



# ANNUAL REPORT

2014-15



**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)**



# ANNUAL REPORT

## 2014 - 2015

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH KOLKATA

Prepared by  
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Published by the Director  
**IISER Kolkata**



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## Preface

I am happy to present the Annual Report of Indian Institute of Science Education and Research (IISER) Kolkata for the Financial Year 2014-15 highlighting the activities and achievements of the Institute for perusal of all the stakeholders. This is a chronicle of our growth in the last year, as well as a document of our accountability.

IISER Kolkata continues its exemplary performance in all aspects of its mandate. Our accomplishments, since inception in 2006, reflect the strength of our vision, mission, and core values. Today, IISER Kolkata is positioned to become a knowledge centre for value-addition in the country.

IISER Kolkata has dedicated its efforts to nurture students and research scholars who will contribute to society by advancing knowledge and imparting it to new generations of students. The core values of IISER Kolkata lie in its quality academic programmes, the future goals of our graduating students (BS-MS dual-degree), research scholars (MS-by-research, Integrated-PhD, PhD), and postdoctoral fellows, the research output, and outreach activities.

We scheduled our Second Convocation on 20 June 2014. Prof. K. VijayRaghavan, FRS (Secretary, Department of Biotechnology, Government of India) was our Chief Guest. A total of 75 BS-MS, 9 Integrated-PhD, and 21 PhD students graduated in 2014. I am happy to mention here that the total number of students graduated so far from IISER Kolkata is 270 (BS-MS 224; IPhD 9; PhD 37). In our Second Convocation we conferred Doctor of Science *Honoris Causa* to Prof. Ashoke Sen, FRS (HRI, Allahabad).

IISER Kolkata's contribution to science is measured by the increased number of PhD scholars it attracts and the quality of publications in peer-reviewed journals. Currently, we have about 230 PhD students on roll. Limitations of laboratory space and campus accommodation have restricted the number. However, to overcome this hurdle, we are in the process of creating additional infrastructure (a new student hostel, laboratory space etc.) which will enable us to add more students by mid-2016.

Currently, IISER Kolkata has 581 students in our BS-MS, 125 in IPhD, 8 in MS- by-Research, 231 in PhD programmes, and 25 post-doctoral fellows. It is evident that the academic program of IISER Kolkata is going strong, as expected. Many of our students achieved the opportunity to present papers at national and international seminars and conferences.

I am particularly pleased with the research output of the faculty members during the current year. The faculty members have received grants to the tune of approximately 13 crores from various funding agencies, against sanctioned grants of 52 crores, published approximately 200 papers in national and international journals of repute, including in *Nature Chemistry*, *Physical Review Letters*, *Scientific Reports*, *J. Virology* etc. Currently, we have regular faculty strength of 80 (Assistant Professors 42, Associate Professors 33 (one is on lien), Professors 5 (one is on deputation) and 7 Assistant Professors (on contract). In addition, we have 2 Ramanujan and 4 INSPIRE faculty fellows. We have a total of 63 regular non-teaching staff members for the smooth running of the institute.

I congratulate our faculty colleagues and students for their achievements, which have brought laurels to IISER Kolkata and wish them all success in their future endeavours. Many faculty members received awards/recognitions within India and from abroad, as reported in details in this report. Our undergraduate and postgraduate students have also received many prestigious grants/ scholarships/ awards during the current year which are also detailed in this report.

The 'Foundation Day' lecture of IISER Kolkata was delivered by Prof. Ashoke Sen, FRS (HRI, Allahabad) on 25 August 2014. It was highly appreciated by the entire IISER Kolkata scientific community. Prof. C.N.R. Rao, FRS, Bharat Ratna, inaugurated our new Research Complex in the permanent campus at Mohanpur on 27 September 2014. Construction and related works of entire 'Research Complex' is expected to be completed by July 2015.

The construction of Administrative Block-cum-Academic Complex, Director's residence, guest house, girl's hostel, campus school is in full swing. Construction of faculty and non-teaching staff housing, auditorium, animal facility, biome, student's activity centre etc. is underway. We are also paying our utmost efforts to make IISER Kolkata campus 'Clean and Green'. We plan to complete IISER Kolkata campus by July 2016. The construction work in the permanent campus has given a sense of security and certainty of release from functioning from transit campus since 2009.

IISER Kolkata also organized a number of events throughout the year in order to involve the institute community in various national missions and initiatives. This included 'Rashtriya Ekta Diwas' which was organized to celebrate Sardar Vallabhbhai Patel's Birth anniversary on 31 October 2014, as a mark of honor to Sardar Patel for his remarkable contributions to maintaining India's unity, safety and security. IISER Kolkata organized 'Rastriya Ekta Run' to spread the message of unity, safety and security and administered the 'Ekta Diwas Pledge' to maintain unity and integrity of our nation.

'Bal Swachhta Mission' was held on the occasion of Children's Day (Bal Divas) on 14 November 2014, the birthday of Pandit Jawaharlal Nehru. In this programme, children were sensitized and involved in different aspects of hygiene and safe sanitation. Our pre-school BUD had taken an active part in this mission within the school premises. 'International Students Day' was observed on 17 November. In the spirit of the International Students Day, IISER Kolkata organized a students' forum to discuss ideas on – "Shikshit Bharat, Saksham Bharat" – quality education for all. The forum was hosted to encourage the students to discuss about new ideas on quality education as an opportunity to help in the framing of new initiatives in education.

In compliance with the launch of 'Swachh Bharat Abhiyan' on 2 October 2014, Mahatma Gandhi's birthday, IISER Kolkata administered the Cleanliness Oath (Swachhta Shapath) to all its employees as well as students on 2 October 2014. After the pledge, cleaning activities inside the campus were undertaken by the participants with much zeal and enthusiasm.

'Good Governance Day' was observed at IISER Kolkata on 23 December 2014. Students, faculty members, and staff members attended a seminar on the topic "Use of Technology and Innovations in promoting Good Governance". There was also an oratory competition ('Bhaasha Shailee') with active participation by staff members and students where cash prizes were awarded to the best orators.

IISER Kolkata was honoured to host the Science Camp (VIJYOSHI), under the aegis of KVPY, INSPIRE and the Department of Science & Technology, Government of India during 10-12 November 2015. The number of participants from all over India was 493. The programme included inspiring lectures to motivate young minds towards basic sciences in the 'Science City' auditorium in Kolkata and a day was devoted to demonstrate interesting and appealing laboratory experiments at our permanent campus. Truly speaking, it was a grand success. This was followed by visit of a group of students and accompanying teachers of the north-eastern states of India to our campus as a part of our outreach programme. IISER Kolkata also took part in International Conference on Structural Chemistry of Molecules and Materials (SCOMM-2014), Indo-German Conference on Bio-inspired Chemistry (IGCBIC-2014) and Chemical Frontiers 2014 as its outreach activities.

Dr. T. Ramasami, former Secretary, Department of Science & Technology spent about 2 weeks at IISER Kolkata to interact with faculty and students during November-December of 2014. He delivered a series of lectures on excellence and relevance in research and systems of global ranking in research and development field. The lectures were highly appreciated by the institute community.

IISER Kolkata hosted the prestigious 'Asian Academic Seminar and School-2015' during 6-10 March 2015. We organized lectures at the Indian Association for the Cultivation of Science, Kolkata, EZCC, Salt Lake, Kolkata, and IISER Kolkata permanent campus. The total number of participants was 165, including 41 speakers/poster presenters from Japan and 124 from India. It has been a great success story.



The scheduling of department-level and institute-level seminar/colloquia have increased, as desirable. Many distinguished personalities from various walks of life have visited the Institute during the year and expressed their satisfaction with the progress of the Institute, not only on academic matters but most importantly on 'campus building' initiatives. Interaction with them gave opportunities particularly to our students for realizing the research opportunities of their fields.

The celebration of the annual 'Department Day' by the five departments of IISER Kolkata has now matured into a major science outreach activity.

Our students – 96 in number – participated in 'Inter-IISER-Sports Meet-2014' at IISER Mohali and in few events performed very well.

We have entered a new phase of growth and development. With the combined efforts of faculty members, non-teaching staff, and student community, I am sure that we will do better in the years to come.

I take this opportunity to express our sincere gratitude to the MHRD for advisory and financial support, and the Board of Governors, the Finance Committee, the Academic Senate, the Building and Works Committee for providing direction and guidance. I also would like to thank the Deans, Head of the Departments, and the Registrar and his team for the hard work to run the Institute.

Finally, I would like to thank the Annual Report Committee for making the report on time.



**(R N Mukherjee)**  
*Director*







# THE IISER KOLKATA COMMUNITY

# 1.1

## Staff Members

## Faculty Members

### Professors

---

**Rabindra Nath Mukherjee** (DCS)

DIRECTOR

FNA, FASc, FRSc

Inorganic Chemistry and Bioinorganic Chemistry

PhD - Chemistry

University of Calcutta, 1983

---

**Somnath Dasgupta** (DES)

(on Deputation w.e.f. 22.06.2012)

FNA, FNASc, FASc, FTWAS

Geochemistry, Petrology

PhD - Geology

Jadavpur University, 1979

---

**Asok K. Nanda** (DMS)

Reliability, Statistics

PhD - Statistics

Panjab University, Chandigarh, 1998

---

**Prasanta K. Panigrahi** (DPS)

FNASc

Field Theory

PhD - Field Theory

University of Rochester, New York, USA, 1988

---

**Narayan Banerjee** (DPS)

Gravitation & Cosmology

PhD - Physics

Jadavpur University, 1986

---

**Soumitro Banerjee** (DPS)

FNA, FNASc, FASc, FNAE, TWAS, Fellow IEEE

Nonlinear Dynamics

PhD - Electrical Engineering

Indian Institute of Technology Delhi, 1988

---

### Associate Professors

---

**Tapas Kumar Sengupta** (DBS)

mRNA Stability, Gene Regulation, Bioremediation

PhD - Biochemistry

University of Calcutta, 1996

**Jayasri Das Sarma (DBS)**

Neural Cell Biology, Neuro Science

PhD - Immunology/Biochemistry

Jadavpur University, 1995

**Annagiri Sumana (DBS)**

Behaviour and Ecology

PhD - Dominance Hierarchy in a Social Wasp

Indian Institute of Science (Bangalore), 2002

**Punyasloke Bhadury (DBS)**

Marine Microbiology, Climate Change and

Ocean Acidification, Microbial Ecology

PhD - Biological Sciences

Plymouth Marine Laboratory

(University of Plymouth), 2005

**Sanjio Shankarrao Zade (DCS)**

Organic Electronics Materials

PhD - Chemistry

Indian Institute of Technology Bombay, 2004

**Swadhin Kumar Mandal (DCS)**

Organometallic Catalytic Transformations,

Nanomaterials,

PhD - Chemistry

Indian Institute of Science Bangalore, 2002

**Balaram Mukhopadhyay (DCS)**

Synthetic Organic Chemistry (Carbohydrate),

Glyco-nanotechnology

PhD - Chemistry

Indian Association for the Cultivation of Science /

Jadavpur University, 2001

**Pradip Kumar Ghorai (DCS)**

Computational and Theoretical Chemistry

PhD - Computational Chemistry

Indian Institute of Science, Bangalore, 2005

**Amlan Kusum Roy (DCS)**

Theoretical Chemistry

PhD - Theoretical Chemistry

Panjab University, Chandigarh, 1998

**Debasish Halder (DCS)**

SupraMolecular Bio Organic Chemistry

PhD - Chemistry

Indian Association for the Cultivation of Science/

Jadavpur University, 2005

**Chilla Malla Reddy (DCS)**

Supramolecular Chemistry, Crystal Engineering

PhD - Crystal Engineering

University of Hyderabad, 2006

**Subhajit Bandyopadhyay (DCS)**

Photochromic Materials; Biomimetic Chemistry

PhD - Chemistry

University of Victoria, British Columbia,

Canada, 2004

**Pradipta Purkayastha (DCS)**

Photochemistry and Spectroscopy

PhD - Photophysics and Photochemistry

Jadavpur University, 2002

**Arindam Mukherjee (DCS)**

Metal Complexes, Magnetism, DNA Cleavage,

Anti-cancer Agents, Metalloproteins, Microcalorimetry

PhD - Chemical Sciences

Indian Institute of Science, 2005

**Priyadarsi De (DCS)**

Polymer Chemistry

PhD - Polymer Chemistry

Indian Institute of Science, Bangalore, 2002

**Venkataramanan Mahalingam (DCS)**

Luminescent Nanomaterials &amp; Nanocomposites

PhD - Chemistry

Indian Institute of Technology (IIT),

Madras, India. 2001

**Raja Shunmugam (DCS)**

Polymer Chemistry

PhD - Chemistry

Indian Institute of Technology, Madras, 2003



**Supriyo Mitra (DES)**

Seismology, Continental Tectonics  
PhD - Geophysics  
Department of Earth Sciences  
(University of Cambridge), 2004

**Ravikant Vadlamani (DES)**

(On-lien w.e.f. 15.06.2014)  
Crustal Evolution, Isotope Geochemistry and  
Geochronology  
PhD - Earth Science  
NGRI/Osmania University, Hyderabad, 2002

**Tarun Kumar Dalai (DES)**

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

**Prasanta Sanyal (DES)**

Paleoclimatology, Paleomonsoon,  
Paleoecology, River Response to Climate  
PhD - Geology Physical Research Laboratory,  
Ahmedabad, 2004

**Ananda Dasgupta (DPS)**

Quantum Phenomena  
PhD - Physics  
Jadavpur University, 2001

**Bipul Pal (DPS)**

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

**Chiranjib Mitra (DPS)**

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

**Rajesh Kumble Nayak (DPS)**

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

**Amit Ghosal (DPS)**

Condensed Matter Physics (Theory)  
PhD - Physics  
Tata Institute of Fundamental Research,  
Mumbai, 2001

**Satyabrata Raj (DPS)**

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

**Goutam Dev Mukherjee (DPS)**

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

**Subhasis Sinha (DPS)**

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

**Dibyendu Nandi (DPS)**

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

**Ayan Banerjee (DPS)**

Precision Optical Spectroscopy;  
Optical micromanipulation  
PhD - Physics IISc, Bangalore, 2005

**Nirmalya Ghosh (DPS)**

Optics & Spectroscopy, Biophotonics  
PhD - Physics  
Raja Ramanna Centre for Advanced Technology,  
Indore, 2005

**Supratim Sengupta (DPS)**

Complex Systems, Biophysics,  
Computational Biology & Bioinformatics  
PhD - Physics  
Institute of Physics (Utkal University), 2000

## Assistant Professors

---

**Partho Sarothi Ray (DBS)**

Molecular Biology, Translational Control,  
RNA-Protein Interactions  
PhD - Molecular Virology  
Indian Institute of Science,  
Bangalore, 2005

---

**Partha Pratim Datta (DBS)**

Structural & Molecular Biology  
PhD - Molecular Biology  
Indian Institute of Chemical Biology,  
Jadavpur University, 2002

---

**Mohit Prasad (DBS)**

Cell and Developmental Biology  
PhD - Biology  
Center for Cellular & Molecular Biology (CCMB),  
Hyderabad, India, 2005

---

**Anuradha Bhat (DBS)**

Community Ecology, Biodiversity and Conservation,  
Zebrafish Behavioural Ecology  
PhD - Ecological Sciences  
Indian Institute of Science, Bangalore, 2002

---

**Robert John Chandran (DBS)**

Tropical Forest Ecology  
PhD - Tropical Forest Ecology  
Indian Institute of Science, Bangalore, 2001

---

**Rupak Datta (DBS)**

Biology of Diseases  
PhD - Biochemistry & Molecular Biology  
Indian Institute of Chemical Biology, 2006

---

**Sankar Maiti (DBS)**

Actin Cytoskeleton  
PhD - Biology  
Institute of Microbial Technology, Chandigarh,  
Punjab University, 2003

---

**Rituparna Sinha Roy (DBS)**

Engineering Biomimetics for Therapeutic Interests,  
Nanobiotechnology  
PhD - Biology  
Indian Institute of Science, Bangalore 2005

---

**Malancha Ta (DBS)**

Molecular characterization and differentiation of  
Mesenchymal Stem Cells Isolated from Human  
Umbilical Cord/Bone Marrow/Adipose Tissue  
PhD - Life Sciences (Virology)  
National Institute of Immunology (NII),  
New Delhi, 2000

---

**Shree Prakash Pandey (DBS)**

Molecular Ecology, Systems Biology, Small-RNA  
Mediated Gene Regulation  
PhD - Biology  
Max Planck Institute for Chemical Ecology and FSU,  
Jena, Germany, 2007

---

**Supratim Datta (DBS)**

Biochemical Engineering and Bioenergy,  
Bioinorganic Chemistry  
PhD - Chemistry  
Boston University, Boston, 2005

---

**Bidisha Sinha (DBS)**

Biophysics  
PhD - Biology  
National Centre for Biological Sciences - TIFR,  
Bangalore, 2007

---

**Amirul Islam Mallick (DBS)**

(w.e.f. 04.08.2014)  
Understanding the Mechanism of Molecular  
Components Involved in Host-Pathogen Interaction  
PhD - Biotechnology  
Aligarh Muslim University, 2008

---

**Rahul Das (DBS)**

(w.e.f. 15.10.2014)  
Understanding the Mechanism of Signal Transduction  
across the Plasma Membrane  
PhD - Biochemistry and Biomedical Sciences  
McMaster University, Ontario, Canada, 2008

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---

**Sumit Khanra (DCS)**

Bioinspired Water Oxidation towards Energy,  
Small Molecules and C-H bond Activation,  
Nanomagnetism, Organometallic Chemistry  
PhD - Chemistry  
Max-Planck Institute for Bioinorganic Chemistry,  
Germany

---

**Prasun Kumar Mandal (DCS)**

Single Molecule Spectroscopy, Microscopy and  
Ultrafast Fluorescence Dynamics of Chemical,  
Biological and Material systems  
PhD - Fluorescence Spectroscopy  
University of Hyderabad, 2006

---

**Sayan Bhattacharyya (DCS)**

Materials Chemistry, Nanotechnology  
PhD - Solid State Chemistry  
Indian Institute of Technology Kanpur, 2006

---

**Ashwani Kumar Tiwari (DCS)**

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

---

**Debasish Koley (DCS)**

Computational Chemistry  
PhD - Computational Chemistry  
Max-Planck-Institute for Coal Research, Mülheim an  
der Ruhr, Germany, 2005

---

**Soumyajit Roy (DCS)**

Soft-Oxometalates (FOMs),  
Poly-Oxometalates (POMs)  
PhD - Chemistry  
University of Bielefeld, Germany, 2005

---

**Debansu Chaudhuri (DCS)**

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

---

**Sujata Ray (DES)**

Environmental Science and Engineering  
PhD - Environmental Engineering and Water  
Resources, Princeton University, 2007

**Manoj Kumar Jaiswal (DES)**

Geomorphology, Quaternary Geochronology,  
Palaeoseismics and Palaeoclimatic Studies  
PhD - Geology  
Maharaja Sayajirao University of Baroda,  
Vadodara, Gujarat, 2006

---

**Devapriya Chattopadhyay (DES)**

Invertebrate Paleontology  
PhD - Geology  
University of Michigan, 2009

---

**Kathakali Bhattacharyya (DES)**

Structural Geology  
PhD - Geological Sciences  
University of Rochester, USA, 2010

---

**Saugata Bandyopadhyay (DMS)**

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

---

**Subrata Shyam Roy (DMS)**

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

---

**Anirban Banerjee (DMS)**

Spectral Graph Theory; Structure and Evolution of  
Biological Networks;  
Human Brain Functional Networks  
PhD - Mathematics  
Max Planck Institute, University of Leipzig,  
Germany, 2008

---

**Koel Das (DMS)**

Biological and Machine Learning, Computational  
Neuroscience, Visual Perception, Feature Extraction  
and Pattern Classification, Brain-Computer Interface  
PhD - Electrical and Computer Engineering  
University of California, Irvine, 2003

---

**Satyaki Mazumder (DMS)**

Outlier Detection in High Dimensions  
PhD - Statistics  
University of Texas at Dallas, 2010

**Sriram Balasubramanian (DMS)**

Functional Analysis  
PhD - Mathematics  
University of Florida, 2010

**Shibananda Biswas (DMS)**

Operator Theory, Multivariable Operator Theory  
PhD - Mathematics  
Indian Statistical Institute, Bangalore, 2011

**Partha Mitra (DPS)**

Magnetism in Mesoscopic Systems and Spintronics  
Application  
PhD - Physics  
University of Florida, 2006

**Dhananjay Nandi (DPS)**

Laser-Electron-Molecule Collisions,  
Photoelectron/Photoion Imaging Spectroscopy,  
Ultrafast Electron Dynamics in Solid Surfaces and  
Interfaces  
PhD - Molecular Physics  
Tata Institute of Fundamental Research,  
University of Mumbai, 2004

**Arindam Kundagrami (DPS)**

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

**Bhavtosh Bansal (DPS)**

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

**Siddhartha Lal (DPS)**

Low-dimensional Quantum Condensed Matter  
Systems  
PhD - Physics  
Indian Institute of Science, Bangalore, 2003

**Anandamohan Ghosh (DPS)**

Non-linear Dynamics;  
Mathematical and Theoretical Biology  
PhD - Physics  
National Chemical Laboratory,  
Pune University, 2003

**Golam Mortuza Hossain (DPS)**

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

**Rangeet Bhattacharyya (DPS)**

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

**Rumi De (DPS)**

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

**Ritesh Kumar Singh (DPS)**

High Energy Physics  
PhD - Physics  
Indian Institute of Science, Bangalore, 2006

**Prashanth C Upadhyay (DPS)**

(Upto 01.08.2014)  
Terahertz Spectroscopy,  
Ultrafast Phenomena in Condensed Matter and  
Nanophotonics  
PhD - Physics  
University of Cambridge, 2004

**Assistant Professors**

*(on Contract)*

**Anindita Bhadra (DBS)**

Animal Behaviour, Evolution, Ecology  
PhD - Animal Behaviour  
Indian Institute of Science,  
Bangalore, 2008



**Sukant Khurana (DBS)**

[w.e.f. 28.07.2014]

Neuroscience, Drug Discovery,  
Biotechnology and Study of Complex Biological  
and Non-Biological Systems.

PhD - Neuroscience

The University of Texas, Austin, USA, 2009

**Mousumi Das (DCS)**

Computational and Theoretical Chemistry

PhD - Computational Chemistry

Indian Institute of Science, 2006

**Sureshkumar Devarajulu (DCS)**

[w.e.f. 23.02.2015]

C-H bond activation, Asymmetric metal and  
organocatalysis, Asymmetric Halofunctionalization of  
Olefins, Visible Light Photocatalysis

PhD - Synthetic Organic Chemistry

Indian Institute of Science, Bangalore, 2007

**Jitendra Kr. Pattanaik (DES)**

Application of Cosmogenic Radionuclides in  
Geosciences

PhD - Earth Sciences

Pondicherry University, 2010

**Kajaljyoti Borah (DES)**

[w.e.f. 11.08.2014]

Shallow crustal structure and High resolution  
tomographic image using Ambient Noise, Crust and  
Mantle anisotropy, Mantle Transition Zone (MTZ),  
Lithosphere- Asthenosphere Boundary (LAB)

PhD - Applied Geophysics

Indian School of Mines, Dhanbad, 2013

**Himadri Mukherjee (DMS)**

(Upto 14.12.2014)

Algebraic Geometry, Commutative Algebra

PhD - Mathematics

Northeastern University, Boston, 2008

**Veerendra Vikram Awasthi (DMS)**

(Upto 27.05.2014)

Algebraic Topology

PhD - Mathematics

Harish-Chandra Research Institute, Allahabad, 2008

**Buddhananda Banerjee (DMS)**

[w.e.f. 01.08.2014]

Surrogate endpoint analysis in clinical trials,  
Change point problem, Goodness-of-fit test for  
censored data, Spatio-temporal data analysis

PhD - Statistics

Indian Statistical Institute, Kolkata, 2014

**Swarnendu Datta (DMS)**

[w.e.f. 19.12.2014]

Geometric Representation Theory of Unipotent  
Groups

PhD - Mathematics

The University of Chicago, 2011

## Fellows

**Guha Dharmarajan (DBS)**

Ramanujan Fellow

Theoretical and empirical aspects of population  
biology and disease ecology

PhD - Biology

Purdue University, 2008

**Sutapa Bose (DES)**

Ramanujan Fellow

Soil and Crop Science,

Soil Pollution and Solid Waste Management,  
Heavy Metal Pollution and Phyto-remediation

PhD - Environmental Sciences

Jawaharlal Nehru University, New Delhi, 2005

**Mithun Mukherjee (DMS)**

INSPIRE Fellow

Inclusion Systems and Amalgamated Product of  
Product Systems of Hilbert Spaces

PhD - Mathematics

Indian Institute of Science, Bangalore, 2010

**Argha Banerjee (DES)**

INSPIRE Fellow

Himalayan glaciers, Debris covered glaciers

Ph. D. - Physics

Tata Institute of Fundamental Research, Mumbai,  
2010

## Honorary Professors

**Pandit Ajoy Chakraborty**

ITC Sangeet Research Academy,  
Kolkata, India

**Raghavendra Gadagkar**

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

**Partha Pratim Majumdar**

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

**M. Ram Murty**

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

## Senior Scientific Officers

**Dr. Uday Kumar (DPS)**

PhD (University of Bombay, 2003)

**Dr. K. Srikanth (DCS)**

PhD (Indian Institute of Technology Bombay, 2001)

## Scientific Officers

**Dr. Parna Gupta Bhattacharaya (DCS)**

PhD - Chemistry (Jadavpur University, 2004)

**Indrajit Chatterjee (DCS)**

MSc, Physics

## Administrative Staff

**Joydeep Sil**

Registrar

**Prakash Hazarika**

Deputy Registrar (F&A)

**Shahid Ali Farooqui**

System Administrator

**Siladitya Jana**

Assistant Librarian

**Sanad Kumar Shukla**

Assistant Registrar

**Rana Bhadra**

Technical Officer

**Dr.Sushmita Bhattacharjee**

Assistant Registrar (Academics)

**Arnab Kumar Sadhukhan**

Technical Officer

**Sunita Bhattacharjee**

Technical Officer (Civil)

**Santanu Das Mahapatra**

Assistant Registrar

**Dr.Somraj Gupta**

Medical Officer

**Partha Banerjee**

Technical Officer (Electrical)

**Chinmay Sarkar**

Assistant Registrar (F&A) against lien vacancy

**Dew Prasad Ghosh**

Chief Security Officer (Resigned & relieved  
w.e.f 27.01.2015)

**Immanuel Alexander**

Private Secretary to Director (On lien)

**Debabrata Mazumder**

Asst. Engineer (Electrical)

**Shibajee Das**

Asst. Engineer (Civil)

**Arup Kumar Saha**

Office Superintendent

**Suraj Narayan Bordoloi**

Assistant Registrar (Officiating) R & D

**Arnab Chatopadhyay**

Tech/Scientific Assistant

**Saberi Sen**

Personal Assistant

**Shibnarayan Paul**

Accountant

**Sanjib Das**

Tech/Scientific Assistant

**Rajni Marick**

Tech/Scientific Assistant

**Sushanta Kumar Roy**

Library Information Assistant

**Mettu Vasudev**

Physical Education Instructor

**Santosh Ch. Das**

Scientific Assistant

**Abhinaba Basu**

Software Assistant

**Pitambar Naskar**

Library Information Assistant

**Subhankar Das**

Technical Assistant (Civil)

**Mitali Pal**

Personal Assistant

**Gopal Shankar Mukherjee**

Technical Assistant  
(Electrical)

**Ritabrata Ghosh**

Scientific Assistant

**Ganga Ram Roy**

Accountant (against lien vacancy)

**Surashree Dutta**

Junior Translator (OL) (JT (OL) w.e.f 31.10.2014

**Puskar Das**

Office Assistant (MS)

**Raju Sethi**

Office Assistant (MS)

**Sudip Mitra**

Lab Technician

**Himanshu Ghosh**

Office Assistant (MS)

**Ashok Das**

Office Assistant (MS)

**Prasanta K Bhui**

Office Assistant (MS)

**Sukhendu Chatterjee**

Office Assistant (MS)

**Debabrata Sutradhar**

Lab Technician

**Rupan Chandra Rakshit**

Lab Technician

**Piyali Bose**

Lab Technician

**Gour Gopal Paul**

Lab Technician

**Purabi Mondal**

Nursing Assistant (MS)

**Deepak Kumar Panigrahi**

Nursing Assistant (MS)

**Sharmistha Ghosh**

Office Assistant (MS) against lien vacancy

**Pintu Das**

Lab Assistant

**Sudhangsu Maity**

Lab Assistant

**Saroj Nayak**

Lab Assistant

**Aveek Chattopadhyay**

Lab Assistant

**Subhas Malo**

Attendant

**Sanjit Singh**

Attendant

**Ajay Kumar Das**

Attendant (Multi Skill)

**K. Dharma Rao**

Attendant (Multi Skill)

**Sujit Sarkar**

Attendant (Multi Skill)

**Shyamal Sana**

Attendant (Multi Skill)



## 1.2 Achievements of Staff Members



**Prof. Soumitro Banerjee**

*Professor  
Physical Sciences*

Elected as fellow of National Academy of Sciences (NASI), Allahabad, India. 2014

## Faculty Members

**Dr. Dibyendu Nandi**

*Associate Professor  
Physical Sciences*

Nominated as a member of the National Science Steering Committee (NSSC) for the formulation of a Science Programme entitled "Solar Terrestrial Atmosphere Research Programme (STARP)-India" of Indian Space Research Organization (ISRO), Bangalore. 2014



**Dr. Anindita Bhadra**

*Assistant Professor (on Contract)  
Biological Sciences*

Founder member of Indian National Young Academy of Science (INYNAS) approved by INSA Council in December, 2014

## 1.3 Administration Members



**Joydeep Sil**  
*Registrar*

Awarded 'Erasmus Mundus, India 4EU II' scholarship for participating in a professional development programme at the University of Porto, Portugal during the month of April 2014

## 1.4 Students Achievements

### **Jibin S.**

*Department of Biological Sciences (DBS)*

Awarded the 'Du Pre grant 2014' by the Multiple Sclerosis International Federation. Co-authored a poster, presented in ASM-Tribranch meeting entitled "3'-Sequencing of Novel ORF's of Varizella Zoster Virus Open Reading Frame" in the American Society of Microbiology (ASM) Tri-branch meeting in Durango, Colorado, United States.



### **Shibojyoti Das**

*Department of Earth Sciences (DES)*

Presented poster entitled "Effect of Hunger on Drilling Predation by Naticid Gastropods" published in the journal "Palaeogeography, Palaeoclimatology, Palaeoecology" in Geological Society of America Annual Meeting-2014, Vancouver, BC, Canada in October 2014

### **Rajashik Tarafder, M Sri Bhavya, Roopam K. Gupta, Sabyasachi Mukhopadhyay** *Department of Physical Sciences (DPS)*

Awarded SPIE Optics and Photonics Education Scholarship 2014.





**Pamir Nag**

*Department of Physical Sciences (DPS)*

Received the joint "Best poster" award from TIFR in the experimental poster session in the "20th National Conference on Atomic and Molecular Physics" held at Indian Institute of Space Science and Technology, Valiamala, Trivandrum on 9-12 December, 2014.

**Kamal Bauri**

*Department of Chemical Sciences (DCS)*

Received American Chemical Society Award for the best posters presented in the MACRO 2015 conference held from 23 January 2015 to 26 January 2015 at IACS-Kolkata.



**Mutyala Naidu Ganivada**

*Department of Chemical Sciences (DCS)*

Received American Chemical Society Award for the best posters presented in the MACRO 2015 conference held from 23 January 2015 to 26 January 2015 at IACS-Kolkata.

**Shashwat Kumar Singh**

*Department of Earth Sciences (DES)*

Selected for S N Bose Scholarship Programme 2015



**Sushovan Paladhi, PhD.***Department of Chemical Sciences (DCS)*

Awarded 1st Prize of "2014 Lilly Outstanding Thesis Awards". His thesis title was: "Stereoselective uncatalyzed and chiral triazole prolinamide catalyzed aldol reactions in aqueous media: Application towards the synthesis of tubulysins".

**Anurag Kumar***Department of Earth Science (DES)*

Received travel award to attend "International Symposium on Isotope Hydrology: Revisiting Foundations and Exploring Frontiers" to be held in Vienna, Austria, from 11 to 15 May 2015.

**Dipak Kumar Poria***Department of Biological Sciences (DBS)*

Awarded best oral presentation award for talk entitled "HuR protein acts as an "miRNA sponge" to bind microRNA-21 and rescue the translation of the pro-inflammatory tumor suppressor gene Programmed Cell Death 4 (PDCD4)" at 7th National RNA Meeting, 2014, at CSIR-Indian Institute of Chemical Biology, Kolkata.



## 1.5 Institute Achievements

IISER Kolkata was awarded 'Karyalaya Deep Smriti Chinha' by Rajbhasa Sansthan, New Delhi for implementation of official language policy of Government of India.

IISER Kolkata won the "RAJBHASHA Shield" for the year 2014 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 2014-15 are highlighted as follows:

1. Meetings:

- (i) Four meetings of the Board of Governors were held on 19.06.2014, 31.10.2014, 18.12.2014 and 19.02.2015
- (ii) Four meetings of the Finance Committee were held on 19.06.2014, 31.10.2014, 18.12.2014 and 19.02.2015
- (iii) Four meetings of the Senate were held on 16.06.2014, 08.10.2014, 12.12.2014 and 06.02.2015
- (iv) Four meetings of the Building and Works Committee were held on 15.05.2014, 03.09.2014, 12.12.2014 and 04.02.2015



*Doctor of science (Honoris Causa) to Prof. Ashoke Sen by the Director, IISER-K*

2. The Second Convocation of the Institute was held on 20 June 2014 at the permanent campus of IISER Kolkata. Prof. K VijayRaghavan, Secretary, Department of Biotechnology, Govt. of India graced the occasion as the Chief Guest. All the graduating students of '09 batch of BS-MS programme, Integrated PhD programme, MS by Research programme and PhD programme received their degrees at the Second Convocation. Special medals were also awarded to the best performing student, based on academic and extra-curricular performances.
3. Construction of the Lecture Hall Complex, the Research Complex and Electrical Sub-station II were completed during the year under report at the permanent campus of IISER Kolkata. The Administrative Office has also been moved from the transit campus to one floor of the Lecture Hall Complex.
4. The First Statutes of the IISERs have been published in the Gazette of India on 19 August 2014.
5. Prof. Ashoke Sen, HRI Allahabad delivered the 'Foundation Day' lecture of IISER Kolkata on 25 August 2014 and received the Doctor of Science, Honoris Causa.
6. IISER Kolkata organised a National Science (Vijoyshi) Camp during 10-12 November 2014 at Kolkata under the auspices of the KVPY fellowship scheme.
7. An MoU has been signed between IISER Kolkata and the Satikanta Guha Foundation, Kolkata, on 19 November 2014, for establishment of a Campus School at the permanent campus of IISER Kolkata.









RESEARCH &  
TEACHING

## 3.1

### Activities

#### 3.1.1

#### Department of Biological Sciences (DBS)



The Department of Biological Sciences, since its inception, has been striving to set up exemplary standards in areas of teaching and research. Our teaching courses for BS-MS and IPhD students have been designed to train and motivate students with diverse backgrounds in biological science and technology. The courses offered by the Department provide a strong platform in fundamentals of biology and encourage intellectual thinking to awaken an interest towards research in the mind of each student.

The Department is actively engaged in undertaking research activities in frontier areas of biological sciences including behavioural biology, cell and cancer biology, infection and immunity, neurobiology, plant molecular biology, structural biology, terrestrial and marine ecology, as well as on interdisciplinary themes such as biophysics and systems biology. Our department is well equipped with instrumentation facilities that include confocal microscope, apotome, epifluorescence microscopes with live cell imaging, FACS, real-time PCR systems, genetic analyzer and histopathology suite. The Department is also on the verge of setting up an institute level Animal House to support the growing need for biomedical research using animal model systems. In addition, the department has well equipped undergraduate teaching laboratories that are used for training BS-MS and IPhD students in advanced techniques in modern biology.

The Department of Biological Sciences is home to 51 PhD students, 26 IPhD students, 60 BS-MS students (Biology major), 5 postdoctoral researchers, 8 non-teaching staff members, 1 Ramanujan Fellow and 20 faculty members. Students who have graduated from the BS-MS program of this department have joined some of the top research institutions in this country and abroad and presently are pursuing their doctoral research. Also, several students who completed their PhD in the department have become postdoctoral researchers in reputed institutions in India and abroad.

The research work undertaken in this department has been published in some of the leading international journals including Journal of Virology, Oncogene, Journal of Biological Chemistry, Journal of Ethology, Animal Behaviour, Journal of Theoretical Biology, Journal of Nanobiotechnology, Molecular Biology and Evolution, PLoS One, Current Biology, Global Change Biology, Biomacromolecules, BMC Genomics, Environmental Science and Technology and Journal of Phycology. The Department has received extramural funding from different agencies including Wellcome-DBT India Alliance (2 Wellcome-DBT India Alliance fellowships), Department of Science and Technology (DST, Govt. of India) Department of Biotechnology (DBT, Govt. of India), Council of Scientific and Industrial Research and Ministry of Earth Sciences (MoES, Govt. of India).



The Department of Biological Sciences is also keen on outreach activities that allow us to connect with citizens, especially young students, regarding our research and teaching. We receive students from many institutions in India who like to learn about our work, and faculty members also pay visits to other institutions to speak about research and teaching activities undertaken by our department. During this year some of our faculty members participated in the camp for KVPY fellows of the eastern region of India. We also had several students from the north-eastern states of India visit us, and faculty members spoke to them about research and teaching in the departments and had extended discussions on possible opportunities for prospective students from the region. Similarly, several students from the West Bengal State University visited us and interacted with faculty and students in the biology department.





### 3.1.2

## Department of Chemical Sciences (DCS)



The Department of Chemical Sciences (DCS) of Indian Institute of Science Education and Research (IISER) Kolkata has embodied the institute's mission of excellence in both teaching and research. From a humble beginning in 2006, it has significantly expanded in strength, year by year. It is a matter of pride that currently DCS remains one of the largest departments of our Institute consisting of 104 PhD students, 22 Integrated PhD students, 46 BS-MS students (Chemistry major), 17 Post-doctoral Fellows, 3 Scientific Officers, 1 Professor, 13 Associate Professors, 7 Assistant Professors, 2 Assistant Professors (on contract) and 1 INSPIRE Faculty Fellow. We strive to impart high-quality education to the neophytes of science and future scientific leaders of our country.

The department continues to excel at undergraduate and graduate learning, diversity efforts and encourages student participation in research activity from a very nascent stage. A varied range of up-to-date and relevant courses such as chemical biology, chemistry of macromolecules, functional nanomaterials, materials chemistry, medicinal chemistry, bioinorganic chemistry, spectroscopy and microscopy, synthetic organic chemistry, supramolecular chemistry, theoretical and computational chemistry, etc., in addition to the traditional organic, inorganic and physical chemistry courses are offered. This helps to train the students from various branches of science with solid fundamentals, while propelling the inquisitive mind towards





exciting research directions ahead. We constantly explore and try to improve the standard of our teaching. Much attention is paid to incorporate the latest developments of respective fields in our curricula so that it challenges the young mind as well as enhances their fascination and love for chemistry.

In keeping with the basic objectives of IISER, we try to create and foster an academic environment where teaching and education is integrated with cutting-edge research. The department has considerable strength in core areas of physical, organic and inorganic chemistry as well as in interdisciplinary research topics at the boundaries with physics, biology and earth science. An extremely wide range of state-of-the-art instruments are available in different research groups and as central facilities of this department. This provides an intellectually vibrant atmosphere of research where important, challenging and timely questions are pursued by breaking the barriers of conventional disciplines.

The BS-MS and PhD students brought many laurels to the department and made tremendous contribution to our research effort. They received several awards at local and international conferences/workshops showcasing their talent and success of the department to a wider audience. It is a great pleasure to note that most of our BS-MS students have taken up PhD positions in some of the prestigious laboratories all around the world or are absorbed in Research and Development sector of various companies/industries. So far, 31 students earned their PhD from this department. They are either pursuing post-doctoral research in recognized laboratories across the globe or are employed as faculty in reputed Indian universities.

The department remains steadfast to uphold its standard of research output in terms of both volume and impact. High-quality research articles have appeared in leading international journals, which bear the mark of the department's commitment to address chemically relevant





### Major initiatives initiated by our Department

and challenging problems today. It remains devoted to facilitate interaction with institutions across the world and make strong ties with them, which results in successful collaboration. Our outreach program offers an excellent opportunity to share our achievements with others, especially the school and college students community. The level of interaction with our alumni has grown to bring greater diversity in our student body and the department takes opportunity to benefit from their ideas and constructive feedback. Another distinctive measure of our research success is reflected in the healthy amount of external funding procured by our department, thanks largely to Department of Science and Technology, Defence Research and Development Organization, Department of Biotechnology and Council of Scientific and Industrial Research for their generous support. To increase the funding, efforts are being made to approach the international funding bodies and industry.

The department has received funds worth of Rs. 590 lacs for a High Resolution Transmission Electron Microscope (HR-TEM) with Field emission gun under the DST "Fund for Improvement of S&T infrastructure" (FIST) program. HR-TEM will be established as a Central Facility at IISER Kolkata under the umbrella of DCS. The facility will benefit research work and contribute to the greater good through imaging of samples from sources of societal significance such as arsenic contamination, phyto nanotechnology, cancer therapy, etc., to name a few. This will also obviate the necessity of carrying out TEM imaging at other institutes on payment basis.

### 3.1.3

## Department of Earth Sciences (DES)



The department started its journey in 2007, a year after IISER-Kolkata was established. The Department of Earth Sciences is committed to building a community of researchers including students and faculty members dedicated to develop a modern centre for Earth Science education and research. The Department has nine regular faculty members: one Professor (on lien), four Associate Professors (one on lien), and four Assistant Professors. Additionally, the Department has three teaching and research personnel: one Assistant Professor on contract, one Ramanujan Fellow, and one DST INSPIRE Fellow.

The department has twenty nine BS-MS students, thirteen IPhD students, and twenty two PhD students. It offers twenty three theory courses, four interdisciplinary courses, and ten laboratory courses that are designed to train students in core areas of earth sciences, along with overlapping areas with other basic and applied sciences.

The research areas of the DES Faculty members include (a) Isotope Geochemistry, (b) Solid Earth Studies, (c) Paleoclimate, Paleoenvironment and Paleoecological studies, and (d) Environmental and Ecological studies in modern system. During this academic year, the Faculty members have developed new research and teaching facilities, viz. set up a small Earth and Environmental Sciences Teaching and Research Lab, OSL/TL Instrument etc.



## New Experimental Facilities Introduced

The Department organized its 3rd Annual Department Day, Convergence, on 14th March where distinguished geoscientists, from various institutes of India, presented their research work and interacted with students. The DES PhD students made oral as well as poster 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 admitted four students to the IPhD programme. It is gratifying to see that five of the graduated BS-MS students have qualified CSIR-NET, and three student's received PhD offers from various universities and Institutes and one IPhD student of the department was selected for the prestigious S.N. Bose Scholars Program.

### A. OSL/TL Instrument :

Luminescence dating is a chronometric method that has been used extensively in archaeology and the earth sciences. It is based on the emission of light (luminescence) by commonly occurring minerals, principally quartz. The method can be applied to a wide range of materials that contain quartz/feldspar or similar minerals. For pottery, burnt flints and burnt stones, the event being dated is the last heating of the objects. In the case of sediments, the event being dated is the last exposure of the mineral grains to daylight. The age range over which the method can be applied is from a century or less to over one hundred thousand years.

Radioactivity is ubiquitous in the natural environment. Luminescence dating exploits the presence of radioactive isotopes of elements such as uranium (U), thorium (Th) and potassium (K). Naturally occurring minerals such as quartz and feldspars act as dosimeters, recording the amount of radiation to which they have been exposed. A common property of some naturally occurring minerals (e.g. quartz) is that when they are exposed to emissions released by radioactive decay, they are able to store within their crystal structure the energy delivered by the radiation. This energy accumulates as exposure to radioactive decay continues through time. The energy stored in minerals can be reset by two processes. The first is by heating the sample to temperatures above about 300°C, as would occur in a hearth or in a kiln during firing of pottery. The second process is exposure of the minerals to daylight, as may occur during erosion, transport and deposition of sediments. Either of these processes will release any preexisting energy stored, and thus set the 'clock' to zero. Thus in luminescence dating, the event being dated is this resetting, either by heat (Thermo luminescence; TL) or by exposure to light (Optically stimulated luminescence; OSL).





*Fig : OSL/TL Instrument*

**B.**

A small Earth and Environmental Sciences Teaching and Research Lab has been set up in one room of Ecological Field Station by faculty members of DES. Small equipment and instruments related to environmental quality study have been installed in this lab and will be used to develop the Earth and Environmental Sciences Lab course according to the proposed syllabus.



### 3.1.4

## Department of Mathematics and Statistics (DMS)



Being committed to the central theme of the Indian Institute of Science Education and Research (IISER) Kolkata, the Department of Mathematics and Statistics (DMS), since its inception, has been providing its undergraduate as well as post-graduate students with strong training to pursue scientific careers in academia as well as in industry. The year 2014-2015 was no exception to that. In this year, we have started the process of restructuring our undergraduate and post-graduate syllabi, keeping in mind the present-day requirements. While restructuring syllabi, our aim is always to integrate Mathematics with Statistics and Theoretical Computer Science so that the well-designed courses give our students a holistic knowledge of the subject. Gone are the days when different areas of science were developed in isolation. The trend in vogue is to see science in an integrated and unified way so as to have a multifaceted and multi-dimensional understanding. We always design our BS-MS and Integrated PhD teaching programme keeping this philosophy in mind.

The overall trend of the students graduating from the Department is very successful. BS-MS Students graduating from DMS have joined Northeastern University, USA, Pennsylvania State University, USA, Humboldt University, Berlin, University of Warwick, together with one student who has joined Indian Institute of Management Bangalore in a





Fellows Programme and another who has joined the University of Jyväskylä, Finland. The only PhD student who has graduated from the Department is presently with the Indian Statistical Institute, Kolkata. We are happy to mention here that one PhD student has completed his PhD work in 2014-2015 and is waiting to receive his degree to join the University of Free State, South Africa to work as Post-doctoral Fellow under the guidance of one of the stalwarts of Reliability Theory.

Apart from the regular teaching programme which involves a lot of effort of the faculty members due to the relatively smaller size of the Department, and the diverse bouquet of courses it offers, the faculty members of the Department are actively involved in research and have published some high quality works (in terms of Mathematical Citation Quotient) in premier journals. The faculty members of DMS have also successfully obtained externally sponsored projects from different funding agencies like DBT, NBHM, DST etc. The Department is currently hosting 12 faculty members, of whom 8 are permanent, 2 are on contract and 2 are INSPIRE faculty members, along with 9 PhD students, 6 Integrated PhD students, one post-doctoral fellow and 22 BS-MS students. The students include one Shyama Prasad Mukherjee Fellow and another was invited for the Mitacs Globalink Programme, Canada.

In order to keep the research quality of the Department at par with other premier Institutes, we are in the process of forming strong and self-supported research groups in some broad spectrum of Mathematics and Statistics.

Other than regular seminars in the Department, we organized a one-day Symposium on February 7, 2015 which was attended by some renowned mathematicians and statisticians. Some of the students and the faculty members also shared their research work with the participants through presentations.

In a nutshell, the Department is determined to climb higher along the academic ladder with the participation of its students and faculty



### 3.1.5

## Department of Physical Sciences (DPS)



members in all sorts of academic endeavours.

The Department of Physical Sciences (DPS) at the Indian Institute of Science Education and Research (IISER) Kolkata continues its journey towards excellence with a goal of standing amongst the very best institutions in Indian science. We are dedicated and vigilant to fulfil our mandate to provide quality education and training to future scientists, and to engage in cutting-edge research to enrich the knowledge base of the scientific community at large. With its 25 faculty members and about 220 students, DPS maintains a very good teacher – student ratio. Fourth batch of physics major students, 31 in number, graduated in the year 2014-15. This number is more than 2.5 times compared to the previous years. DPS continues to be the most popular department among the students in terms of their choice of major subject. More than 40% of the students of every batch choose to major in physics. Number of PhD and Integrated PhD student strength reached to more than 50 and 40, respectively, in the year 2014-15. To cope up with the increasing number of students, all teaching laboratories have been augmented with new experimental setups with the help of a special funding from the institute this year.

Research program of the department also has taken off well. The year 2014-15 saw publication of research works from the department in reputed international journals like Physical Review Letters, Applied Physics Letters, Optics Letters, Physics Letters A, and Astrophysical Journal. Faculty and students continue to produce quality research in areas including astrophysics, space science, gravitation, cosmology, high energy physics, atomic, molecular, and optical physics, biophysics, soft matter physics, complex systems, nonlinear dynamics, mathematical physics, and condensed matter physics. Several new extramural research projects have been sanctioned to DPS faculty this



year. Young and established scientists visited our department, interacted with the faculty and students, and presented seminars. Our faculty and students also visited academic institutes and conferences all over India and abroad to present their research work. The annual day of the department, the "DPS Day" was celebrated on November 1, 2014. Besides seminars given by eminent scientists like Prof. S. Minwalla, Prof. K. Maity, and Prof. S. M. Bhattacharjee, several of our PhD and Int. PhD students presented their research work in the day-long academic program, which concluded with a special evening lecture by Prof. A. K. Majumdar on Nanomagnetism.

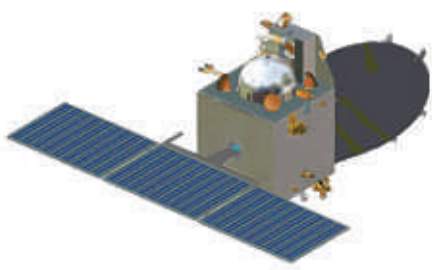
First review of the academic activity of the department was carried out this year by an external committee of experts. Faculty members presented their research and teaching activities to the committee. Committee also interacted with students and staff members of the department. The review committee appreciated the teaching and research activity of the department and gave some good suggestions for further improvement. The department will try its best to follow up with the suggestions of the committee.





### 3.1.6

## Center of Excellence in Space Sciences India (CESSI)



The Center of Excellence in Space Sciences India (CESSI) is a multi-institutional facility which 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. CESSI was established through funding by the Ministry of Human Resource Development, Government of India and is envisaged to function with administrative and financial autonomy under the overall umbrella of IISER Kolkata.

The Center utilizes in-house computing facilities, cloud computing, resources at participating Institutions 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 (ISRO; Bangalore). Other Astrophysics and Space Science Institutes in the country are also involved with CESSI in collaborative research and space science instrument development.

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. In 2014, CESSI also initiated a two year Masters by Research Program leading to a MS



degree and inducted its first batch of 3 MS by Research students. This program targets talented and motivated students with engineering or technical backgrounds, trains them through courses in relevant space science disciplines and a year-long research work either in theory, data analysis or instrument development.

On the international front, CESSI is involved in planning and site survey for the Laser Interferometer Gravitational Wave Observatory (LIGO)-India detector. CESSI faculty and students are expected to play a significant role in the development of data analysis techniques and post deployment science with the LIGO consortium – which is one of the largest and most significant International efforts directed towards gravitational wave detection. CESSI is also part of an international team which has secured a NASA Heliophysics Grand Challenge Grant to develop physics-based, data driven models for predicting the Sun's future activity.

CESSI has attracted independent external funding from the Asian Office of Aerospace Research and Development (US Air Force) and the Indo-French Center for Promotion of Advanced Research to support focussed international, bilateral scientific collaborations.

CESSI faculty, as Principal or Co-Investigators, are leading the development of India's first national space mission to study the Sun. The satellite mission named Aditya-1 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 operations and mission lifetimes, disrupts telecommunication and global positioning systems, and poses a hazard to electric power grids and air-traffic that are routed through the polar region.

Students at CESSI are directly involved in these research endeavours which are of fundamental importance, as well as practical relevance, to the society.

CESSI faculty are at the forefront of international and national capacity building in space, astrophysics and climate sciences. This activity includes, but is not limited to, Chairmanship of an International Astronomical Union (IAU) Working Group, Co-Leadership of an international research team for the Scientific Committee on Solar-Terrestrial Physics (SCOSTEP), Vice-Chairmanship of the Panel on Space Weather of the Committee on Space Research (COSPAR), and National Advisory Committee membership of ISRO's Solar-Terrestrial and Atmosphere Research Program.



## 3.2

### Research and Development Activities



**R**esearch and Development (R&D) activity at IISER Kolkata is growing rapidly. The Institute is attracting substantial amount of funding in the form of externally funded sponsored projects. This year 24 new sponsored projects have been received with a total sanctioned amount of ~6.41 crores taking the tally of ongoing projects to 87 and the total sanctioned amount to 51.67 crores. It is heartening to note that this year the research funding received is ~13 crores, which is best till date with a growth of 23% than the previous financial year.

Department of Chemistry submitted a proposal on Facility for Atomic Scale Imaging and Structural Analysis of Solid State, Soft and Bio-Materials by High-Resolution Transmission Electron Microscopy under the FIST program of DST under Level-I category to augment research facilities in the Institute. The proposal has been recommended by DST with a total allocation of Rs. 5.9 Crores for the 200kVA HR-TEM including maintenance for a period of 5 years. The Institute has already initiated the procurement process of the equipment. The said DST-FIST support is first for the Department and also the Institute, paving the way forward.

In addition to promoting core research in basic and applied sciences to drive innovation, IISER Kolkata is also promoting theme-based quality research in areas of importance/societal relevance and encouraging their integration with our education program. To execute this idea in practice the Institute provided special modest research funding to teams comprising faculty members with relevant expertise in the thematic area of research relevant to the society. It includes projects on Arsenic removal from water, agricultural products, clean and renewable energy and Smart systems/functional materials. These projects funded under the scheme Funding Innovation in Research and Education (FIRE) are currently ongoing.

### 3.3

## Sponsored Research



Department	Sanctioned Amount (Rs.)
Department of Biological Sciences	22,14,90,170
Department of Chemical Sciences	9,60,14,210
Department of Earth Sciences	6,82,54,361
Department of Mathematics and Statistics	3,48,87,856
Department of Physical Sciences	9,11,40,817
Centre of Excellence in Space Sciences India (CESSI)	49,10,361
<b>Total</b>	<b>51,66,97,775</b>

## Department of Biological Sciences Projects Funded by National Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Parental Care and social Dynamics in free-ranging dogs in India	Dr. Anindita Bhadra	SERB	17-09-2013 to 16-09-2016	14,00,000
2.	Mating dynamics, Territoriality and social organization in the Indian free-ranging dog, <i>Canis Lupus familiaris</i> (SERB WEA)	Dr. Anindita Bhadra	SERB	08-10-2013 to 07-10-2016	18,00,000
3.	Understanding the mechanisms of viral induced axonal loss and demyelination in an experimental animal model	Dr. Jayasri Das Sarma	DBT	12-10-2011 to 11-10-2014	46,13,024
4.	Development of an unique animal model to understand the etiology of human central nervous system autoimmune disease multiple sclerosis (MS)	Dr. Jayasri Das Sarma	DBT	01-04-2012 to 31-03-2017	29,94,012

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
5.	Basic characterization and analysis of growth factors secreted by Wharton's jelly mesenchymal stem cells under conditions of hypoxia.	Dr. Malancha Ta	DBT	31-03-2014 to 30-03-2016	32,75,200
6.	Role of non muscle myosin IIs in Proliferation and Differentiation of Umbilical Cord derived mesenchymal Stem Cell.	Dr. Malancha Ta	ICMR	01-03-2015 to 28-02-2018	19,63,200
7.	Characterizing the role of Pak3 collective cell movement using the model of border cell migration in Drosophila ovary	Dr. Mohit Prasad	CSIR	01-06-2013 to 31-05-2016	15,00,000
8.	Understanding collective cell migration using the model of border cells in Drosophila oogenesis	Dr. Mohit Prasad	SERB	10-07-2013 to 09-07-2016	43,94,000
9.	Studies on the mechanisms of the translational regulation of the cold shock response genes in human entero-pathogenic bacteria	Dr. Partha Pratim Datta	DBT	21-07-2011 to 20-07-2014	18,89,000
10.	Taxonomy and Barcoding of marine nematodes	Dr. Punyasloke Bhadury	MoES	01-10-2012 to 30-09-2017	60,00,000
11.	Marine Faunal diversity along the West Bengal coast with special reference to nematodes	Dr. Punyasloke Bhadury	MoES	01-10-2012 to 30-09-2017	79,50,000
12.	Monitoring Harmful Algal Bloom (HAB) along the coasts of West Bengal	Dr. Punyasloke Bhadury	MoES	23-12-2014 to 22-12-2019	55,00,000
13.	Engineered Nature Inspired Hybrid Nanomedicine for Wound Healing	Dr. Rituparna Sinha Roy	CSIR	30-01-2013 to 29-01-2016	22,92,000

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
14.	Engineered Novel Lipopeptide Detergents for Structural Studies of Integral Membrane Proteins (RGYI)	Dr. Rituparna Sinha Roy	DBT	06-08-2013 to 05-08-2016	46,58,000
15.	Engineering Lipid-peptide conjugated nanoscale delivery system for delivering siRNA	Dr. Rituparna Sinha Roy	DBT	27-11-2013 to 26-11-2016	44,13,400
16.	Functional Study of Drosophila $\beta$ -glucuronidase for developing a fly model of mucopolysaccharidosis VII (RGYI)	Dr. Rupak Datta	DBT	24-07-2013 to 23-07-2017	15,99,000
17.	Leishmania major $\beta$ -CARBONIC ANHYDRASE AS POSSIBLE DRUG TARGET	Dr. Rupak Datta	CSIR	06-01-2015 to 05-01-2018	17,95,000
18.	Role of formin in neurite initiation and synapse formation	Dr. Sankar Maiti	DBT	23-11-2011 to 22-11-2014	40,10,000
19.	Functional Analysis and Regulation of Dishevelled in Planer Cell Polarity Pathway	Dr. Sankar Maiti	CSIR	14-02-2012 to 13-02-2015	15,50,000
20.	The role of small-RNA pathways in plant defense against insect herbivores	Dr. Shree Prakash Pandey	Max Planck Partner Group in India	01-08-2011 to 18-12-2016	1,05,27,680
21.	Understanding the mechanisms of Non-Host Resistance (NHR) against rust and blast in rice and wheat	Dr. Shree Prakash Pandey	ICAR	01-04-2013 to 31-03-2016	80,01,803
22.	Behaviour and Inter-Colony Dynamics in a Queenless Ant	Dr. Sumana Annagiri	DST	16-05-2012 to 15-05-2015	14,70,000
23.	Engineering enzymes to overcome biomass recalcitrance. (RGYI)	Dr. Supratim Datta	DBT	11-01-2013 to 10-01-2016	50,60,000

## Projects under Fellowship/ Awards

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Understanding cell membrane homeostasis during cell stretch (Wellcome Trust/DBT India Alliance Intermediate Fellowship)	Dr. Bidisha Sinha	WT DBT	01-10-2013 to 30-09-2018	3,51,12,814
2.	Ramanujan Fellowship	Dr. Guha Dharmarajan	DST	30-08-2012 to 29-08-2017	84,10,000
3.	Cellular and Molecular Dynamics of Direction-sensing in Collective Cell Migration (Ramalingaswami Fellowship)	Dr. Mohit Prasad	DBT	01-04-2010 to 31-03-2015	74,80,000
4.	Molecular interactions in the Post-transcriptional regulation of inflammatory gene expression (Wellcome Trust/DBT India Alliance Intermediate Fellowship)	Dr. Partho Sarothi Ray	WT DBT	01-05-2011 to 30-04-2016	3,38,57,714
5.	Engineered Peptide Lipid modular nanostructure for siRNA delivery (Ramalingaswami Fellowship)	Dr. Rituparna Sinha Roy	DBT	02-05-2011 to 01-05-2016	76,92,823
6.	Causes and consequences of impaired Autophagy in mucopolysaccharidoses (Ramalingaswami Fellowship)	Dr. Rupak Datta	DBT	12-08-2011 to 11-08-2016	77,00,000
7.	Engineering enzymes for lignocellulose degradation and biofuel production (Energy Bioscience Overseas Fellowship)	Dr. Supratim Datta	DBT	01-09-2011 to 31-08-2016	70,00,000



## Projects Funded by International Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Deciphering phytohormone signaling in modulation of resistance to spot blotch disease for identification of novel resistance components for WHEAT improvement	Dr. Shree Prakash Pandey	CIMMYT	01-08-2012 to 31-07-2015	2,06,66,500

## Consultancy Projects

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Validation of differentiated neural cells in culture	Dr. Jayasri Das Sarma	Hi-Media Consultancy	08-11-2013 to 07-11-2014	10,00,000
2.	Consultancy on Inventorizing Benthic Faunal Assemblages in the Chilika Lagoon	Dr. Punyasloke Bhadury	CDA-ICZMP	26-03-2013 to 25-03-2015	39,15,000

## Department of Chemical Sciences

### Projects Funded by National Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Transition Metal Polynuclear Complexes of Multidentate N,O Donor and Redical Containing Ligands as Molecular Magnets	Dr. Arindam Mukherjee	CSIR	01-07-2011 to 30-06-2014	10,00,000
2.	Metal complexes of nitrogen mustards as anticancer agents- studying the influence of nutrient and enhanced selectivity in hypoxia.	Dr. Arindam Mukherjee	SERB	21-10-2014 to 20-10-2017	46,60,000
3.	Dynamics of water dissociation on metal surfaces and on nano-particles	Dr. Ashwani Kumar Tiwari	DST	29-12-2011 to 28-12-2014	13,45,000
4.	Synthesis of the oligosaccharides related to the repeating units of the o-antigens from <i>E. coli</i> 0158, 036 and 0174 and further vaccine designing.	Dr. Balaram Mukhopadhyay	SERB	29-10-2014 to 28-10-2017	37,82,000
5.	Design of Mechanochromic Luminescent Materials: Crystal Engineering	Dr. C. Malla Reddy	CSIR	10-07-2014 to 09-07-2017	20,42,000
6.	Peptide Based Self-Assembled Systems as Delivery Vehicles and Controlled Release	Dr. Debasish Halder	CSIR	27-06-2011 to 26-06-2014	17,50,000
7.	Novel supramolecular polymer and receptor from isoorotic acid semicarbazide with peptide spacer	Dr. Debasish Halder	CSIR	17-11-2014 to 16-11-2017	9,00,000
8.	Understading The Mecanisms of important transition- metal catalyzed chemical transformations: A computational investigation	Dr. Debasis Koley	SERB	09-07-2012 to 08-07-2015	24,95,000

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
9.	Computational investigation of Abnormal-N-Heterocyclic Carbene (aNHC) Mediated Cross-Coupling Reactions: The Nature and Role of the Catalytic Species Involved	Dr. Debasis Koley	CSIR	10-07-2014 to 09-07-2017	13,96,000
10.	Development of graphene-polynorbornene novel composite material for aircraft applications	Dr. Madhumita Mukherjee	SERB	09-07-2013 to 08-07-2016	25,10,000
11.	Theoretical investigation on designing novel conjugated system in solar cell application	Dr. Mousumi Das	SERB	08-08-2014 to 07-08-2017	21,65,000
12.	Ru (II) /Os (II)-sugar complexes as pet biosensors of lectins and potential therapeutics	Dr. Parna Gupta Bhattacharyya	CSIR	06-02-2012 to 05-02-2015	11,20,000
13.	Investigation of Molecular Mechanism for Solute Dynamics in Aqueous Micellar and Reverse Micellar Solutions Containing Ionic Liquid	Dr. Pradip Kumar Ghorai	CSIR	09-07-2013 to 08-07-2016	13,14,000
14.	Nanosystem based host-guest chemistry: Characterization using fluorescence spectroscopy	Dr. Pradipta Purkayastha	SERB	25-07-2012 to 24-07-2015	48,40,000
15.	Probing the Phenomenon of Interaction between Lipids and Surfactants Fluorescence Spectroscopy	Dr. Pradipta Purkayastha	CSIR	15-01-2013 to 14-01-2016	16,50,000
16.	Spectral and temporal fluorescence studies of red emitting dyes in tris (pentafluoroethyl) trifluorophosphate (FAP) anion containing Imidazolium room temperature ionic liquids	Dr. Prasun Kumar Mandal	SERB	22-05-2012 to 21-05-2015	24,95,000

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
17.	Polymer chains with inorganic nano objects	Dr. Priyadarsi De	DRDO	03-10-2012 to 02-10-2015	19,40,000
18.	Green Synthesis of Novel Degradable Polyperoxides	Dr. Priyadarsi De	CSIR	30-08-2011 to 29-08-2014	13,00,000
19.	Polymer Networks Assembled by Host-Guest Inclusion between Cyclodextrins and Amino Acid/ Peptide Substituents on the Polymer Side- Chain.	Dr. Priyadarsi De	BRNS DAE	07-08-2014 to 06-08-2017	18,45,950
20.	Sensing of Chemical Warfare Agents With Naobornene Based Polymers	Dr. Raja Shunmugam	DRDO	01-05-2011 to 30-04-2014	17,47,000
21.	Norbornene based multi-drug containing nanocarrier for efficient tuberculosis therapy	Dr. Raja Shunmugam	CSIR	07-03-2015 to 06-03-2017	6,00,000
22.	Norbornene Derived Doxorubicin Copolymers as Drug Carriers- An Unique Approach for the Site- specific Cancer Therapy	Dr. Raja Shunmugam	DBT	31-03-2015 to 30-03-2018	78,00,600
23.	Poly (Cyclopenta [c] Chalcogenophene) and Related Polymers : Synthesis and Applications in Bulk Heterojunction Organic Photovoltaic Devices	Dr. Sanjio Shankarrao Zade	DRDO	04-05-2012 to 03-05-2015	27,29,000
24.	New Conjugated Polymers for Polymer Solar Cells	Dr. Sanjio Shankarrao Zade	CSIR	12-04-2013 to 11-04-2016	16,70,000
25.	Magnetic and Mössbauer Spectroscopic Studies Exchange Biased Nanostructures	Dr. Sayan Bhattacharyya	CSIR	15-01-2013 to 14-01-2016	16,92,000



Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
26.	Photonic and magnetic interactions of nanoparticles inside carbon nanotube channels	Dr. Sayan Bhattacharyya	SERB	17-06-2013 to 16-06-2016	40,74,600
27.	Spectroscopic Investigation of the Core-Shell and Ternary Quantum Dots for Quantum Dot Solar Cells	Dr. Sayan Bhattacharyya	India-Israel S & T Cooperation Programme	01-01-2015 to 31-12-2016	21,13,000
28.	Seleno and Telluro salen type ligands : Complexation with transition metals and study of the catalytic properties of the complexes	Dr. Snigdha Panda	SERB	23-05-2012 to 22-05-2015	26,80,000
29.	Oxometalate based 'Reactor-on-A-Glass-Slide' (RAG) using Colloid and 'Opto-Chemistry'	Dr. Soumyajit Roy	SERB	21-08-2012 to 20-08-2015	20,84,600
30.	Dynamic Assembly of Soft-oxometalates using Optochemistry	Dr. Soumyajit Roy	BRNS DAE	25-03-2013 to 21-03-2016	13,35,175
31.	Development of photochromic molecules as molecular switches for potential application in logic devices with photonic inputs and outputs	Dr. Subhajit Bandyopadhyay	DST	07-10-2011 to 06-10-2014	30,90,000
32.	Glycosidase Mimics using General Acid- Base Catalysis and Catalysis by Metal Complexes	Dr. Subhajit Bandyopadhyay	CSIR	17-04-2013 to 16-04-2016	9,40,000
33.	Abnormal N-heterocyclic carbene: Development of organometallic chemistry to design homogeneous catalysts	Dr. Swadhin K. Mandal	SERB	05-07-2013 to 04-07-2016	46,19,000
34.	Development of Synthetic Routes to make Water Dispersible Upconverting Nanocrystals and their Applications	Dr. Venkataramanan Mahalingam	CSIR	17-04-2013 to 16-04-2016	23,92,000

## Projects under Fellowship/ Awards

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Ramanujan Fellowship	Dr. Raja Shunmugam	DST	14-07-2010 to 13-07-2015	76,45,000

## Projects Funded by International Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	US-India Collaborative Research to decipher Function and Evolution of GABAergic Neurotransmission in Planaria	Dr. Priyadarsi De	National Science Foundation, USA	04-08-2014 to 03-08-2015	4,81,223
2.	Development of detection for some pesticides in water samples	Dr. Subhajit Bandyopadhyay	UKIERI	01-01-2015 to 30-03-2016	31,15,280

## Consultancy Projects

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Invictus Oncology Private Limited	Dr. Swadhin K. Mandal	Invictus Oncology	19-03-2013 to 31-03-2015	8,39,108 @ Rs. 3000/hour
2.	On development of thermo-resistant, high-stress and high-tensile strain resistant materials for safes	Dr. Soumyajit Roy	Gunnebo India Private Limited	19-12-2011 to 18-12-2014	23,29,800

## Project Transferred from other Institutes

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Mechanistic investigation of plant growth stimulation by water soluble carbon nanotubes	Dr. Shweta Tripathi	SERB	06-08-2013 to 31-05-2015	14,86,874

## Department of Earth Sciences

### Projects Funded by National Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Glaciers in the upper Alkananda-Saraswati Basin and Climate Change	Dr. Argha Banerjee	Collaborative Project of (IIMSc-HNBGU-IISERK)	30-06-2014 to 31-03-2017	6,00,000
2.	Measurements and modeling of supraglacial debris layer properties in Hamtah Glacier	Dr. Argha Banerjee	SERB	09-06-2014 to 08-06-2016	19,75,000
3.	Response of molluscan community to climate variation: A case study from Miocene of Kutch	Dr. Devapriya Chattopadhyay	SERB	20-03-2013 to 19-03-2016	26,00,000
4.	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	Dr. Kathakali Bhattacharyya	SERB	11-02-2014 to 10-02-2017	25,00,000
5.	Luminescence Chronology of Paleoflood and aeolian dunes deposit in Kaveri Basin: Implication to Holocene climate reconstruction	Dr. Manoj Kumar Jaiswal	MoES	19-02-2015 to 18-02-2020	96,85,200
6.	Calcretes on Metamorphosed Rocks of the Precambrian Eastern Ghats Mobile Belt, Orissa: Genesis and Implications to Climate	Dr. Prasanta Sanyal	CSIR	06-07-2011 to 05-07-2014	18,00,000
7.	Molecular level isotopic characterization of vegetation and its phytolith in humid to arid climate zones in India	Dr. Prasanta Sanyal	SERB	09-07-2014 to 08-07-2017	44,10,000

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
8.	Earthquake Hazard Evalution in Jammu and Kashmir Himalaya and Western Indo-Gangetic Plains	Dr. Supriyo Mitra * *(Co-PI)	UGC UKIERI	01-01-2015 to 31-03-2016	17,81,400
9.	Investigation of trace metal geochemistry anthropogenic inputs in the Ganga (Hooghly) River Estuary	Dr. Tarun Kumar Dalai	MoES	19-09-2011 to 01-04-2016	84,56,000

### Projects under Fellowship/ Awards

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Ramanujan Fellowship	Dr. Sutapa Bose	DST	22-12-2011 to 21-12-2016	81,75,000
2.	J C Bose Fellowship	Prof. Somnath Dasgupta	DST	02-07-2007 to 01-07-2017	1,21,10,000
3.	Inspire Faculty Award	Dr. Argha Banerjee	DST	01-02-2013 to 13-01-2018	86,27,428

### Projects Transferred to other Institute

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Constraining Tectonic Setting of The Paleoproterozoic Krishna Province Metagneous Rocks: Implications for the Geodynamic History of The Active Eastern Dharwar Cratonic Margin	Dr. Ravikant Vadlamani	CSIR	03-10-2013 to 02-10-2016	14,92,000

## Projects Funded by International Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Application and development of Isotope techniques to evaluate human impact on water balance and nutrient dynamics of Large River Basins	Dr. Prasanta Sanyal	IAEA (International Atomic Energy Agency)	04-09-2014 to 03-09-2015	1,53,263
2.	Seismic velocity structure of the north-western and north-eastern Himalaya and its implications for earthquake hazard assessment	Dr. Supriyo Mitra	UKIERI	01-03-2012 to 31-12-2014	21,30,000
3.	Seismic structure Active faulting and ground motion evaluation in NW India	Dr. Supriyo Mitra	NERC IAA Knowledge Exchange Award	11-12-2014 to 31-03-2015	17,59,070



## Department of Mathematics and Statistics

### Projects Funded by National Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	National Network for Mathematical and Computational Biology	Dr. Anirban Banerjee	SERB	28-11-2013 to 27-11-2016	52,37,000
2.	Orderings and Ageing properties having Applications in Reliability	Prof. Asok Kumar Nanda	DAE	21-02-2015 to 20-02-2018	2,50,000
3.	Neural correlates of cooperative decisions in humans	Dr. Koel Das	DST	01-07-2013 to 30-06-2016	43,00,000
4.	Pullback equation for differential forms	Dr. Saugata Bandyopadhyay	SERB	11-11-2013 to 10-11-2016	3,96,000

### Projects under Fellowship/ Awards

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Neural Correlates of cognitive and Behavioural Performance in Humans (Ramalingaswami Fellowship)	Dr. Koel Das	DBT	06-12-2011 to 05-12-2016	74,50,000
2.	Inspire Faculty Award	Dr. Mithun Mukherjee	DST	01-02-2013 to 31-01-2018	86,27,428

### Projects under Fellowship/ Awards Transferred from other Institutes

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Inspire Faculty Award	Dr. Shibananda Biswas	DST	03-04-2014 to 30-06-2017	86,27,428

## Department of Physical Sciences

### Projects Funded by National Agencies

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Time resolved nonlinear optical spectroscopy in transition-metal-doped ZnO nanoparticles and thinfilms	Dr. Bipul Pal	SERB	28-05-2012 to 27-05-2015	19,44,000
2.	Development of Novel Velocity Map Imaging Technique For the Study of Molecular Dynamics	Dr. Dhananjay Nandi	INSA	13-08-2013 to 12-08-2016	15,00,000
3.	Physical properties of elemental solids, their compounds and oxides, and mineral phases at extreme conditions of pressure and temperature: an experimental and theoretical study	Dr. Goutam Dev Mukherjee	MoES	13-07-2011 to 12-07-2016	6,00,15,360
4.	Mueller matrix polarimetry for biological tissue characterization	Dr. Nirmalya Ghosh	BRNS DAE	14-07-2014 to 13-07-2017	20,80,300
5.	Exploring novel concepts in spintronics with organic materials: Generation, detection and manipulation of pure spin currents using completely electrical scheme	Dr. Partha Mitra	SERB	11-07-2013 to 10-07-2016	23,00,000
6.	Theoretical study of the dynamics and mechanosensitivity of cell adhesion under time varying stretch	Dr. Rumi De	SERB	30-03-2015 to 29-03-2018	21,86,800

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
7.	Study of electronic structure of strongly correlated systems by X-ray Emission Spectroscopy	Dr. Satyabrata Raj	SERB	25-05-2012 to 24-05-2015	24,24,000
8.	Computational Biology of Riboswitches; Pattern Detection and Comparative Genomics	Dr. Supratim Sen Gupta	India Israel Programme	05-12-2014 to 04-12-2017	31,08,690

## Projects under Fellowship/ Awards

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Ramanujan Fellowship	Dr. Dibyendu Nandi	DST	01-08-2009 to 31-07-2014	74,06,667
2.	Ramanujan Fellowship	Dr. Siddhartha Lal	DST	20-10-2010 to 19-10-2015	81,75,000

## Center of Excellence in Space Sciences India (CESSI)

Sl. No.	Title	Principal Investigator	Sponsoring Agency	Duration	Sanctioned Amount (Rs.)
1.	Advanced Computational Models to Facilitate Solar Activity and Space Weather Predictions	Dr. Dibyendu Nandi	FCPAR	01-01-2015 to 31-12-2018	49,10,361

## 3.4

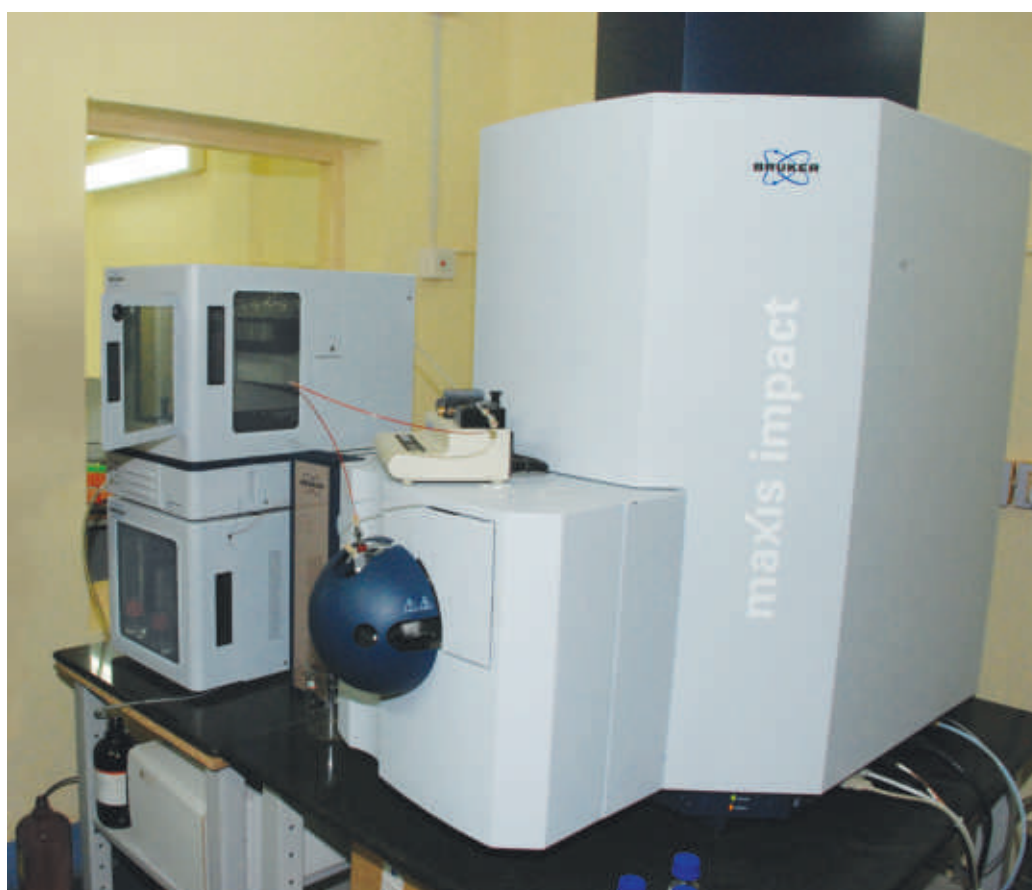
### Equipments Procured

Serial No.	Item	Supplier
1	Laser Line 561 for LSM 710 with All Standard Accessories	Carl Zeiss Microscopy Limited, Germany
2	Mass Flow Controller with All Standard Accessories	Alicat Scientific Inc., USA
3	Buchi Rotavapor with All Standard Accessories	Buchi Labortechnik AG, Switzerland
4	Thermo Herause CO <sub>2</sub> Incubator and Microbiological Safety Cabinet with All Standard Accessories	Thermo Fisher Scientific (Hong Kong) Limited, Hong Kong
5	Sonicator Ultrasonic Processor Model: VC750 with All Standard Accessories	Sonics and Materials Inc., USA
6	Eppendorf Spectrophotometer Bio Spectrometer with All Standard Accessories	Eppendorf AG, Germany
7	Accessories for Physics Laboratory	Advanced Measurement Technology, United Kingdom
8	Thermo Linderberg Blue M Brand 1200 Deg C LGO Box Furnace Model: BF51732BC-1 with All Standard Accessories	Thermo Fisher Scientific (Hong Kong) Limited, Hong Kong
9	Buchi Rotavapor System Model: 23011V01111 with All Standard Accessories	Buchi Labortechnik AG, Switzerland
10	Lamda 25 Double Beam UV VIS Spectrophotometer and PerkinElmer Spectrum Two FT-IR Spectrometer System with All Standard Accessories	PerkinElmer Singapore Pte. Ltd., Singapore
11	Mounted Glan Thompson Calcite Polarizer and Linier Polarizer	Mels Impex America Inc., USA
12	Innova 42R Stackable On or Under Bench Incubator Shaker with All Standard Accessories	Eppendorf AG, Germany
13	Centrifuge 5804R with All Standard Accessories	Eppendorf AG, Germany
14	Accessories for the Physics Department	Lasever Inc., USA
15	Vertical Gel Electrophoresis System and Semi Dry Western Blot Transfer Apparatus	Bio Rad Pacific Limited, Hong Kong



Serial No.	Item	Supplier
16	Thermo Scientific Microcentrifuge and Biocontiment Lid and Rotor with All Standard Accessories	Thermo Electron LED GmbH, Germany
17	Beta Spectroscopy with All Standard Accessories	Phywe Systeme GmbH & Co. Kg., Germany
18	Rutherford Scattering System with All Standard Accessories	LD Didactic GmbH, Germany
19	Ultrapure Water Purification System Model: Ulteramatic GR UF with All Standard Accessories	Navarra De Tratamiento Del Aqua S.L., Spain
20	Microplate Spectrophotometer with All Standard Accessories	Bio tek Instruments Inc., USA
21	Shimadzu Uv VIS Spectrophotometer Model: UV-1800 with All Standard Accessories	Shimadzu (Asia Pacific) Pte. Ltd., Singapore
22	ND-2000 Spectrophotometer with All Standard Accessories	Thermo Electron Scientific Instruments LLC, USA
23	UVO Cleaner Model: 42-220 and Blower Assembly with All Standard Accessories	Jelight Company Inc., USA
24	Microbiological Safety Cabinet with All Standard Accessories	Thermo Fisher Scientific (Hong Kong) Limited, Hong Kong
25	PI Line Translation Stage and Piezomotor Controller with All Standard Accessorioes	Physik Instrument (PI) GmbH & Co. KG, Germany
26	Supermicro Superserver Model: SuperServer 6027TR-HTQRF with All Standard Accessories	Netweb Pte. Ltd., Singapore
27	Julabo FT902 Immersion Coller with All Standard Accessories	Julabo GmbH, Germany
28	Supermicro Superserver Model: SuperServer SYS-6027R-72RF with All Standard Accessories	Netweb Pte. Ltd., Singapore
29	Olympus Motorized Simultaneous Multi Color Automatic TIFR Imaging System with All Standard Accessories	Olympus Corporation, Japan
30	Electroporation System with All Standard Accessories	Havard Appratus Inc., USA
31	2 Ch Low Cost NIM Locally Programmable HV Power Supply with All Standard Accessories	C.A.E.N.S.p.A., Italy

Serial No.	Item	Supplier
32	Mono Vista CRS + 750 High Resolution for In Situ Measurement in the Diamond Anvil Cell in Crystate System with All Standard Accessories	Spectroscopy & Imaging System GmbH, Germany
33	Olympus Upright Polarizing Microscope Model: BX43P including Photomicrography Attachment with All Standard Accessories	Olympus Corporation, Japan
34	Eppendorf Thermo Mixer with All Standard Accessories	Eppendorf AG, Germany
35	CEM Microwave Accelerated Reaction System Model: MARS6 230V 60 Hz with All Standard Accessories	CEM Corporation, USA



## 3.5

### Library



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

Library Hours (2014-2015):

Weekdays : 08:00 to 22:00 hrs.

Saturdays  
and Sundays : 08:00 to 22:00 hrs.

During the reported period, in consultation with the respective departments, the IISER Kolkata Library reassessed its journal subscription. As a result of that process, the library dropped few titles from its subscription list and started to subscribe nine new titles. Most of these titles pertained to earth sciences, except one each from biological sciences and physical sciences. As earlier, the library mostly subscribed online journals during this period. Only 16 print only journals were subscribed during the period under report. Seven titles were subscribed in print+online format.

The Library added 205 printed books to its collection. Apart from that, the library received 57 printed documents as gratis. The library also subscribed to 333 selected e-books on perpetual access basis from Cambridge University Press from the fields of Biological Sciences, Chemical Sciences, Earth Sciences, Mathematics and Statistics and Physical Sciences. To provide better scanning facility to the IISER Kolkata community, the library procured Bookeye 4 (professional) scanner during this period.

Approximately 13,500 transactions (for printed books and audio-video materials) took place at the circulation desk. As part of document delivery service, the library supplied 320 papers to its own community. On account of Inter Library Loan (ILL), the library supplied 75 papers to other academic institutions. Approximately 350 photocopies/print outs were supplied to outside users on payment basis. The library supplied around 5,500 photocopies/print outs to its own users.



# 3.6

## Student Enrolment



### PhD

Biological Sciences	Chemical Sciences	Earth Sciences	Mathematics and Statistics	Physical Sciences	Total
51	98	22	9	51	231

### IPhD

Biological Sciences	Chemical Sciences	Earth Sciences	Mathematics and Statistics	Physical Sciences	Total
26	39	13	7	40	125

### BS-MS

1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
177	140	101	89	74	581

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

Batch	Biological Sciences	Chemical Sciences	Earth Sciences	Mathematics and Statistics	Physical Sciences	Total
MS12	19	21	5	12	44	101
MS11	24	9	9	5	42	89
MS10	17	16	16	5	20	74

## 3.7

### Graduating Students

#### Graduating Students PhD



#### PhD

DBS	DCS	DES	DMS	DPS	Total
3	16	0	0	2	21

#### Department of Biological Sciences

Sl.	Roll No.	Name	Graduation Date
1	07RS002	Debdeep Dasgupta	08.01.2014
2	07RS003	Sumana Banerjee	15.01.2014
3	07RS018	Abhishek Sinha	10.04.2014

#### Department of Chemical Sciences

Sl.	Roll No.	Name	Graduation Date
1	08RS002	Pradip Kumar Dutta	24.09.2013
2	09RS036	Sunirmal Pal	09.10.2013
3	08RS012	Partha Pratim Bag	05.11.2013
4	07RS019	Tamal Kr Sen	08.11.2013
5	08RS001	Sanjib Kr Sardar	11.11.2013
6	08RS009	Prashant Ranjan Verma	17.12.2013
7	09RS002	Soumyajit Ghosh	30.12.2013
8	08RS011	Ramakrishnarao Gamidi	14.02.2014
9	09RS012	Prasun Ghosh	03.03.2014
10	09RS017	Palas Baran Pati	15.04.2014
11	09RS007	Suman Kumar Maity	21.04.2014
12	08RS015	Mane Shivshankar Raosaheb	24.04.2014
13	09RS009	Amrita Sarkar	02.05.2014
14	09RS011	Joydev Hatai	02.05.2014
15	09RS001	Niraja Kedia	09.05.2014
16	08RS013	Vijayakameswararao N	23.05.2014



## Department of Physical Sciences

Sl.	Roll No.	Name	Graduation Date
1	07RS010	Harkirat Singh	19.05.2014
2	08RS005	Arghya Choudhury	09.06.2014

## Graduating Students IPhD (After award of MS Degree)

DBS	DCS	DES	DMS	DPS	Total
8	0	0	1	0	9

## Department of Biological Sciences

Sl.	Roll No.	Name	Current Affiliation
1	09IP03	Rania Indu	R. G. Kar Medical College, Kolkata
2	10IP02	Anandarup Bhadra	
3	11IP03	Moturu Taraka Ramji	GITAM University, Visakhapatnam
4	11IP07	Naresh Mutukula	Tel-Aviv University, Israel
5	12IP014	Nishtha Ranawat	Okinawa Institute of Science and Technology, Japan
6	12IP016	Madhurima Chatterjee	VUMC, Amsterdam and University of Goettingen, Germany
7	12IP018	Shalini Singh	IISc. Bangalore
8	12IP027	Kaveri Banerjee	InSTEM, Bangalore

## Department of Mathematics and Statistics

Sl.	Roll No	Name	Current Affiliation
1	11IP02	Manami Roy	University of Oklahoma, USA

## Graduating Students BS-MS

DBS	DCS	DES	DMS	DPS	Total
12	20	13	4	26	75

## Department of Biological Sciences

Sl.	Roll No.	Name	Current Affiliation
1	08MS45	Tulika Sharma	University of Connecticut, USA Connecticut
2	09MS001	Hemanta Sarmah	Okinawa Insitute of Science and Technology, Japan
3	09MS015	Manjusha S Ghosh	University of Regensburg, Germany
4	09MS023	Titas Sengupta	Yale University, USA
5	09MS025	Abhishek Anand	NCBS, Bangalore
6	09MS028	Abhinav Yadav	NCBS, Bangalore
7	09MS029	Sumit Kumar Kar	
8	09MS031	Debtanu Chakraborty	
9	09MS043	Poonam Kumari	MPI, Bad Neuheim, Germany
10	09MS063	Trishtina Hembram	doing MBA, Ranchi
11	09MS068	Ritama Paul	University of Cincinnati, USA
12	09MS106	Anilisa Biswas	Iowa State University, USA

## Department of Chemical Sciences

Sl.	Roll No.	Name	Current Affiliation
1	09MS006	Soumalya Sinha	Simon Fraser University, Vancouver, Canada
2	09MS007	Saswata Roy	University of California, Irvine, USA
3	09MS011	Bibek Ranjan Samanta	University of Southern California, USA
4	09MS018	Mukul Mahanti	University of Lund, Sweden
5	09MS036	Barmase Swapnil Siddhartha	IESE Business School, Spain
6	09MS044	Alok Kumar	IIT Kanpur
7	09MS045	Chandan Kumar	University of Oslo, Norway
8	09MS049	Shipra	IIM, Raipur

9	09MS051	Phulari Shivam Baburao	IRIS Business Services Ltd.
10	09MS064	Prabir Biswas	CSIR-IMMT, Bhubaneshwar
11	09MS074	Sumanjani Vinnakota	University of Leeds, UK
12	09MS080	Rahul Kumar	Received Rajiv Gandhi Fellowship for PhD studies
13	09MS085	Anupam Kumar	Madhukunj Industries, Muzaffarpur
14	09MS091	Nitesh Kumar	
15	09MS095	Avinash Kumar	University of Pennsylvania, USA
16	09MS104	Banoth Balaraju	
17	09MS109	Sameer Saurav	BARC, Mumbai
18	09MS112	Avichal Vaish	Southern Methodist University, Dallas, USA
19	09MS119	Ayon Bir	IIM, Kozhikode
20	09MS124	Pawan Kumar	IISER, Kolkata

## Department of Earth Sciences

Sl.	Roll No.	Name	Current Affiliation
1	09MS010	Aakash Anand	
2	09MS032	Sourav Kumar Sahoo	University of Southampton, UK
3	09MS046	Praveen Kumar Marutha Muthu	IIM Kolkata
4	09MS048	Anurag Kumar	IISER Kolkata
5	09MS054	Om Prakash Kaptan	
6	09MS056	Mona Lisha Tirkey	Academica Sinica, Taipei, Taiwan
7	09MS059	Shivanand Mandraha	
8	09MS062	Harsh Vardhan Gaur	NGRI, Hyderabad
9	09MS070	Utpal Kumar	Academica Sinica, Taipei, Taiwan
10	09MS076	Rahul Kumar Gupta	
11	09MS077	Jeetendra Kumar Saini	MPI, Jena, Germany
12	09MS102	Shail Vijeta Ekka	
13	09MS105	Sagar Damania	IISER Kolkata

## Department of Mathematics and Statistics

Sl.	Roll No.	Name	Current Affiliation
1	09MS012	Saptarshi Bej	
2	09MS033	Ravi Prakash Ranjan	IIM, Bangalore
3	09MS042	Debanjan Nandi	University of Jyväskylä, Finland
4	09MS128	Guddu Kumar	ISM, Dhanbad

## Department of Physical Sciences

Sl.	Roll No.	Name	Current Affiliation
1	09MS002	Sridip Pal	University of California, San Diego, USA
2	09MS004	Anirban Mukherjee	IISER Kolkata
3	09MS005	Sumanta Bandyopadhyay	University of Washington, St. Louis, USA
4	09MS009	Aritra Kumar Mukhopadhyay	University of Hamburg, Germany
5	09MS013	Mainak Pal	TIFR, Mumbai
6	09MS020	Juhi Rajhans	University of Federico II, Naples, Italy
7	09MS021	Arunesh Roy	IISER Kolkata
8	09MS026	Sonali Mohapatra	Perimeter Institute, Canada
9	09MS030	Ankan Bag	MPI, Germany
10	09MS034	Soubhik Kumar	University of Maryland, USA
11	09MS039	Anindya Sengupta	Weizmann Institute of Science, Israel
12	09MS040	Debashis Saha	University of Gdansk, Poland
13	09MS047	Sumeet Kumar	
14	09MS055	Argha Mondal	New York University, USA
15	09MS061	Prateek Verma	IISER Kolkata
16	09MS066	Vivek Sinha	University of Amsterdam, Netherlands
17	09MS071	Harshit Lakhotia	MPI, Munich, Germany
18	09MS083	Avinash Kumar Gupta	
19	09MS090	Bapun Kumar Giri	

20	09MS094	Suman Basak	
21	09MS098	Sandip Maji	
22	09MS107	Ratnesh Kumar Gupta	IISER Kolkata
23	09MS110	Rakshit Kalra	Finomial Software Pvt. Ltd.
24	09MS118	Abhinna Kumar Behera	IISER Kolkata
25	09MS126	Bodduna Kireeti	
26	09MS130	Chiranjit Mitra	Humboldt University, Berlin, Germany







SEMINARS  
COLLOQUIA &

# 4

## Seminars & Colloquia

### 4.1 Department of Biological Sciences (DBS)

Date	Speaker and Affiliation	Title
May 21, 2014	Dr. Shreyasi Chatterjee University of Texas Medical Branch	Regulation of Tau phosphorylation and toxicity: Insights from a Drosophila model of neurodegeneration
July 16, 2014	Koushik Chakraborty Ruhr-Universitat Bochum, Germany	Deciphering the neuronal code towards cell replacement therapy
July 18, 2014	Akhil C Banerjee National Institute of Immunology	HIV-1 pathogenesis by accessory and regulatory proteins of HIV-1
October 22, 2014	Darius Koster NCBS	Actomyosin drives membrane dynamics in an <i>in vitro</i> active composite layer
November 06, 2014	Dr.Gaurav Das Oxford University	Neural circuit basis of learning, memory and behaviour: Drosophila learn opposing components of a compound food stimulus
November 24, 2014	Prof. Tapas Kumar Kundu JNCASR	Epigenetic Regulation of Chromatin Dynamics and Gene Expression: Implications in Differentiation, Disease and Therapeutics
January 05, 2015	Prof. Amit Kumar Mandal Division of Molecular Medicine, St. John's Research Institute, St. John's National Academy of Health Science, Bangalore, India	Mass spectrometry based analysis of Hemoglobin inside live Red Blood Cells and in the screening of Hemoglobinopathies
January 23, 2015	Dr. Pankaj Alone NISER, Bhubaneswar	Intricacies of translation initiation process: eIF2 mutant affects the fidelity of AUG codon selection independent of Met-tRNA <sup>iMet</sup> binding affinity
January 28, 2015	Dr. Romeu Cardoso Guimaraes University Federal de Minas Gerais Brazil	The self-referential genetic code

Date	Speaker and Affiliation	Title
February 03, 2015	Prof. Raghavendra Gadagkar IISc Bangalore	How to Design Experiments in Animal Behaviour
February 19, 2015	Prof. Ian Thomas Baldwin Max Planck Institute for Chemical Ecology, Jena Germany	Timing is everything in ecology
March 30, 2015	Dr. S.Venkata Mohan Indian Institute of Chemical Technology	Retrofitting Waste as potential Feedstock for Bioenergy Generation in the Framework of Sustainable Biorefinery

## Department Day

The Department of Biological Sciences organized their Department Day programme on Saturday March 21, 2015. During this day-long event, a series of scientific talks by distinguished invited speakers, IISER Kolkata Faculty members and PhD students were delivered. Also, there was an excellent poster session, where more than 20 posters highlighting the research done by PhD and BS-MS students and post-doctoral fellows at the Department of Biological Sciences were displayed.

Speaker and affiliation	Title of the Talk
Dr. Soumen Chakrabarty Institute of Life Sciences, Bhubaneswar	BCR-ABL mediated repression of miR-223 results in the activation of MEF2C and PTBP2 in chronic myeloid leukemia
Dr. Supratim Datta IISER Kolkata	Towards Understanding the Molecular Basis of Glucose Tolerant $\beta$ -Glucosidase
Mr. Dipak Poria IISER Kolkata	The RNA-binding Protein HuR acts as a "microRNA sponge" to bind miR-21 and prevent translation repression of pro-inflammatory tumor suppressor gene Programmed Cell Death 4
Dr. Santanu Ray Viswabharati University, Santiniketan	Concept of robustness in ecological system through network analysis and its comparative study on Sundarban mangrove ecosystem
Dr. Amit Pal NICED, Kolkata	Microbial proteases and their role in pathogenesis
Ms. Devanita Ghosh IISER Kolkata	Dissolved organic carbon impact microbial arsenic cycling in aquifers of West Bengal (India)
Dr. Rahul Das IISER Kolkata	EGFR: an Asymmetric Signaling Switch

Speaker and affiliation	Title of the Talk
Dr. Oishee Chakrabarti SINP Kolkata	Specificity in the promiscuity of E3 ligases
Ms. Ananya Chatterjee IISER Kolkata	Insights into the mode of actions of CgtA: a multifunctional bacterial essential Obg-GTPase protein
Ms. Priyanka Dutta IISER Kolkata	Expression and Characterization of Non Diaphanous Formin Delphinin
Mr. Rahul Basu IISER Kolkata	Mouse Hepatitis Virus (MHV) induced remodeling of gap junction protein Cx43 in Astrocytes

## 4.2 Department of Chemical Sciences (DCS)

Date	Speaker and Affiliation	Title
01.04.2014	Prof. Nils Metzler-Nolte, Ruhr Universität Bochum, Germany	A Bioorganometallic Journey from Peptide Bioconjugates to Novel Metal-based Antibiotics
23.04.2014	Dr. Amitava Das, NCL Pune	Ordering Molecules for Desired Photo-Induced Responses
21.05.2014	Dr. Sarmistha Halder Sinha, JNCASR	Synthesis and application of small molecule on PRMT1 and CBP/p300
28.05.2014	Prof. Satrajit Adhikari, IACS	The effect of Phonon Modes and Electron-Hole Pair Couplings on Molecule-Surface Scattering Processes
09.07.2014	Dr. Ashok Dikshit, CGCRI	Nanostructure Organic-Inorganic Hybrid Optical Materials for Photonics Applications
14.07.2014	Prof. Amitava Patra, IACS	Fundamental Understanding of Luminescent Nanomaterials and Applications
23.07.2014	Prof. Anunay Samanta, HCU	Room Temperature Ionic Liquids: What can be learnt from Fluorescence Studies?
28.07.2014	Prof. D. Basavaiah, HCU	The Baylis-Hillman Reaction: Our Vision and Thirty Years of Experience
30.07.2014	Prof. Narayan Pradhan, IACS	Some Exciting Chemistry in Designing Nanostructures in Reaction Flask
06.08.2014	Prof. Sreebrata Goswami, IACS	Synergistic Metal-ligand Cooperation in Transition Metal Complexes of Redox Non-innocent Azoaromatic Ligands

Date	Speaker and Affiliation	Title
13.08.2014	Prof. Tapas Chakraborty, IACS	Non-conventional hydrogen bonds in non-aqueous media: Bearings of donors aqueous phase acidity
14.08.2014	Prof. Manas K. Ghorai, IIT Kanpur	Stereoselective synthesis of biologically important aza-, carba- and oxacyclic compounds: Memory of chirality for chiral induction
20.08.2014	Prof. L. Goossen, University of Kaiserslautern, Germany	Sustainable concepts for C-C and C-heteroatom bond formation
20.08.2014	Prof. Kankan Bhattacharyya, IACS	Physical Chemistry of a Live Biological Cell
22.08.2014	Dr. Devarajulu Sureshkumar, Institute of Microbial Chemistry, Tokyo, Japan	Direct Catalytic Asymmetric Aldol Reaction of Thioamides
08.10.2014	Dr. S. Raghothama, IISc	NMR analysis of Natural and designed synthetic peptide structures
29.10.2014	Dr. Pralay K. Santra, Stanford University, USA	Strategies to Boost Efficiencies of Quantum Dot Solar Cells
05.11.2014	Dr. Ratheesh. K. Vijayaraghavan, Eindhoven University of Technology, Netherlands	Nanoscale Aspects of Organic Photovoltaic Devices
19.11.2014	Dr. Suman De Sarkar, Institute for Organic and Biomolecular Chemistry, Goettingen, Germany	Derivatization of Aldehydes by NHC Catalyzed Redox Activation
17.12.2014	Dr.Sambasivarao Kotha, IIT Bombay	Diversity oriented approach to unusual amino acid derivatives and peptides.
21.01.2015	Dr. Suhrit Ghosh, IACS	H-Bonding Driven Supramolecular Assembly of Donor-Acceptor Chromophores and Amphiphilic Macromolecules
28.01.2015	Dr. Vinod K. Tiwari, BHU	Synthesis of Diverse Glycoconjugates of Chemotherapeutic Potential
28.01.2015	Prof. Susanta Lahiri, SINP	Destination Island-120
04.02.2015	Dr. Nimai Mishra, LANL, USA	Synthesis and Optoelectronic/ Thermoelectric Applications of Branched Semiconductor Nanocrystals and 1-D Nanowires
05.02.2015	Dr. Louise Natarajan, Univ. of Manchester, UK	Multiphoton and Upconversion Processes in Transition Metal and f-Element Containing Systems
18.02.2015	Prof. V. Ramamurthy, University of Miami, USA	Photochemistry in a capsule



19.02.2015	Prof. V. Ramamurthy, University of Miami, USA	Science and Scientists
27.02.2015	Prof. Miguel Yus, Universidad de Alicante, Spain	Chiral N-Sulfinyl Imines: New Discoveries in Asymmetric Synthesis
27.02.2015	Prof. Carmen Nájera, Universidad de Alicante, Spain	Coinage Metal Complexes as Chiral Catalysts for 1,3-Dipolar Cycloadditions
03.03.2015	Dr. Masanobu Naito, NIMS, Japan	Bioinspired multifunctional coatings for advanced structural metals/alloys
31.03.2015	Prof. Kavita Shah, Purdue University, USA	Chemical Genetic Dissection of Signaling Pathways in Cancer and Alzheimer's disease

## Department Day

The department organised its “Department Day” on 7th December, 2014. Thirteen talks were delivered during this event as follows:

Speaker and affiliation	Title of the Talk
Dr. Vijayamohan K. Pillai, Central Electrochemical Research Institute	Applications of Artificially Engineered Carbon for Electrochemical Power
Dr. Suresh Das, National Institute for Interdisciplinary Science and Technology	Photoresponsive Materials
Dr. Debasish Halder, IISER Kolkata	Nanoporous Organic Material to Nanoreactor
Koushik Das, IISER Kolkata	Direct Synthesis of Controlled Size Nanospheres inside Nanocavities of Self-Organized Photopolymerizing Soft-oxometalate $[PW_{12}O_{40}]_n$ ( $n = 1100-7500$ ) Acting as a Model Heterogeneous Catalytic System Assembled by an 'Aufbau Principle'
Dr. Priyadarsi De, IISER Kolkata	Macromolecular Engineering for Nano-Architectures
Dr. Madhumita Mukherjee, IISER Kolkata	Graphene Functionalized Polynorbornene as Hybrid Functional Materials
Sashi Debnath, IISER Kolkata	Sulphur and Selenium Containing New Building Blocks for Conjugated Systems
Tanmay Chatterjee, IISER Kolkata	Structural and Electronic Control of Dual Emitting Green Fluorescent Protein chromophore Analogues

Dr. Sayan Bhattacharyya, IISER Kolkata	Understanding the Mysteries of Self-assembly at Small Dimensions
Bholanath Maity, IISER Kolkata	Computational Study of the Mechanism and Selectivity of Ruthenium-Catalyzed Hydroamidations of Terminal Alkynes
H. Sreenivasan, IISER Kolkata	Surface Temperature Effect on Water Dissociation on Nickel Surfaces
Abheek Datta, IISER Kolkata	The Effects of Pd Nanoparticle Confinement on Methanol Electro-oxidation
Sudipta Bhattacharya, IISER Kolkata	Intercalator Bearing Cyclic Phosphoramodates to Understand Targeting and Enhancement of Activity Against Cancer

### 4.3 Department of Earth Sciences (DES)

Date	Speaker and Affiliation	Title
02.04.2014	Prof. Nigel Hughes Department of Earth Sciences, University of California, Riverside, USA	Dissecting Factors controlling growth and development in an ancient fossilized arthropod: the case of the Silurian trilobite <i>Aulacopleurakoninckii</i>
12.06.2014	Dr. Kajaljyoti Borah NGRI, Hyderabad	Seismic imaging of crust beneath the Dharwar Craton, India
05.09.2014	Dr. Supriyo Mitra IISER Kolkata	Mountain Building, Earthquakes and Society
26.11.2014	Dr. Sitindra Sundar Dirghangi Yale University	An Evaluation of the Environmental and Biological Controlling Factors of Lipid-Based Climate Proxies
02.01.2015	Dr. Abhijit Ghosh University of California, Riverside	Slow earthquakes: a global overview
05.01.2015	Dr. Alex Copley Department of Earth Sciences, University of Cambridge, U.K	New insights into fault friction and behaviour
05.01.2015	Dr. Tapabrato Sarkar Institut für Geowissenschaften, Universität Kiel, Germany	Formation and evolution of a proterozoic magmatic arc-Ongole domain of the Eastern Ghats belt, India

Date	Speaker and Affiliation	Title
07.01.2015	Dr. Alex Copley University of Cambridge, U.K	Exploring the controls on earthquakes and tectonics: from the plains of India to the greatest mountain range on Earth
14.01.2015	Dr. Mainak Mookherjee Cornell University	The Deep Hydrosphere: Atomistic to global
11.02.2015	Dr. Kaushalendra M. Bhatt Geo Forschungs Zentrum (GFZ), Germany	Microseisms: A mCSEM noise
13.03.2015	Prof. S. K. Tondon Indian Institute of Technology, Kanpur	What is Earth Sciences and where is it going?
18.03.2015	Prof. R. N. Singh INSA Senior scientist, CSIR-NGRI, Hyderabad	Modelling Charnockitization in Southern Indian Shield
19.03.2015	Dr. Prasanta Sanyal IISER-K	How much we know about evolution of C4 plants?
24.03.2015	Dr. O. P. Mishra Scientist, Ministry of Earth Sciences, New Delhi	Role of Passive Source Geo-tomography in piercing deeper Earth: A New Frontier of Earth Sciences
26.03.2015	Dr. Sutapa Bose IISER-K	Management of natural and anthropogenic contaminants: An overview.

## Department Day

The Department organized its 3rd Annual Department Day, Convergence, on 14th March, 2015 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
Professor S.K. Tandon, IIT Kanpur	Exploration of the surface environments of Mars: Recent Developments
Sayak Basu, DES, IISER-K	Variability of the rainfall oxygen isotopic composition during dual monsoon phases in the southeast India

Speaker	Title
Saumik Samanta, DES, IISER-K	Investigation of cobalt and nickel in the Hooghly estuary: Enhanced flux to the oceans via metal generation in the estuary
Anurag Kumar, DES, IISER-K	Stable Isotope as Tracer to Delineate water budget of river: A case study from River Ganga, India
Sambit Ghosh, DES, IISER-K	Early appearance (~ 11 Ma) of C4 plant in the Indian subcontinent: compound specific isotopic evidence from NW Siwalik sediments, India
Professor Kanchan Pande, IIT Bombay	The causal link between Deccan Flood Basalts and the Cetaceous Mass Extinctions: A case of unfounded assumptions
Chiranjeeb Chatterjee, DES, IISER-K	U-Pb detrital zircon geochronology for provenance studies of Udayagiri domain sedimentary rocks from south eastern margin of the eastern Dharwar Craton
Anil Barla, DES, IISER-K	Accumulation of Arsenic in Monsoon fed Rice & Its Impact
Vijayananda Sarangi, DES, IISER-K	Effect of pedogenesis on isotopic values of calcrete and its implication on paleoclimatic reconstruction: A case study from Rayka section, Mahi river, India
Dr. Ranjit Shaw, Technical Domain Champion, GeoSoftware, CGG	Seismic Reservoir Characterization: AVO, Inversion & Uncertainty Quantification
Himangshu Paul, DES, IISER-K	Crustal structure and Earthquakes beneath Sikkim Himalaya

## 4.4 Department of Mathematics and Statistics (DMS)

Date	Speaker and Affiliation	Title
09.05.2014	Dr. Swarnendu Datta Yale University, USA.	Orbit method and character sheaves on unipotent groups in positive characteristic.
16.05.2014	Dr. Pinaki Sarkar National Institute of Science and Technology, Berhampur.	Key Pre - Distribution (KPD) Schemes Based On Finite Fields In WSN Security
21.05.2014	Dr. Sushil Gorai ISI, Bangalore	Polynomial convexity of finitely many totally-real subspaces of $\mathbb{C}^n$ of maximal dimension
10.06.2014	Dr. Buddhananda Banerjee ISI, Kolkata	Estimating treatment difference for binary responses in the presence of surrogate endpoints.
30.07.2014	Dr. Avijit Pal IISc, Bangalore	Contractivity, Complete Contractivity and Curvature inequalities.
31.07.2014	Mr. Gouri Shankar Seal North Eastern University, USA.	Assignment cohomology of Bott-Samelson manifolds.
06.08.2014	Dr. Subhamay Saha IISc, Bangalore	Zero-sum Stochastic Game with Partial Information and Average Payoff
08.10.2014	Prof. Pulak Ghosh IIM, Bangalore	Discovery With Data: Bayesian Advantage to Big Data and Analytics
15.10.2014	Prof. Sumitra Purakayastha ISI, Kolkata	Monotonicity of tail probability and convolution, and simpler proofs of some results in multivariate analysis using matrix algebra
15.10.2014	Dr. Sourav Pal BGU, Israel	Spectral Sets and Distinguished Varieties in the Symmetrized Bidisc
04.12.2014	Prof. Joydeep Dutta IIT, Kanpur	Error Bounds for Convex Inequality System Revisited
04.02.2015	Dr. Pradip Kundu NIT, Durgapur	Reliability Optimization and Fuzzy System Reliability
19.02.2015	Dr. Shirshendu Chowdhury TIFR CAM, Bangalore	Controllability of Linearized Compressible Navier Stokes Equations



The following scholars visited the department during this period:

Name	Duration of Visit
Dr. Sourav Pal BGU, Israel	December 3-8, 2014
Gouri Sankar Seal North Eastern University, USA.	July 28- August 8, 2014
Dr. Shirshendu Chowdhury TIFR CAM, Bangalore	February 18 -19, 2015

## Department Day

The department organised its “Department Day” on 07th February, 2015. Five talks were delivered in this event as follows:

Speaker and Affiliation	Title
Prof. Rajeeva L. Karandikar, CMI	Power and limitations of opinion polls
Bichitra K. Lenka, IISER Kolkata	On Floquet multipliers for fractional Floquet system
Dr. Buddhananda Banerjee, IISER Kolkata	An efficient method for detecting changes in the mean of functional observations
Prof. Mahan Mj, Ramakrishna Mission Vivekananda University	What is hyperbolic geometry?
Ranjit Mehataari, IISER Kolkata	Matchings and the normalized Laplacian spectrum of trees

## 4.5 Department of Physical Sciences (DPS)

Date	Speaker and Affiliation	Title
02.04.2014	Abhrajit Lasker, IMSc, Chennai	Flows at the microscale due to non-equilibrium energy transduction
09.04.2014	Dr. Rajesh K Nayak and Dr. Golam M Hossain, IISER Kolkata	On the Detection of Gravitational Waves by BICEP2
23.04.2014	Dr. Sourav Chatterjee, Department of Astronomy, University of Florida	Our Changing Understanding of Extrasolar Planets
07.05.2014	Dr. Himadri Sekhar Samanta, Institute for Physical Science & Technology, University of Maryland	Collapse transition in protein-L
23.05.2014	Pritam Khan, IISER Bhopal	Role of temperature and rigidity in controlling the light-induced response of Ge-As-Se network glasses
23.05.2014	Dr. Sandip Maity, GE Global Research	Photonics Applications in Industries and Challenges
29.05.2014	Dr. Vivek Vyas, IMSc, Chennai	Topology, charge and symmetry: some new results
04.06.2014	Dr. Parvathalu Kalakonda, Soft and Nano-materials Research Laboratory, Carnegie Mellon University	Thermoelectric Performance of Single Walled Nanotube-Filled Polymer Composites
05.06.2014	Dr. N. Nirmal Thyagu, Max Planck Institute, Goettingen, Germany	Granular slip events, electrical precursors, and role of particle shape in jamming transition
06.06.2014	Dr. Pradipta Ghosh, Instituto de Fisica Teorica UAM/CSIC, Universidad Autonoma de Madrid	Searching evidences of new physics in the light of the $\mu\nu$ SSM
09.06.2014	Arghya Choudhury, IISER Kolkata	Constraining different SUSY models in the light of LHC Experiments
11.06.2014	Dr. Rajarshi Chakrabarti, Department of Chemistry Indian Institute of Technology, Bombay	Looping and reconfiguration dynamics of a single flexible chain with internal friction

Date	Speaker and Affiliation	Title
11.06.2014	Dr. Basanta Bhaduri, Department of Electrical and Computer Engineering & Bioengineering, University of Illinois at Urbana-Champaign	Quantitative phase microscopy (QPM) for various applications in science and engineering
23.06.2014	Prof. Subodh Shenoy, TCIS, TIFR-Hyderabad	How Does A System Re-equilibrate, After A Quench?
02.07.2014	Dr. Argha Banerjee, IISER Kolkata	Dynamics of Himalayan Glaciers
16.07.2014	Dr. Sujit Bandyopadhyay, Nanometrics (UK) Ltd	White light Interferometer and its Applications
23.07.2014	Dr. Shubhendu Nandi IISER Kolkata	Persistent patterns in microtubule dipole lattices
30.07.2014	Mr. Biplab Goswami, ISM, Dhanbad	Electron impact scattering and cross sections.
06.08.2014	Dr. Abhishek Majhi, SINP, Kolkata	Energy spectrum of equilibrium black holes in LQG
06.08.2014	Prof. Sanjeev Dhurandhar, IUCAA, Pune	Gravitational Wave Astronomy: A 21st Century Astronomy
07.08.2014	Dr. Sreraman Muralidharan, Yale University	Ultrafast quantum communication across long distances
13.08.2014	Dr. Somenath Jalal IISER Kolkata	Quantum Ising Systems, Edge Modes, and Rabi Lattice
13.08.2014	Dr. Ipsita Mandal, Perimeter Institute for Theoretical Physics	Low Energy Physics of a Non-Fermi Liquid System
20.08.2014	Mr. Suman Acharyya, PRL, Ahmedabad	Master stability analysis of synchronization in nearly identical oscillators
20.08.2014	Dr. Vivek Kumar Anand, Helmholtz Zentrum Berlin	Magnetism and superconductivity in ACo <sub>2</sub> As <sub>2</sub> and APd <sub>2</sub> As <sub>2</sub> & Cluster-glass behavior in CeRuSn <sub>3</sub> and PrRhSn <sub>3</sub>
27.08.2014	Dr. Sandipan Sengupta, Raman Research Institute, Bangalore	Topological parameters in classical and quantum gravity

Date	Speaker and Affiliation	Title
27.08.2014	Prof. Igor Meglinski, University of Otago	"Bio-Photonics: Imaging and diagnostics of biological tissues utilizing polarization and coherence properties of light".
03.09.2014	Dr. Sai Vinjanampathy, National University of Singapore	Second Law for non-Markovian Quantum Systems
10.09.2014	Dr. Shyamsundar Ghosh, Indian association of the Cultivation of Science, Kolkata	Magnetic aspects of wide band-gap Semiconducting Oxides: Role of magnetic impurities and lattice defects
29.10.2014	Dr. Vivek M. Vyas, IMSc, Chennai	Gauge invariance, Goldstone theorem and gauge boson mass
19.11.2014	Dr. R. Prabhu, QIC Group, Harish-Chandra Research Institute	Multipartite quantum correlations in many-body systems
26.11.2014	Dr. Jeevan Hirale, University of Augsburg, Germany	Novel states at magnetic instability
07.01.2015	Sayan Choudhury, Cornell University	Stability of one-dimensional Floquet Bose-Einstein Condensates
21.01.2015	Dr. Amitabha Bhattacharyya, School of Physical Sciences, Sikkim University	Foam Stability of Polyelectrolyte Surfactant Solutions: Relation to Surface Rheology and Microencapsulation
28.01.2015	Dr. Sutirtha Mukhopadhyay, TIFR, Mumbai	Quantum criticality and BEC scenario in quasi 1-D Antiferromagnets - signatures in the spin dynamics.
28.01.2015	Dr. Rajdeep Sensarma, TIFR, Mumbai	Novel Phenomena in Cold Atoms: Ferromagnetic Response of a " High Temperature " Quantum Antiferromagnet
30.01.2015	Dr. Debabrata Goswami, IIT, Kanpur	Femto-Science: A Coupled Space-Time interplay between Physics and Chemistry
10.02.2015	Prof. Sibasish Ghosh, Institute of Mathematical Sciences	Ancilla assisted suppression of decoherence
18.02.2015	Prof. Deshdeep Sahdev, IIT, Kanpur	Resolving Atom in our Backyards: Indigenous Technology in a Globalized World
20.02.2015	Dr. Siddhartha Lal, IISER, Kolkata	Hall phases and a Lifshitz transition in a 2D Electron Gas with competing orders
25.02.2015	Dr. C. Malla Reddy, DCS, IISER, Kolkata	Understanding Mechanically Reconfigurable Organic Single Crystals

Date	Speaker and Affiliation	Title
04.03.2015	Arun Prasath V, Center for High Energy Physics, IISc Bangalore	Anomalous Wtb coupling and top polarization
11.03.2015	Prof. Gautam Menon, IMSc, Chennai	Active Matter
18.03.2015	Dr. Sakuntala Chatterjee, SNBNCBS, Kolkata	Boundary induced phase transition with stochastic entrance and exit
25.03.2015	Prof. Palash Baran Pal, SINP, Kolkata	Discovering particles
31.03.2015	Dr. Debjani Bagchi, Department of Physics, MS University of Baroda	Using DNA micro-mechanics to study molecular motor activity at the single molecule level

## Department Day

The Department of Physical Sciences (DPS), IISER Kolkata observed its Annual Day on 1st November 2014. To celebrate the Annual Day, DPS organized a one day meeting and discussion on emergent areas of theoretical and experimental physics. There were three invited lectures by eminent scientists: Prof. Shiraz Minwalla, TIFR Mumbai, Prof. Somendra Mohan Bhattacharjee, IOP Bhubaneswar and Prof. Kalobaran Maiti, TIFR Mumbai. There were six other talks by DPS students followed by a special evening lecture by Prof. Alok Kumar Majumdar.

## National Workshop

Dr. Goutam Dev Mukherjee organized a one day National Workshop on Studies at Extreme Conditions of Pressure and Temperature on 25th March, 2015 to prime the interest of potential researchers in high pressure studies at extreme conditions of pressure and temperature through a brainstorming discussion of ideas and results at the frontier of this exciting field. The emphasis was on the fundamental studies of structural changes and phase transitions at extreme conditions of pressure and temperature using the recently created National Centre for Laser Heated Diamond Anvil Cell Facility for High Pressure Studies in IISER Kolkata by a project grant from Ministry of Earth Sciences. Eight talks in the interdisciplinary areas of both Geosciences and Physical Sciences by eminent scientists in this field were organized.



## 4.6 Center of Excellence in Space Sciences, India (CESSI)

Date	Speaker and Affiliation	Title
15.05.2015	Sudip Bhattacharyya, TIFR, Mumbai	Study of Black Holes and Neutron Stars in the ASTROSAT Era
22.04.2015	S. P. Rajaguru, IIA, Bangalore	Helioseismology of Large Scale Flows
18.03.2015	K. Sankarasubramanian, ISRO, Bangalore	Solar Coronal Studies with Aditya Mission
18.03.2015	K. Sankarasubramanian, ISRO, Bangalore	Estimating Magnetic Field Strength from Polarimetry
17.03.2015	Robertus von Fay-Siebenburgen, University of Sheffield, UK	Living with a Star: The Sun
17.03.2015	K. Sankarasubramanian, ISRO, Bangalore	Introduction to Astronomical Magnetic Fields
12.03.2015	A. N. Ramprakash, IUCAA, Pune	India's Participation in the Thirty Metre Telescope project
10.03.2015	Durgesh Tripathi, IUCAA, Pune	Fundamentals of Solar Radiation
11.02.2015	Sugata Mitra, Newcastle University, UK	The Future of Learning
09.02.2015	Suvodip Mukherjee, IUCAA, Pune	Anomalies in CMB
13.01.2015	Nimisha G Kantharia, NCRA, Pune	Observational Techniques in Radio Astronomy
07.01.2015	Dhrubaditya Mitra, NITP, Stockholm University	From Dynamos to Sunspots: New results
06.01.2015	Dhrubaditya Mitra, NITP, Stockholm University	Blood, Sweat and Tears: Simulations of Biological Flows
17.12.2014	Debanjan Bose, SungKyunKwan University, South Korea	Highlights from the IceCube Neutrino Observatory

Date	Speaker and Affiliation	Title
26.09.2014	Ranjan Gupta, IUCAA, Pune	Upcoming Very Large Telescopes
03.09.2014	Swati Baruah, Institute of Plasma Physics, Gandhinagar	The Role of Different Interaction Potentials on Dust Crystal Formation
06.08.2014	Sanjeev Dhurandhar, IUCAA, Pune	Gravitational Wave Astronomy: A 21st Century Astronomy
30.07.2014	Dipanjan Mukherjee, IUCAA, Pune	Magnetically confined accretion mounds on Neutron stars
08.05.2014	Shravan Hanasoge, TIFR, Mumbai	Imaging the 3-D Interior of the Sun
10.04.2014	Nandita Srivastava, Udaipur Solar Observatory, PRL	Evolution, Interaction and Impact of Coronal Mass Ejections





# PUBLICATIONS

## 5.1

### Publications of Faculty Members

#### 5.1.1

### Department of Biological Sciences

#### Journal Articles

Karunakaran, Anoop and **Annagiri, Sumana**. 2015. "Response to a change in the target nest during ant relocation." *Journal of Experimental Biology*, 218, 887-892

Kaur, Rajbir and **Annagiri, Sumana**. 2015. "Influence of colony associated factors on nest selection in an Indian queenless ant." *Ecological Entomology*, 40, 78–84

Kaur, Rajbir and **Annagiri, Sumana**. 2014. "Coupled adult-brood transport augments relocation in the Indian queenless ant *Diacamma indicum*." *Insectes Sociaux*, 61, 141-143

Nandi, Anjan K; **Annagiri, Sumana** and Bhattacharya, Kunal. 2014. "Social insect colony as a biological regulatory system: modelling information flow in dominance networks." *Journal of Royal Society London Interface*, 11, 20140951

**Bhadra, Anindita**. 2014. "Science threatened by Subjectivity." *Current Science*, 107, 343-345

**Bhadury, Punyasloke**. 2014. "Molecular biodiversity of benthic communities in deep-sea sediments- examples from the phylum Foraminifera and Nematoda." *Indian Journal of Geomarine Sciences*, 43, 709-713

**Bhadury, Punyasloke**; Mandal N.; Ansari KGMT; Philip P.; Pitale R; Prasade A.; Nagale P. and Apte D. 2015. "Checklist of free-living marine nematodes from intertidal sites along the central west coast of India." *Check List*, 11, 1605

Choudhury, A. K. and **Bhadury, Punyasloke**. 2014. "Phytoplankton study from the Sundarbans ecoregion with an emphasis on cell biovolume estimates- a review." *Indian Journal of Geo-Marine Sciences*, 43:1-9

Ghosh, Devanita; **Bhadury, Punyasloke** and Routh, Joyanto. 2014. "Diversity of arsenite oxidizing bacterial communities in arsenic-rich deltaic aquifers in West Bengal, India." *Frontiers in Microbiology*, 605, 1-14

Land, Peter E; Shutler, Jamie D; Findlay, Helen S; Girard-Ardhuin, Fanny; Sabia, Roberto; Reul, Nicolas; Piolle, Jean-Francois; Chapron, Bertrand; Quilfen, Yves; Salisbury, Joseph; Vandemark, Douglas; Bellerby, Richard and **Bhadury, Punyasloke**. 2015. "Salinity from space unlocks satellite-based monitoring of ocean acidification." *Environmental Science and Technology*, 49, 1987-1994

Samanta B. and **Bhadury, Punyasloke**. 2014. "Analysis of diversity of chromophytic phytoplankton in a mangrove ecosystem using rbcL gene sequencing." *Journal of Phycology*, 50:328-340

Srichandan, Suchismita; Kim, Ji Yoon; **Bhadury, Punyasloke**; Barik, Saroja K; Muduli, Pradipta R; Samal, Rabindro N; Pattnaik, Ajit K and Rastogi, Gurdeep. 2015. "Spatiotemporal distribution and composition of phytoplankton assemblages in a coastal tropical lagoon; Chilika, India." *Environmental Monitoring and Assessment*, 187, 147

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

Chatterjee, Dhriti; Addya, Sankar; Khan, Reas S; Kenyon, Lawrence C; Choe, Alexnader; Cohrs, Randall J; Shindler, Knneth S and **Das Sarma, Jayasri**. 2014. "Mouse hepatitis virus infection upregulates genes involved in innate immune responses.." *PLoS One*. , 9, 14

Ganivada, Mutyala Naidu; Nerella, Vijayakameswara Rao; Dinda, Himadri; Kumar, Pawan Pawan; **Das Sarma, Jayasri** and Shunmugam, Raja. 2014. "Biodegradable Magnetic Nanocarrier for Stimuli Responsive Drug Release." *Macromolecules*, 47, 2703-2711\*

Kishore, Abhinoy; Biswas K, Rao VN, Shunmugam R, **Das Sarma, Jayasri**. 2014. "Functionalized single walled carbon nanotubes facilitate efficient differentiation of neuroblastoma cells in vitro." *RSC Advances*, 4, 53777-53787\*

Mane, S. R., Dinda, H., Sathyan, A., Shunmugam, R., and **Das Sarma, Jayasri**. 2014. "Increased Bioavailability of Rifampicin from Stimuli-Responsive Smart Nano Carrier." *ACS Applied Materials and Interfaces*, 19, 16895- 902\*

Rao, Vijay N; Dinda, Himadri; N, Ganivada M; **Das Sarma, Jayasri** and Shunmugam, Raja. 2014. "Efficient approach to prepare multiple chemotherapeutic agent conjugated nanocarrier.." *Chemical Communications*, 50, 13540-3\*

Rao, Vijayakameswara N.; Dinda, Himadri; Venu, Parvathy; **Das Sarma, Jayasri** and Shunmugam, Raja. 2014. "Smart nanocarrier from norbornene based triblock copolymers for the sustained release of multi-cancer drugs." *RSC Advances*, 4, 45625-45634.\*

**Dharmarajan, Guha**. 2015. "Inbreeding in stochastic subdivided mating systems: The genetic consequences of host spatial structure, aggregated transmission dynamics and life history characteristics in parasite populations." *Journal of Genetics*, 94, 43-53



Kumar, Nitesh; Dutta, Priyanka; **Maiti, Sankar**; Somlata; Mazumder, Mohit and Gourinath, Samudrala. 2014. "EhCoactosin stabilizes actin filaments in the protist parasite *Entamoeba histolytica*." *PLoS Pathogen*, 10, e1004362

Singh, Ravi K; Gase, Klaus; Baldwin, Ian T and **Pandey, Shree Prakash**. 2015. "Molecular evolution and diversification of the Argonaute family of proteins in plants." *BMC Plant Biology*, 15, 23

Srivastava, Prashant K; Moturu, Taraka Ramji; Pandey, Priyanka; Baldwin, Ian T and **Pandey, Shree Prakash**. 2014. "A comparison of performance of plant miRNA target prediction tools and the characterization of features for genome-wide target prediction." *BMC Genomics*, 15, 348

Mandal, Soumik; Poria, Dipak Kumar; Ghosh, Ritabrata; **Ray, Partho Sarothi** and Gupta, Parna. 2014. "Development of a cyclometalated iridium complex with specific intramolecular hydrogen-bonding that acts as a fluorescent marker for the endoplasmic reticulum and causes photoinduced cell death." *Dalton Transactions*, 43, 17463\*

Mandal, Soumik; Poria, Dipak K.; Seth, Dipravath K., **Ray, Partho Sarothi** and Gupta, Parna. 2014. "Cyclometalated rhodium and iridium complexes with imidazole containing Schiff bases: Synthesis, structure and cellular imaging". *Polyhedron*, 73, 12-21\*

**Ray, Partho Sarothi** and Fox, Paul L. 2014. "Origin and Evolution of Glutamyl-prolyl tRNA synthetase WHEP domains reveal evolutionary relationships within holozoa." *PLoS One*, 9, e98493

Roy, Saheli; Arora, Sneha; Kumari, Poonam and **Ta, Malancha**. 2014. "A simple and serum-free protocol for cryopreservation of human umbilical cord as source of Wharton's jelly mesenchymal stem cells." *Cryobiology*, 68, 467-472

Sharma, Tulika; Kumari, Poonam; Pincha, Neha; Mutukula, Naresh; Saha, Shekhar; Jana, Siddhartha Sankar and **Ta, Malancha**. 2014. "Inhibition of non-muscle myosin II leads to G0/G1 arrest of Wharton's jelly-derived mesenchymal stromal cell." *Cytotherapy*, 16, 640-652

Swamynathan, Priyanka; Venugopal, Parvathy; Kannan, Suresh; Thej, Charan; Kolkundar, Uday Kumar; Bhagwat, Swaroop; **Ta, Malancha**; Majumdar, Anish Sen and Balasubramanian, Sudha. 2014. "Are serum-free and xeno-free culture conditions ideal for large scale clinical grade expansion of Wharton's jelly derived mesenchymal stem cells? A comparative study." *Stem Cell Res and Therapy*, 5, 88

## Book

**Khurana, Sukant**. 2014. *A Case Against Alcohol Prohibition In India*. Los Gatos, USA: Smashwords. ISBN: 9781310577147

## Book Chapter

Chakraborty, Anirban; Dasgupta, Chanchal K and **Bhadury, Punyasloke**. 2014. "Application of molecular techniques for assessment of microbial communities in contaminated sites" in *Microbial Biodegradation and Bioremediation*, edited by S Das, Elsevier, Philadelphia, USA, ISBN: 9780128000212.

## 5.1.2

### Department of Chemical Sciences

## Journal Articles

**Bandyopadhyay, Subhajit** and Roy, Saswata. 2014. "Determination and Comparison of Carbonyl Stretching Frequency of a Ketone in Its Ground State and the First Electronic Excited State." *Journal of Chemical Education*, 91, 1995-1998

Hatai, Joydev and **Bandyopadhyay, Subhajit**. 2014. "Photoreversible Assembly–Disassembly of a Polymeric Structure by Using an Azobenzene Photoswitch and  $\text{Al}^{3+}$  Ions." *Chemistry - A European Journal*, 20, 10020

Roy, Biswajit; Mondal, Debasish; Hatai, Joydev and **Bandyopadhyay, Subhajit**. 2014. "A highly efficient tandem [3 + 2] "click" cycloaddition /6-exo-cyclization strategy for the construction of triazole fused pyrazines." *RSC Advances*, 4, 56952-56956

Samanta, Mousumi; Siva Rama Krishna, V and **Bandyopadhyay, Subhajit**. 2014. "A photoresponsive glycosidase mimic." *Chemical Communications*, 50, 10577-10579

**Bhattacharyya, Sayan**. 2015. "The Iron Nitride Family at Reduced Dimensions: A Review of their Synthesis Protocols and Structural and Magnetic Properties." *Journal of Physical Chemistry C*, 119, 1601-1622

Datta, Abheek; Kapri, Sutanu and **Bhattacharyya, Sayan**. 2015. "Enhanced Catalytic Activity of Palladium Nanoparticles Confined Inside Porous Carbon in Methanol Electro-Oxidation." *Green Chemistry*, 17, 1572-1580

Datta, Abheek; Sadhu, Anustup; Santra, Subhankar; Shivaprasad, S. M.; Mandal, Swadhin K. and **Bhattacharyya, Sayan**. 2014. "Pd nanoparticle concentration dependent self-assembly of  $\text{Pd@SiO}_2$  nanoparticles into leaching resistant microcubes." *Chemical Communications*, 50, 10510-10512

Debnath, Bharati; Halder, Ganga and **Bhattacharyya, Sayan**. 2014. "One-step Synthesis, Structural and Optical Characterization of Self-assembled ZnO Nanoparticle Clusters with Quench-induced Defects." *Science of Advanced Materials*, 6, 1160-1169

- Sadhu, Anustup; Singh, Shiv Prakash and **Bhattacharyya, Sayan**. 2014. "Direct Correlation of the Morphologies of Metal Carbonates, Oxycarbonates and Oxides Synthesized by Dry Autoclaving to the Intrinsic Properties of the Metals." *Crystal Growth and Design*, 14, 4060-4067
- Dutta, Pradip K; Panda, Snigdha; **Chaudhuri, Debangshu** and **Zade, Sanjio S.** 2014. "Reduced fluorenoazomethine based photoluminescence turn-on sensors for transition metal ions." *RSC Advances*, 4, 33955-33957
- Bauri, K.; Li, R.; Faust, R.; **De, Priyadarsi**. 2015. "Synthesis and Self-assembly of Polyisobutylene Based Thermoresponsive Diblock copolymers via combination of Cationic and RAFT Polymerizations." *Macromolecular Symposia*, 349, 65-73.
- Halder, U.; Ramakrishnan, L.; Sivaprakasam, K.; **De, Priyadarsi**. 2014. "Main-chain sulphur containing water soluble poly(N-isopropylacrylamide-co-N,N-dimethylacrylamide sulphide) copolymers via interfacial polycondensation." *Polymer*, 55, 5656-5664.
- Kedia, N.; Roy, S. G.; **De, Priyadarsi**; Bagchi, S. 2014. "Synthesis of a Polymer Bearing Several Coumarin Dyes Along the Side-Chain and Study of its Fluorescence in Pure and Binary Solvent Mixtures as well as Aqueous Surfactant Solutions." *Journal of Physical Chemistry B*, 118, 4683-4692.
- Kumar, R.; **De, Priyadarsi**; Zheng, B.; Huang, K.-W.; Emert, J.; Faust, R. 2015. "Synthesis of Highly Reactive Polyisobutylene by FeCl<sub>3</sub>/Ether Complexes in Hexanes; Kinetic and Mechanistic Studies," *Polymer Chemistry*, 6, 322-329.
- Kumar, S.; Acharya, R.; Chatterji, U.; **De, Priyadarsi**. 2014. "Controlled synthesis of  $\beta$ -sheet polymers based on side-chain amyloidogenic short peptide segments via RAFT polymerization." *Polymer Chemistry*, 5, 6039-6050.
- Maiti, B.; Kumar, S.; **De, Priyadarsi**. 2014. "Controlled RAFT Synthesis of Side-Chain Oleic Acid Containing Polymers and Their Post-Polymerization Functionalization." *RSC Advances*, 4, 56415-56423.
- Narayanan, A., Bauri, K., Ruidas, B., Pradhan, G., Banerjee, S., and **De, Priyadarsi**. 2014. "Specific Counterion Repercussions on the Thermal, pH-Response, and Electrochemical Properties of Side-Chain Leucine Based Chiral Polyelectrolytes." *Langmuir*, 30, 13430-13437
- Roy, Saswati Ghosh; Bauri, Kamal; Pal, Sunirmal and **De, Priyadarsi**. 2014. "Tryptophan containing covalently cross-linked polymeric gels with fluorescence and pH-induced reversible sol-gel transition properties." *Polymer Chemistry*, 5, 3624-3633

Roy, S. G.; **De, Priyadarsi**. 2014. "Facile RAFT synthesis of side-chain amino acid containing pH responsive hyperbranched and star architectures." *Polymer Chemistry*, 5, 6365-6378.

Roy, S. G.; **De, Priyadarsi**. 2014. "pH Responsive Polymers with Amino Acids in the Side Chains and Their Potential Applications." *Journal of Applied Polymer Science*, 131, 41084.

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Vaish, A.; Roy, S. G.; **De, Priyadarsi**. 2015. "Synthesis of Amino Acid Based Covalently Cross-Linked Polymeric Gels Using Tetrakis(hydroxymethyl) Phosphonium Chloride as a Cross-Linker." *Polymer*, 58, 1-8.

Bag, Arijit and **Ghorai, Pradip Kumar**. 2015. "Computational investigation of the ligand field effect to improve the photoacoustic properties of organometallic carbonyl clusters." *RSC Advances*, 5, 31575-31583.

Sinha, Vivek; **Ghorai, Pradip Kumar**. 2014. "CO adsorption on  $\text{Fe}_N$  ( $N = 1-4$ ) transition metal clusters: a density functional theory study" *Current Science*, 106, 1243-1248

Bera, Santu; Maity, Sibaprasad and **Haldar, Debasish**. 2015. "Assembly of encapsulated water in hybrid bisamides: helical and zigzag water chains." *CrystEngComm*, 17, 1569-1575

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Maji, Krishnendu; Sarkar, Rajib; Bera, Santu and **Haldar, Debasish**. 2014. "A small molecule peptidomimetic of spider silk and web." *Chemical Communications*, 50, 12749-52

Paikar, Arpita; Pramanik, Apurba and **Haldar, Debasish**. 2015. "Influence of side-chains interactions on the self-assembly of discotic tricarboxyamides: A crystallographic insight." *RSC Advances*, 5, 31845-51

Li, Y.; Mondal, K. C.; Samuel, P. P.; Zhu, H.; Orben, C. M.; Panneerselvam, S.; Dittrich, B.; Schwederski, B; Kaim, W.; Mondal, T.; **Koley, Debasis** and Roesky, H. W. 2014. " $\text{C}_4$  Cumulene and the Corresponding Air-Stable Radical Cation and Dication." *Angewandte Chemie International Edition*, 53, 4168-72.

Maity, Bholanath and **Koley, Debasis**. 2014. "Mechanistic investigation of the reactivity of disilene with nitrous oxide: A DFT study." *Journal of Molecular Graphics and Modelling*, 51, 50-63

Maity, Bholanath; Mondal, Totan; Dey, Kaustav; Biswas, Sankarsan and **Koley, Debasis**. 2015. "The Role of Ligands in Controlling Regioselectivity in Ruthenium-Catalyzed Addition of Carboxylic Acids to Terminal Alkynes: A DFT Study." *Journal of Chemical Sciences*, 127, 281-293

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Roy, Sudipta; Mondal, Kartik Chandra; Krause, Lennard; Stollberg, Peter; Stalke, Dietmar; Meyer, Jann; Stückl, A. Claudia; Maity, Bholanath; **Koley, Debasis**; Vasa, Suresh kumar; Xiang, Sheng Qi; Linser, Rasmus and Roesky, Herbert W.. 2014. "Electron-Induced Conversion of Silylones to Six-Membered Cyclic Silylenes." *Journal of American Chemical Society*, 136, 16776

Samanta, Tuhin; Hazra, Chanchal and **Mahalingam, Venkataramanan**. 2015. "3. C-dots Sensitized  $\text{Eu}^{3+}$  Luminescence from  $\text{Eu}^{3+}$ -Doped  $\text{LaF}_3/\text{C}$  dots Nanocomposites." *New Journal of Chemistry*, 39, 106-109

Roy, Sudipta Raha; Nijamudheen, A; Pariyar, Anand; Ghosh, Anup; Vardhanapu, Pavan; **Mandal, Prasun Kumar**; Datta, Ayan and **Mandal, Swadhin Kumar**. 2014. "Phenalenyl in a Different Role: Catalytic Activation through the Nonbonding Molecular Orbital." *ACS Catalysis*, 4, 4307- 4319

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



## 5.2

### Student Publications

#### Journal Articles

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#### Conference Proceedings

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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

### Report of Activities (2014-15)

The student community at IISER-K is represented by the Gymkhana Committee which looks into the different aspects of the well being and development of students. 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, transport committee etc., to look after specific issues.

Like every year, 2014-15 also saw a lot of student club activities. The Arts Club organized two rounds of Face Painting events, followed by a Black book drawing workshop, a Kit making and Cartoon Drawing event which was succeeded by the Rangoli competition (during Diwali) and the annual art exhibition – Alter Ego. The Athletics Club introduced a cycling event this year and conducted Kho-Kho and Kabaddi tournaments too. The club was also responsible for coordinating the Independence Day marathon and the first Ekta run on campus. The Badminton club, Basketball club, Chess club, Cricket Club, Football Club, Table tennis Club and Volleyball Club organized intra and inter batch tournaments for the students. A DJ night and an Inter Batch dance competition was organized by the Dance club this year. It was the first time that the club represented IISER-K in a street dance competition organized by IIT Kanpur. The Dramatics Club put forward a 24 hour







drama competition and a short silent act show on the occasion of Teachers' Day. The highlight of their session was the Annual Drama Night which was the staging of the Indian adaptation of the English play "Arsenic & Old Lace". The Gym and Body-Building Club encouraged students to be fit and conducted several physical activities. The literary club organized a host of activities over the year- Spell Bee, Compatibility Meter, Le Quiz and a debate. The Movie club, this year, successfully conducted a foreign language film festival under the name 'Avant Garde', for the first time and around 16 movies were screened. The Music Club hosted events like the Karaoke Night, Acoustica-I, Live Music night, Acoustica-II and Classical Night. Events planned and executed by the Nature Club included a Campus walk, a Hanging garden making, a trip to the Madhyamgram snake park, my tree challenge (a tree planting campaign) and an eco quiz. The club screened a few documentaries on nature and environment too. The photography club actively chronicled the various student activities of IISER Kolkata and organized the monthly photography contest. The Science Club conducted a sky gazing event and a trip to the Indian Museum.

96 students participated in the third edition of the Inter IISER Sports Meet (IISM) at Mohali; the football team from IISER-K was declared joint





winners. The teams in Table Tennis (boys and girls) were runners up in their respective events. IISER-K picked an individual medal in Athletics (Javelin throw).

Five years ago, a group of enthusiastic individuals came together to take up the responsibility of inculcating a scientific temperament in the student fraternity across the country. Thus was born the idea of INQUIVESTA. Subsequent editions met with success and motivated us to relive the “Inquivesta Dream”. This year Inquivesta was held from February 27th – March 1st, 2015, coinciding with the celebrations of National Science Day on February 28th. Prof. Sibaji Raha, Director of Bose Institute, graced the occasion and delivered the inaugural address on the evening of February 27th. The inaugural address was followed by a slew of music and dance performances by the students of IISER-Kolkata. Prof. Asok Mallick, Honorary Professor at IEST, delivered the Science Day lecture.

Inquivesta 2015 had 19 different events, each directed at testing the various skills of the participants. This year also saw the introduction of events like Just-A-Minute (JAMpacked) and a mime-act competition (Take Two), adding a cultural element to Inquivesta. Several online events were opened for participants a month earlier. Over a thousand participants registered to be part of India's largest science festival.

All the events had enthusiastic participation, with students coming from institutes like JU, CU, IEST, Presidency College, St. Xavier's College, Kalyani University, BCKV, NISER and NLS (Jodhpur) among others. Overall it was a grand success.

In addition to that students celebrated regional festival like Onam, Saraswati Puja, Janmashtami and Lohri this year and all the festivals were a grand success.





# OUTREACH

## 7

## Outreach

## 7.1

### IISER Kolkata initiatives for the Promotion of Science in Society

Focusing on the vision of IISER Kolkata as one of the premier institutes for science education and research in India, outreach activities of IISER Kolkata are essential and integral parts of our mission to engage and attract broader sections of the society at local, national and international levels to the needs and benefits of the ongoing basic science education and research at IISER Kolkata.

To fulfil the outreach mission, the faculty, students and staff members of the institute regularly take part in various outreach programs for the promotion of science in society. These include various lectures in schools, colleges and universities and organizing workshop and seminars on science in various events. A few of the IISER Kolkata outreach events during 2014-15 are listed below.





## 7.2

### **DST Sponsored National Science (VIJYOSHI) Camp 2014**

IISc Bangalore and IISER Kolkata jointly organized the DST sponsored National Science (VIJYOSHI) camp for the year 2014. From November 10 to 12, 2014, IISER Kolkata organized the VIJYOSHI camp for the KVPY fellows, INSPIRE scholars and undergraduate students from IISc, IISERs, IITs, NISER and central universities. The three-day program was conducted with the active support from the students, staff and faculty members from IISER Kolkata. Series of scientific lectures by eminent scientists from India and abroad were delivered during the camp. Mathematical models and a number of experiments on physical, chemical and biological sciences were demonstrated to the participants to excite them about basic science education and research.

## 7.3

### **Asia Student Photonics Conference-2014**

Students of IISER Kolkata under the guidance of IISER Kolkata faculty advisors organized international conference and workshop on photonics. The conference was held from July 18 to July 21, 2014. Eminent scientists from USA, Canada, Japan, UK, Belgium, Singapore and India participated as speakers and instructors for the conference and workshop.





## 7.4

### Asian Academic Seminar 2015

IISER Kolkata organized DST (India) and Japan Society for the Promotion of Science sponsored international seminars on chemical sciences from 6-10 March, 2015. Eminent scientists from Japan, Korea, France, USA, Thailand and India participated in the program as speakers and delivered talks on chemical sciences to the student participants from Japan, Korea, Thailand and India.

## 7.5

### EK PAHEL

Ek Pahel is a youth-led initiative by the students of IISER Kolkata which empowers children of the underprivileged strata of the society. The students of IISER Kolkata have organized Ek Pahel programme to bring the children of the local area to learn about the excitement of science. IISER Kolkata students interact with the local children on regular basis and teach them about all branches of science and boost them about learning and understanding science education and research.



## 7.6

### **IISER Kolkata visit by Students from North-East India**

As a special drive in outreach activities, IISER Kolkata organized an academic tour for students from North-East India. A group of 11 students along with two of their teachers visited IISER Kolkata on November 13, 2014. Faculty members from different departments delivered popular science talks and the students visited different laboratories to know about scientific experiments and discoveries.

## 7.7

### **IISER Kolkata visit by Students from Nearby Academic Institutes**

As a part of outreach activities, IISER Kolkata organized laboratory visit by the MSc (Zoology) students from the West Bengal State University on December 8, 2014. IISER Kolkata also organized laboratory visit and seminars for the students from Shantipur College on March 12, 2015.

## 7.8

### **Participation in Science Fair and Science Exhibition**

To spread the general knowledge and awareness about science in communities, the students and faculty members of IISER Kolkata participated in the "18TH NATIONAL SCIENCE EXHIBITION on the theme of SERVICE TO THE NATION FOR PROGRESS OF INDIA", held during 3-7 September 2014 at Amarabati Maidan, Sodepur, Kolkata and in the "Prof. S. N. Bose Science, Agriculture & Book Fair - 2015" at Barajaguli, Nadia.









# KEY COMMITTEES

# 8

## Key Committees

### 8.1

#### Board of Governors

<b>Shri Pankaj R Patel,</b> Chairman & Managing Director Cadila Health Care Ltd.	<i>Chairperson</i>	<b>Shri G. B. Pradhan,</b> Secretary, Deptt. of New & Renewable Energy, Government of India	<i>Member</i>
<b>Secretary,</b> Higher Education, Ministry of Human Resource Development, Government of India	<i>Ex-officio Member</i>	<b>Chief Secretary,</b> Govt. of West Bengal	<i>Ex-officio Member</i>
<b>Prof. R. N. Mukherjee,</b> Director IISER, Kolkata	<i>Ex-officio Member</i>	<b>Prof. Narayan Banerjee,</b> Professor IISER, Kolkata	<i>Member</i>
<b>Prof. Anurag Kumar,</b> Director Indian Institute of Science Bangalore	<i>Ex-officio Member</i>	<b>Prof. Soumitro Banerjee,</b> Professor IISER, Kolkata	<i>Member</i>
<b>Prof. Indranil Manna,</b> Director Indian Institute of Technology Kanpur	<i>Member</i>	<b>Two eminent scientists to be nominated by the Council,</b>	<i>Members</i>
<b>Dr. Shailesh Nayak,</b> Secretary, Ministry of Earth Sciences, Government of India	<i>Member</i>	<b>Financial Advisor,</b> Ministry of Human Resource Development Government of India	<i>Ex-Officio Member</i>
		<b>Shri Joydeep Sil,</b> Registrar IISER, Kolkata	<i>Secretary</i>

## 8.2

### Finance Committee

<b>Shri Pankaj R. Patel</b> Chairman and Managing Director Zydus Cadila	<i>Chairman</i>	<b>Director (Mgt.)</b> Higher Education Ministry of Human Resource Development	<i>Member</i>
<b>Prof. R. N. Mukherjee</b> Director IISER Kolkata.	<i>Ex-officio Member</i>	<b>Prof. Sreebrata Goswami</b> Sr. Professor & Dean (Academic) Department of Inorganic Chemistry, IACS, Jadavpur, Kolkata.	<i>Member</i>
<b>Joint Secretary &amp; Financial Advisor</b> Department of Higher Education Ministry of Human Resource Development Government of India	<i>Member</i>	<b>Shri A. N. Bokshi</b> Consultant Ministry of Human Resource Development Government of India	<i>Member</i>

## 8.3

### SENATE

<b>Prof. R. N. Mukherjee</b> Director IISER Kolkata.	<i>Chairman</i>	<b>Prof. Nilanjana Gupta</b> Professor, Department of English, Jadavpur University, Kolkata.	<i>Member</i>
<b>Prof. Ajoy Kumar Roy</b> Director IEST, Shibpur, Howrah.	<i>Member</i>	<b>Prof. Soumitro Banerjee</b> Professor, Department of Physical Sciences & Dean, Students IISER, Kolkata.	<i>Member</i>
<b>Prof. Pratim Kumar Chattaraj</b> Dean of Faculty, Department of Chemistry, IIT Kharagpur.	<i>Member</i>	<b>Prof. Prasanta K Panigrahi</b> Professor, Department of Physical Sciences & Dean, Faculty IISER Kolkata.	<i>Member</i>

<b>Prof. Narayan Banerjee</b> Professor, Department of Physical Sciences, IISER Kolkata.	<i>Member</i>	<b>Dr. Punyasloke Bhadury</b> Head, Department of Biological Sciences, IISER Kolkata.	<i>Member</i>
<b>Prof. Asok Kumar Nanda</b> Head, Department of Mathematics & Statistics, IISER Kolkata.	<i>Member</i>	<b>Dr. Raja Shunmugam</b> Head, Department of Chemical Sciences, IISER Kolkata.	<i>Member</i>
<b>Prof. Somnath Dasgupta</b> Vice-Chancellor, Assam University, Silchar.	<i>Member</i>	<b>Dr. Prasanta Sanyal</b> Head, Department of Earth Sciences, IISER Kolkata.	<i>Member</i>
<b>Dr. Ananda Dasgupta</b> Dean, Academic, IISER Kolkata.	<i>Member</i>	<b>Dr. Bipul Pal</b> Head, Department of Physical Sciences, IISER Kolkata.	<i>Member</i>
<b>Dr. Dibyendu Nandi</b> Dean, Research and Development IISER Kolkata.	<i>Member</i>		

## 8.4

### Building Works Committee (BWC)

<b>Prof. R. N. Mukherjee</b> Director IISER Kolkata.	<i>Chairperson</i>	<b>Shri Siddhartha Roy</b> Circle Manager & Suptd. Engineer WBSEDCL, Nadia Circle, Kalyani.	<i>Member</i>
<b>Shri T. V. Prabhakaran</b> Architect	<i>Member</i>	<b>Shri A. K. Das</b> Project Manager, IISER Kanchrapara Project Circle, CPWD, Kanchrapara.	<i>Member</i>
<b>Prof. Soumitro Banerjee</b> Professor, Department of Physical Sciences & Dean, Students, IISER Kolkata.	<i>Member</i>	<b>Shri Joydeep Sil</b> Registrar, IISER Kolkata.	<i>Ex-officio Member</i>
<b>Chief Engineer</b> EZ – CPWD	<i>Member</i>		





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