day

Speaker	Title
Prof. Bala Iyer, Raman Research Institute, Bangalore	LIGO-India: Locating einstein's messengers and Inaugurating Gravitational wave astronomy
Dr. Rajesh Nayak, IISER Kolkata, Kolkata	Particle swarm optimisation in gravitational wave data analysis
Dr. Rumi De, IISER Kolkata, Kolkata	Nonlinear dynamics of cell orientation
Dr. Arindam Kundagrami, IISER Kolkata, Kolkata	Phase behaviours of charged polymers
Prof. C.S. Unnikrishnan, TIFR, Mumbai	Listen! Gravitational waves!

Speaker	Title
Mr. Nandan Roy, IISER Kolkata, Kolkata	Tracking quintessence: A dynamical systems study
Mr. Basudev Roy, IISER Kolkata, Kolkata	Precise determination of translational and rotational dynamics of trapped particles in optical tweezers
Mr. Soumitra Hazra, IISER Kolkata, Kolkata	Can flux transport solar dynamo model function shallow meridional flow?
Mr. Abhishek Basu, IISER Kolkata, Kolkata	High pressure phase transition in Eu-doped BiFeO ₃

The Department of Physical Sciences (DPS) of IISER Kolkata observed its annual day on February 22, 2014. To take this opportunity to look at the current status of “**Gravitational Wave Physics and its future directions**”, the DPS organized a one-day conference of like-minded people to celebrate its Department Day.

SPIE Winter School 2013: “**SPIE Winter School for Photonics 2013**” was held in between December 26 – 29, 2013. This symposium was aimed to promote the research in photonics across the country by means of teaching and dialogue. The programme included talks by eminent lecturers, paper presentation, poster presentations and interaction sessions.

Condensed Matter Physics Day: The one-day symposium on “**Condensed Matter Physics and Related Areas**” was scheduled on December 20, 2013. The aim of this one day symposium is to bring together people working in the areas of Condensed Matter Physics, Nonlinear Dynamics, Statistical Physics, Soft Matter and Biophysics for interactions and discussions and explore possible avenues of collaborations.

Workshop on Field Theory : The workshop was organized from 7th – 9th August, 2013 on field theory of “**Recent trends and applications**” which has seen a recent surge in interest, largely due to the development in condensed matter systems and cold atoms. Application in systems like topological insulator, graphene, cold atoms etc, has brought realization of exotic field theoretical concepts like anomaly, index theorem and Dirac Fermions to the low-energy domain. Presence of defects and natural curvature bring curved geometry and gravity also to this realm. Hence, a gathering of like-minded researchers in these areas, together with experimentalists for pondering about various subtle aspects of field theory and their possible applications is a worthwhile endeavour.

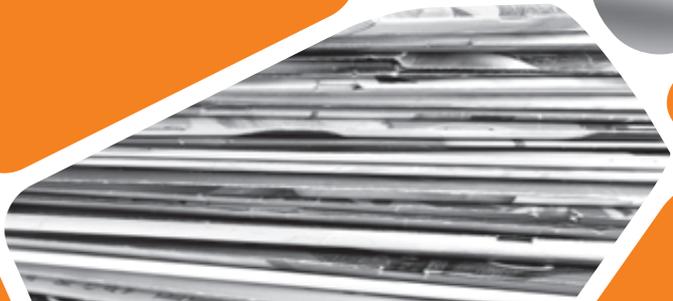
Discussion and meeting on Recent Trends in Optics: A one-day discussion and meeting session on “**Recent Trends in Optics**” was held on 29th July, 2013 at Kolkata with Prof. G.S. Agarwal, Nobel Professor, Oklahoma State University along with other collaborators of the research institutes.

4.6 Center of Excellence in Space Sciences

Seminars

Date	Speaker and Affiliation	Title
08.16.2013	Dr. Anita Sengupta, Jet Propulsion Laboratory, Flintridge, CA, USA	Curiosity's entry, descent, and landing on Mars
09.23.2013	Dr Dipankar Banerjee, IIA, Bangalore	India's first solar observatory in space: Aditya
10.03.2013	Dr. Sourav Palit, Jadavpur University, Kolkata	Development of a novel hard X-ray imaging technique for solar imaging and modeling the ionospheric effects of solar flares
10.07.2013	Dr. Sanjit Mitra, Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune	Gravitational wave astronomy
31.10.2013	Dr. K Chandrashekhar, IIA, Bangalore	The dynamical behavior of a jet in an on-disk coronal hole observed with AIA/SDO
28.11.2013	Prof. Sabyasachi Chatterjee, IIA, Bangalore	Growth of grains in astronomical situations and their light scattering properties
09.12.2013	Dr. Mausumi Dikpati, National Center for Atmospheric Research, Boulder, CO, USA	Origins of space weather and climate: The solar dynamo
11.02.2014	Dr. Dipankar Banerjee, IIA, Bangalore	Course lecture
12.02.2014	Dr Dipankar Banerjee, IIA, Bangalore	Course lecture
18.02.2014	Dr. Sharanya Sur, Arizona State University, Tempe, AZ, USA	Turbulent mixing in magnetized media
10.04.2014	Dr. Nandita Srivastava, Udaipur Solar Observatory, PRL, Udaipur	Evolution, Interaction and impact of coronal mass ejections

PUBLICATIONS



5.1 Publications of Faculty Members

5.1.1 Department of Biological Sciences

Journal Articles

Annagiri, Sumana and Sona, Chandan. 2013. "Key relocation leaders in an Indian queenless ant." *Behavioural Processes*, 97, 84-89.

Nandi, Anjan Kumar; **Bhadra, Anindita**; **Annagiri, Sumana**; Deshpande, Sujata and Gadagkar, Raghavendra. 2013. "The evolution of complexity in social organization—A model using dominance-subordinate behavior in two social wasp species." *Journal of Theoretical Biology*, 327, 34-44*.

Bhattacharjee, Dola; Sharma, Charu and **Bhadury, Punyasloke**. 2013. "Chromotypes of *Globigerinoides ruber* in the surface sediments from the North-West coast of the Bay of Bengal." *Marine Biodiversity Records*, 6, 1-5.

Bhattacharjee, Dola; Samanta, Brajogopal; Danda, Anamitra Anurag and **Bhadury, Punyasloke**. 2013. "Temporal succession of phytoplankton assemblages in a tidal creek system of the Sundarbans mangroves." *International Journal of Biodiversity*, ID 824543, 1-15.

Bhattacharjee, Dola; Choudhury, Binod C; Sivakumar, Kuppusamy; Sharma, Charu; John, Sajan; Behera, Satyaranjan; Behera, Subrata and **Bhadury, Punyasloke**. 2013. "Benthic foraminifer assemblages in turtle congregation sites along the North East coast of India." *Journal of the Marine Biological Association of the United Kingdom*, 93, 877-887.

Biswas, Kaushiki and **Das Sarma, Jayasri**. 2013. "Effect of microtubule disruption on neuronal spread and replication of demyelinating and nondemyelinating strains of mouse hepatitis virus in vitro." *Journal of Virology*, 88(5):3043-7, 3043-7.

Chatterjee, Dhriti; Biswas, Kaushiki; Nag, Soma; Ramachandra, S.G. and **Das Sarma, Jayasri**. 2013. "Microglia play a major role in direct viral-induced demyelination." *Clinical and Developmental Immunology*, 2013, 1-12.

Das Sarma, Jayasri. 2013. "Microglia-mediated neuroinflammation is an amplifier of virus-induced neuropathology." *Journal of Neurovirology*, 2013, 1-15.

Das Sarma, Subhajit; Chatterjee, Koushik; Dinda, Himadri; Chatterjee, Dhriti and **Das Sarma, Jayasri**. 2013. "Cytomorphological and Cytochemical Identification of Microglia.." *ISRN Immunology*, 2013, 1-10.

Khan, Reas S; Dine, Kinberly; **Das Sarma, Jayasri** and Shindler, Kenneth S. 2014. "SIRT1 Activating compounds reduce oxidative stress mediated neuronal loss in viral induced CNS demyelinating disease.." *Acta Neuropathologica Communications*, 2, 3.

Kishore, Abhinoy; Kanunjia, Anurag; Nag, Soma; Rostami, A.M.; Kenyon, Lawrence C; Shindler, Kenneth S and **Das Sarma, Jayasri**. 2013. "Different mechanisms of inflammation induced in virus and autoimmune-mediated models of multiple sclerosis in C57BL6 mice." *BioMed Research International*, 2013, 1-9.

Rao, Vijayakameswara N; Ganivada, Mutyala Naidu; Sarkar, Santu; Dinda, Himadri; Chatterjee, Koushik; Dalui, Tanmoy; **Das Sarma, Jayasri** and Shunmugam, Raja. 2013. "Magnetic Norbornene Polymer as Multiresponsive Nanocarrier for Site Specific Cancer Therapy." *Bioconjugate Chemistry*, 2014, 1-10*.

Bhattacharyya, S; Sarkar, A; Dey, S K; Jose, G P; Mukherjee, A and **Sengupta, T K**. 2013. "Copper(II) complex of methionine conjugated bis-pyrazole based ligand promotes dual pathway for DNA cleavage." *Dalton Transactions*, 42, 11709-19*.

Martins, Emilia P and **Bhat, Anuradha**. 2014. "Population-level personalities in zebrafish: aggression-boldness across but not within populations." *Behavioral Ecology*, 25, 368-373.

Krishnaswamy, J.; **John, R.** and Joseph, S. 2014. "Consistent response of vegetation dynamics to recent climate change in tropical mountain regions." *Global Change Biology* 20, 203–215.

Pandey, S.P.; Winkler, J.A.; Li, H.; Camacho, D.M.; Collins, J.J. and Walker, G.C. 2014. "Central role for RNase YbeY in Hfq-dependent and Hfq-independent small-RNA regulation in bacteria." *BMC Genomics*, 15, 121.

Yao, Peng; Potdar, Alka A; **Ray, Partho Sarothi**; Eswarappa, Sandeepa M; Flagg, Andrew C; Willard, Belinda and Fox, Paul L. 2013. "The HILDA complex coordinates a conditional switch in the 3'-untranslated region of the VEGFA mRNA." *PLoS Biology*, 11, 1-10.

Alessandri, K; Sarangi, B R; Gurchenkov, V V; **Sinha, B**; Kießling, T R; Fetler, L; Rico, F; Scheuring, S; Lamaze, C; Simon, A; Geraldo, S; Vignjevic, D; Doméjean, H; Rolland, L; Funfak, A; Bibette, J; Bremond, N; Nassoy, P. 2013. "Cellular capsules as a tool for multicellular spheroid

production and for investigating the mechanics of tumor progression *in vitro*." *Proceedings of National Academy of Sciences of the United States of America*, 110, 14843-14848.

Bhadra, Anandarup and **Bhadra, Anindita**. 2014. "Preference for meat is not innate in dogs." *Journal of Ethology*, 32, 15-22.

Bhadra, Anindita and Jordan, Ferenc. 2013. "Cryptic successors unrevealed even by network analysis: A comparative study of two paper wasp species." *Network Biology*, 3, 54-66.

Majumder, Sreejani Sen; Bhadra, Anandarup; Ghosh, Arjun; Mitra, Soumitra; Bhattacharjee, Debottam; Chatterjee, Jit; Nandi, Anjan Kumar and **Bhadra, Anindita**. 2014. "To be or not to be social: foraging associations of free-ranging dogs in an urban ecosystem." *Acta Ethologica*, 17, 1-8.

Nandi, Anjan Kumar; **Bhadra, Anindita**; Annagiri, Sumana; Deshpande, Sujata and Gadagkar, Raghavendra. 2013. "The evolution of complexity in social organization—A model using dominance-subordinate behavior in two social wasp species." *Journal of Theoretical Biology*, 327, 34-44*.

Paul, Manabi; Sen Majumder, Sreejani and **Bhadra, Anindita**. 2014. "Selfish mothers? An empirical test of parent-offspring conflict over extended parental care." *Behavioural Processes*, 103, 17-22.

Sen Majumder, Sreejani; Chatterjee, Ankita and **Bhadra, Anindita**. 2014. "A dog's day with humans-time activity budget of free-ranging dogs in India ." *Current Science*, 106, 874-878.

Book Chapters

Indu, Rania; Chakraborty, Alina; Sengupta, Sumita and **Sengupta, Tapas Kumar**. 2013. "Regulation of Gene Expression through mRNA Stability: Implications in Cancer Development and Therapeutics" in *Recent Trends in Gene Expression*, edited by Subhrangsu S. Mandal, Chapter 4, Nova Science Publishers, Hauppauge, NY, USA, Hauppauge, NY, USA. 9781626186804.

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5.1.3

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5.1.4 Department of Mathematics and Statistics

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5.2 Student Publications

Journal Articles

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5.3 Staff Publications

Journal Articles

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* These papers appear in more than one Departmental Publications List because of co-authors from different departments.



STUDENT ACTIVITIES

6. Student Activities

One hostel block, the Netaji Subhas Chandra Bose Hall, was handed over in July 2013, and the students occupied the hostel in July 2013. Another hostel block, the Ishwar Chandra Vidyasagar Hall, became fully functional from January 2014. Thus, all the students of IISER Kolkata now reside in the permanent campus. The dining block attached to the hostels also has a few commercial establishments and facilities for students' extracurricular activities, in addition to a large lecture hall.

A students' self-governance system has been developed at IISER Kolkata. In this system, students' extracurricular activities are organized through 18 "Clubs" which function under the supervision of an apex students' body—the Gymkhana. The Gymkhana is responsible for every aspect of the students' well being, and represent the student community in every Institute-level committee where decisions related to students' welfare are taken. The Gymkhana functions mainly through the Students' Council, an elected representative body headed by an Executive Committee. The Gymkhana also has subcommittees—like the hostel committee, canteen committee, etc., to look after specific affairs. The students' council is made up of the Club office bearers and the members of the subcommittees, and looks after various aspects of students' administration and Club activities, and have representation from across the student body of IISER-K.

A very large number of activities were organized by the Clubs and subcommittees in the year 2013-14. The **Arts Club** organized painting exhibition, face painting competition, Rangoli, still-life painting, and an art-camp at Shantiniketan. The **Athletics Club** organized Kabaddi and Kho-Kho tournaments in addition to the annual athletics meet. The **Badminton Club, Basketball Club, Chess Club, Volleyball Club, and Table Tennis Club** organized tournaments in the specific areas. The **Cricket Club** organized an IPL-type tournament in addition to an Inter-batch cricket tournament. The **Dance Club** organized an annual dance night, a Salsa workshop, and a DJ night. The **Dramatics Club** organized a 24-hour drama festival and an annual drama night. The **Football Club** organized two football tournaments: inter-batch and inter-club. The **Gym and Bodybuilding Club** took initiative to equip the Gym and enthused students to use it. The **Literary Club** organized a quiz competition, a story writing competition, an annual debate, Spelling Bee test, and a visit to Shantiniketan. The **Movie Club** screened good movies throughout the year. The **Music Club** organized a Karaoke night and a classical music night. The **Nature club** organized many events including documentary screening, Herpetology workshop, Ecoquizzitive, bird watch, visit to Shanti Beel, trip to the Sunderbans, interactive bird watching trip cum competition, and a nocturnal trip through the campus to observe night-wildlife. The **Photography Club** organized a photo exhibition, and a Sunderban trip. The **Science Club** organized numerous sky-watching sessions with telescope, a colloquium, a rocket making competition, and many science projects. The **Trekking Club** organized a trekking workshop, and a trekking trip to Dooars.

The flagship event started by the students of the IISER Kolkata is the **Inquivesta**—the only science fest in the country. This year the Inquivesta was held from 7th to 9th March, and featured innovative events like I-Think (out of the box science questions), Biomimetics (nature-inspired model making), Art in a Culture (painting using bacterial culture), Codathon (coding competition), Exzib (poster presentation featuring students' research), CSI (Crime Scene Investigation), LOST (Land of Secret Treasures), Junkyard Wars (making useful things using junk) and Thrust (water rocketry), Bot Prix (a robotics event), and GNQ (the grand quiz). Many students from colleges and universities took part in the Fest.

Last year the students of IISER Kolkata had initiated the Inter-IISER Sports Meet. This year the 2nd edition of the Inter-IISER Sports Meet was hosted by IISER Pune. The performance of IISER Kolkata in the 2nd edition was quite impressive: Gold in Boys' Table Tennis, Silver in Boys' Badminton, Silver in Football, Bronze in Boys' 100m race, Bronze in Girls' Javelin throw, and Bronze in Girls' Table Tennis.

The SPICMACAY chapter at IISER Kolkata started its activities in the Spring semester of 2014. Two programmes were held this semester:

1. On 29th January, Pandit Kaushal Das gave a sitar recital.
2. On 18th March, Smt. Sharmila Biswas and her team gave a Odissi dance performance.

Both the programmes were lecture-demonstration type, from which the students could learn many things about Indian classical music and dance.





MAJOR INITIATIVES

7. Major initiatives during Financial Year 2013-14

MathBio

A group of faculty members, Dr. Anirban Banerjee, Dr. Anandamohan Ghosh, Dr. Koel Das, Dr. Rumi De, Dr. Shree Prakash Pandey, Prof. Soumitro Banerjee and Dr. Supratim Sengupta, are actively participating to promote the Mathematical and Computational Biology. They are from various Departments in IISER Kolkata and broadly working in the area of Mechanobiology, Computational and Cognitive neuroscience, Nonlinear Modeling of Biological Systems, Network Biology and Evolution. The Facility for Mathematical-Biology (FMB) in IISER Kolkata is initiated by them.

The selection of IISER Kolkata as the nodal institute in the Eastern-India zone for the project National Network for Mathematical and Computational Biology funded by the Science and Engineering Research Board (SERB), Government of India is one of the recent achievements of this group. Initially Rs. 52.37 lakh has been sanctioned by SERB to IISER Kolkata for next 3 years. The aim of this project is to popularize Mathematical and Computational Biology at all levels and especially among the undergraduate student community to make them aware of the exciting research opportunities that exist in this field. The following activities are being organized as part of this project:

1. Lecture Programmes in various colleges/universities.
2. National Visitors Programme to invite researchers to visit IISER Kolkata for upto one month.
3. Foreign Visitors Programme to invite internationally renowned scientists working in the area to visit IISER Kolkata for a period of upto one month.
4. Internship Programme for short-term training of young researchers.
5. Short Workshop:
 1. Foreign Visitors Programme in 2014: The visitor visited until now:
 - a. Prof. Eduardo Massad (School of Medicine, University of São Paulo, Brazil) in February 2014.
 2. Colloquium in 2014:
 - a. A talk on Philosophy of Mathematical Modeling of Epidemics by Prof. Eduardo Massad on 13th February 2014.
 3. Internship Programme for 2014: 14 interns have been chosen for 2014 and they will start their internships from May onwards.

OUTREACH



8. Outreach

8.1 IISER Kolkata initiatives for the promotion of Science to Society

The faculty and staff members of the institute regularly take part in various outreach programs for the promotion of science to the society. These include various lectures in the schools and colleges, organizing workshop and seminars on science in various fairs. A few of the IISER Kolkata outreach events are listed below.

8.2 NCERT sponsored Nurturance Program

From December 9 to 13, 2013, the institute organized the NCERT sponsored Nurturance Program for the National Talent Search Awardees. The five-day program was conducted with the active support from the students, staff and faculty members from IISER Kolkata. A total 25 resource persons (from IISER Kolkata as well as from other institutions from Kolkata) were involved in this nurturance program. There were several lectures organized in the fields of Physics, Chemistry, Mathematics, Biology and Earth Sciences. Laboratory visits and field trip were also organized. In addition to the regular scientific programs, the IISER Kolkata students organized various interactive programs and documentary shows in the evening for the young minds. All participants were given a participation certificate and a book on general scientific interest.



8.3 Science Day 2014

National Science Day was celebrated at IISER Kolkata on February 28, 2014. Schools from several districts took part in the celebration. Fascinating talks on science were presented by Dr. Dibyendu Nandi and Prof. Soumitro Banerjee. There was spectacular chemical magic show by the students of the Department of Chemical Sciences. Fossils and geological samples by the Department of Earth Sciences, demonstration on renewable energy and live-viewing of sunspots by the Department of Physical Sciences, migration of ant colony by the Department of Biological Sciences captivated the students. The program was concluded by an in-depth lecture on the lives of several Indian scientists by Prof. Kankan Bhattacharjee. The participating schools were given a set of books on science for their school libraries. The program was coordinated by Dr. Subhajit Bandyopadhyay.



8.4 Excellence on tour

IISER Kolkata had active participation in The Excellence on Tour Road Show organized by the German House for Research & Innovation - New Delhi at the Science City Kolkata on March 22, 2014. The event was inaugurated by the German Consul General in Kolkata - Mr. Rainer Schmiedchen, the Director of IISER Kolkata - Prof. Dr. R. N. Mukherjee, the Director of the Max Planck Institute for Solar System Research in Göttingen - Prof. Dr. Laurent Gizon, Deputy Director General, BMBF - Mr. Maximilian Metzger DFG Vice President - Prof.

Dr. Dorothea Wagner, and Dr. Jörg Schneider, Head of Division International Cooperation, DFG. The program consisted of exhibitions, hands on workshops, lectures, quizzes and cultural events. A satellite program was held at the IISER Kolkata Mohanpur Campus on March 24, 2014 with active participation of the students and faculty members.



A lecture by Prof. S. J. O'Brien, Chief Scientific Officer, Theodosius Dobzhansky Center for Genome Bioinformatics, St. Petersburg, Russia, was jointly hosted by IISER Kolkata and NIBMG, Kalyani on February 24, 2014.

A public lecture by Dr. Anita Sengupta, NASA Jet Propulsion Laboratory at the Science City Kolkata was cohosted by CESSI - IISER Kolkata on August 13, 2013. The talk with the title, "Curiosity's Entry Descent and Landing on Mars", drew a large volume of audience.



KEY COMMITTEES

9. Key Committees

9.1 Board of Governors

The following are the members of the Board of Governors:

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Government of India

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Professor
Indian Institute of Science Education and Research Kolkata

Two eminent scientists to be nominated by the Council, *Members*

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Ministry of Human Resource Development
Government of India

Shri Joydeep Sil, *Secretary*
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Indian Institute of Science Education and Research Kolkata

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Department of Inorganic Chemistry
Indian Association for the Cultivation of Science

Shri A N Bokshi, Member

Consultant
Ministry of Human Resource Development
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Indian Institute of Science Education and Research Kolkata

9.3 Senate

The following are the members of the Senate:

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Indian Institute of Science Education and Research Kolkata

Prof. Soumitro Banerjee, Member

Professor
Dean, Student
Indian Institute of Science Education and Research Kolkata

Prof. Prasanta K. Panigrahi, Member

Professor
Dean, Faculty
Indian Institute of Science Education and Research Kolkata

Prof. Narayan Banerjee, Member

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Prof. Amitava Datta, Member

(Till 21.06.2013)
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Indian Institute of Science Education and Research Kolkata

Prof. Asok Kumar Nanda, Member

(From 27.03.2014)
Professor
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Prof. Somnath Dasgupta, (on lien), Member

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(Till 10.09.2013)
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9.4 Research Advisory Committee

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