IISER KOLKATA

Indian Institute of Science Education & Research, Kolkata

(Under the Ministry of Human Resource Development, Deptt. of Higher Education, Govt. of India)

Annual Report
2009-2010

ANNUAL REPORT

2009-2010

Indian Institute of Science Education and Research, Kokata

Mohanpur Campus, P.O. BCKV Campus Main Office

Mohanpur – 741 252, Dist – Nadia, West Bengal

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CONTENTS

PART A

I. Foreword

It is a pleasure to write about our progress over the year 2009 – 2010.

We have consolidated our Earth science programme by selective recruitment of a set of extremely motivated and bright young faculty. Some of them have moved from other IIT's. We feel very proud that IISER Kolkata has now got a very good Department of Earth Sciences and we are able to provide Earth Science Major to our dual degree MS-BS students.

We are continuing to add to the already existing excellent experimental facilities in terms of a Confocal Microscope, a Micro-Calorimeter, an Optical Tweezer and an Atomic Force Microscope. Our Squid Magnetometer is already installed and I am happy to note, my colleagues have started collecting data from this system. Scientists from other institutes are also using this facility.

As we are continuing to thrive in our temporary campus of the West Bengal University of Animal & Fishery Sciences, our focus of attention is now shifting to the adjoining permanent campus, where construction activities are in full swing. We expect a hostel plus dinning hall facility for 800 students to be operational by June 2011. Our Laboratory Complex and Lecture Theatres are also expected to be ready by next year-end.

On the Education and Research front several of our third and fourth year MS-BS students had gone abroad, mostly to Germany and the USA, to do Summer Projects during the year 2010. Many obtained DAAD Fellowship, Khurana Fellowship, etc., for carrying out these projects. Our Faculties have also maintained a steady stream of research publications in international journals of repute. With more than 60 Faculty Members, about 400 undergraduate students and about 100 research students the campus is buzzing with activities, and we all feel very proud to be a part of this budding institute.

Sushanta Dattagupta
Director

II. Members of the Society

1. Dr. R. A. Mashelkar — Chairman
   Bhatnagar Fellow and President, Global Research Alliance
   National Chemical Laboratory,
   Dr. Homi Bhabha Road,
   Pune-411 008

2. The Chief Secretary — Member
   Government of West Bengal
   Writers' Building, Kolkata-700 001

3. Prof. S. Dattagupta — Member
   Director,
   Indian Institute of Science Education and Research, Kolkata
   C/o National Institute of Technical Teachers' Training & Research,
   Block- FC, Sector III, Salt Lake,
   Kolkata-700106

4. The Secretary (S & HE), — Member
   Ministry of HRD,
   Government of India,
   Shastri Bhawan,
   New Delhi-110 001

5. The Secretary — Member
   Department of Science and Technology
   Technology Bhavan
   New Mehrauli Road
   New Delhi-110 016

6. Director — Member
   Indian Institute of Technology, Kharagpur
   Kharagpur-721 302

7. The Chairman — Member
   University Grants Commission
   Bahadur Shah Zafar Marg
   New Delhi-110 002

8. Dr. Sunil Sarangi — Member
   Director
   National Institute of Technology
   Rourkela-769 008

9. **Dr. Sibaji Raha** — **Member**
Director
Bose Institute
93/1 Acharya Prafulla Chandra Road
Kolkata – 700 009, West Bengal, India

10. **Ms. Sushma Nath** — **Member**
Secretary
Government of India
Department of Expenditure
Ministry of Finance
North Block, Central Secretariat
New Delhi – 110 003

11. **Dr. M. K. Bhan** — **Member**
Secretary
Government of India,
Department of Biotechnology,
Block No. 2, CGO Complex, Lodi Road
New Delhi-110 003

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Mumbai-400 001

13. **The Chairman** — **Member**
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Govermemnt of India
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New Delhi-110 003

14. **The Secretary** — **Member**
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Lokmanya Bhavan
3rd Floor, Khan Market
New Delhi-110 003

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Council of Scientific and Industrial Research
Anusandhan Bhawan
2, Rafi Ahmed Kidwai Marg
New Delhi -110 001

16. Prof. Promod Tandon — Member
Vice Chancellor
North-Eastern Hill University, Permanent Campus
Umshing Mawkynroh
Shillong-793 022 Meghalaya

17. Prof. D. P. Singh — Member
Vice Chancellor
Beneras Hindu Unversity
Varanasi-221 005 (U.P.)

18. The Director — Member
Indian Institute of Science
Bangalore-560 012
Karnataka

19. Prof. K. N. Ganesh — Member
Director
Indian Institute of Science Education and Research (IISER),
First floor, Central Tower,
Sai Trinity Building, Garware Circle,
Sutarwadi, Pashan,
Pune-411 021

20. Mr. Joydeep Sil — Non-Member Secretary
Registrar
Indian Institute of Science Education and Research
Kolkata Campus, NITTTR, Block - FC,
Sector-III, Salt Lake City,
Kolkata-700 106

III. Board of Governors

BOG MEMBERS FOR THE PERIOD FROM 1st APRIL 2009 TO 23rd AUGUST 2009

1. **Prof. C. N. R. Rao, F.R.S.** — Chairman
   Chairman, BoG, IISER, Kolkata & Honorary President,
   Jawaharlal Nehru Centre for Advanced Scientific Research
   Jakkur Campus, P. O. Jakkur
   Bangalore-560 064

2. **Shri R. P. Agrawal** — Member
   Secretary
   Ministry of Human Resource Development
   Department of Secondary & Higher Education
   Shastri Bhawan,
   New Delhi-110 001

3. **Prof. Sushanta Dattagupta** — Member
   Director
   Indian Institute of Science Education & Research (IISER), Kolkata
   IIT Kharagpur Kolkata Campus, Salt Lake
   Kolkata - 700 106

4. **Prof. K. N. Ganesh** — Member
   Director
   IISER, Pune & Division of Organic Chemistry (Synthesis)
   National Chemical Laboratory
   Pune-411 008

5. **Prof. Damodar Acharya** — Member
   Director
   Indian Institute of Technology Kharagpur
   Kharagpur-721 302

6. **Prof. P. Balaram** — Member
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   Indian Institute of Science
   Bangalore - 560 012

7. **Dr. G. Madhavan Nair** — Member
   Chairman
   Indian Space Research Organisation
   ISRO Headquarters, Antariksh Bhavan
   New BEL Road
   Bangalore-560 094

8. **Dr. M. K. Bhan** — Member
   Secretary
   Department of Biotechnology
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   Block-2, 7th Floor, CGO Complex,
   Lodi Road
   New Delhi-110 003

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Secretary
Dept. of Science & Technology
Technology Bhawan, New Mehrauli Road
New Delhi-110 016

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Chief Secretary
Government of West Bengal
Writers' Building,
Kolkata-700 001

11. Prof. Bikash Sinha — Member
Director
Saha Institute of Nuclear Physics
Block-AF, Sector-I, Salt Lake
Kolkata-700 064

12. Prof. M. R. S. Rao — Member
President
Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR)
Jakkur Campus, P. O. Jakkur
Bangalore-560 064

13. Prof. Kalyan B. Sinha — Member
Bhatnagar Fellow
Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR),
Bangalore-560 064

14. Prof. Gautam R. Desiraju — Member
School of Chemistry
University of Hyderabad
Hyderabad-500 046

15. Shri Sanat Kumar Ray — Invitee
Joint Secretary & Financial Adviser
Ministry of Human Resource Development
Department of Education
Shastri Bhawan,
New Delhi-110 001

16. Registrar — Secretary
Registrar
Indian Institute of Science Education and Research
Kolkata Campus, NITTTR, Block - FC,
Sector-III, Salt Lake City,
Kolkata-700 106

LIST OF BOG MEMBERS FROM 24th AUGUST 2009 TO 31st MARCH 2010

1. **Dr. R. A. Mashelkar** — Chairman
   Bhatnagar Fellow & President,
   Global Research Alliance
   National Chemical Laboratory,
   Dr. Homi Bhabha Road,
   Pune-411 008

2. **Prof. Sushanta Dattagupta** — Member
   Director
   Indian Institute of Science Education and Research, Kolkata
   C/o National Institute of Technical
   Teachers' Training & Research,
   Block - FC, Sector III, Salt Lake,
   Kolkata-700 106

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   Government of India,
   Shastri Bhawan,
   New Delhi-110 001

4. **Prof. P. Balaram** — Member
   Director
   Indian Institute of Science
   Bangalore-560 012

5. **Prof. Sanjay Govind Dhande** — Member
   Director-IIT, Kanpur,
   Director's Office,
   Indian Institute of Technology,
   Kanpur-208 016

6. **Prof. K. N. Ganesh** — Member
   Director
   Indian Institute of Science Education and Research (IISER),
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   Sai Trinity Building, Garware Circle,
   Sutarwadi, Pashan,
   Pune-411 021

7. Dr. M. K. Bhan — Member
Secretary
Department of Biotechnology
Ministry of Science & Technology
Block-2, 7th Floor
CGO Complex, Lodi Road,
New Delhi-110003

8. Dr. Shailesh Nayak — Member
Secretary
Ministry of Earth Sciences,
Government of India,
Block-12, Mahasagar Bhavan,
C.G.O. Complex Lodhi Road,
New Delhi-110003

9. Shri Deepak Gupta — Member
Secretary,
Ministry of New and Renewable Energy,
Block No.14, C.G.O. Complex,
Lodi Raod,
New Delhi-110003

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

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

12. Prof. Sankar K. Pal — Member
Director
Indian Statistical Institute,
203 Barrackpore Trunk Road,
Kolkata-700 108, India

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

14. **Chief Secretary** — **Member**
Government of West Bengal
Writers' Building,
Kolkata-700 001

15. **Shri Sanat Kumar Ray** — **Invitee**
Joint Secretary & Financial Adviser
Ministry of Human Resource Development
Department of Education
Shastri Bhawan,
New Delhi-110001

16. **Mr. Joydeep Sil** — **Secretary**
Registrar
Indian Institute of Science Education and Research
Kolkata Campus, NITTTR, Block - FC,
Sector-III, Salt Lake City,
Kolkata-700 106

IV. Staff

Faculty Members

Director

Sushanta Dattagupta	*Condensed Matter Physics (Theory)*	Ph.D.- Physics (St.John's/ Brookhaven National Laboratory, 1973/74), FNA,FNASc, FASc, FTWAS

Professors

Amitava Bagchi (Till 14.02.2010)	*Computer Science*	Ph. D.- Electrical Engineering (MIT, 1972)
Sanjib Bagchi	*Photochemistry, Experimental Spectroscopy*	Ph.D.- Chemistry (Calcutta,1979)
Narayan Banerjee	*Gravitation & Cosmomogy*	Ph.D.- Physics (Jadavpur Univ., 1986)
Soumitro Banerjee	*Nonlinear Dynamics*	Ph.D. Electrical Engineering (IIT Delhi), FNA, FASc, FNAE
Chanchal Das Gupta	*Biology*	Ph.D.- Biology (SINP,1974) FNA, FNASc, FASc
Somnath Dasgupta	*Geochemistry, Petrology*	Ph.D.- Geology (Jadavpur, 1979) FNA, FNASc, FASc, FTWAS
Amitava Datta	*High Energy Physics*	Ph.D. - Physics (Viswa Bharati, 1974), FNA
Swapan Kumar Datta	*Experimental Nuclear Physics*	Ph.D.- Physics (NorthCarolina, 1974), FNASc
Nibir Mandal (Till18.01.2010)	*Structural Geology, Tectonics*	Ph.D.- Geology (Jadavpur University, 1991), FASc
Prasanta Panigrahi	*Field Theory*	Ph.D. (University of Rochester, 1988)
G V R Prasad (Till 30.11.2009)	*Evolution, functional adaptations, taphonomy, palaeoecology, palaeobiogeography of Mesozoic vertebrates of India*	Ph.D. - Geology, (Panjab University, Chandigarh, 1986)
Shyam Sundar Rai (Till 29.01.2010)	*Seismology and Geodynamics*	Ph.D.- Geophysics (ISM, Dhanbad,1988) FNA, FASc, FNASc

Adjunct Professor

Bidyendu Mohan Deb	Theoretical Chemistry, Chemical Physics	D.Phil (Oxon, 1969), FNA, FASc, FTWAS

Associate Professors

Asok K. Nanda	*Reliabillity, Statistics*	Ph.D. - Statistics (Panjab University, Chandigarh,1998)
Jayasri Das Sarma	*Neural Cell Biology, Neuro Science*	Ph.D.- Immunology/Chemistry (Jadavpur University, Kolkata, 1995)
Ratnesh Gupta (Till 20.10.09)	*Condensed Matter Physics (Experimental)*	Ph.D. - Physics (DAVV, Indore, 1992)
Joyanto Routh	*Biogeochemistry, Organic geochemistry*	Ph.D. - Geochemistry (Texas A&M University, USA, 1998)

Assistant Professors

Saugata Bandyopadhyay	*Partial Differential Equations, Differential Inclusions and Calculus of Variations*	Ph.D. - Mathematics (EPFL, 2007)
Subhajit Bandyopadhyay	*Photochromic materials; biomimetic chemistry*	Ph.D. - Chemistry (Victoria, British Columbia,2004)
Ayan Banerjee	*Precision Optical Spectroscopy; Optical Sensors*	Ph.D. (IISc, Bangalore, 2005)
Bhavtosh Bansal	*Condensed Matter Physics (Experimental)*	Ph.D. (IISc, Bangalore, 2005)
Rabeya Basu	*Algebra*	Ph.D. - Mathematics (TIFR, Mumbai, 2007)
Punyasloke Bhadury	*Molecular ecology, climate change, Nano-biology*	Ph.D. - Biological Science (Univ. of Plymouth, UK, 2005)
Sayan Bhattacharyya	*Materials Chemistry, Nanotechnology*	Ph.D.- Chemistry (IIT Kanpur, 2006)
Devapriya Chattopadhyay	*Invertebrate Paleontology*	Ph.D. - Geological Sciences (University of Michigan, USA, 2009)
Ananda Dasgupta	*Quantum Phenomena*	Ph.D.- Physics (SINP/Jadavpur University, 2001)
Jyotirmayee Dash	*Organic Chemistry*	Ph.D. - Chemistry (IIT, Kanpur, 2003)

Partha Pratim Datta	*Structural & Molecular Biology*	Ph.D. - Molecular Biology, (IICB/Jadavpur University, 2002)
Priyadarsi De	*Polymer Chemistry*	Ph.D. - Chemistry (IISc, Bangalore, 2002)
Pradip Kumar Ghorai	*Computer Simulation, Diffusion in porous solids and liquids, Electron transfer, self-assembly*	Ph.D. (IISc, Bangalore, 2005)
Amit Ghosal	*Physics*	Ph.D.- Physics (TIFR, Mumbai, 2001)
Mahua Ghosh-Ghosal	*Structural Biology*	Ph.D.- Chemistry (TIFR, Mumbai, 2001)
Nirmalya Ghosh	*Optics & Spectroscopy, Biophotonics*	Ph.D.- Physics (RRCAT, Indore, 2005)
Debasish Haldar	*Supra Molecular Bio Organic Chemistry*	Ph.D.- Chemistry (IACS, Kolkata 2005)
Manoj Jaiswal	*Geomorphology, Quaternary Geochronology, Palaeoseismics and palaeoclimatic studies*	Ph.D.- Geology (PRL/ M.S. University of Baroda, Vadodara, 2006)
Sachindranath Jayaraman	*Functional Analysis*	Ph.D.- Mathematics (IIT Madras, 2008)
Sumit Khanra	*Molecular Magnetism, Bioinorganic Organometallic Chemistry*	Ph.D.- Chemistry (Max- Plank Institute for Bioinorganic Chemistry, Germany, 2005)
Arindam Kundagrami	*Theoretical Soft Condensed Matter Physics*	Ph.D -Physics (University of Pennsylvania, Philadelphia, USA 2003)
Venkataramanan Mahalingam	*Luminescent Nanomaterials & Nanocomposites*	Ph.D.- Chemistry (IIT, Madras 2001)
Prasun K. Mandal	*Single Molecule Spectroscopy*	Ph.D.- Chemistry (University of Hyderabad, 2006)
Swadhin K. Mandal	*Organometallic Catalytic Transformations, Nanomaterials*	Ph.D. - Chemistry (IISc, Bangalore, 2002)
Chiranjib Mitra	*Quantum Information Processing, Quantum Magnetism, Strongly Correlated Electron Systems and Magnetooptics*	Ph.D. - Physics (TIFR, Mumbai, 2001)

Partha Mitra	*Magnetism in mesoscopic systems and spintronics application*	Ph.D. - Physics (University of Florida, 2006)
Balaram Mukhopadhyay	*Synthetic Organic Chemistry (Carbohydrate), Glyco-nanotechnology*	Ph.D. - Biological Chemistry (Jadavpur University, 2001)
Arindam Mukherjee	*Metal complexes, magnetism, DNA cleavage, Anti-cancer agents, metalloproteins, microcalorimetry*	Ph.D. - Chemistry (IISc, Bangalore, 2005)
Goutam Dev Mukherjee	*Experimental Condensed Matter Physics*	Ph.D. - Physics (Hyderabad Central University, 1997)
Dhananjay Nandi	*Laser-Electron-Molecule collisions, Photoelectron/Photoi on Imaging Spectroscopy, Ultrafast Electron Dynamics*	Ph.D. - Physics (TIFR, Mumbai, 2004)
Dibyendu Nandi	*Astrophysical Magnetohydrodynamics, Sun-Earth-System Science, Space Science*	Ph.D. - Physics (IISc, Bangalore, 2003) Ramanujan Fellow (DST, Govt. of India)
Rajesh Kumble Nayak	*General Theory of Relativity, Relativistic Astrophysics and Cosmology*	Ph.D. Physics (IIA, Bangalore, 2002)
Bipul Pal	*Ultrafast Optical Spectroscopy and Semiconductor Nanostructure*	Ph.D. Physics (TIFR, Mumbai, 2004)
Mohit Prasad	*Cell and Developmental Biology*	Ph.D.-Biology (Center for Cellular & Molecular Biology, Hyderabad, 2005)
Pradipta Purkayastha	*Chemistry*	Ph.D. Chemistry (Jadavpur University, 2002)
Satyabrata Raj	*Condensed Matter Physics (Experimental)*	Ph.D.- Physics (IOP/Utkal University, 2001)
C. Malla Reddy	*Supramolecular Chemistry, Crystal Engineering*	Ph.D.- Chemistry (University of Hyderabad, 2006)
Amlan K. Roy	*Theoretical Chemistry*	Ph.D.- Chemistry (Panjab University, Chandigarh, 1998)
Partho Sarothi Ray	*Molecular Biology, Translational Control, RNA-Protein Interaction*	Ph.D.- Biology (IISc, Bangalore, 2005)
Srimonti Sarkar	*Cell Biology*	Ph.D.- Biology (Penn State, 2001)

Tapas K. Sengupta	*mRNA Stability, Gene Regulation, Bioremediation*	Ph.D.- Biology (Calcutta University, 1996)
Raja Shunmugam	*Synthetic Macromolecules, Drug Carriers, Self-assembling Nanomaterials, Sensors*	Ph.D. - Chemistry (IIT Madras, 2003)
Subhasis Sinha	*Condensed Matter Physics (Theory)*	Ph.D. - Physics (IMSc/Madras University, 2001)
P. A. Sreeram	*Quantum Many Body Theory*	Ph.D.- Physics (IOP/Utkal University, 2000)
Annagiri Sumana	*Behaviour and Ecology*	Ph.D. - Biology (IISc, Bangalore, 2002)
Jitendra K. Thakur (Till 30.09.09)	*Regulation of transcription in yeast and plants*	Ph.D. - Plant Molecular Biology (University of Delhi , 2003)
Sanjio S. Zade	*Organic Electronics Materials*	Ph.D.- Chemistry (IIT, Mumbai, 2004)

IISER Fellows

V. V. Awasthi	*Algebraic Topology*	Ph.D. - Mathematics (Harish Chandra Research Institute, Allahabad, 2008)
Manua Banerjee	*Metamorphic Petrology and Structural Geology*	Ph.D. - Structural Geology (University of Calcutta, 2000)
Anindita Bhadra	*Animal Behaviour, Evolution, Ecology*	Ph.D. - Animal Behaviour, (IISc, Bangalore, 2008)
Parna Gupta Bhattacharayya	*Phenomena: Inorganic Chemistry*	Ph.D. (Jadavpur Univ., Kolkata, 2004)
Mousumi Das	*Computational and Theoretical Chemistry*	Ph.D. - Chemistry (IISC, Bangalore, 2006)
Tridib Ganguly	*Virolgy, Bacteriophage*	Ph.D. (Bose Institute, Kolkata, 2007)
Sankar Maiti	*Actin Cytoskeleton*	Ph.D. (Institute of Microbial Technology, 2003)
Himadri Mukherjee	*Algebraic Geometry, Commutative Algebra*	Ph.D. (Northeastern Univ., Boston, 2008)
Subrata Shyam Roy	*Operator Theory*	Ph.D. - Mathematics (Indian Statistical Institute, Bangalore, 2009)

Senior Scientific Officers

Uday Kumar	Ph.D. (Bombay University)
K. Srikanth	Ph.D. (IIT, Bombay)

Administrative Staff

Joydeep Sil	Registrar
Bhaskar Chandra Layek	OSD (Estate)
Barendra Lal Bhattacharya	OSD (Engineering)
Sudhangshu Shekhar Panja	OSD (Finance)
V. K. Thomas	Librarian
Dilip Bhoyar (Till 02.09.09)	Asst. Registrar (Finance)
U. K. Jena (Till 14.12.09)	Project Engineer cum Estate Officer
N. Muruganantham	Project Engineer cum Estate Officer
Sanad Kumar Shukla	Public Relations Officer
Dayanidhi Pradhan (Till 06.05.09)	Documentation Officer
Rana Bhadra	Technical Officer
Immanuel Alexander	Private Secretary
Debabrata Majumder	Assistant Engineer (Electrical)
Shibaji Das	Assistant Engineer (Civil)
Biswajit Das	Accountant
Shibnarayan Pal	Accountant
Arnab Chatopadhayay	Scientific Assistant
Rajan Thomas	Personal Assistant
Saberi Sen	Personal Assistant
Sanjib Das	Technical Scientific Assistant
Siladitya Jana	Library and Information Assistant
Sunita Basak	Technical Scientific Assistant
Arup Kumar Saha	Office Assistant (MS)
Himanshu Ghosh	Office Assistant (MS)
Puskar Das	Office Assistant (MS)
Raju Sethi	Office Assistant (MS)
Sudip Mitra	Laboratory Technician
Subrata Das (Till 01.02.2010)	Laboratory Assistant
Subhas Malo	Attendant

V. IISER-K Administration

During the year 2009-10 the following major administrative activities were undertaken:-

1. One meeting of the **IISER-K Society** (on 19/11/09), Two meetings of the **Board of Governors** (on 26/05/09 and 19/11/09), Two meetings of the **Finance Committee** (on 26/05/09 and 19/11/09) and Eight meetings of the **Buildings and Works Committee** (on 27/04/09, 28/05/09, 10/08/09, 15/09/09, 26/11/09, 30/12/09, 08/02/10 and 19/03/10) were held.

2. Construction work of the **Hostel cum Dining Block** and the **Lecture Theatre and Laboratory Complex** at the Main Campus of the IISER-K at Haringhata, Nadia were taken up by the CPWD.

3. Construction of the **Liaison Office and Guest House** building at Salt Lake was started by CPWD.

4. Two new courses, viz., **(i) Post B.Sc. Integrated Ph.D (PBIP)** and **(ii) MS by Thesis** programmes were launched.

5. **Recruitment Rules** for the Non-teaching Staff were framed and approved by the BoG.

6. The revised pay scales under the **6th CPC** were implemented for the regular faculty and staff members of IISER-K.

7. **Empanelment of Vendors** was done for Housekeeping, Security, Canteen and Transport services.

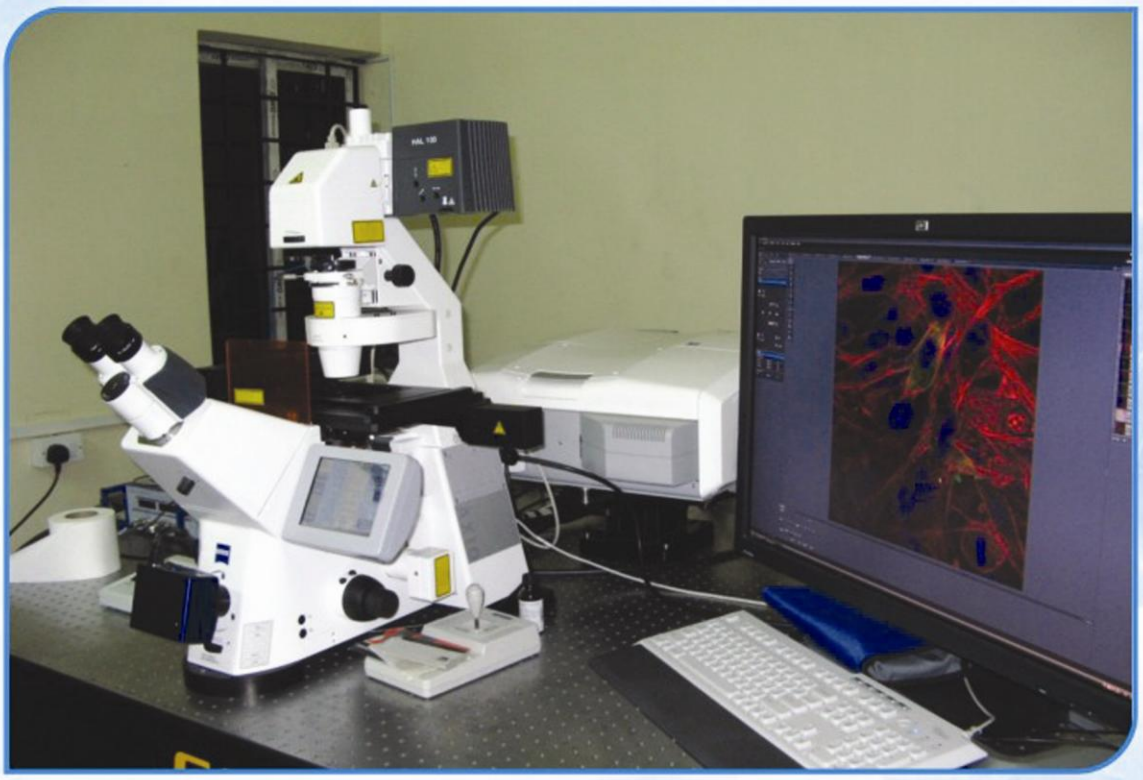
8. The City Office of the IISER-K was shifted from IIT-Kgp Building to the NITTTR Campus at Salt Lake.

9. The Institute is abiding by the Language Policy and the Reservation Policy as per GOI norms.

10. Students enrolment:

YEAR/COURSE	BS-MS	PBIP	Ph.D
2006-07	38	Nil	12
2007-08	69	Nil	17
2008-09	47	Nil	52
2009-10	99	10	16

Celebration of Children's' Day in THE BUD



Confocal Microscope

Bhoomi Puja of Main Campus

Inauguration of MTS Building

VI. Faculty Profile

DEPARTMENT OF BIOLOGICAL SCIENCES

Punyasloke Bhadury

Publications

Journal

Bhadury P and Austen MC (2010) Barcoding marine nematodes- an improved set of nematode18S rRNA primers to overcome eukaryotic co-interference. Hydrobiologia 641: 245-251

Bhadury P and Ward BB (2009) Molecular diversity of marine phytoplankton communities based on key functional genes. Journal of Phycology 45:1335-1347

Book Chapter

Bhadury P (2009) Barcoding free living marine nematodes–an 18S rRNA approach. In Training Manual on DNA barcoding of Marine Fauna (2009) National Institute of Oceanography, Kochi, 51 p.

Teaching programme

LS112 (Biology Practical) for 1st Year 1st Semester students
ID429 (Geomicrobiology) with Joyanto Routh – 4th Year 8th semester students

Supervision of students

Ph.D. Students
Brajagopal Samanta (Project Fellow)
Dola Bhattacharjee (Postdoctoral Fellow)

Talks given

Invited talk at the First World Young Earth Scientist Congress, Beijing, China, 25th-28th October, 2009.

Invited talk in the Department of Marine Science, Kasetsart University, Bangkok, Thailand, 22nd December, 2009.

Meetings Attended

(a) Active participation and technical inputs in a working session titled 'Impact on ecosystem/biodiversity at the Sundarbans Climate Workshop organized by WWF and School of Oceanographic Studies, Jadavapur University from 30th-31st March, 2009.

(b) First World Young Earth Scientist Congress, Beijing, China, 2009.

(c) Technical inputs in a meeting titled 'WWF Ganga-Sundarbans Delta Vision Academic Forum' organized by WWF-India and School of Oceanographic Studies, Jadavapur University, 14th January, 2010.

Collaborative Work

Meiobenthic studies in three Olive Ridley turtle rookeries along the coast of Orissa- We are investigating the benthic meiofaunal diversity along the coast of Orissa in three Olive Ridley turtle rookeries with Prof. B. C. Choudhury and his group from the Wildlife Institute of India, Dehradun.

DNA barcoding of polychaetes from the coastal waters of Andhra Pradesh jointly with Prof. C. Annapurna, Andhra University.

Funded Projects

(a) Arsenic biogeochemical cycling in groundwater aquifers of the Bengal Delta Plains (West Bengal, India): Early detection and remedial issues (with Joyanto Routh and Raja Shunmugam, IISER)

Funding Agency: International Collaborative Research Grant, Swedish Research Council, Sweden

Duration: January 2010-January 2012

Total grant amount: 735,000 Swedish Konor (Approximately 4.7 crores)

(b) Effects of climate change on phytoplankton community in the Sundarbans ecoregion.

Funding Agency: WWF-India

Duration: March 2010-June 2011

Total grant amount: ₹ 3,37,150

(c) Meiobenthic studies in three Olive Ridley turtle rookeries along the coast of Orissa.

Funding Agency: DGH, Govt. of India

Duration: extended until December 2010

Total grant amount: ₹ 4,71,500

(d) Ice binding proteins in Arctic marine phytoplankton communities–sequence diversity and characterization.

Funding Agency: Ministry of Earth Sciences and NCAOR, Goa, India.

Duration: Participation in the Indian Arctic Expedition 2009-2010.

Total grant amount: Funding towards travel, stay and sample collection in the Arctic

(e) Benthic biodiversity Workshop at IISER-Kolkata

Funding Agency: DGH, Govt. of India

Duration: October, 2009

Total grant amount: ₹ 50,000

Other academic/educational activities

Visits, conferences, symposia

(a) Travel grant from Ministry of Earth Science, Govt. of India and ISPRA, Italy to give an invited talk at the World Young Earth Scientist Congress.

(b) Expedition Leader, 3rd Indian Arctic Expedition 2009-2010 (Ministry of Earth Science, Govt. of India).

Jayasri Das Sarma

Publications

Journal

1. Das Sarma J, Kenyon LC, Hingley, ST, Shindler KS. Mechanisms of primary axonal damage in a viral model of multiple sclerosis, *J of Neuroscience. 29(33): 10272-80.2009.*
2. Das S, Smith TD, Das Sarma, J, Ritzenthaler JD, Maza J, Kaplan BE, Cunningham LA, Suaud L, Hubbard MJ, Rubenstein RC, Koval M. ERp29 restricts Connexin43 oligomerization in the endoplasmic reticulum. *Mol Biol Cell.* 20(10): 2593-604. 2009.
3. Das Sarma J, Ciric B, Marek R, Sadhukhan S, Caruso ML, Shafagh J, Fitzgerald DC, Shindler KS, Rostami A. Functional interleukin-17 receptor A is expressed in central nervous system glia and upregulated in experimental autoimmune encephalomyelitis. *J Neuroinflammation.* 6:14. 2009.

Review

1. Das Sarma, J. A Mechanisms of viral induced demyelination. Interdiscip Perspect Infect Dis. 2010;2010:109239. Epub 2010 Jun 21. *(Invited Review).*

Technical report

2. Marek, R, Caruso, M, Rostami, AM, Grinspan, JB, Das Sarma J*. Simultaneous isolation of highly purified astrocytes and microglia. *MACS & More; Special Edition: neuroscience meets MACS® Technology. Vol. 12-2; 7-9. 2010.* (Cover Page illustration).

Teaching programme

Theory Courses

LS 311 (Theory)	Co-coordinator	Autumn Semester
LS 221 (Theory)	Coordinator but shared the course with Dr Mohit Prasad and Arindam Kundagrami	Spring Semester
LS 422 (Theory)	Co-coordinator with Dr. Partho Sarathi Roy and Dr. Anidita Bhadra	Spring Semester

Practical Courses

LS 222	Dr. Tridib Ganguly	Autumn Semester
LS 222	Dr. Mohit Prasad and Teaching assistants	Autumn Semester
LS 423	With Dr. Partho Sarathi Roy	Autumn Semester

Supervision of students

Ph.D Students

Dhriti Chatterjee (2nd Year)
Kaushiki Biswas (2nd Year)
Abhinoy Kishore (1st Year)
Anamika Singh (1st Year)

Talks given

Mechanisms of demyelination in a viral model of multiple sclerosis. Neurology Grand Round; Das Sarma J. University of Colorado, Denver School of Medicine, Aurora, CO, 80045; USA. September 2, 2009.

Complexity in human neuroinflammatory demyelinating disease multiple sclerosis: The advent of System Biology Das Sarma J. *Indian Institute of Mathematical Science, Chennai, India. Nov 2009.*

Deciphering complex mechanisms of neuroinflammatory demyelinating disease multiple sclerosis in an experimental mouse model. Das Sarma J. *Shankar Netralaya; Ophthalmology Research and development, Chennai, India. Nov 2009.*

Immunosuppression or Neuroprotection: Multiple approaches to Autoimmune Disease Multiple Sclerosis Das Sarma J. Dec 19th, 2009. *Invited Plenary Talk*: at 36th Annual Conference of Indian Immunology Society/*IMMUNOCON*-2009. Dec 16th-Dec 19th 2009 (*Invited Plannary talk).*

Meetings attended

Mechanisms of primary axonal damage in a viral model of multiple sclerosis: Das Sarma J, Shindler KS, Hingley ST, Grinspan JB, Kenyon LC. 9th International Society for Neurovirology Meeting; June 2-6, 2009 Miami, Florida, USA.

Macrophage Mediated Myelin Stripping: key mechanisms of demyelination in a viral model of multiple Sclerosis Das Sarma J., Invited oral Presentation in Neuroimmunology Section at 36th Annual Conference of Indian Immunology Society/ *IMMUNOCON*-2009. NIMHANS, Bangalore, India; Dec 16th-Dec 19th 2009.

Chatterjee, D., Kenyon, L. C., Shindler, K. S., and Das Sarma J *Best Poster Presentation*: *IMMUNOCON*-2009.

Vijay, N., Sarkar, S., Mane, S., Bhatachariya, S., Das Sarma, J., Shunmugam R., Engineering polymers towards drug delivery and sensor applications, International conference on "Of Molecules and Materials" held between 28th-30th Dec 2009 at IISER-K

Chairing the session: of Neuroimmunology; 36th Annual Conference of Indian Immunology Society/ *IMMUNOCON*-2009. Dec 16th-Dec 19th 2009.

Partha Pratim Datta

Teaching programme

LS-122 (Practical) Molecular biology & genetics, Semester II (2010) with Dr. M. Ghosh, Dr. T. Mukhopadhay, Dr. S. Sarkar, Dr. M. Prasad and Dr. C. K. DasGupta

Meetings attended

Participated in the National Bioinfomatics workshop in Kalyani University from Feb 23-26, 2010

Tridib Ganguly

Publications

Journal

1. Mondal R, Ganguly T, Chanda PK, Bandhu A, Jana B, Sau K, Lee CY, Sau S. Stabilization of the primary sigma factor of Staphylococcus aureus by core RNA polymerase. *BMB Rep.* 2010 Mar; 43(3):176-81.

2. Bandhu A, Ganguly T, Chanda PK, Das M, Jana B, Chakrabarti G, Sau S. Antagonistic effects Na+ and Mg2+ on the structure, function, and stability of mycobacteriophage L1 repressor. BMB Rep. 2009 May 31;42(5):293-8.

3. Ganguly T, Das M, Bandhu A, Chanda PK, Jana B, Mondal R, Sau S. Physicochemical properties and distinct DNA binding capacity of the repressor of temperate Staphylococcus aureus phage phi11. *FEBS J.* 2009 Apr; 276(7):1975-85. Epub 2009 Feb 23.

Teaching programme

Theory courses

LS 321 Host-Pathogen interactions, 5 year integrated MS course at IISER K, spring semester 2009-10.

Lab courses

LS 314 & LS 315 Genomics and Proteomics Laboratory course, 5 year integrated MS course at IISER K, autumn semester 2009-10. (With Dr. Mahua Ghosh)

Supervision of students

Ph.D. Students

Imroze Khan, SRF
Ananya Chatterjee, JRF

Talks given

Presented poster in the International Symposium at ICGEB – IUBMB Workshop on "Human RNA Viruses" New Delhi, India; February 10 to 12, 2010.

Oral presentation in the RNA meeting organized by RNA group, INDIA on 18th-19th January 2010 at Pune University, Pune.

Meeting Attended

ICGEB – IUBMB Workshop on "Human RNA Viruses" New Delhi, India; February 10 to 12, 2010.

RNA group, INDIA. 18th-19th January 2010 at Pune University, Pune.

Collaborative Work

1. "Determination of sex specific responses of drosophila after bacterial infection". (With Dr. N.G. Prasad, IISER-Mohali)
2. "Elucidating the structure of a small RNA of viral origin by RNase foot-printing techniques". (With Prof. Dhrubajyoti Chattopadhyay, University of Calcutta)

Funded Project

"Identification of Factors involved in Host-Pathogen interactions with negative sense single stranded RNA viruses." (DST Fast Track Proposal is accepted)

Sankar Maiti

Publications

Journal

Minamide LS, Maiti S, Boyle JA, Davis RC, Coppinger JA, Bao Y, Huang TY, Yates J, Bokoch GM, Bamburg JR. (2010) Isolation and characterization of cytoplasmic cofilin actin rods. *J Biol Chem.* 285:5450-60.

Teaching programme

Theory courses

Movement and Motions LS421, 2010
Biochemistry LS211
Biochemistry LS411
Advanced Cell Biology LS311

Practical courses

Biochemistry and cell Biology (1st Sem, 2008) LS112 with Dr. P. S. Ray
Genetics and Molecular Biology (2nd Sem, 2009) LS122 with Dr. P Bhadury.
Yeast and Fly Genetics (3rd Sem, 2009) LS212 with Dr. A. Sumana

Supervision of students

Ph.D. Students

Name	Qualification	Joining	Title of the project
Amit Das	M.Sc. (Biophysics and Molecular Biology) CSIR-NET	Jan.2010 JRF	Functional analysis of Daam1and regulation with Dishevelled proteins.
Priyanka Dutta	M.Sc. (Biophysics and Molecular Biology) NET-LS	Jan. 2010 JRF	Fuctional characterization of forming protein Delphilin.
Simanti Bhattacharya	M.Sc.(Biophysics and Molecular Biology) UGC-NET	Aug. 2010 JRF	Functional characterization of Dishevelled protein in Planar Cell Polarity pathway.

Talks given

Delivered talk at SLS, JNU, Delhi, Jan 2010: Funtional regulation of Formins.

Meeting Attended

13th International Conference on Emerging Infectious Diseases (EID) in the Pacific Rim – Focused on Enteric Diseases, April 6 - 9, 2009 Kolkata.

Collaborative Work

Characterization of toxin/target protein from *Helicobacter pylori* involved in the duodenal ulcer and

gastric ulcer: Specially, gene like *dupA* has been associated with duodenal ulcer, but molecular mechanism is not well studies. Also toxin like VacA involved in the gastric ulcer. I like to see the change in actin cytoskeleton with the over expression of VacA in culture cell line, also mode of interaction of VacA with Actin. (This work is going on in collaboration with Dr. A K Mukhopadhyay, of National Institute of Cholera and Enteric Disease, Kolkata).

Funded Project

Sponsoring Agency : Department of Scince and Technology
Title: "Functional analysis and Regulation of activity for Daam1 formin by Dishevelled in Planer Cell Polarity by Wnt/Fz signaling pathway"
SERC Divission, has been considered and recommended for support.

Partho Sarothi Ray

Publications

Journal

1. Chaudhury A., Hussey G.S., Ray P.S., Jin G., Fox P.L. and Howe P.H. (2010) Transforming growth factor-β-mediated phosphorylation of hnRNP E1 induces EMT via transcript selective translational induction of Dab2 and ILE1. *Nature Cell Biol.* 12, 286-293 (Epub 2010 Feb 14).

2. Mukhopadhyay R., Jia J., Arif A., Ray P.S. and Fox P.L. (2009) The GAIT system: A gatekeeper of inflammatory gene expression. *Trends Biochem Sci.* 34, 324-31.

Teaching Programme

Theory courses

LS 311	Physiology and Neurobiology	August, 2009	(with Jayasri Das Sharma)
LS 312	Cellular Regulation	August, 2009	
LS 422	Communication	January, 2010	(with Jayasri Das Sharma, Anindita Bhadra)

Practical courses

LS 423	Tissue culture and Histology	January, 2010	(with Jayasri Das Sharma)

Supervision of students

Ph.D. Student

Dipak Poria

Talks given

1. Symposium Fellowship Lecture at the 74th Cold Spring Harbor Symposium on Quantitative Biology, May-June, 2009: "Evolution: The molecular Landscape".

2. Invited talk at the two day discussion meeting on "Evolutionary biology in India: Looking ahead" at the Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, September, 2009.

3. Invited talk at the Department of Microbiology, West Bengal State University, Barasat, December, 2009.
4. Invited talk at the national workshop on "Bioinformatics in Evolutionary Studies" at the Bioinformatics facility, Kalyani University, February, 2010.
5. Invited talk at the Department of Biophysics and Molecular Biology, Calcutta University, Kolkata, March, 2010.

Meetings attended

1. 74th Cold Spring Harbor on Quantitative Biology, May-June, 2009, Cold Spring Harbor Laboratories, New York, USA
2. Discussion meeting on "Evolutionary Biology in India: Looking Ahead" at JNCASR, Bangalore, September, 2009.
3. Half-yearly meeting of the Indian Academy of Sciences, Bangalore, July, 2010.

Awards, Prizes etc.

Symposium Fellowship at the 74th Cold Spring Harbor Symposium on Quantitative Biology,"Evolution: The molecular Landscape".

Srimonti Sarkar

Publications

Journal

1. Banerjee, S., Basu, S. *, and Sarkar, S. * (2010). Comparative genomics reveals selective distribution and domain organization of FYVE and PX domain proteins across eukaryotic lineages. BMC Genomics, 11:83. (*Co-corresponding authors)
2. Ray, T., Maity, P.C., Banerjee, S., Deb, S., Dasgupta, A.K., Sarkar, S.*, and Sil, A.K.*. (2010). Vitamin C prevents cigarette smoke induced atherosclerosis in guinea pig model. Journal of Atherosclerosis and Thrombosis (in press). (*Cocorresponding authors)

Teaching programme

Theory courses

Autumn Semester of 2009

LS-313 (Experimental Biology and Biostatistics)
Biology Seminar Course

Spring Semester of 2010

LS-421 (Movement and Motion)

Laboratory courses

Spring Semester of 2010

LS-122 (Dr. M. Ghosh, Dr. P. Dutta, Dr. T. Mukhopadhyay, Dr. M. Prasad)

Supervision of students

Ph.D. Students

Sumana Banerjee
Abhishek Sinha
Somnath Datta

Talks given

Deconvolution Microscopy. *Invited talk*. NCBS-Olympus Micro Imaging Centre, NCBS, Bangalore, June, 2009.

Selective Distribution and Domain Organization of FYVE and PX Domain Proteins Across Eukaryotic Lineages. *Invited talk*: Symposium entitled 'Global Challenges in Biology : The journey From GenesTo Disease', Department of Microbiology, West Bengal State University, Barasat, December 2009.

Collaborative work

Study of intracellular protein transport in *Giardia lamblia*
Collaborator: Dr. Sandipan Ganguly, National Institute of Cholera and Enteric Diseases

Understanding the ligand-binding specificity of a non-canonical FYVE domain
Collaborator: Dr. Soumalee Basu, West Bengal University of Techonology

Molecular mechanism of cigarette smoke induced atherosclerosis
Collaborator: Dr. Alok Kumar Sil, University of Calcutta

Funded Projects

Role of phosphoinositides in intracellular protein transport of *Giardia lamblia*
Funded by: Council of Industrial and Scientific Research

Tapas K. Sengupta

Publications

Journal

Ishimaru D, Ramalingam S, **Sengupta TK**, Bandyopadhyay S, Dellis S, Tholanikunnel BG, Fernandes DJ, Spicer EK."Regulation of Bcl-2 expression by HuR in HL60 leukemia cells and A431 carcinoma cells". ***Mol. Cancer Res***. 7(8):1354-66. (2009)

Teaching programme

Theory courses

2009	Semester-II	LS-121 (Genetics)	Classical genetics
	Semester-VI	LS-322 (Cancer Biology)	Cancer Biology
	Semester-I	LS-111 (Cell Biology)	Cell Biology
2010	Semester-VI	LS-322 (Cancer Biology)	Cancer Biology

Practical courses

2009	Semester-VI	LS-324 & LS-325 (Practical) with Dr. Partho S Ray	Hybridization Techniques & Cancer Biology
	Semester-I	LS-112 (Practical) with Dr. Punyosloke Bhadury and Dr. Tanusree Mukhopadhyay	Cell Biology
2010	Semester-VI	LS-324 & LS-325 (Practical) with Dr. Tridib Ganguly	Hybridization Techniques, Cancer Biology

Supervision of students

Ph.D. Students:

Debdeep Dasgupta
Brinta Chakraborty
Paromita Banerjee
Gregor P. Jose

Collaborative Work

1. "Effect of metal nanoparticles on bacterial and cancer cell behavior" in collaboration with Dr. Swadhin Mandal, Department of Chemical Sciences, IISER-Kolkata.
2. "Isolation and characterization of bio-active secondary metabolites from crude oil degrading *Pseudomonas* cultures" in collaboration with Dr. Balaram Mukhopadhyay, Department of Chemical Sciences, IISER-Kolkata.
3. "Laboratory model for behavior and inter-species interactions amongst engine oil degrading bacteria" in collaboration with Dr. Annagiri Sumana, Department of Biological Sciences, IISER-Kolkata.
4. "Studies on pattern formation by growing bacterial colonies under different environmental conditions" in collaboration with Prof. Sushanta Dattagupta, Department of Physical Sciences, IISER-Kolkata

Any other information like Awards, Prizes etc.

"Anti-bacterial and anti-cancer activity of Copper nanoparticles" by Gregor P J, Subhankar Santra, Nirlipta Saha, Swadhin Mandal and Tapas K Sengupta. 78th Annual meeting, Society of Biological Chemists (India). Page No. 82. ***Awarded " D P Burma Best Poster Award" in Nano Biology. (2009)***

Annagiri Sumana

Publications

Journal

Bang A., Deshpande S., Sumana A. and Gadagkar R. 2010. Choosing an appropriate index to construct dominance hierarchies in animal societies: a comparison of three indices. Animal Behaviour 79: 631-636.

Teaching programme

LS411	Seminar Course	Aug 2009	Theory
LS323	Ecology & Animal Behaviour	Jan 2010	Theory
LS212	Evolution	Aug 2009	Practical
LS324	Ecology & Animal Behaviour	Jan 2010	Practical

Supervision of students

Ph.D. Students

Ms Rajbir Kaur

Meetings attended

"House hunter and movers – case study of an ant". Young Investigators Meeting 2010 (YIM). 8th to 12th Feb 2010, Fort Resort, Raichak, West Bengal. Organized by NCBS Bangalore.

Funded Projects - Submitted

Behaviour and Inter-Colony Dynamics in a Queenless Ant – DBT Fast Track, ₹ 1,948,910 (Submitted 2009).

Impact of Climate Change on Insects in an Estuarine Ecosystem – Part of the Center for Climate Change proposal to the Ministry of Earth Science, ₹ 14,102,000 (Submitted 2010).

DEPARTMENT OF CHEMICAL SCIENCES

Sanjib Bagchi

Publications

Journal

1. Sanjib Kr Sardar, Kambalapalli Srikanth, Sanjib Bagchi. Interaction of ketocyanine dye with a Co^{2+} ion: An electronic spectroscopic study; J. Phys. Chem. A 2010 (in press).
2. Nipamanjari Deb, Sanjib Bagchi, Asok K Mukherjee. Charge transfer complex formation between TX-100/CCl_4 reverse micelle and a series of π-electron acceptors: determination of cmc and aggregation number; Molecular Phys 2010 (in press).
3. Nipamanjari Deb, Sanjib Bagchi, Asok K Mukherjee. Fluorimetric study of water-ethanol interaction and its effect on the micellisation of sodium dodecyl sulphate in presence of bovine serum albumin; Spectrochimica Acta Part A : Molecular and Biomolecular Spectroscopy 73, 2009,370.

Teaching programme

Spectroscopic and Deffraction methods for determination of molecular structure,
Ultrafast Processes
Reaction dynamics,
Symmetry,
Photochemistry

Supervision of students

Ph. D. Students

Sanjib Sardar
Niraja Kedia
Amrita Sarkar

Talks given

"Spectroscopy: A Unified Approach": at Visva Bharati University

Subhajit Bandyopadhyay

Publications

Journal

Ann C. Babtie, Subhajit Bandyopadhyay, Luis F. Olguin, Florian Hollfelder. Efficient Catalytic Promiscuity for Chemically Distinct Reactions *Angewandte Chemie International Edition* Volume 48, Issue 20, 2009, Pages: 3692-3694

German version

Effiziente katalytische Promiskuität fürchemisch unterschiedliche Reaktionen *Angewandte Chemie* Volume 121, Issue 20, Pages: 3746-3749.

Teaching Programme

ID 415 and CH 414: Chemical Perspectives of Biological Pathways; (Fall 2009 and 2010)

CH 421: Photochemistry: (Spring 2010) [Co-instructed by Dr. J Dash, Prof S Bagchi]. Application aspects of photochemistry was taught by me. This included Supramolecular Photochemistry, principles, design and fabrication of sensor devices. Photonic devices (logic gates, memory devices) and application of photoactivated protecting groups in synthetic chemistry was also covered.

CH 411: 4th Year Seminar Course: Fall 2009 (with Dr. S Zade and Dr. M Venkataramanan), Spring 2010. (with Dr. M Venkataramanan)

Lab Courses: CH 325: Spectroscopy Lab for 6th Semester of Integrated MS Course, Spring 2009 (with Prof S Bagchi), 2010. (with Dr. Prasun Mondal)

Students supervision

Ph.D Students

Suman Pal; JRF
Joydev Hatai, JRF CSIR-NET

Students under MS Project

Sivaramakrishna (Integrated Ph.D.)
Arghya Modak

Other academic/educational activities

Symposia Poster: "Photonic control of DNA binding" International Symposium of Molecules and Materials (OMAM), IISER-K. 27-29 December 2009.

Presented the same work at IISER Chemistry Meet, IISER-K. December 30 2009.

Mousumi Das

Publication

Journals

1. Mousumi Das and S. Ramasesha, *Journal of Chemical Physics*, Vol 132, 124109 (2010) "Fluorescent resonant excitation transfer in linear polyenes."
2. Mousumi Das, *Journal of Chemical Physics* Vol. 132 , 194107 (2010) "Low Lying Excitations of Poly-Fused Thiophene within Pariser-Parr-Pople Model: A Density Matrix Renormalization Group Study."

Teaching Programme

Theory courses taken: I had designed one elective course on computational chemistry for the spring semester, 2010. But I could not take the theory class as the number of students were below the critical number. I am taking now CH413 theory course in this autumn semester, 2010.

Lab courses taken: CH212 lab course has been taken in Autumn semester, 2009.

Supervision of Students

Supervised one summer student from Indian Academy of Science.

Papers/Posters/Invited Talks

1. Poster given in International symposium held at IISER-K "Of Molecules and Materials" on December 28-29, 2009
2. Poster given in Inter-IISER Chemistry Meet, December 30-31, 2009

Meetings Attended

1. "Of Molecules and Materials" on December 28-29, 2009.
2. "Inter-IISER Chemistry Meet", December 30-31, 2009.

Jyotirmayee Dash

Publications

Journals

1. J. Dash, H.-U. Reissig, A New and Flexible Synthesis of 4-Hydroxypyridines: Rapid Access to Caerulomycins A, E and Functionalized Terpyridines; *Chem. Eur. J.* 2009, *15*, 6811-6814.
2. T. J. Hoffman, J. Dash, J. H. Rigby, S. Arseniyadis, J. Cossy, Enantioselective Organocatalytic Conjugate Reduction of β-Azole α,β-Unsaturated Aldehydes; *Org. Lett.* 2009, *11*, 2756-2759.
3. T. Lechel, J. Dash, P. Hommes, D. Lentz, H.-U. Reissig, Three-Component Synthesis of Perfluoroalkyl- or Perfluoroaryl-Substituted 4-Hydroxypyridine Derivatives and Their Palladium-Catalyzed Coupling Reactions; *J. Org. Chem.* 2010, *75*, 726–732.

Teaching Programme

1. CH 325: Preparation and Spectroscopic Characterization, 5 years Integrated MS Laboratory Course at IISER-K, Spring Semester 2009.
2. CH 411: Synthetic Methodologies and Natural Products, 5 years Integrated MS Theory Course at IISER-K, Autumn Semester 2009.
3. CH 421: Pericyclic Reactions and Organic Photochemistry, 5 years Integrated MS Theory Course at IISER-K, Spring Semester 2010.
4. CH 424: Synthesis of H-bonded bis-amide derivatives, 5 years Integrated MS Practical Course at IISER-K, Spring Semester 2010.

Supervision of Students

Ph.D Students

Kalyan Dhara, UGC-JRF (Year of joining: 6th July, 2009)

Rabindranath Das, CSIR-JRF (Year of joining: July, 2008)

Sushovan Paladhi, CSIR-JRF (Year of joining: 3rd Aug, 2009)

Ganesh Chandra Midya, CSIR-JRF (Year of joining: 23rd July, 2009)

Collaborative work

G-quadruplex DNA binding ligands as anticancer drugs: Professor S. Balasubramanian, University of Cambridge, UK.

Hydrogels as novel chemosensors: Professor S. Mann, University of Bristol, UK.

Funded Projects

CSIR project: Design, Synthesis and Structural Basis of G-Quadruplex DNA Binding Small Molecules

DST first Track project: A diversity oriented synthesis of functionalized thiazoles.

Priyadarsi De

Publication

Journals

1. Li, M.; De, P.; Li, H.; Sumerlin, B. S. Conjugation of RAFT-generated polymers to proteins by two consecutive thiolene reactions. *Polymer Chemistry*, 2010, *1*, 854-859.
2. De, P.; Gondi, S. R.; Roy, D.; Sumerlin, B. S. Boronic Acid-Terminated Polymers: Synthesis by RAFT and Subsequent Supramolecular and Dynamic Covalent Self-Assembly. *Macromolecules*, 2009, *42(15)*, 5614-5621.

Patents

1. Johnson, P.; Stayton, P. S.; Hoffman, A. S.; Convertine, A. J.; Overell, R.; Gall, A.; Prieve, M.; Paschal, A.; Diab, C.; De. P. Micelles for intracellular delivery of therapeutic agents. US Patent. WO/2009/140432, 2009.
2. Johnson, P.; Stayton, P. S.; Hoffman, A. S.; Convertine, A. J.; Duvall, C. L.; Benoit, D.; Overell, R.; Gall, A.; Prieve, M.; Paschal, A.; Diab, C.; De. P. Micellic assemblies comprising a plurality of copolymers. US Patent. WO/2009/140429, 2009.
3. Johnson, P.; Stayton, P. S.; Hoffman, A. S.; Convertine, A. J.; Duvall, C. L.; Benoit, D.; Lee, C. C.; Overell, R.; Gall, A.; Prieve, M.; Paschal, A.; Diab, C.; De. P. Targeted polymer bioconjugates and therapeutic uses thereof. US Patent. WO/2009/140423, 2009.
4. Stayton, P. S.; Hoffman, A. S.; Convertine, A. J.; Duvall, C. L.; Benoit, D.; Overell, R.; Johnson, P.; Gall, A.; Prieve, M.; Paschal, A.; Diab, C.; De. P. Polymeric carrier for the delivery of polynucleotides into a living cell. US Patent. WO/2009/140421, 2009.
5. Johnson, P.; Stayton, P. S.; Hoffman, A. S.; Overell, R.; Gall, A.; Prieve, M.; Paschal, A.; Diab, C.; De, P. Heterogeneous polymeric micelles and conjugates for intracellular delivery. US Patent. WO/2010/021770, 2010.
6. Prieve, M. G.; Johnson, P. H.; Stayton, P. S.; Hoffman, A. S.; Overell, R. W.; Gall, A. S.; Paschal, A. E. E.; Diab, C.; De. P.; Declue, M. S.; Monahan, S. D. Multiblock copolymers associated with polynucleotides for pharmaceutical compositions. US Patent. WO 2010054266, 2010.
7. Johnson, P.; Stayton, P. S.; Hoffman, A. S.; Overell, R.; Gall, A.; Prieve, M.; Paschal, A.; Diab, C.; De. P. Micelles of hydrophilically shielded membrane-destabilizing copolymers. US Patent. WO 2010053597, 2010.

Teaching Programme

Theory Course

4th year 2nd Semester Polymer Chemistry Course, ID-426.
Other faculty members: Raja Shunmugam, Sanjio S. Zade

Practical Course

2nd year 2nd Semester Practical Course, CH-222.
Other faculty members: Pradip Kumar Ghorai, Amlan K. Roy, Pradipta Purkayastha

Supervision of Students

Ph.D. Students

Sunirmal Pal; Year of Joining: 2010; Title of Thesis Work: Green Synthesis of Novel Degradable Polyperoxides

Saswati Ghosh Roy; Year of Joining: 2010; Title of Thesis Work: Design, Synthesis, Characterization and Solution Properties of Amino Acid Based Novel Macromolecular Architectures

Meetings Attended

2nd Inter-IISER Chemistry Meet, Organized at IISER-Kolkata (December 2009)
Presented a poster on the tropic: Thermoresponsive polymer-protein bioconjugates by reversible addition-fragmentation chain transfer polymerization technique

Other Academic/Educational Activities

B. M. Deb

Publication

Journal

M. Sadhukhan and B. M. Deb, "Variations in electron density and bonding in the lowest $^1\Sigma_g$ state of H_2 molecule under strong magnetic fields by using a time-dependent density functional theory", J. Mol. Struc. THEOCHEM (Special Issue on Conceptual DFT), 943, 65 - 70 (2010).

Teaching Programme

ID211 Indian Heritage in Science, Literature and Art
CH221 Bonding, Structure and Symmetry

Supervision of Students

Ph.D. Students:
Mainak Sadhukhan, SRF (CSIR)

Talks Given

(i) "Aspects of Holism in Indian Culture", Inaugural Address, Bangalore Institute of Music and Art, September 5, 2009.

(ii) "Integration of Sciences and Humanities as well as Social Sciences in University Education", Lecture at the Consultative Meeting on Integrated Science Education in India, IISER-Pune, October 3 – 4, 2009.

(iii) "Glimpses into Classical Art of India", Evening Lecture at the International Symposium "Of Molecules and Materials" (OMAM), IISER-Kolkata, December 28 – 29, 2009.

(iv) "Being and Becoming : Imaginary-time and Real-time Dynamics of Quantum Systems", Lecture at the Inter-IISER Chemistry Meet, IISER-Kolkata, December 30, 2009.

Meetings Attended

All the above four Meetings/Symposia. In addition to them, also attended the Concluding Session of the Platinum Jubilee Celebrations of INSA, New Delhi.

Other Academic/Educational Activities

(i) Member, National Science Education Panel of the three National Science Academies of India, up to December, 2009.

(ii) Fellow, International Union of Pure & Applied Chemistry, January, 2010.

(iii) Convener, International Symposium "Of Molecules & Materials", IISER-Kolkata, December 28 – 29, 2009.

(iv) A book on Indian Heritage in Science, Literature and Art is in preparation.

Pradip Kumar Ghorai

Publication

Journal

1. Jeffrey J. Kuna, Kislon Voïtchovsky, Chetana Singh , Hao Jiang , Steve Mwenifumbo, Pradip Kr. Ghorai, Molly M. Stevens, Sharon C. Glotzer and Francesco Stellacci, *Nature Materials*, 10, 837 (2009).
2. Pradip Kr. Ghorai, *J. Phys. Chem. B, 114,* 6492–6499 (2010).

Teaching programme

Theory

CH121 (Energetics and Dynamic of Chemical Reactions) (2009 Spring Semester)

Practical

CH112 (Chemistry Lab with Dr. Sumit Khanra and Dr. Parna Gupta Bhattacharaya) (2009: Autumn Semester)

CH222 (Chemistry Lab along with Dr. Amlan K. Roy, Dr. Pradipa Purkayastha and Dr. Priyadarshi De) (2010 Spring Semester)

Winter project:

Meeting attended

1. OMAM International conference, December 28-29th , 2009, IISER-Kolkata.
2. Second Inter IISER chemistry meet, December 30-31, 2009, IISER-Kolkata. (POSTER)
3. International meeting supported by Indo-French Centre for Promotion of Advanced Research, New Delhi on Diffusion in Nanoporous and Dense Media, Bangalore, India.

Collaborative Research

I am collaborating with different faculty members in our Institute and also other Institute. In our Institute I am collaborating with Dr. Swadhin Mondal. I am also collaborating with Dr. Ranjit Biswas from S. N. Bose National Center for Basic Sciences, Kolkata.

Funded Project

Title: Computational study of diffusion in nanoporous media and in liquids.

Funding Agency: DST

Value: ₹ 19,92,000.

Debasish Haldar

Publications

Journals

a) Hybridization of long pyridine-dicarboxamide oligomers into multi-turn double helices: Slow strand association and dissociation, solvent dependence, and solid state structures, B. Baptiste, J. Zhu, Debasish Haldar, B. Kauffmann, J.-M. Léger and Ivan Huc, Chemistry an Asian Journal, 2010, 5, 1364–1375.

b) Developments in the synthesis of organometallic amino acids and analogues, Poulami Jana, Sibaprasad Maity and Debasish Haldar, Current Organic Synthesis, 2010,7, 224-234.

Teaching programme

a) April-May 2009, VI semester CH322 (Organic Synthesis, theory course)

b) August-December 2009, V semester CH314 (Advance Organic Synthesis, Practical course)
VII semester (lab rotation, Practical course)
Integrated PhD student (lab rotation, Practical course)
PhD student (lab rotation, Practical course)

c) January-March 2010, VI semester CH322 (Organic Synthesis, theory course)
VIII semester Medicinal Chemistry (theory course)

Supervision of students

Ph.D. Students

Poulami Jana
Shibaprasad Maity
Sumon Kumar Maity

Talks given

Peptide based foldamers: structure and function, Foldamers: from design to protein recognition, Institut Europeen de Chemie et Biologie (IECB), University Bordeaux 2, Bordeaux, France (January 25-28, 2010)

Funded Projects

Fast Track project entitled "Molecular recognition and self-assembly of chromophore based smart materials: a novel sensor" Department of Science and Technology.

Sumit Khanra

Teaching programme

Semester: August 2009 - December 2009
CH112: Quantitative Analysis (Chemistry Practical Course for 1st Year Students)
PH415: Materials and Magnetism Laboratory (Physics 4th Year laboratory)

Semester: January 2010 –April 2010

CH321: Transition Metal Chemistry (Chemistry 3rd Year Theoretical Course)

Lab Rotation for 4th Year Chemistry Students (laboratory)

Supervision of Students

Ph.D Students

Sibasree Karmakar (First Class First, University of Calcutta) – CSIR JRF
Bhaskar Pramanik - CSIR JRF
Priyanka Saha - CSIR JRF

Meetings attended

2nd IISER Meet at IISER Kolkata, December 2009 (Poster Presentation)

Venkataramanan Mahalingam

Publications

Journals

1. **M. Venkataramanan,** F. Vetrone, R. Naccache, and J. A. Capobianco. Sensitized Ce^{3+} and Gd^{3+} Ultraviolet Emissions via Tm^{3+} in Colloidal $LiYF_4$ nanocrystals. *Chem. Eu. J.*, 2009, 15, 9660.
2. F. Vetrone, R. Naccache, **M. Venkataramanan,** C. G. Morgan, and J. A. Capobianco. The Active core/Active-shell Approach: A strategy to enhance the upconversion luminescence in Lanthanide-doped Nanoparticles *Adv. Func. Mater.*, 2009, 19, 2924. (Appeared as a cover article)

Teaching programme

(i) Taught part of an interdisciplinary course on "Nanoscale Materials and ultrafast Phenomena" (ID 412).

(ii) Involved (along with another colleague) in the inorganic chemistry practicals (CH-315).

(iii) Both the semesters I was involved in the 4th year seminar course.

(iv) I was occupied (with two other colleagues) in assisting and supervising the 1st year students in the "Inorganic qualitative analysis" lab course (CH-122).

Supervision of students

Ph.D. Students

Chanchal Hazra
Shyam Sarkar

Invited talks/Meetings

1. I gave a talk titled "Synthesis and Spectroscopic Investigations of Luminescent Nanocrystals" at the National Seminar on "Nanotechnology and its Applications" organized by Synergy Institute of Engineering and Technology, Dhenkanal, Orissa, July, 2009.
2. Presented a poster at the Inter IISER meet organized by the Department of Chemical Sciences, IISER-Kolkata

Collaborative work

Dr. Sri Sivakumar, Department of Chemical Engineering, IIT Kanpur

Funded Projects

Development of Cyclopenta[c]heterol-based Conjugated Systems for Dye-Sensitized Solar Cells (DSSCs)" as a co-principle investigator submitted to DST has been sanctioned (value ~ ₹ 40,00,000/-).

Swadhin Mandal

Publications

Journal

Mandal, S. K. and Roesky, H. W. "Assembling Hetero Metals Through Oxygen: An Efficient Way to Design Homogeneous Catalysts." *Acc. Chem. Res.* 2010, *43*, 248–259.

Teaching Programme

Theory Courses

CH101 (Chemistry of Elements) and

ID 412 (Nano Scale Materials and Ultrafast Dynamics)

CH424 (Physical Methods for structural elucidation)

Practical Course

CH122 (Chemical Analysis)

Supervision of Students

Ph.D. Student

Arup Mukherjee
Subhankar Santra
Tamal K Sen
Samaresh Chandra Sau

Grants and Contracts

Title: *Design and Synthesis of Heterometallic Catalysts: Olefin Polymerization, Copolymerization and Tandem Catalysis.*
Funding Agency: DST
Value: ₹ 19,44,000.

Title: *Syntheses and Design of Green Catalysts for Hydroamination Reactions Based on Phenalenyl Ligands.*
Funding Agency: CSIR
Value: ₹ 12,80,000

Talks given

"The Phenalenyl: From Organic Conductors to Inorganic Catalysts" at 13th National Symposium on Modern Trends in Inorganic Chemistry, (MTIC-XIII) held at Indian Institute of Science, Bangalore during 7-10th Dec. 2009

Collaborative Work

I have been collaborating with Prof. Dietmar Stalke at University of Goettingen, Germany on single crystal X-ray measurements. Also in collaboration with Dr. Tapas Sengupta, IISER-K and his student Gregor, we synthesized copper nanoparticles and shown for the first time copper nanoparticles can be used as anticancer agent for different cell lines. I do have ongoing collaboration with Dr. Pradip Ghorai, IISER-K to understand various homogeneous catalytic organic transformations using computational methods.

Arindam Mukherjee

Teaching programme

(Theory and Practical courses given)

CH-313 – Main group Chemistry (Aug-Dec2009)

CH424- Physical methods in Chemistry (Jan- May 2010)

CH111- Elements of Chemistry (Aug- Dec 2010)

Supervision of Students

Ph.D. students

Suman Kumar Dey (CSIR)
Subhendu Karmakar (UGC)
Amrita Sarkar (IISER)

Meetings attended

1. Inter IISER meet 30-31 Dec 2009, IISERK, Mohanpur campus, Nadia, WB.
2. Modern Trends in Inorganic Chemistry (MTIC-XIII) -7-10 Dec 2009, IISc, Bangalore.

Funded Projects

Applied for two projects

1. SERC DST project of proposed budget of ca. ₹ 35 lakhs (Proposal presentation at TIFR, Mumbai on 20th Septemeber 2010)
2. CSIR project of proposed budget of ca. ₹ 21 lakhs

Balaram Mukhopadhyay

Publications

Journal

Prashant Ranjan Verma, Balaram Mukhopadhyay. Synthesis of a tetrasaccharide related to the O-antigen from *Azospirillum lipoferum* SR65, *Carbohydrate Research* 2010, *345*, 432-436.

Vishal Kumar Rajput, Balaram Mukhopadhyay. Syntheses of a tetra- and a trisaccharides related to the non-reducing O-linked oligosaccharides of *Pseudallescheria boydii*, *Trends in Carbohydrate Research* 2010, *2*, 5-13.

Santanu Mandal, Nayan Sharma and Balaram Mukhopadhyay. H_2SO_4-silica promoted direct formation of β-glycosides of *N*-acetyl glycosylamines under microwave conditions, *Synlett* 2009, 3111-3114.

Bimalendu Roy, Robert A. Field and Balaram Mukhopadhyay. Synthesis of a tetrasaccharide related to the repeating unit of the O-antigen from *Escherichia coli* K-12, *Carbohydrate Research* 2009, *344*, 2311-2316.

Priya Verma, Balaram Mukhopadhyay. Concise synthesis of two trisaccharides related to the cytotoxic triterpenoid saponin isolated from *Pithecellobium lucidum*, *Carbohydrate Research* 2009, *344*, 2554-2558.

Bimalendu Roy, Ritu Raj, Balaram Mukhopadhyay. Efficient Grignard-type addition of sugar alkynes *via* C-H activation to imines using Cu-Ru catalyst under microwave, *Tetrahedron Letters* 2009, *50*, 5838-5841.

Vishal Kumar Rajput, Pooja Ratnakumar Jadhav, Balaram Mukhopadhyay. Synthesis of trisaccharide related to the non-reducing O-linked oligosaccharides of *Pseudallescheria boydii*, *Trends in Carbohydrate Research* 2009, *1*, 1-8.

Balaram Mukhopadhyay, Maristela Braga Martins, Rositsa Karamanska, David A. Russell and Robert A. Field. Direct detection of *E. coli* with mannose-coated CdS quantum dots, *Tetrahedron Letters*, 200, *50*, 886-889.

Teaching

Theory courses

CH111: Chemistry of Elements (1st Year Integrated MS, IISER-K, Autumn Semester, 2009)

CH425: Medicinal Chemistry: Carbohydrates and Peptides (4th Year Integrated MS, IISERK, Spring Semester, 2010)

Laboratory courses

CH322: Laboratory (3rd Year Integrated MS, IISER-K, Spring Semester, 2009)

CH415 : Laboratory (4th Year Integrated MS, IISER-K, Autumn Semester, 2009) (with Dr. Debasish Haldar)

CH122: Laboratory (1st Year Integrated MS, IISER-K, Spring Semester, 2010) (with Dr. Swadhin Mandal, Dr. Parna Gupta Bhattacharyya, Dr. Venkatramanan Mahalingam and Dr. K. Srikanth)

Supervision of Students

Ph.D. students

Santanu Mandal (CSIR-NET-SRF)
Priya Verma (UGC-SRF)
Prashant Ranjan Verma (IISER-JRF)
Somnath Mukherjee (CSIR-NET-JRF)

Talks given

- Carbohydrates: Synthesis and application: in XIV Carbohydrate Conference organized by ACCT-I in Jodhpur held on 7-9th December, 2009.
- Carbohydrates: today and tomorrow: in the National Seminars on Chemistry: today and tomorrow at the Chemistry Department, Burdwan University held on 18-19th March, 2010.
- Invited talk in the joint project workshop at Lund University, Sweden to be held on 8-10th May, 2010

Collaborative work

Synthesis of galactose-hetereocycle hybrids as novel anti-inflammatory and anti-tumor agents and of glyconanoparticles as galectin-targeting tumor markers (Dnr 348-2007-6856): Indo-Swedish Collaborative project with Lund University, funded by Swedish Research Council.

Funded Projects

1. Project Title: Synthesis of the oligosaccharides related to the repeating units of the Oantigens from *Shigella boydii* type-16 and type-17 and further vaccine designing (SR/S1/OC-67/2009)

   Project Status: Implemented on 6th April, 2010
   Duration: 3 Years (06.04.2010-05.04.2013)

   Funding Agency: Department of Science and Technology, New Delhi
   Total cost: ₹ 22,65,000.00

2. Project Title: Synthesis hexasaccharide repeating unit of the O–antigen from *E. coli* O35 and a tetrasaccharides related to the capsular polysaccharide repeating unit of *Vibrio cholerae* serogroup O31 NRT36S

   Project Status: Implemented on 7th August, 2010
   Duration: 3 Years

   Funding Agency: Council of Scientific and Industrial Research, New Delhi
   Total cost: ₹ 10,00,000.00

Any other information like Awards, Prizes etc.

Received "Bharat Sikhsha Ratan Award" from Global Society for Health and Educational Growth, New Delhi.

Pradipta Purkayastha

Publications

Journals

1. S.S. Jaffer, and P. Purkayastha, Steady state fluorescence spectroscopic technique revealing the thermodynamics of fragmentation of compound induced α-cyclodextrin nanotubular suprastructures, *J. Colloid Interface Sci.* 342, 2010, 57-61.
2. P. Purkayastha, Cu^{2+} induced charge transfer switch by choosing the right cyclodextrin environment, *J. Photochem. Photobiol. A: Chem.* 212, 2010, 43-48.
3. S.S. Jaffer, P. Ghosh, A. Das, and P. Purkayastha, Opening of DNA double helix at room temperature: Application of α-cyclodextrin self-aggregates, *Nanoscale* 2, 2010, 1420-1422.
4. P. Ghosh, S.S. Jaffer, T. Das, A. Maity, D. Kumar and P. Purkayastha, Solvatochromic study of three indoloquinoline derivatives: Effect of chloro group/s on the photophysics of the compounds, (communicated).
5. S.S. Jaffer and P. Purkayastha, Mechanistic Pathway for controlled extraction of an unsymmetrical cyanine type drug bound to Herring Sperm DNA using α-cyclodextrin, (communicated).
6. T. Das, A. Kumar, P. Ghosh, A. Maity, S.S. Jaffer, and P. Purkayastha, 20 nm Silver Nanoparticles loaded with a twisted intramolecular charge transfer probe deliver and differentially release the guest to the hydrophobic nanocavities of cyclodextrins, (communicated).
7. A. Maity, T. Das, P. Ghosh, and P. Purkayastha, Step-by-step demonstration of adsorption of a TICT compound on silver nanoparticles and expulsion of the guest by ionic surfactants, (communicated).

Teaching programme

Theoretical Courses

(i) ID414: Application of Spectroscopy in Chemistry and Biology

(ii) CH323: Atomic and Molecular Spectroscopy (along with Dr. P. K. Mandal)

(iii) CH211: Spectroscopy and Other Physical Methods for Molecules and Solids

Practical Course

CH222: Physical Chemistry Practical (along with Dr. P. De, Dr. P. Ghorai, Dr. A. K. Roy)

Supervision of students

Ph.D. Students

1. S. Syed Jaffer, Senior Research Fellow, CSIR.
2. Prasun Ghosh, Junior Research Fellow, CSIR.
3. Arnab Maity, Junior Research Fellow, UGC.
4. Tarasankar Das, Junior Research Fellow, CSIR.

Talks given

Fragmentation of compound induced α-cyclodextrin nanotubular suprastructures: Understanding the thermodynamics through steady state fluorescence spectroscopy.

Meetings attended

1. National conference on green and sustainable chemistry (Invited for a talk). Venue: Birla Institute of Technology & Science, Pilani, India. Date: February 19-21, 2010.
2. 2nd Inter-IISER Chemistry Meet, Venue: IISER, Kolkata, 2009.

Collaborative work

Collaboration with Dr. Dalip Kumar, Chemistry Group, BITS, Pilani.

Project: Studies of the photophysics of a few indoloquiniloine derivatives which are potential anticancer agents.

One report has been communicated for publication.

Two reports are about to be communicated.

Funded Projects

Physicochemical characterization of guest molecule induced cyclodextrin nanotubular suprastructures – This project is funded by CSIR, New Delhi and is under progress.

Amlan Kusum Roy

Publications

Journals

1. Amlan K. Roy, A new DFT method for atoms and molecules in Cartesian grid, Trends in Physical Chemistry, (approx 20 pages), (Invited article) (in press).
2. Amlan K. Roy, J. L. Speyer, L. Bartell and D. Neuhauser, Spin-birefringence in molecular currents: Tellurium and gold complexes, Chem. Phys. Lett. 484, 104—109 (2010). (Considered significant contribution by the Editor.)

Book Chapter

1. Amlan K. Roy, "A general method for central potentials in quantum mechanics", in "Mathematical Chemistry", W. I. Hong (Eds.), (approx. 45 pages), Nova Publishers, Hauppauge, NY, USA (in press).
2. Amlan K. Roy, "A density functional method for general excited states in atoms", in "Quantum Mechanics", Jonathan P. Groffe (Eds.), (approx 39 pages), Nova Publishes, Hauppauge, NY, USA (in press).

Teaching programme

a) CH311 (August 2009)

b) CH222 (Jan 2010)

c) ID421 (August 2009).

Meetings attended

a) Co-convener of "Of Molecules and Materials" (OMAM) conference, held at IISER-K, (Dec 2009). Also poster presented.

b) Poster presented at 2nd Inter-IISER Chemistry Meet, held at IISER-K (Dec 2009).

Other academic/educational activities

a) Demonstration on Theoretical and Computational Chemistry, on Science Day, April, 2010, at IISER-K.

b) Visit to IISER-Pune for the cultural function, with IISER-K students.

Raja Shunmugam

Publications

Journal

R. Shunmugam, G. J. Gabriel, K. A. Aamer, G. N. Tew, "Metal-Ligand-Containing Polymmers: terpyridine as the Supramolecular Unit" *Macromol. Rapid. Commun.*, 31, 784-793, (2010).

Teaching

Theory courses

CH-321: Inorganic Chemistry: Chemistry of Transition Elements –Third year (Jan 2009 – May 2009) (3 credits)

ID-426: Polymers 4th Year (January 2010-May 2010) (3 credits)

ID-426: Polymers 4th Year (August 2010-December 2010) (3 credits)

Practical courses

CH212: Synthesis and characterization of organic and inorganic molecules (Aug 2009 –Dec 2009)

CH-324: Polymer Synthesis (Jan 2009 – May 2009)

CH-422: Lab Rotation for the 4th year (Jan 2010-Feb 2010)

CH-422: Lab Rotation for the 4th year (Aug 2010- Dec 2010)

CH212: Synthesis and characterization of organic and inorganic molecules (Aug 2009 –Dec 2009)

(a) Involvement in theory course and teaching lab development

Designed the syllabus for the polymer theory (ID 414) and synthesis lab (CH-324) and instructed the lab class for the first time.

Students Supervision

Ph.D Students

N. Vijay, 2009; Title - Norbornene based polymers for targeted drug delivery

Shivshankar Mane, 2009; Title - Synthesis and characterization of polymers for sustained drug release

Santu Sarkar, 2009; Title - CdSe containing polymers for the detection of poisonous gases

Sourav Battacharaya, 2009; Tilte - Designing novel polymers for the sensing of arsenic poisioning

Meetings Attended

Engineering polymers towards drug delivery and sensor applications Vijay, N., Sarkar, S., Mane, S., Bhatachariya, S., Das Sarma, J., **Shunmugam, R.**, Second Inter IISER Chemistry meet held between 30th-31st Dec. 2009 at IISER-Kolkata.

Grants and Contracts (External):

As Principle Investigator

No.	Project Title	Funding Agency	Value (₹)	Status
1	"Turn On" Sensors for Arsenic Threats in Drinking Water SR/FT/CS-017/2009	DST	14 Lakhs	Funded
2	Ramanujan Fellowship, SR/S2/RJN-27/2009	DST	73 Lakhs	Funded
3	"Sensing of chemical warfare agents with norbornene based polymers ERIP/ER/0904503/14/01	DRDO	15 Lakhs	Approved, Funding yet to be released
4	Fluorometric sensor for cadmium in drinking water DST/TSG/PT/2009/100	DST	30 Lakhs	Approved, Funding yet to be released

As Co-Principle Investigator:

5	Arsenic biogeochemical cycling in groundwater aquifers of the Bengal Delta Plains (West Bengal, India): Early detection and remediation issues'. Dr. Joyanto Routh, Dr. Punyasloke Bhadury (PIs) and Dr. Raja Shunmugam (Co-PI)	Swedish Research Council's International Collaborative Research Grant	About 50 Lakhs	Funded

Externally funded research proposals submitted (title, funding agency, proposed value).

6	Understanding the cellular consequences of axonal loss and demyelination in viral infection using in vitro myelination system. Dr. Jayasri Das Sarma (PI) and Dr. Raja Shunmugam (Co-PI)	CSIR	15 Lakhs	Submitted

Any other information like Awards, Prizes etc.

Ramanujan Fellowship (DST, Govt of India) for the year 2010.

Sanjio S. Zade

Publications

Journal

1. Anna J. Mukherjee, Sanjio S. Zade, Harkesh B. Singh and Raghavan B. Sunoj, Organoselenium Chemistry: Role of Intramolecular Interactions, *Chem. Rev.* 2010, *110*, 4357-4416.
2. Sanjio S. Zade and Michael Bendikov, Heptacene and Beyond: The Longest Characterized Acenes, *Angew. Chem. Int. Ed.* 2010, *49*, 4012-4015.
3. Sanjio S. Zade, Natalia Zamoshchik and Michael Bendikov, From Short Conjugated Oligomers to Conjugated Polymers. Lessons from Studies on Long Conjugated Oligomers, *Acc. Chem. Res.* 2010 (in press)
4. Sanjio S. Zade, Natalia Zamoshchik and Michael Bendikov, Oligo- and Polyselenophenes: A Theoretical Study, *Chem.- Eur. J.* 2009, *15*, 8613-8624.
5. Soumyajit Das and Sanjio S. Zade, Poly(cyclopenta[c]selenophene): a new polyselenophene, *Chem. Commun.* 2010, *46*, 1168-1170.
6. Soumyajit Das, Pradip K. Dutta, Snigdha Panda and Sanjio S. Zade, 3,4- Ethylenedioxythiophene and 3,4-Ethylenedioxyselenophene: Synthesis and Reactivity of Cα-Si Bond, *J. Org. Chem.* 2010, *75*, 4869-4871.
7. Yair H. Wijsboom, Asit Patra, Sanjio S. Zade, Yana Sheynin, Mao Li, Linda J. W. Shimon, and Michael Bendikov, Controlling Rigidity and Planarity in Conjugated Polymers: Poly(3,4-ethylenedithioselenophene), *Angew. Chem. Int. Ed.* 2009, *48*, 5443-5447.

Book Chapter

Sanjio S. Zade, and Michael Bendikov, Theoretical Studies on Thiophene-Containing Compounds, in "Thiophene Based Materials for Electronics and Molecular Optics", Eds. Dmitrii F. Perepichka and Igor Perepichka, *John Wiley and Sons*: Chichester, 2009.

Teaching Programme

Theory courses

H412 (Organometallic Chemistry and Catalysis): Autumn Sem 2009-2010

D424 (Polymers): Spring Sem 2009-2010 (shared with Dr. Raja Shunmugam and Dr. Priyadarshi De)

SEMINAR 411: Autumn Sem 2009-2010 (shared with Dr. M. Venkatramanan and Dr. Subhajit Bandopadhyay)

Practical Courses

CH413 (fourth year lab rotation): Autumn Sem 2009-2010 (shared with Dr. Debasish Haldar, Dr. Raja Shunmugam, Dr. Balram Mukhopadhyay)

CH324 (Polymer Chemistry): Autumn Sem 2009-2010.

CH324 (Polymer Chesmitry): Spring Sem 2008-2009 (shared with Dr. Raja Shunmugam)

Supervision of Students

Ph.D Students

Soumyajit Das
Pradip Kumar Dutta
Palas Baran Pati
Anjan Bedi

Funded Projects

Title: Cyclic oligomers and cooligomers of thiophene and selenophene: New Types of Electronic Materials
Funding Agency: DST
Total Amount: 20,40,000/-
Period of support: 2007-2010

Title: Development of Cyclopenta[c]heterol-based Conjugated Systems for Dye-Sensitized Solar Cells (DSSCs)

Funding Agency: DST (TDS)
Total Amount: 3, 00,000/-
Period of support: Sanctioned for funding

DEPARTMENT OF EARTH SCIENCES

Somnath Dasgupta

Publications

Journal

Bose, S, Das,K, Ohnishi,I., Torimoto,J., Karmakar,S, Shinoda, K & Dasgupta,S (2009). Characterization of oxide assemblages of a suite of granulites from the Eastern Ghata Belt, India: implication to the evolution of C-O-H-F fluid during retrogression. Lithos, 113, 483-497.

Goswami, S., Bhowmik, S.K. & Dasgupta, S (2009). Petrology of a non-classical Barrovian inverted metamorphic sequence from the western Arunachal Himalaya, India. Journal of Asian Earth Sciences, 36, 390-406.

Karmakar, S., Bose, S., Das, K. and Dasgupta, S. (2009). Proterozoic Eastern Ghats Belt, India – a witness of multiple orogenies and its lineage with ancient supercontinents. In: (Eds.) Talat Ahmad, Francis Hirsch, and Punya Charusiri, *Geological Anatomy of India and the Middle East*, Journal of the Virtual Explorer, Electronic Edition, ISSN 1441-8142, volume 32, paper 3.

Bhowmik,S.K., Bernhardt,H-J. & Dasgupta,S (2010). Grenvillian age high pressure upper amphibolite-granulite metamorphism in the Aravalii-Delhi mobile belt, northwestern India: New evidence from monazite chemical age and its implication. Precambrian Research, 178, 168-184.

Teaching Programme

ES 221
ES 311
ES 322
ES 324
ES 314

Awards and Honors

Joined as Associate Editor for Geological Journal (Wiley-Interscience)

Member of the Research Council of the National Institute of Oceanography, Goa

Joyanto Routh

Publications

Journal

1. Choudhary, P., Routh, J. (2009). Organic geochemical record of increased productivity in Lake Naukuchiyatal, Kumaun Himalayas, India. (Environmental Earth Sciences, DOI:10.1007/s12665-009-0221-3).
2. Ranjan, R.K., Routh, J., Ramanathan, AL (2010) Bulk organic matter characteristics in the Pichavaram mangrove-estuarine complex, south-eastern India (Applied Geochemistry, DOI: 10.1016/j.apgeochem.2010.05.003).

3. Choudhary, P., Routh, J. (2010). Distribution of polycyclic aromatic hydrocarbons in Kumaon Himalayan lakes (Organic Geochemistry, DOI:10.1016/j.orggeochem.2010.01.009).
4. Baskar, S., Baskar, R., Routh, J. (2010) Biogenic evidences of moonmilk deposition in the Mawmluh Cave, Meghalaya, India (Geomicrobiology Journal, in press).
5. Routh, J. and Hjelmquist, P. (2010) Sediment geochemistry of an arsenic contaminated aquifer in Ambikanagar (West Bengal, India) (Applied Geochemistry, in press).
6. Choudhary, P., Routh, J., Chakrapani, G.J. (2009). Comparison of organic matter in sediments of three Kumaun Himalayan lakes. Current Science 97, 572-575.
7. Five papers submitted to Biogeochemistry, Science of Total Environment, Hydrobiologia and Journal Hazardous Material (2) are currently under review.

Papers/posters in national, international seminars and conferences

1. International Meeting in Organic Geochemistry (Bremen, Oct 2009): Four papers were presented in the poster sessions by me. Also attended by one of my PhD students
2. EUCOP Meeting: One poster presented by my PhD student in Fairbanks, Alaska
3. ClimeECO2 Meeting: One poster presented by my PhD student at Brest, France

Teaching Programme

1. Organic Geochemistry (Autumn 2009)
2. Geomicrobiology (Spring 2010 with P. Bhadhury)
3. Introductory Geology (Spring 2010 with S. Dasgupta)
4. Hydrology and Rock Mechanics (Autumn 2010 with S. Ray)
5. Environmental geochemistry and Geomorphology (Autumn 2010 with M. Jaiswal)

Supervision of students

Post-Doctoral Fellow

Preetam Choudhury (Lund University)

Ph.D student(s)

Gustaf Hugelius (Stockholm University)
Rajesh Ranjan (Stockholm University)
Xavier Middleton (Stockholm University)
Devnita Ghosh (IISER-Kolkata)

MS Students

Abhniav Kumar
Ashish Agarwal
Rajarshi Roychoudhury

Talks given

Speleothem archives in India and climate change, University of Heidelberg (June 2010)

Funded Projects

1. SIDA (2010-12) High resolution paleoclimate record in stalagmites from northeastern India. J. Routh (PI); 1.5 million kr.
2. Swedish Research Link Program–South Africa (2010-12) Millennial scale variability in climate and precipitation in S. Africa – Impacts on terrestrial ecosystems. J. Routh (PI) and AN Roychoudhary (Stollenbosch Univ, S Africa, co-PI); 950000 kr.
3. Swedish Research Link Program–Asia (2010-12) Arsenic biogeochemical cycling in Bengal Delta Plain aquifers– Early detection and remediation. J. Routh (PI) and P. Bhadhury (IISER-K; co-PI); 735000 kr.
4. SASNET (2010-11). Sedimentary records in glacial lakes in Bhutan. Planning grant 75000 kr.
5. Climate Change Center at IISER-K – MoES (ca. 15 crores)
6. Climate and anthropogenic impacts on phytoplankton diversification in the Sundarban mangroves of India (w/ P. Bhadhury at IISER-K (co-PI); SIDA; 3.0 million kr)
7. High-resolution paleotemperature and paleovegetation reconstruction from speleothem archives: Impact of the Indian monsoon variability on terrestrial ecosystem (w/ A. Mangini (co-PI) at Heidelberg Univ, Formas; 4.6 million kr.)

Visit to foreign labs in connection with ongoing projects

1. Glasgow University (James Bendle; January 2010 for 1 week).
2. University of Heidelberg (A. Mangini; February 2010 for 1 week, June 2010 for 2 weeks). Experiments set up in Heidelberg are currently run by Abhinav Kumar for his MSc thesis work.
3. Continuing work with ongoing projects at Stockholm University in lake sediments in the organic geochemistry lab.

Acquisition of instruments and Laboratory set up

Setting up the organic geochem laboratory: Installed and running accelerated solvent extractor and roto/multi vap. Waiting for installation of the GCMSMS. The instrument is on its way from Germany.

DEPARTMENT OF MATHEMATICS

Saugata Bandyopadhyay

Publication

Journal

S. Bandyopadhyay, B. Dacorogna, *On the pullback equation $\varphi^*(g) = f$*, Ann. Inst. H. Poincaré Anal Non Linéaire, 26 (2009), 1717-1741.

Teaching Programme

Theory courses

A) *January 2009 – May 2009:*

1. Geometry of Curves and Surfaces.
2. Ordinary Differential Equations and Algebra (1/3 course).

B) *August 2009 – December 2009:*

1. Advanced Complex Analysis.

C) *January 2010 – May 2010:*

1. Geometry of Curves and Surfaces.
2. Differential Geometry.

Other Teaching Activities

A) In-charge of the Seminar Course (August 2009 – December 2009).

B) Supervisor of Mr. Kapil Dev, Integrated MS student, for his Semester Seminar Project (April 2009 - December 2009).

Title: *On a Problem on Isometry.*

C) Supervisor of Mr. Abhishek Shukla, Integrated MS student, for his Semester Seminar Project (January 2010 – May 2010).

Title: *Non-uniqueness of Solutions of an Ordinary Differential Equations and Kneser Theorem*

D) Supervisor, jointly with Dr. Dibyendu Nandi, of Mr. Nishant Kumar, Integrated MS student, for his Semester Seminar Project (January 2010 – May 2010).

Title: *Bifurcation Theory and its application to Low-order Stellar Dynamo Models*

Talks Delivered and Meeting Presentations

On the Pullback Equations. Department of Mathematics, EPFL, Switzerland, June 2009.

Sachindranath Jayaraman

Publications

Journal

Sachindranath Jayaraman and K. C. Sivakumar, *Matrix interval monotonicity*, Demonstratio Mathematica, 43(1) (2010), 1-10.

Sachindranath Jayaraman, *Nonnegative reflexive generalized inverses and applications to group monotonicity*, Operators and Matrices, 4(3) (2010), 353-363.

Teaching

Autumn 2009 – MA313, Graph Theory and Combinatorics

Spring 2010 – MA324, Integration and Measure

Autumn 2010 – MA313, Graph Theory and Combinatorics

Autumn 2010 – Reading Course on Linear Algebra for PBIP student

Himadri Mukherjee

Teaching programme

Algebra1 MA121 Spring 2009

Algebraic Topology MA 413 Fall 2009

Representation Theory MA422 Spring 2010

Algebra1 MA312 Fall 2010

Riemann Surfaces MA 515 Fall 2010

Collaborative work

Positivity questions of various matrix forms joint work with Dr. S. Jayaraman

Asok K. Nanda

Publications

Journal

1. Chanchal Kundu and Asok K. Nanda (2010): On Generalized Mean Life of Records. *Statistics and Probability Letters*, 80, 797-806.
2. Asok K. Nanda (2010): Characterization of Distributions through Failure rate and Mean Residual Life Functions. *Statistics and Probability Letters*, 80, 752-755.
3. Asok K. Nanda, Subarna Bhattacharjee and N. Balakrishnan (2010): Mean Residual Life Function, Associated Orderings and Properties. *IEEE Transactions on Reliability*, 59(1), 55-65.
4. Subarna Bhattacherjee, Asok K. Nanda and Satya Kr. Misra (2010): Aging Intensity Function in Reliability Analysis. Proceedings of the International Conference on Challenges and Applications of Mathematics in Science and Technology (CAMIST)}, S. Chakraverty (editor), pp. 601-607, Macmillan Publishers India Limited, Delhi.
5. Asok K. Nanda and Amarjit Kundu (2009): On Generalized Stochastic Orders of Dispersion-Type. Special Triennial Volume of *Calcutta Statistical Association Bulletin*, 61(241-244), 155-182.
6. S.S. Maiti and Asok K. Nanda (2009): A loglikelihood-based shape measure of past lifetime distribution. Special Triennial Volume of *Calcutta Statistical Association Bulletin*, 61(241-244), 303-320.

Teaching programme

1. Probability and Statistics (MA221): Spring 2008-09
2. Probability and Stochastic Processes (MA324): Spring 2008-09
3. Numerical Analysis Lab (ID418)(This includes theory as well): Autumn 2009-10
4. Probability and Statistics (MA221): Spring 2009-10

Supervision of students

Ph.D. Students

1. Suchismita Das at IISER Kolkata
2. Satya Misra at Kalinga Institute of Industrial Technology University, Bhubaneswar

Seminar/Conferences etc.

1. Member of the Organizing Committee of the Twelfth Annual Conference of the Society of Statistics, Computer and Applications held at the Department of Statistics, Visva-Bharati University, Santiniketan during February 24-26, 2010.
2. Organized a session on *Reliability Models and their Properties*, presented an invited talk and chaired a session in the International Indian Statistical Association (IISA) meeting held in Vishakhapatnam, India during January 4-8, 2010.
3. Presented an invited talk, and chaired a session at the International Triennial Symposium held in the Department of Statistics, University of Calcutta during December 28-31, 2009.

Externally Funded Project

Title of the Project: "On Stochastic Order Relations with Applications in Reliability"

Funded by: Department of Science and Technology, Government of India

Duration: Three years with effect from September 20, 2006.

This project was started at IIT Kharagpur and got transferred to IISER Kolkata. So, it was at IISER during April-September, 2009. The project student, Suchismita Das, we are happy to report, has now joined us as a research scholar, pursuing a Ph.D under the supervision of Dr. Asok Nanda.

Other academic/educational activities

1. Reviewed research articles for *Mathematical Reviews* of American Mathematical Society
2. Reviewer of sponsored project of DST, Government of India
3. Refereed research papers for different journals from India and abroad.
4. Collaborating with people from different places viz. McMaster University, Canada; University of Arizona, USA; King Abdulaziz University, Saudi Arabia; India (ISI, Kolkata; Kalinga Institute of Industrial Technology University, Bhubaneswar; Rajiv Gandhi Institute of Petroleum Technology, Rae Bareli; Visva-Bharati University, Santiniketan; Santipur College, Santipur)

DEPARTMENT OF PHYSICAL SCIENCES

Narayan Banerjee

Publications

Journal

Chameleon field and the late time acceleration of the Universe: Narayan Banerjee, Sudipta Das, Koyel Ganguly: Pramana, 74, L481, 2010

Teaching Activities

1. PH 121 (Electrodynamics I) Spring Semester, 2009.
2. PH 311 (Classical Mechanics II) Autumn Semester, 2009.
3. ID 121 (Thermodynamics) Spring Semester, 2010.
4. ID 421 (General Relativity) Spring Semester, 2010 (Shared with Dr. Nayek)

Students Supervision

Ph.D Student

Barun Majumdar

Talks Delivered and Meeting Presentations

1. Dr. Ramatosh Sarkar Memorial Lecture at Bangiya Bijnan Parishad
2. Invited Talk at IUCAA Pune (IUCAA Reunion Meet)
3. Popular talks at various Under Graduate colleges.

Education, Public Outreach and Synergistic Activities:

Organized a Workshop for High School students on Astronomy at IISER-Kolkata in April, 2009, as a part of celebration of the Year of Astronomy.

Soumitro Banerjee

Publications

Journal

1. S. Kapat, S. Banerjee, and A. Patra, "Discontinuous Map Analysis of a DC-DC Converter Governed by Pulse Skipping Modulation," *IEEE Transactions on Circuits & Systems — I*, vol.57, no.8, 2010.
2. V. Avrutin, P. S. Dutta, M. Schanz, and S. Banerjee, "Influence of a square-root singularity on the behavior of piecewise smooth maps," *Nonlinearity*, Vol. 23, pp.445-463, 2010.
3. J. Ing, E. Pavlovskaia, M. Wiercigroch, and S. Banerjee, Bifurcation analysis of an impact oscillator with one sided elastic constraint near grazing," *Physica D*, Vol. 239, pp.312-321, 2010.
4. Z. T. Zhusubaliyev, O. O. Yanochkina, E. Mosekilde, S. Banerjee, "Two-mode dynamics in pulse-modulated control systems," *Annual Reviews in Control*, Vol.34, No.1, pp.62-70, 2010.

5. P. S. Dutta, S. De, S. Banerjee, A. R. Roy, "Torus destruction via global bifurcations in a piecewise-smooth, continuous map with square-root nonlinearity," *Physics Letters A*, vol. 373, pp.4426-4433, 2009.
6. S. Banerjee, J. Ing, E. Pavlovskaia, M. Wiercigroch, R. K. Reddy, "Invisible Grazings and Dangerous Bifurcations in Impacting Systems: the Problem of Narrow-band Chaos," *Physical Review E*, vol.79, p. 037201, 2009.

Teaching programme

2009 Autumn: Single variable analysis, MA111

2010 Spring: Nonlinear Dynamics and Chaos Theory, ID422

Talks Given

1. S. Banerjee, S. Kundu, and D. Giaouris, "The problem of singularity in impacting systems," International Workshop on Resonance Oscillations and Stability of Nonsmooth Systems, London, 16-25 June, 2009.
2. P. S. Dutta and S. Banerjee, "Period Increment Cascades in a Discontinuous Map with Square-Root Singularity," 2nd IFAC Conference on Analysis and Control of Chaotic Systems, London, 22-24 June, 2009.
3. S. Banerjee, "Dynamics of discontinuous maps," International Workshop on Nonlinear Maps and their Applications (NOMA '09), Urbino, Italy, 10-11 September 2009.

Collaborative work

I have collaborative work with the University of Newcastle upon Tyne, UK, Aberdeen niversity, UK, University of Stuttgart, Germany, and University of Kursk, Russia. The papers resulting from these collaborations are mentioned under Journals.

Ananda Dasgupta

Publications

Books

(a) Book titled "Mechanics through problems" coauthored with Prof. Dhiranjan Roy has been submitted to the publishers.

(b) Book titled "Python for the sciences" is currently under preparation.

Teaching Programme

Autumn Semester 2009

(a) MA311 - Analysis on $R ^ n$

(b) PH412 - Advanced electromagnetism

Spring Semester 2010

(a) MA121 - Linear algbera

(b) MC121 - Computer applications

Talks Given

(a) "Relativity with a flashlight" minicourse delivered at the Summer workshop for Class 12 students organised by IACS, Kolkata, May, 2009

(b) "Fractals : the geometry of nature" talk delivered at a one day UGC sponsored workshop organised by Jogesh Ch. Chaudhuri College, Kolkata, February 20th, 2010

(c) "It is obvious from symmetry that" talk delivered at Manindra Chandra College, Kolkata, organised by IAPT, 17th April 2010.

Meetings Attended

KVPY Physics question framing committee meeting at Homi Bhaba Center for Basic Science Education, Mumbai, Sept. 2009

Education, Public Outreach and Synergistic Activities:

Was part of the organizing committee for the outreach program on the Large Hadron Collider organized by IISERK in collaboration with SINP and HRI in 2009.

Amitava Datta

Publications

Journal

1. Nabanita Bhattacharyya, Amitava Datta. Tracking down the elusive charginos/neutralinos through tau leptons at the Large Hadron Collider, Phys.Rev.D80:055016,2009.
2. Amitava Datta and Sujoy Poddar. Probing R-parity violating models of neutrino mass at the LHC via top squark decays, Phys. Rev. D 79, 075021 (2009).

Teaching Programme

Autmn Semester 2009-10: Quantum Field Theory (Theory)

Spring Semester 2009-2010: High Energy Physics (Theory); Nuclear and Particle Physics Lab.

Students Supervision

Ph.D. Students

Sujoy Poddar (Registered at JU)

Nabanita Bhattacharyya (Registered at JU)

Arghya Choudhury (IISER-K)

Other academic/educational activities

Continues to a member of the DAE-DST task force for CMS-ALICE

Continues to be a member of Sectional Committee II (physical sciences), INSA

Continues to be a member of the Programme Advisory Committee, Regional Centre for Accelerator based Particle Physics, Harish Chandra Research Institue Allahabad.

Sushanta Dattagupta

Publications

Journal

1. Evolution of 180^0, 90^0, and vortex domains in ferroelectric films, Manas Kumar Roy, Shamik Sarkar, and Sushanta Dattagupta, Appl. Phys. Lett. 95, 192905 (2009)
2. Dissipative quantum systems and the heat capacity, Sushanta Dattagupta, Jishad Kumar, S. Sinha, and P.A. Sreeram, Phy. Rev. E 81, 031136 (2010)
3. Role of quantum heat bath and confinement in the low-temperature thermodynamics of cyclotron motion, M. Bandopadhyay and S. Dattagupta, Phy. Rev. E 81, 042102 (2010)

Teaching Programme

i) A course on Quantum Mechanics during Monsoon Semester 2009

ii) An interdisciplinary course on Non-equilibrium Phenomena during Monsoon Semester 2009

iii) An interdisciplinary course on Diffusion during Spring Semester 2010

Students Supervision

Ph.D. Students

Jishad Kumar, jointly with Dr. P.A. Sreeram

Manas Kumar Roy

Talks given

i) Domains in ferroelectric films – formation, dynamics and imaging, in a JNCASR Conference on Chemistry of Materials, Alleppy, October 2009

ii) From Benzene to Aharonov – Bohm ring, in Inter-IISER Chemistry meeting, IISER-K (December, 2009)

iii) On Molecular Magnetics, in OMAM, IISER-K (December, 2009)

iv) The story of quantum friction, DAE C.V. Raman Prize Lecture of the Indian Physics Association (2009) at IISER-K on 16th January, 2010

Meeting Attended

Joint meeting of Göttingen University with IISERs, Kolkata and Pune and TIFR, Mumbai

Collaborative Work

i) Ongoing research with Prof. Amnon Aharony and Prof. Ora-Entin Wohlman of Ben-Gurion University and Prof. S. Gurvitz of Weizmann Institute, Israel on Mesoscopic Systems.

ii) J.C. Bose Fellowship of the Department of Science and Technology under which Dr. Jaita Paul worked as a Post-Doctoral Fellow.

Awards, Prizes, etc

DAE C.V. Raman Award Lecture (2009).

Nirmalya Ghosh

Publications

Journal

1. Nirmalya Ghosh, Michael F. G. Wood and I. Alex Vitkin, "Influence of the order of the constituent basis matrices on the Mueller matrix decomposition-derived polarization parameters in complex turbid media such as biological tissues", Optics Communications, 283, 1200 – 1208 (2010).
2. Xinxin Guo, Michael F. G. Wood, Nirmalya Ghosh, and I. Alex Vitkin, "Depolarization of light in turbid media: a scattering event resolved Monte Carlo study", Applied Optics, 49 (2), 153-162 (2010). [Virtual Journal of Biomedical Optics, 5 (3), 2010].
3. Marika A. allenburg, Mihaela Pop, Michael F. G. Wood, Nirmalya Ghosh, Graham A. Wright and I. Alex Vitkin, "Comparison of optical polarimetry and diffusion tensor MR imaging for assessing myocardial anisotropy", Journal of Innovative Optical Health Sciences, 3(2), 109-121 (2010).
4. Michael F. G. Wood, Nirmalya Ghosh, Marika A. Wallenburg, Shu-Hong Li, Richard D. Weisel, Brian C. Wilson, Ren-Ki Li, and I. Alex Vitkin, "Polarization birefringence measurements for characterizing the myocardium, including healthy, infracted, and stem cell treated regenerating cardiac tissues", submitted to Journal of Biomedical Optics (later appeared in 15 (4), 047009, 2010).
5. Marika A. Wallenburg, Michael F. G. Wood, Nirmalya Ghosh and I. Alex Vitkin, "Effect of optical axis orientation on polarimetry-based linear retardance measurements", submitted to Optics Letters (later appeared in 35 (15), 2570 – 2572 2010).

Book Chapter

Nirmalya Ghosh, Michael Wood, and Alex Vitkin, Polarized light assessment of complex turbid media such as biological tissues using Mueller matrix decomposition; Chapter 9, *Handbook of Photonics for Biomedical Science*, Edited by Valery V. Tuchin, Taylor and Francis Publishing (in press).

Teaching Programme

Physics laboratory course (PH 222, Optics and Heat) in the spring semester 2010.

Talks given

Nirmalya Ghosh, "Probing Biological Tissues with Polarized Light: A Mueller matrix Decomposition Approach", DAE-BRNS National Laser Symposium, held at Bhabha Atomic Research Centre, Mumbai (January 13 to 16, 2010).

Collaborative work

With Prof. I. Alex Vitkin, University of Toronto, Canada (research area: Biophotonics)

Uday Kumar

Publications

Journal

1. A. V. Deshpande, Uday Kumar: Journal of Non-Crystalline Solids 355 (2009) 501–506
2. A. V. Deshpande, Uday Kumar: Journal of Luminescence 130 (2010) 839–844

Teaching Programme

1. EL 122 Basic Electronics and instrumentation 5 years integrated MS Course at IISER-K, Autumn Semester 2009.
2. PH 122 Electricity and Magnetism 5 years integrated MS Course at IISER-K, Spring Semester 2010.
3. PH 325 Nuclear Physics 5 years integrated MS Course at IISER-K, Spring Semester 2010.
4. PH 425 X-ray and nano-materials 5 years integrated MS Course at IISER-K, Spring Semester 2010.

Meeting Attended

Development of pulse magnetic field facility at SINP, dated 21/11/2009, Saha Institute of Nuclear Physics, Kolkata.

Collaborative Work

Effect of size reduction on magnetic and structural properties of magnetic oxides with following collaborators

(i). Dr. K. Srikanth, Department of Chemical Sciences, IISER-Kolkata; (ii). Prof. R. Ranganathan, Experimental Condensed Matter Physics Division, SINP, Kolkata; (iii). Prof. Chandan Majumdar, Experimental Condensed Matter Physics Division, SINP, Kolkata.

Arindam Kundagrami

Teaching Programmme

Theory Course: Delivered three weeks of (total 9) lectures as a part of the course of Systems Biology (LS221 – Semester January, 2010) for the second year Integrated M.S. students.

Parth Mitra

Teaching Programme

Aug 2009 Semester

EL111: Electronics Lab (With Prof. Swapan Dutta and Dr. P. A. Sreeram)

PH315: Optics and Heat Laboratory (with Dr. Ayan Bannerjee)

January 2010 Semester

PH122: Electricity and Heat Lab (with Dr. Goutam Dev Mukerjee)

Meeting attended

"Utilization of High Magnetic Field and Low Temperature in Materials Research", held on 5th November, 2009 at Jadavpur University.

Collaborative work

With Prof. Nitin Samarth, Pennstate, USA: Fabrication of Spin torque based devices with Diluted Magnetic Semiconductors.

With Prof. Alak Kumar Majumdar, S. N. Bose: magnetic susceptibility studies of quantum phase transitions in disordered magnetic alloys.

With Swadhin Mandal, Chemistry IISERK: Spin transport in organic semiconductors

With Arindam Mukerjee, Chemistry IISERK: Magnetization studies of novel single molecular magnets

With Chiranjib Mitra, Physics, IISERK: Fabrication of novel mageto-electronic devices with oxide ferromagnetic and superconducting materials.

Goutam Dev Mukherjee

Publications

Journal

D. Santamaria-Perez, M. Ross, D. Errandonea, G.D. Mukherjee, M. Mezouar and R. Boehler, J. X-ray diffraction measurements of Mo Melting to 119 GPa and the high pressure phase diagram; Chem. Phys. 130, 124509 (2009).

Teaching Programme

For August – December 2009 Semester:
PH414 Laboratory Course on Raman Spectroscopy at High Pressures and Laser Spectroscopy (Elective). I shared the course with Dr. Bipul Pal.

For January 2009 – May 2009 Semester:
PH 122 Physics Laboratory Course on Optics and Electromagnetism in which we set up and taught 11 experiments. My co-instructor was Dr. Chiranjib Mitra.

For January 2010 – May 2010 Semester:
PH 122 Physics laboratory Course on Electricity-magnetism and Heat-thermodynamics, in which we set up and taught 8 experiments. My co-instructor was Dr. Partha Mitra.

For January 2010 – May 2010 Semester:
PH/ID 425 Laboratory Course on Nanomaterials and X-ray Diffraction. I shared the course with Dr. Uday Kumar.

Student Supervision

Ph.D. Student

Abhisek Basu

Talks Delivered and Meeting Presentations

Melting phenomena of simple systems at high pressures; Departmental Seminar, October 21, 2009.

Funded Projects

Title: Electrical conductivity measurements of silicate minerals and transition metal oxides at high pressures and high temperatures, and its implications

Funding agency: DST

Sanctioned amount: ₹ 28,81,000

Sanction Letter No. SR/S2/CMP-0041/2009

Dhananjay Nandi

Publications

Journal

Dhananjay Nandi and E. Krishnakumar. Dissociative electron attachment to poly-atomic molecules: Ion kinetic energy measurements. *International Journal of Mass Spectrometry* **289** *(2010) 39 – 46.*

Proceedings

Dhananjay Nandi, Lionel Poisson, Benoit Soep and Jean-Michel Mestdagh. Time Resolved Photoelectron Imaging of a Nucleobase mimic 2-Pyridone. *National Conference on Advances in Atomic Molecular and Nuclear Physics(NCAAMNP), Department of Physics, MMH College Ghaziabad (UP), India, November 5-7, 2009.*

Dhananjay Nandi, Lionel Poisson, Benoit Soep and Jean-Michel Mestdagh. Direct Observation of Electronic Relaxation Dynamics in a Nucleobase mimic 2- Pyridone using Time Resolved Photoelectron Imaging. *International Symposium of Molecules and Materials (A Survey of Recent Concepts), Indian Institute of Science Education and Research (Kolkata), West Bengal, India, December 28-29, 2009.*

Teaching programme

Modern Physics Laboratory (PH 212). Autumn Semester (2009)

Electronics and Instrumentations (EL 321). Spring Semester (2010). (Theory + Experiment) course for the Post-BSc students.

Talks given

Time Resolved Photoelectron Imaging of a Nucleobase mimic 2-Pyridone. National Conference on Advances in Atomic Molecular and Nuclear Physics (NCAAMNP), Department of Physics, MMH College Ghaziabad (UP), India, November 5-7, 2009.

Meetings attended

(a) National Conference on Advances in Atomic Molecular and Nuclear Physics (NCAAMNP), Department of Physics, MMH College Ghaziabad (UP), India, November 5-7, 2009.

(b) International Symposium of Molecules and Materials (A Survey of Recent Concepts), Indian Institute of Science Education and Research (Kolkata), West Bengal, India, December 28-29, 2009.

Dibyendu Nandi

Publications

Journals

1. Munoz-Jaramillo, A., Nandy, D., & Martens, P.C.H. "Helioseismic Data Inclusion in Solar Dynamo Models", 2009, Astrophysical Journal, Volume 698, Page 461
2. Cook, G.R., Mackay, D.H., & Nandy, D. "Solar Cycle Variations of Coronal Null Points: Implications for the Magnetic Breakout Model of Coronal Mass Ejections", 2009, Astrophysical Journal, Volume 704, Page 1021

3. Yeates, A.R., Attrill, G.D.R., Nandy, D., Mackay, D.H., Martens, P.C.H., & van Ballegooijen, A.A. "Comparison of a Global Magnetic Evolution Model with Observations of Coronal Mass Ejections", 2010, Astrophysical Journal, Volume 709, Page 1238
4. Preminger, D., Nandy, D., Chapman, G., & Martens, P.C.H. "Empirical Modeling of Radiative versus Magnetic Flux for the Sun-as-a-Star", 2010, Solar Physics, Volume 264, Page 13
5. Munoz-Jaramillo, A., Nandy, D., Martens, P.C.H., & Yeates, A.R. "A Double-Ring Algorithm for Modeling Solar Active Regions: Unifying Kinematic Dynamo Models and Surface Flux-Transport Simulations", 2010, Astrophysical Journal Letters, Volume 720, Page L20

Book Chapter

1. Nandy, D. "Outstanding Issues in Solar Dynamo Theory", 2010, in the book "Magnetic Coupling between the Interior and Atmosphere of the Sun", Eds. S.S. Hasan and R.J. Rutten, Springer (Berlin), Page 86 [ISBN 978-3-642-02858-8]
2. Nandy, D. "Dynamo Processes", 2010, in the book "Heliophysical Processes", Eds. N. Gopalswamy, S.S. Hasan and A. Ambastha, Springer (Berlin) [ISBN: 978-3-642-11340-6]

Teaching Programme

1. "Sun-Earth-System Science" Autumn Semester, 2009
2. "Electromagnetism", Spring Semester, 2010
3. "Magnetohydrodynamic Dynamo Theory", Tutorial lectures at the DST-SERC School on Space Weather, Indian Institute of Geomagnetism, Navi Mumbai, India, 2010

Students Supervision

Ph.D. Students

Andres Munoz-Jaramillo
Soumitro Hazra

Talks Given

"Solar Activity: From Understanding to Forecasting", Invited Talk, Workshop on "Solar, Cosmic Rays and Climate Connections" Institute of Advanced Studies, Hebrew University, Jerusalem, Israel, 2010

"Space Weather and Climate: A Modeling Perspective", Invited Talk, Indian Institute of Geomagnetism, Navi Mumbai, 2010

"Solar Cycle Predictions", Invited Talk, Astrophysics Division—Physical Research Laboratory, Ahmedabad, India 2010

"Physics of Space Weather and Climate", Institute Colloquium, Physical Research Laboratory, Ahmedabad, India, 2010

"Dynamo Model Based Solar Cycle Predictions", Invited Talk, Symposium STP12 of the Scientific Committee on Solar-Terrestrial Physics (SCOSTEP), Berlin, Germany, 2010

"The Deep Minimum of Solar Cycle 23: A Solution to the Mystery of the Missing Sunspots", Invited Talk, Scientific Assembly of the Committee on Space Research (COSPAR), Bremen, Germany, 2010

Other Meetings

Discussion and planning meeting on National Astronomical Scientific Instrumentation Development, Invited Participant, Bangalore, 2009

Funded Projects

1. "Investigations in Fundamental Solar Astrophysics and Sun-Earth-System Science", Ramanujan Fellowship Research Grant, Department of Science and Technology, Government of India, Amount: INR 25 Lakhs, Role: Principal Investigator, 2009-2014

Other Information

Education, Public Outreach and Synergistic Activities:

1. As team member, involved in providing theoretical research support for the national solar space mission "Aditya", to be launched by the Indian Space Research Organization
2. Involved in developing a multi-institutional national initiative for space weather modeling and predictions for use by national agencies
3. Member of the "Sun-Climate" working group, a NASA Targeted Research & Technology Focus Team
4. Project coordinator of the "Solar Minimum" working group of the International Astronomical Union
5. Developed solar dynamo model selected as an exhibit at NASA's Scientific Visualization Studio (http://svs.gsfc.nasa.gov/search/Series/SolarDynamo.html) and featured in the education and public outreach video associated with NASA's flagship solar space mission – the Solar Dynamics Observatory (http://www.youtube.com/watch?v=BthDupBQXpQ)

Rajesh Kumble Nayak

Publication

Journal

K Rajesh Nayak. "Einstein equations and inertial forces in axially symmetric stationary spacetimes", Gen. Relativ. Gravit., 41, 2737(2009).

Teaching Programme

Electricity and Magnetism II, PH312, (2008 Autumn semester).

Bipul Pal

Publication

Journal

1. B. Pal and Y. Masumoto, *"Spin relaxation in charge-tunable InP quantum dots"*, Phys. Rev. B 80, 125334 (2009).

2. K. Goto, M. Ikezawa, S. Tomimoto, B. Pal, Y. Masumoto, P. Mohan, J. Motohisa, and T. Fukui, "*One- and Two-Dimensional Spectral Diffusions in InP/InAs/InP Core–Multishell Nanowires*", Jpn. J. Appl. Phys. 48, 04C203 (2009).

3. B. Pal, K. Goto, M. Ikezawa, Y. Masumoto, P. Mohan, J. Motohisa, and T. Fukui, "*Spectral diffusion of type-II excitons in wurtzite InP/InAs/InP core-multishell nanowires*", J. Lumin. 129, 1941 (2009).

Teaching Programme

Theory courses

(i) ID420: Nanomaterials and ultrafast phenomena in physics, chemistry and biology, 4th year BS-MS course, autumn semester - 2009-10 (with Swadhin Mondal).

Practical courses

(ii) PH324: Condensed Matter Physics lab, 3rd year BS-MS course, spring Semester - 2008-09 (with Dr. R. Gupta)

(iii) PH414: Ultrafast laser and Raman spectroscopy lab, 4th year BS-MS course, autumn semester - 2009-10, (with Dr. G. D. Mukherjee)

(iv) PH324: Condensed Matter Physics lab, 3rd year BS-MS course, spring Semester - 2009-10 (with Dr. C. Mitra)

Students Supervision

Ph.D. Students

Richarj Mondal, joined in August 2009.

Deepak K Ambast, joined in January 2010.

Talks Delivered and Meeting Presentations:

"*Spintronics: A new twist in electronics*", in the 1st Platinum Jubilee meeting of the Indian Academy of Sciences, Indian Institute of Chemical Technology (IICT) campus, Hyderabad, 2-4 July, 2009.

Funded Projects

1. "*Linear and nonlinear optical study of Er-doped ZnO nanocrystals and thinfilms*" INSA young scientist project funded by Indian National Science Academy. Total grant: Rs. 1,50,000/- over 3 years starting from April 2010.

2. "*Time resolved nonlinear optical spectroscopy in transition-metal-doped ZnO nanocrystals and thinfilms*" SERC fast track project funded by Department of Science and Technology. Total grant: about 20 lakhs including 20% overhead for 3 years. Sanction letter received in May 2010.

Prasanta K. Panigrahi

Publications

Journal

1. S. Sree Ranjani, P.K. Panigrahi, A.K. Kapoor and A. Khare, An explicit realization of fractional statistics

in one dimension, Annals of Physics 324, 11761183 (2009).

2. P. Manimaran, Prasanta K. Panigrahi, Jitendra C. Parikh, Multiresolution analysis of fluctuations in non-stationary time series through discrete wavelets, Physica A 388, 2306 (2009).

3. Prasanta K. Panigrahi, Siddharth Karumanchi and Sreraman Muralidharan, Minimal classical communication and measurement complexity for quantum information splitting of a two-qubit state, Pramana – Jour. of Physics, **73,** 499 (2009).

4. Priyam Das, Manan Vyas and Prasanta K. Panigrahi, Loss of superfluidity in the Bose–Einstein condensate in an optical lattice with cubic and quintic nonlinearity, J. Phys. B: At. Mol. Opt. Phys. 42, 245304 (2009).

5. Sakshi Jain, Sreraman Muralidharan and Prasanta K. Panigrahi, Secure quantum conversation through non-destructive discrimination of highly entangled multipartite states, Euro. Phys. Lett. 87 60008 (2009).

6. Utpal Roy, Suranjana Ghosh, Prasanta K. Panigrahi, and David Vitali, Sub-Planck-scale structures in the Pöschl-Teller potential and their sensitivity to perturbations, Phys. Rev. A 80, 052115 (2009).

7. Prasanta K. Panigrahi, and Chiranjib Mitra, Use of quantum correlation: A theoretical and experimental perspective , Journal of the Indian Institute of Science, 89 333 (2009).

8. Anita H. Gharekhan, Ashok N. Oza, M. B. Sureshkumar, Prasanta K. Panigrahi, and Asima Pradhan, Characterizing fluorescence spectral features of cancer, benign, and normal human breast tissues through wavelet transform and singular value decomposition, Proc. of SPIE 7373, 73730O (2009).

9. V. Ramesh Kumar, R. Radha, Prasanta K. Panigrahi, Matter wave interference pattern in the collision of bright solitons, Phys. Lett. A, 373, 4381 (2009).

10. Utpal Roy, Rajneesh Atre, C Sudheesh, C Nagaraja Kumar and Prasanta K. Panigrahi, Complex solitons in Bose–Einstein condensates with two- and three-body interactions, J. Phys. B: At. Mol. Opt. Phys. 43, 025003 (2010).

11. Anita H. Gharekhan, Siddharth Arora, Ashok N. Oza, M. B. Sureshkumar, Asima Pradhan, and Prasanta K. Panigrahi, Characterizing polarized autofluorescence of normal and benign tissues using singular value decomposition and wavelet transform, Proc. of SPIE *7563, 756308 (2010)*

Book chapter

Prasanta K. Panigrahi, Sayantan Ghosh, P. Manimaran and Dilip P. Alphara, "*Statistical Properties of Fluctuations: A Method to Check Market*", Econophysics & Economics of Games, Social Choices and Quantative Techniques, Editors: B. Basu, B. K. Chakrabarti, S. R. Chakravarti and K. Gangopadhyay, pp 110 - 118, Springer, 2010.

Teaching Programme

1. Nuclear and Particle Physics (6th Semester) Spring 2010,
2. Advanced Quantum Mechanics (7th Semester) Autumn 2009
3. Conducted physics seminar course (7th Semester)Autumn 2009,

4. Conducted physics seminar course (8th Semester) Spring 2010.

Students Supervision:

Ph.D. Students

8. Priyam Das
9. Vivek M. Vyas
10. Kumar Abhinav

Talks Delivered and Meeting Presentations:

1. "Solitons in Optical System", National Seminars on Photonics and Quantum Systems, Tezpur University, November 4-6, 2009.
2. "Quantum Teleportation and Dense Coding", in National Workshop on Quantum Entanglement, Department of Physics, Pondicherry University, Ponsicherry, February 17-19, 2010.
3. "BEC in strongly coupled regime: nature of Lieb mode and dark solitons", in National Level TPSC Workshop on Cold Atoms, February 15-17, 2010.
4. "Quantum Information Splitting", in International Program on Quantum Information, January 4 – 30, 1010.
5. "Bose-Einstein condensates in one dimension: Soliton and Phase Transition", in National Level TPSC Workshop on Nonlinear Physics: Theory, Experiments and Application, March 29-31, 2010.

Meetings attended

1. "Of Molecules and Materials (A Survey of Recent Concepts)", Indian Institute of Science Education and Research, Kolkata, December 28 – 29, 2009.
2. "Recent trends in AMO Physics", Platinum Jubilee of IPS, IACS, Kolkata, March 17, 2010.
3. SPM Fellowship meeting, July, 2009, CSIR, New Delhi.

Collaborative work

Name of the National/International collaborators

1. P. Manimaran, Center for Mathematical Sciences, C R Rao Advanced Institute of Mathematics, Statistics and Computer Science, University of Hyderabad Campus, Hyderabad, India.
2. Sreraman Muralidharan, Department of Information and Communication Technology, Royal Institute of Technology (KTH), Kista, Sweden.
3. David Vitali, Dipartimento di Fisica, Università di Camerino, Camerino, Italy.
4. Rajneesh Atre, Jaypee University of Engineering & Technology, Raghogarh, Guna, India.
5. C Sudheesh, Applied Mathematics Department, Indian Institute of Science, Bangalore, India.
6. C Nagaraja Kumar, Panjab University, Panjab, India.
7. S. Sree Ranjani, School of Physics, University of Hyderabad, Hyderabad, India.
8. Radha Ramaswamy, Centre for Nonlinear Science, Department of Physics, Government College for Women (Autonomous) Kumbakonam, India.

9. A.K. Kapoor, School of Physics, University of Hyderabad, Hyderabad, India.

Subhasis Sinha

Publications

Journal

1. Structural transitions in a crystalline bilayer: the case of Lennard-Jones and Gaussian core models. Tamoghna Das, Surajit Sengupta and Subhasis Sinha, J. Phys, Condens Matter, 21, 195408 (2009).
2. Nonperturbative approach to quantum Brownian motion, Subhasis Sinha and P. A. Sreeram, Phys. Rev. E 79, 051111(2009).
3. Dissipative dynamics of a harmonic oscillator: A nonperturbative approach, Jishad Kumar, S. Sinha, and P. A. Sreeram, Phys. Rev. E 80, 031130 (2009).
4. Dissipative quantum systems and the heat capacity , S. Dattagupta, Jishad Kumar, S. Sinha, and P. A. Sreeram, Phys. Rev. E 81, 031136 (2010).
5. Superfluid-Insulator transition of ultracold atoms in an optical lattice in the presence of a synthetic magnetic field, S. Sinha, K. Sengupta, arXiv: 1003.0258. (submitted)

Teaching Programme

- Equilibrium Statistical Mechanics (Phy 321) at IISER-K (January-May 2009).
- Condensed Matter Physics II (Phy 413) at IISER-K, (shared with Dr. P. A. Sreeram) (August – December 2009)
- Equilibrium Statistical Mechanics (Phy 321) at IISER-K (January - May 2010).
- One 'Pre-Lab' class per week for PH122 at IISER-K (January - May 2010).

Talks given

1. Two lectures given on 'Rotating Bose-Einstein condensate' in a school at IACS (2009).
2. Invited talk on 'Ultracold dipolar atoms in an optical lattice' in 'International conference on Condensed Matter Physics' organized by ICTS at Mahabaleshwar. (December 2009)

Collaborative work

Ultracold atoms in presence of an artificial gauge field: (Collaboration with Dr. K. Sengupta (IACS)).

It has become possible to generate artificial gauge fields for neutral atoms. We are interested to study the 'Superfluid-Mott insulator' transition of bosons in synthetic magnetic field. We have studied the Mott transition in square lattice and derived effective field theories near the quantum critical points for certain flux quantum. Now we are interested to extend our theory to other lattices, particularly for triangular and hexagonal lattice.

Formation of paired supersolid: (collaboration with Prof. Y. Sudhakar, SINP).

We consider 2D bilayer system of hard core bosons at half filling. Due to the anisotropic nature of dipolar interaction, inter layer interaction is attractive and intra layer interaction among the bosons is repulsive. The attractive nature of interaction between bosons in two different layers can form bound

pairs, whereas the repulsive intralayer interaction tries to arrange the pairs in a density wave states. We study the possibility of formation of paired 'supersolid' state in this bilayer system.

Quantum Ising model under dissipation: (collaboration with Prof. S. Dattagupta and A. Patra)

We consider a transverse field Ising model coupled to a bosonic heat bath. We analyze the spin system at zero temperature by using "Holstein-Primakoff" method and calculated the low-laying excitations near the quantum critical point. To study the thermodynamic properties of the system at finite temperature, we obtain an effective Hamiltonian by an unitary transformation. Phase diagram of the system is obtained within mean-field method. We are also interested to study the quench dynamics of interacting spin systems across the quantum critical point.

Quantum Brownian Motion: (collaboration with Dr. P. A. Sreeram, Prof. S. Dattagupta and Jishad Kumar)

We developed a non-pertutbative method to describe non-equilibrium dynamics of a quantum particle attached to a heat bath. We study the dissipative dynamics of a quantum harmonic oscillator using this method. We also calculate the low temperature thermodynamic properties of quantum oscillator in magnetic field.

P. A. Sreeram

Publications

Journal

1. Nonperturbative approach to quantum Brownian motion, (with Subhasis Sinha), Phys. Rev. E 79, 51111 (2009).
2. Dissipative dynamics of a harmonic oscillator: A nonperturbative approach (with Jishad Kumar and Subhasis Sinha) Phys. Rev. E 80, 031130 (2009).
3. The effect of intrinsic instability of cantilever on static mode atomic force spectroscopy (with Soma Das, A K Raychaudhuri and Dirk Dietzel) Nanotechnology, 21, 045706 (2010).
4. Dissipative quantum systems and the heat capacity (with Sushanta Dattagupta, Jishad Kumar and S. Sinha) Phy. Rev. E 81, 031136 (2010).

Students Supervision:

Ph.D. Student

Jishad Kumar with Prof. Sushnata Dattagupta

VII. IISER-K Departments

IISER-K Library

What started as a library catering mainly to the students' need for textbooks for their courses, IISER-Kolkata Library has now morphed into the most important hub of not only the academic activities but the main junction point for disseminating information for the whole institution. As with the earlier years in this year also the library procured sizeable number of documents in different formats in all the fields of study and research undertaken by the institute. By this time the Library has also developed a good collection on Indology as well.

During this period the Kolkata Unit of the Library located at National Institute of Technical Teachers' Training and Research, Kolkata (NITTTR – Kolkata) was shifted to the Mohanpur Campus. Perhaps it is the most important event for IISER-K Library in this year. It helped the Library to expose the patrons to the full collection it holds. The erstwhile Kolkata Unit is now housed in an adjacent building to the JC Bose Building of IISER-Kolkata.

The Library procured 1,106 documents during this period. So now the total collection of printed books at the Library stands at 14,297. In addition to this, the Library also purchased more than ten thousand (10,000+) e-books from Springer during this period in the areas of Physics, Chemistry, Biology, Mathematics and Earth science. This year it also started to subscribe twenty six (26) new online journals. Keeping in mind the growing number of both faculties and researchers in Chemistry, the Library this year decided to enhance access to *SciFinder* database from single to double user. It also subscribed Springer Protocols this year. During the reported period, it started to get access to AIP/APS journals, twenty seven (27) Nature Group journals, thirty seven (37) Annual Reviews, journals of Project Muse database from INDEST as new resources. With the help from INDEST, the Library also started to subscribe the Springer journals from this year and also started a new subscription model with Elsevier whereby the Library will have the right over the subscribed content for the year it paid the subscription fees. As part of the subscription agreement with Elsevier, the patrons are now able to access SCOPUS for their bibliographic literature search.

As part of its tertiary service, it supplied 17,517 photocopies and prints to its patrons.

Library Hours:

IISER-K Library, Mohanpur Campus

Weekdays: 9.00 to 24.00 hrs.

Saturdays and Sundays: 10.00 to 24.00 hrs.

Department of Biological Sciences

During the indicated period, the first batch of students in IISER-K completed 4 years and were about to enter the fifth (final) year. At this time, there are more than twenty Ph.D. students and eight integrated M.Sc.-Ph.D. students in the Biology department. The course work in Biology at all levels remained more or less what we taught in the preceding years. The major deviation was the inclusion of Biochemistry in the course material, both as theory and laboratory course. To ensure that those who missed the chance

of learning Biochemistry as a compulsory paper could go through it, we introduced Biochemistry in the course work for both the second and fourth year Biology for this year only. A laboratory course on Biochemistry has been introduced for the second year students. We would probably do some rearrangement of the syllabus, but we have been able to touch upon most of the areas in Biology which should be covered in the five year integrated course.

The Dapartment of Biological Sciences in the year 2009-2010 expanded its teaching and research laboratories in the following directions.

The tissue culture facilities and the facilities for storage and experimentation on animals were set up. The microbial culture facilities were also put in operation. The constitution of the animal ethics committee following the regulations of DBT, Government of India has been done. The first meeting of the committee in presence of DBT representative was held recently. The arrangement for regular removal of biology laboratory waste is in place. This will ensure a smooth transition of the logistics for running the department to the new campus when we move there. The procedures for procuring the license for radioactive chemical usage have started already.

The Drosophila laboratory has been set up in LEL building.

The confocal microscope has been installed. Some minor modification in the platform for the microscope remains to be done by the supplier.

A Millipore water purification system has been installed to ensure quick supply of deionized water to all the laboratories in the LEL and J.C.Bose Building. There is already a deionized water supply system in the C.V. Raman building. A Hitachi fluorescence spectrophotometer has also been installed. So, the routine biological UV-visible and fluorescence spectroscopy can be done in the department. Two small prefabricated cold rooms have been installed in C.V. Raman and LEL building to cater to the need of all the workers in the biology research laboratories. This more or less ensures that the basic requirements for day to day work in the biology teaching and research laboratories are in place. The performances of the faculty members have also started showing up in the form of publications which are noted elsewhere.

Most of the instruments which are running all the time or need very stable power supply are connected to the UPS. This will ensure fail-safe operation of the equipments.

Department of Chemical Sciences

The institute and the Department of Chemical Sciences have been equipped with state-of-the-art equipments and air-conditioned research laboratories during the above mentioned period. The Department of Chemical Sciences took initiative in setting up the following central facilities for the institute –

Single Crystal XRD Facility with Bruker Kappa Apex II Duo system having computer controlled Mo and Cu source switch over option for the crystal structure determination of small molecules. The low temperature (LN_2) attachment allows data collections from room temperature to 100K.

Powder XRD Facility equipped with Regaku SmartLab system capable of handling powder samples, nanomaterials and thin films with an ultra-low temperature attachment facility (Room temperature to 10K).

A *Differential Scanning Calorimeter* (DSC), which measures temperatures and heat flows associated with thermal transitions in a material has just been purchased and to be set up at the upcoming polymer science research center.

NTMDT *Atomic Force Microscope* with all standard attachments to study surface topology and properties at microscopic level.

Dynamic Light Scattering instrument mainly for measuring particle sizes and zeta potential.

Following are the major equipments added to the Department of Chemical Sciences at C.V. Raman building during the above mentioned period.

Isothermal Titration Calorimeter (GE, USA) for determination of thermodynamic parameters and binding constants of biological, organic and inorganic systems.

Size Exclusion Chromatography (SEC) to determine absolute molecular weight and molecular weight distribution of polymers with refractive index (660 nm) and a laser light scattering detector (3 mW, 670 nm with detection angles of 7° and 90°) and a four-capillary viscometer (Viscotek model 270 series).

Glove Box (Mbraun) (just arrived, to be installed) to work and store highly air-sensitive chemicals under inert atmosphere.

Two *Solvothermal Ovens* (UFP-250, Memmert, Germany) to carry out reactions in sealed vessels at temperatures above the normal boiling point of the solvent which superheats the solvent and autogeneous pressure is developed. There are several advantages of this technique over standard solution chemistry.

Three new state-of-the-art air-conditioned inorganic and materials chemistry research laboratories (C.V. Raman building) have been set up for the research of four chemistry faculty members (Dr. Arindam Mukherjee, Dr. M. Vankatramanan, Dr. Parna Gupta and Dr. Sumit Khanra). These synthetic laboratories are equipped with the following major equipments.

Four LCV Fumehoods

Four Rotary Evaporators (Three of which are equipped with Chillers)

Two Programmed Memmert Ovens for solvothermal synthesis (already mentioned above)

Four Analytical and Precision Digital Balances

One Glove Box (already mentioned above)

Hydrothermal setup for high pressure reaction

Centrifugator and Sonicator

Schlenk line to work with air-sensitive compounds

One state-of-the-art air-conditioned polymer chemistry laboratory has been set up by Dr. Priyadarshi De at the C.V. Raman building with the two following major equipments for polymer chemistry research.

(1) Size Exclusion Chromatography (SEC) (already mentioned above)

(2) High pressure reactor to carry out reaction under high pressure (up to 2000 psi) and temperature (room temperature to 250 °C).

The spectroscopy laboratory at J.C. Bose Building has been equipped with major upgradations of existing equipments and new equipements and Dr. Pradipta Purkayastha and Prof. Sanjib Bagchi worked together in this purpose.

The Time Resolved Spectrofluorimeter of picosecond resolution (Horiba Jobin, Yvon, The FluoroHub) that was purchased previously has been installed in the lab.

The Varian Cary 300 Bio UV-vis spectrophotometer has also been installed during this period.

The Perkin Elmer LS55 spectrofluorimeter has been equipped with a temperature controllerand a biokinetic accessory in its upgradation process.

All the above mentioned equipments that have been already installed are running successfully.

Department of Earth Sciences

2009-2010 was the most significant year for the Department of Earth Sciences (DES). So far the largest groups of students (30) choose to major in EarthSciences. Our faculty members offered multiple courses:

Theory Courses: Introduction to Earth Sciences, Paleontology, Structural Geology, Igneous and Metamorphic Petrology, Geochemistry and Mineralogy, Geophysics, Geodynamics and Geomicrobiology

Laboratory courses: Paleontology, Mineralogy and Petrology, Structural geology

The students were taken to field trips as a part of the Structural Geology and Petrology Laboratory courses.

The Earth Science laboratory was set up and we procured petrological microscopes, geological rock samples, and various field equipments. A state-of-art organic geochemistry laboratory is also being set up, and several instruments procured during this period have been installed (Dionex accelerated solvent extractor, Buchi Multivap system, LVF fumehood). A gas chromatograph mass spectrometer (GCMS-MS system from Agilent has already been shipped).

One of the senior researchers in the department joined as the Associate Editor for Geological Journal and Member of the Research Council of the National Institute of Oceanography, Goa.

Faculty members successfully generated multiple international grants from Europe and India. Funds are being used from these projects to run collaborative projects with researchers from DES with researchers from Germany, Sweden, UK and Brazil. In addition, collaborative programs have also been initiated with researchers from Thailand.

A major project on Climate Change Center has also been proposed to the Ministry of Earth Sciences; this project is currently under review.

The DES faculty members published several papers in high impact international (15) and national (2) journals. They also attended several international meetings where papers/posters were presented.

Year 2010 has also been high in terms of recruiting new faculty members to our department. We added 7 new researchers who joined our department from USA, Taiwan, IIT (Kgp and Guwhati), and Pondicherry. The new faculty members are setting up the necessary laboratories and offering specialised courses.

Currently, we have 2 PhD students and one 5th year major student who are working in the department for their thesis.

Department of Mathematics

2009-2010 was an important year for the Department of Mathematical Sciences. It was our first opportunity since the inception of IISER Kolkata to train 4th year students who had chosen to major in Mathematics. The department decided to offer courses with two primary objectives: breadth and depth in Mathematics. Firstly, with respect to breadth, students had to be given a strong foundation in diverse but essential topics of Mathematics. With respect to this objective, the department offered courses in Advanced Complex Analysis, Functional Analysis, Algebraic Topology, Mathematical Logic, Distribution Theory and Fourier Analysis, Representations of Groups and Algebras, Differential Geometry, and Ordinary Differential Equations and Dynamical Systems. Faculty members of the department were joined by visiting faculty members from other universities and institutes for teaching these courses. While Professor Rana Barua from Indian Statistical Institute, Kolkata taught Mathematical Logic, Advanced Complex Analysis was taught by Professor Raj Kumar Maitra (Retired) from Saha Institute of Nuclear Physics and Professor Ranabir Datta (Retired) from Visva Bharati University. In addition, lab courses were offered in Numerical Analysis and Statistics.

To realise the second objective of depth, faculty members gave specialised seminar courses to students on advanced topics. Each student in 4th year approached a faculty member to get a deeper understanding of a topic of his interest. Towards the end of the course, the student was asked to read research material related to the course and present a seminar talk, which was attended and evaluated by other members of the department. By working one-to-one with a faculty member, students took their first steps in the direction of a research career. The seminar courses offered in 2009-2010 are as follows:

Saugata Bandyopadhyay

1) "On a Problem in Isometry" , April-December, 2009. Student: Kapil Dev
2) "Non-uniqueness of Solutions of an Ordinary Differential Equation", January-May,2010. Student: Abhishek Shukla
3) "Bifurcation Theory and its Application to Low-Order Stellar Dynamo Models", January-May, 2010, jointly with Dibyendu Nandi. Student: Nishant Kumar

Rabeya Basu

1) "Invariant Theory", August-December, 2009. Student: Nishant Kumar
2) "Hilbert Nullstellensatz", January-May, 2010. Student: Kapil Dev

Sachin Jayaraman

1) "Unitarily Invariant Norms", August-December, 2009, jointly with Tanmoy Pal. Student: Abhishek Shukla.
2) "CS-Decomposition of Unitary Matrices", August-December, 2009. Student: Anish Mallick.

Himadri Mukherjee

1) "Characteristic Classes", January-May, 2010. Student: Gouri Shankar Seal.

Subrata Shyam Roy

1) "Peter-Weyl's Theorem", January-May, 2010. Student: Anish Mallick.

Department of Physical Sciences

Teaching Laboratories

During the period 2009-10, around 200 students worked in the Physics and Electronics laboratories. Some additional experiments were added to the Physics laboratory, mostly for the benefit of Physics Major students. Experiments added to Condensed Matter Physics laboratory were

1. Measurement of Magnetic Susceptibility of a liquid sample by Quinck's method.
2. Observation of ferroelectric-paraelectric transition by measuring dielectric constant as a function of temperature.
3. Magnetic Hysteresis loop tracing.

Advanced Optics laboratory was expanded with

1. Zeeman effect experiment
2. Raman effect experiment.

Research Laboratories

Some new facilities and equipments were added during this period like:

1. Powder X-Ray Diffractometer: The diffraction patterns for crystalline powder and thin film samples can be measured up to very low temperatures. Particle size distribution and phase estimation can also be done.
2. Magnetic Properties Measurement System (MPMS): Volume Magnetization and a.c. magnetic susceptibility of samples can be measured as a function of temperature up to very low temperature for external magnetic fields upto 7 Tesla.
3. Atomic Force Microscope: This is primarily used for imaging the surface topography of samples with nanometer resolution. It is also possible to obtain information regarding magnetic, electrostatic and elastic properties of the sample surface. Our system is capable of varying sample temperature upto 150 Centigrade degrees, and it can apply external magnetic field upto 0.5 Tesla and is capable of imaging in liquid environment. Nanolithography on polymeric samples is also possible.
4. Z-scan set up: Non-linear optical susceptibility of liquid and thin film samples can be measured with this set up.
5. We have set up a Mechanical Workshop.
6. Femtosecond Laser System: This is suitable for time resolved spectroscopy.

VIII. Seminars & Colloquia

Seminars

Dr. Saikat Mandal, National Institute for Materials Science, Tsukuba, Japan, 1st April '09, "Novel Methods For The Synthesis Of Metal Nanostructures".

Dr. Sarathi Kundu, Department of Materials Science, S N Bose National Centre for Basic Sciences, Kolkata, 1st April '09, "Structures Formed By The Organic Molecules At The Air-Water Interface".

Dr. Vishu Kumar Aimanianda, Unite des Aspergillus, Institut Pasteur, Paris, France, 8th April '09, "Value Addition To The Polysaccharides From Crustacean Wastes & Fungal Cell Wall And Immunity".

Dr. P. P. George, Department of Chemistry, Israel Institute of Technology, Haifa, Israel. 8th April '09, "A Novel And Convenient Synthetic Routes To Nanomaterials And Their Properties".

Dr. Uttamkumar Samanta, Department of Chemistry and Biochemistry, University of Delaware, USA, 8th April '09, "Role Of Lppla$_2$ In Human Health - Structural Insight".

Dr. Bhaskarjyoti Sarmah, Department of Cell and Developmental Biology, Vanderbilt University Medical Center, USA, 15th April '09, "Inositol Polyphosphates: Novel Effectors Of Cilia And Developmental Signaling".

Dr. Anirban Dutta, Dept. of Math, Western Michigan University, 15th April '09, "Stable Trading Strategy Involving Options".

Dr. Anandamohan Ghosh, Institut des Sciences du Mouvement,Université de la Méditerranée, Marseille, France, 17th April '09, "Noise During Rest Enables The Exploration Of The Brains Dynamic Repertoire".

Dr. Sujit K Ghosh, Department of Synthetic Chemistry and Biological Chemistry, Kyoto University, Japan, 22nd April '09, "Structural And Functional Studies Of Dynamic Coordination Polymers".

Dr. Mousumi De Sarkar, GE India Technology Center, Bangalore, 22nd April '09, "Holographic Transmission Gratings Recorded on Polymer Dispersed Liquid Crystals".

Dr. Harapriya Rath, Dept. of Chemistry, Graduate School of Science, Kyoto University, Japan 29th April '09, "From Hückel To Möbius Aromaticity/Antiaromaticity: A Serendipitous Finding In Expanded Porphyrins And The Effect Of Metal Co-Ordination".

Dr. Chittaranjan Patra, Dept of Biochemistry & Molecular Biology, College of Medicine, Mayo Clinic, Rochester, 29th April '09, "Nanomedicine And Future Therapeutics".

Dr. Sachchidanand, Institute of Life Sciences, Hyderabad, 6th May'09, "Finding "HITS" Against Bromodomain and SIRT1"

Dr. Bidisha Majumder, Agroecosystem Research Department, University of Bayreuth, Germany, 6th May '09, "Carbon Sequestration for Soil Conservation"

Dr. Satyaki Bhattacharya, Reader, Physics Department, Delhi University, 14th May '09, "Search for new particles at the Large Hadron Collider - Issues and Challenges"

Dr. Chandran Karunakaran, Department of Biophysics, Medical College of Wisconsin, Milwaukee, 14th May '09, "Metalloenzymes As *In Vivo / Ex Vivo* Biomarkers Of Human Diseases"

Dr. Thillai Natarajan, Institute of Mathematical Sciences, Taramani, Chennai, 15th May 2009, "Finite And Spectral Element Study Of Natural Convection Flows And Wave Propagation".

Dr. Samrat Chatterjee, Dipartimento di Matematica,Universita di Torino, Italy, 15th May '09, "Spiders As Biological Controllers In The Agro Ecosystem".

Dr. Tarun Panda, Graduate School of Engineering Science, Osaka University, Japan, 27th May '09, "Rare Earth Metal Complexes of 2- Iminoimidazolin Ligands; Ln-N Multiple Bonding and Constrained Geometry Catalysts"

Dr. Krishnendu Gongopadhyay, School of Mathematics, TIFR, Mumbai, 20th May '09, "Algebraic Classification Of The Isometries Of The Hyperbolic Space"

Dr. Saurabh Singh, Department of Molecular, Cellular and Craniofacial Biology, University of Louisville Birth Defects Center, Louisville, 3rd June '09, "Environmental Toxins and Birth Defects: Cellular and Molecular Mechanisms"

Dr. Chayan Kanti Nandi, Institut fur Physikalische und Theoretische Chemie, Frankfurt Am Main, Germany, 10th June '09, "Laser Spectroscopic Investigation On The Binding Study Of Biomolecular Complexes".

Dr. Soumen Paul, Assistant Professor, Institute of Maternal-Fetal Biology, University of Kansas Medical Center, Kansas City, 17th June '09, "Stem Cells: Molecular Regulation of Pluripotency and Lineage Commitment"

Dr. Subrata Shyam Roy, Stat-Math Unit, Indian Statistical Institute, Kolkata, 17th June '09, "Homogeneous Operators, Jet Construction and Similarity".

Dr. Prasanta Das, Department of Physics, BITS Goa, Goa, 17th June '09, "Moller And Bhabha Scattering In The Non Commutative Standard Model".

Dr. Himadri Mukherjee, Mathematical Sciences, IISER Kolkata, 17th June '09, "Lattice Toric Varieties".

Dr. Himansu Mohapatra, Dept. of Chemistry, University of Nebraska-Lincoln, USA, 24th June '09, "The Use of Brillouin and Raman Spectroscopy to Study Intermolecular Interaction and Crystallization Process in Pharmaceutical Drug Polymorphs".

Dr. Supriyo Mitra, Geology and Geophysics, IIT Kharagpur, 1st July '09, "A Seismological View of The Indian Lithosphere".

Dr. Samaresh Guchhait, Microelectronics Research Center, University of Texas at Austin, USA 1st July'09, "Strongly Correlated Systems: Magnetic Measurements of Magnesium Diboride and Group IV Ferromagnetic Semiconductor Alloys".

Dr. Kirti Chandra Sahu, Department of Chemical Engineering, Imperial College London. 8th July'09, "Linear Stability Analysis And Numerical Simulation Of Miscible Channel Flow".

Dr. Rumi De, Division of Engineering, Brown University, 15th July '09, "Dynamics of Cellular Response to Mechanical Stress".

Dr. Shalivahan Srivastava, Indian School of Mines, Dhanbad, 22nd July '09, "Window to The Mantle Underneath Eastern Indian Craton Using Magnetotelluric Studies".

Dr. Arijit Chakrabarty, Cornell University, USA, 22nd July'09, "Understanding Heavy Tails In a Bounded World Or, Is A Truncated Heavy Tail Heavy Or Not?"

Dr. Prasenjit Mal, Department of Chemistry, University of Cambridge, UK, 5th August' 09, "Subcomponent Self-assembly Approach: An Iron Cage in Water".

Dr. Mrinmay Kumar Mukhopadhyay, University of California San Diego, 12th August '09, "Xray Scattering Studies of the Structure and Dynamics of Thin Polymer Molten Films".

Dr. Sanchayan Neal Gupta, EAPS, Masachusetts Institute of Technology, USA, 19th August '09, "Preservation And Sequestration Of Organic Carbon In The Earth".

Dr. Motin Sheikh, Visva-Bharati, Santiniketan, 26 August '09, "Exciting Magnetic and Electrical Properties of 112-Ordered Cobaltite: $LnBaCo_2O5.5\pm\delta$.

Dr. Jaydeb Sarkar, Texas A&M University, 26 August '09, "Quotient Hilbert Modules of The Canonical Hilbert Module".

Dr. Tanmay Paul, Visiting Faculty, IISER Kolkata, 26 August 2009, "Ball Remotality In Banach Spaces".

Dr. Swarnali Bandyopadhyay, Physics Department, Norwegian University of Science and Technology, Norway, 2nd September '09, "Renormalization Of The Dephasing By Zero Point Fluctuations".

Prof. Suman Chakraborty, Mechanical Engineering Department, IIT Kharagpur, 9th September'09, "The Rough Makes It Smooth: Towards Superfluidic Transport in Micro- And Nano-Scale Systems".

Dr. Arunava Dasgupta, Department of Immunology, Max Planck Institute for Infection Biology, Germany 9th September '09, "Fight Against Tuberculosis, The Ancient Disease That Has Taken A Deadly New Turn"

Dr. Bhavtosh Bansal, the High Field Magnet Laboratory in Nijmegen, The Netherlands, 16th September'09.

Dr. Rangeet Bhattacharyya, Department of Chemistry, SUNY Stony Brookwill, 16th September '09, "Applications and Methodological Developments Of NMR For Lithium (Ion) Batteries"

Dr. Moumita Saharay, Center for Molecular Biophysics, Oak Ridge National Laboratory, 30th September '09, "Catalytic Mechanism of Cellulose Degradation By Enzyme In The Production of Bioethanol".

Dr. Sangita Bose, Nanoscale Science Department, Max Planck Institute for Solid State Research, Stuttgart, Germany, 23rd September '09, "Scanning Tunneling Spectroscopic Studies of Low- Dimensional Electronic Systems".

Dr. Chetana Sachidanandan, Massachusetts General Hospital & Harvard Medical School, Boston, USA, 7 October 2009, "Understanding Homeostasis Through Perturbations: A Zebrafish Chemical Biology Approach".

Dr. Anindya Goswami, Department of Applied Mathematics, University of Twente, The Netherlands. 14th October 2009, "Risk Sensitive Optimization Of Portfolio Wealth In A Semi-Markov Modulated Market".

Dr. Manoj Jaiswal, National Taiwan University, Taipei, Taiwan, 28th October '09, "Optical Dating of Fluvial Sediments: Case Studies From NW Himalayas And Taiwan".

Dr. Sathish Narayanan, University of Pennsylvania, USA, 4th November 2009.

Dr. Aveek Bid, Department of Condensed Matter Physics, Weizmann Institute of Science, Rehovot, Israel, 4th November 2009, "Electronic Fabry-Perot interference in the Quantum Hall regime – search for Anyonic statistics".

Dr. Vivekanand Perumal, Johns Hopkins School of Medicine, Department of Pathology, Baltimore, 18th November '09, "Methylation: A Novel Mechanism Of Hepatitis B Virus Regulation".

Dr. Shamik Sen, University of California, Berkeley, CA, 25th November 2009, "Cellextracellular matrix mechanobiology in development and disease: from biophysics to cellular engineering".

Dr. Ritesh Singh, Universitaet Wuerzburg, Wuerzburg, 25th November 2009, "A bottom-up approach to new physics at Large Hadron Collider".

Dr. Golam Mortuza Hossain, University of New Brunswick at Canada 2nd December 2009, "Application of Loop Quantum Garvity to Cosmology".

Dr. Stephen Sproules, Max-Planck-Institut für Bioanorganische Chemie, Germany, 9th December 2009, "The electronic structure of tris(dithiolene) metal complexes: Where are the (valence) electrons?".

Dr. Sujoy Mukherjee, Ohio State University, 16th December 2009.

Dr. Devapriya Chattopadhyay, Department of Geoscience, University of West Georgia, 16th December 2009.

Dr. V. Ravikant, Department of Earth Science, IIT Roorkee, 16th December 2009.

Dr. Amit Basu Sarbadhikari, Institute for Study of the Earth's Interior, Okayama University at Misasa, Japan, 17th December 2009.

Dr. Utpal Chatterjee, Materials Science Division, Argonne National Laboratory, USA, 23rd December 2009, "Universal d wave gap shape in the entire doping range of the cuprate High Temperature Superconductors"

Dr. Sourin Das, Institut fuer Festkörper-Forschung - Theorie 3, Germany, 24th December 2009, "Probing non-abelian nature of the Read-Rezayi quantum Hall states via electrical and thermal transport measurements".

Dr. Suhel Parvez, Leibniz-Institute for Neurobiology, Germany, 6th January 2010, "Electrophysiology: An Excellent Tool for Studying Functions of Biological System".

Dr. Veerandra Vikram Awasthi, Department of Mathematics, Harishchandra Research Institute(HRI), Allahabad, 6th January 2010, "On A Barratt-Milnor Conjecture Of Singular Homology".

Dr. Sayan Bhattacharyya, Department of Materials Science and Engineering, and A.J. Drexel Nanotechnology Institute, Drexel University, Philadelphia, 13th January 2010, "Nanostructured Materials and Probes: Synthesis, Properties and Applications"

Dr. Debansu Chaudhuri, Nanoscale Optoelectronics Group, Department of Physics, University of Utah, 20 January, 2010, "From Iridescence to Luminescence: A Spectroscopic Study".

Dr. Sasthi C Ghosh, Indian Statistical Institute-Bangalore Centre, Bangalore, 20 January, 2010, "Dynamic Data Resolution to Improve the Tractability Of UMTS Network Planning"

Dr. Gouriprasanna Roy, Oregon Health and Science University, Portland, 27 January, 2010, "3-Iodothyronamine (T1AM) A Novel Endogenous Thyroid Hormone: It's Carrier Protein in Human Serum and Physiological Effect on Lipoprotein Metabolism".

Dr. Kaneenika Sinha, Pacific Institute of Mathematical Sciences and University of Alberta, Canada, 27 January, 2010, "Equidistribution in Number Theory".

Dr. Suhas Gangadharaiah, University of California, Irvine, 3rd February, 2010, "Role of Spin-Orbit Terms In Quantum Wire And Quantum Dots".

Dr. Sourav Banerjee, Neuroscience Research Institute, University of California, Santa Barbara 3rd February, 2010, "MicroRNAs In Synaptic Plasticity: Tiny RNAs With Big Potential".

Dr. Charulatha Vankataraman, Pennsylvania State University, 6th February 2010, "Photoinduced Proton-Coupled Electron Transfer And The Study Of Isotope Effect In The Dynamics".

Dr. Viswanath, Indian Institute of Science, Bangalore, 6th February 2010.

Dr. Rajib Bandyopadhyay, Sika India Pvt. Ltd., Kalyani, 10th February, 2010, "Porous Materials and Their Application In Petrochemicals And Petroleum Refining".

Dr. Ambarish Sanyal, Materials and Surface Science Institute, University of Limerick, Ireland. 10th February, 2010, "Facile And Novel Approaches Towards Synthesis And Assembly of Semiconductor Nanomaterials".

Dr. Rupak Datta, Department of Biochemistry & Molecular Biology, Saint Louis University School of Medicine, USA, 17th February, 2010, "Diseases Of Protein Misfolding and Misprocessing: Translating Basic Research Into Therapeutic Opportunities".

Dr. Vinayak Sinha, Max Planck Institute for Chemistry, Mainz, Germany, 17th February, 2010, "Measurements of Volatile Organic Compounds and OH Reactivity: Necessary Tools for Quantifying Organic Pollutants and their Climate and Health Impacts".

Dr. Sudipta Sarkar, Geology Deptt., Rajiv Gandhi Institute of Petroleum Technology, Uttar Pradesh, 3rd March, 2010, "Micropaleontology and its application in paleoceanography and paleoclimatology: A Late Quaternary report from Maldivian Islands, equatorial Indian Ocean".

Dr. Sudipta Sarkar, Gravity Theory Group, University of Maryland, 3rd March, 2010, "Gravity and Thermodynamics: The Story of Going Beyond Einstein".

Dr. Tarun Kumar Dalai, Department of Geology and Geophysics, Indian Institute of Technology, Kharagpur, 10th March, 2010, "Marine Osmium Isotope Record: A Robust Tracer, And Its Potential Applications".

Dr. K. R. Shamasundar, Universität Stuttgart, Institut für Theoretische Chemie, Germany, 12th March, 2010, "Towards Automated Implementation Of Internally Contracted Multi-Reference Methods".

Dr. K. S. Nagapriya, Department of Materials and Interfaces Weizmann Institute of Science, Israel, 17th March, 2010, "Torsional Electromechanics of Carbon and Inorganic Nanotubes".

Dr. Supratim Datta, Bio Energy Institute (JBEI), Lawrence Berkeley National Lab, USA, 17th March, 2010.

Dr. Piyali Mukherjee, Molecular Oncology Program, H. Lee Moffitt Cancer Centre and Research Institute, Tampa, 17th March 2010, "Effect Of Transforming Growth Factor Beta (TGF B) on The Assembly And Activation Of Pre-Replication Complex Proteins".

Dr. Ramkinkar Roy, BITS Pilani, 17th March, 2010, "A Comprehensive Decomposition Analysis of DFT Based Stabilization Energy (CDASE) and its Relevance to Reaction Kinetics and Thermodynamics".

Dr. Amit Sarkar, Laboratory of Zoonotic Pathogens, Rocky Mountain Laboratories, NIAID, NIH, Hamilton, MT, 24th March 2010, "A Search For The ospC Repressor, A Critical Gene for Borrelia Burgdorferi Immune Evasion".

Dr. Rituparna Sinha Roy, Harvard Medical School, Harvard-MIT Division of Health Sciences and Technology, USA, 24th March 2010.

Dr. Ajay Singh, PMP, Ministry of Interior, Kingdom of Bahrain, 31st March, 2010, "Geographical Information Systems (GIS) and Remote Sensing".

Dr. Parthasarathi Majumdar, Theory Group, Saha Institute of Nuclear Physics, 31st March, 2010 "Black Hole Mysteries and Holography".

Colloquia

T.V. Ramakrishnan, IISc, "Many Electrons Together: Strange Goings On". September 05

Archana Bhattacharyya, Indian Institute of Geomagnetism, "Space "Weather" Cycles and Storms driven by the Sun". September 12

M.S. Gopinathan, IISER Thiruvananthapuram, "It is a Nonlinear World!". September 19

Ajay Sood, IISc, "Instabilities and Order in Soft Sheared Matter". November 21

Sankar Chatterjee, Texas Tech University, "What Killed the Dinosaurs?". January 9

Sushanta Dattagupta, IISER Kolkata, DAE - C.V. Raman Prize Lecture, Indian Physics Association: "Quantum Dissipative Dynamics of an Electron in a Magnetic Field". January 16

Guenther Werth, Johannes Gutenberg University, Germany, "Ion Trap Spectroscopy". January 23

Marian Wiercigroch, Centre for Applied Dynamics Research, University of Aberdeen, UK, "Nonlinear Dynamics in Engineering Systems". February 5

K.B. Sinha, JNCASR, "Spinoff in Mathematics from Classical and Quantum Physics: An Overview". February 6

Shantanu Sinha, University of California, San Diego, "The Other "Phase" of MRI. March 20

Prof. Naresh Dadhich, Emeritus Professor, IUCAA, Pune, 24th March 2010, "Why Einstein (Had I been born in 1844!)?".

R. Ramesh, Physical Research Laboratory, "How much of the recent Climate Change is due to the Sun ?" March 27

Tree Plantation Ceremony at the Main Campus

Chemistry Laboratory of IISER-K

MPMS (Evercool, 7 Tesla) by Quantum Design at IISER, Kolkata.

Atomic Force Microscope (AFM)

IX. Faculty Publications

DEPARTMENT OF BIOLOGICAL SCIENCES

Journal

Bandhu A, **Ganguly T**, Chanda PK, Das M, Jana B, Chakrabarti G, Sau S.Antagonistic effects Na+ and Mg2+ on the structure, function, and stability of mycobacteriophage L1 repressor. BMB Rep. 2009 May 31;42(5):293-8.

Banerjee, S., Basu, S. *, and **Sarkar, S.** * (2010). Comparative genomics reveals selective distribution and domain organization of FYVE and PX domain proteins across eukaryotic lineages. BMC Genomics, 11:83. (*Co-corresponding authors)

Bang A., Deshpande S., **Sumana A.** and Gadagkar R. 2010. Choosing an appropriate index to construct dominance hierarchies in animal societies: a comparison of three indices. Animal Behaviour 79: 631-636.

Bhadury P and Austen MC (2010) Barcoding marine nematodes- an improved set of nematode 18S rRNA primers to overcome eukaryotic co-interference. Hydrobiologia 641: 245-251

Bhadury P and Ward BB (2009) Molecular diversity of marine phytoplankton communities based on key functional genes. Journal of Phycology 45:1335-1347

Chaudhury A., Hussey G.S., **Ray P.S.**, Jin G., Fox P.L. and Howe P.H. (2010) Transforming growth factor-β-mediated phosphorylation of hnRNP E1 induces EMT via transcript selective translational induction of Dab2 and ILE1. *Nature Cell Biol.* 12, 286-293 (Epub 2010 Feb 14).

Das S, Smith TD, **Das Sarma, J**, Ritzenthaler JD, Maza J, Kaplan BE, Cunningham LA, Suaud L, Hubbard MJ, Rubenstein RC, Koval M. ERp29 restricts Connexin43 oligomerization in the endoplasmic reticulum. *Mol Biol Cell.* 20(10):2593-604. 2009.

Das Sarma J, Ciric B, Marek R, Sadhukhan S, Caruso ML, Shafagh J, Fitzgerald DC, Shindler KS, Rostami A. Functional interleukin-17 receptor A is expressed in central nervous system glia and upregulated in experimental autoimmune encephalomyelitis. *J Neuroinflammation.* 6:14. 2009.

Das Sarma J, Kenyon LC, Hingley, ST, Shindler KS. Mechanisms of primary axonal damage in a viral model of multiple sclerosis, *J of Neuroscience. 29(33): 10272-80.2009.*

Ganguly T, Das M, Bandhu A, Chanda PK, Jana B, Mondal R, Sau S. Physicochemical properties and distinct DNA binding capacity of the repressor of temperate Staphylococcus aureus phage phi11. *FEBS J.* 2009 Apr; 276(7):1975-85. Epub 2009 Feb 23.

Ishimaru D, Ramalingam S, **Sengupta TK**, Bandyopadhyay S, Dellis S, Tholanikunnel BG, Fernandes DJ, Spicer EK."Regulation of Bcl-2 expression by HuR in HL60 leukemia cells and A431 carcinoma cells". *Mol. Cancer Res.* 7(8):1354-66. (2009)

Minamide LS, **Maiti S**, Boyle JA, Davis RC, Coppinger JA, Bao Y, Huang TY, Yates J, Bokoch GM, Bamburg JR. (2010) Isolation and characterization of cytoplasmic cofilin actin rods. *J Biol Chem.* 285:5450-60.

Mondal R, **Ganguly T**, Chanda PK, Bandhu A, Jana B, Sau K, Lee CY, Sau S. Stabilization of the primary sigma factor of Staphylococcus aureus by core RNA polymerase. *BMB Rep*. 2010 Mar; 43(3):176-81.

Mukhopadhyay R., Jia J., Arif A., **Ray P.S.** and Fox P.L. (2009) The GAIT system: A gatekeeper of inflammatory gene expression. *Trends Biochem Sci*. 34, 324-31.

Ray, T., Maity, P.C., Banerjee, S., Deb, S., Dasgupta, A.K., **Sarkar, S.***, and Sil, A.K.*. (2010). Vitamin C prevents cigarette smoke induced atherosclerosis in guinea pig model. Journal of Atherosclerosis and Thrombosis (in press). (*Co-corresponding authors)

Book Chapter

Bhadury P (2009) Barcoding free living marine nematodes-an 18S rRNA approach. In Training Manual on DNA barcoding of Marine Fauna (2009) National Institute of Oceanography, Kochi, 51 p.

Review

Das Sarma, J. A Mechanisms of viral induced demyelination. Interdiscip Perspect Infect Dis. 2010;2010:109239. Epub 2010 Jun 21. (Invited Review).

Technical report

Marek, R, Caruso, M, Rostami, AM, Grinspan, JB, **Das Sarma J**. Simultaneous isolation of highly purified astrocytes and microglia. MACS & More; Special Edition: neuroscience meets MACS® Technology. Vol 12-2; 7-9. 2010. (Cover Page illustration).

DEPARTMENT OF CHEMICAL SCIENCES

Journal

A. Maity, T. Das, P. Ghosh, and **P. Purkayastha**, Step-by-step demonstration of adsorption of a TICT compound on silver nanoparticles and expulsion of the guest by ionic surfactants, (communicated).

Amlan K. Roy, A new DFT method for atoms and molecules in Cartesian grid, Trends in Physical Chemistry, (approx 20 pages), (Invited article) (in press).

Amlan K. Roy, J. L. Speyer, L. Bartell and D. Neuhauser, Spin-birefringence in molecular currents: Tellurium and gold complexes, Chem. Phys. Lett. 484, 104–109 (2010). (Considered significant contribution by the Editor.)

Ann C. Babtie, **Subhajit Bandyopadhyay**, Luis F. Olguin, Florian Hollfelder. Efficient Catalytic Promiscuity for Chemically Distinct Reactions *Angewandte Chemie International Edition* Volume 48, Issue 20, 2009, Pages: 3692-3694

Anna J. Mukherjee, **Sanjio S. Zade**, Harkesh B. Singh and Raghavan B. Sunoj, Organoselenium Chemistry: Role of Intramolecular Interactions, *Chem. Rev.* 2010, *110*, 4357-4416.

B. Baptiste, J. Zhu, **Debasish** Haldar, B. Kauffmann, J.-M. Léger and Ivan Huc, Hybridization of long pyridine-dicarboxamide oligomers into multi-turn double helices: Slow strand association and dissociation, solvent dependence, and solid state structures, Chemistry an Asian Journal, 2010, 5, 1364–1375.

Balaram Mukhopadhyay, Maristela Braga Martins, Rositsa Karamanska, David A. Russell and Robert A. Field. Direct detection of *E. coli* with mannose-coated CdS quantum dots, *Tetrahedron Letters*, **2009**, *50*, 886-889.

Bimalendu Roy, Ritu Raj, **Balaram Mukhopadhyay**. Efficient Grignard-type addition of sugar alkynes *via* C-H activation to imines using Cu-Ru catalyst under microwave, *Tetrahedron Letters* **2009**, *50*, 5838-5841.

Bimalendu Roy, Robert A. Field and **Balaram Mukhopadhyay**. Synthesis of a tetrasaccharide related to the repeating unit of the O-antigen from *Escherichia coli* K-12, *Carbohydrate Research* **2009**, *344*, 2311-2316.

De, P.; Gondi, S. R.; Roy, D.; Sumerlin, B. S. Boronic Acid-Terminated Polymers: Synthesis by RAFT and Subsequent Supramolecular and Dynamic Covalent Self-Assembly. *Macromolecules*, 2009, *42(15)*,5614-5621.

F. Vetrone, R. Naccache, **M. Venkataramanan,** C. G. Morgan, and J. A. Capobianco. The Active core/Active-shell Approach: A strategy to enhance the upconversion luminescence in Lanthanide-doped Nanoparticles. *Adv. Func. Mater.*, 2009, 19, 2924. (Appeared as a cover article)

J. Dash, H.-U. Reissig, A New and Flexible Synthesis of 4-Hydroxypyridines: Rapid Access to Caerulomycins A, E and Functionalized Terpyridines; *Chem. Eur. J.* 2009, *15*, 6811-6814.

Jeffrey J. Kuna, Kislon Voïtchovsky, Chetana Singh , Hao Jiang , Steve Mwenifumbo, **Pradip Kr. Ghorai,** Molly M. Stevens, Sharon C. Glotzer and Francesco Stellacci , *Nature Materials*, 10, 837 (2009).

Li, M.; **De, P.**; Li, H.; Sumerlin, B. S. Conjugation of RAFT-generated polymers to proteins by two consecutive thiol-ene reactions. *Polymer Chemistry*, 2010, *1*, 854-859.

M. Sadhukhan and **B. M. Deb**, "Variations in electron density and bonding in the lowest $^1\Sigma_g$ state of H_2 molecule under strong magnetic fields by using a time-dependent density functional theory", J. Mol. Struc. THEOCHEM (Special Issue on Conceptual DFT), 943, 65 - 70 (2010).

M. Venkataramanan, F. Vetrone, R. Naccache, and J. A. Capobianco. Sensitized Ce^{3+} and Gd^{3+} Ultraviolet Emissions via Tm^{3+} in Colloidal $LiYF_4$ nanocrystals. *Chem. Eu. J.*, 2009, 15, 9660.

Mandal, S. K. and Roesky, H. W. "Assembling Hetero Metals Through Oxygen: An Efficient Way to Design Homogeneous Catalysts." *Acc. Chem. Res.* 2010, *43*, 248–259.

Mousumi Das and S. Ramasesha, *Journal of Chemical Physics*, Vol 132 , 124109 (2010) "Fluorescent resonant excitation transfer in linear polyenes."

Mousumi Das, *Journal of Chemical Physics* Vol. 132 , 194107 (2010) "Low Lying Excitations of Poly-Fused Thiophene within Pariser-Parr-Pople Model: A Density Matrix Renormalization Group Study"

Nipamanjari Deb, **Sanjib Bagchi**, Asok K Mukherjee. Charge transfer complex formation between TX-100/CCl_4 reverse micelle and a series of π-electron acceptors: determination of cmc and aggregation number; Molecular Phys 2010 (in press).

Nipamanjari Deb, **Sanjib Bagchi**, Asok K Mukherjee. Fluorimetric study of water-ethanol interaction and its effect on the micellisation of sodium dodecyl sulphate in presence of bovine serum albumin; Spectrochimica Acta Part A : Molecular and Biomolecular Spectroscopy 73, 2009,370

P. Ghosh, S.S. Jaffer, T. Das, A. Maity, D. Kumar and **P. Purkayastha**, Solvatochromic study of three indoloquinoline derivatives: Effect of chloro group/s on the photophysics of the compounds, (communicated).

P. Purkayastha, Cu^{2+} induced charge transfer switch by choosing the right cyclodextrin environment, *J. Photochem. Photobiol. A: Chem.* 212, 2010, 43-48.

Poulami Jana, Sibaprasad Maity and **Debasish Haldar**, Developments in the synthesis of organometallic amino acids and analogues, Current Organic Synthesis, 2010,7, 224-234.

Pradip Kr. Ghorai, *J. Phys. Chem. B*, 114, 6492–6499 (2010).

Prashant Ranjan Verma, **Balaram Mukhopadhyay**. Synthesis of a tetrasaccharide related to the O-antigen from *Azospirillum lipoferum* SR65, *Carbohydrate Research* **2010**, *345*, 432-436.

Priya Verma, **Balaram Mukhopadhyay**. Concise synthesis of two trisaccharides related to the cytotoxic triterpenoid saponin isolated from *Pithecellobium lucidum*, *Carbohydrate Research* **2009**, *344*, 2554-2558.

R. Shunmugam, G. J. Gabriel, K. A. Aamer, G. N. Tew, "Metal-Ligand-Containing Polymmers: terpyridine as the Supramolecular Unit" *Macromol. Rapid. Commun.*, 31, 784-793, (2010).

S.S. Jaffer and **P. Purkayastha**, Mechanistic Pathway for controlled extraction of an unsymmetrical cyanine type drug bound to Herring Sperm DNA using αcyclodextrin, (communicated).

S.S. Jaffer, and **P. Purkayastha**, Steady state fluorescence spectroscopic technique revealing the thermodynamics of fragmentation of compound induced α-cyclodextrin nanotubular suprastructures, *J. Colloid Interface Sci.* 342, 2010, 57-61.

S.S. Jaffer, P. Ghosh, A. Das, and **P. Purkayastha**, Opening of DNA double helix at room temperature: Application of α-cyclodextrin self-aggregates, *Nanoscale* 2, 2010, 1420-1422.

Sanjib Kr Sardar, Kambalapalli Srikanth, **Sanjib Bagchi**. Interaction of ketocyanine dye with a Co^{2+} ion: An electronic spectroscopic study; J. Phys. Chem. A 2010 (in press)

Sanjio S. Zade and Michael Bendikov, Heptacene and Beyond: The Longest Characterized Acenes, *Angew. Chem. Int. Ed.* 2010, *49*, 4012-4015.

Sanjio S. Zade, Natalia Zamoshchik and Michael Bendikov, From Short Conjugated Oligomers to Conjugated Polymers. Lessons from Studies on Long Conjugated Oligomers, *Acc. Chem. Res.* 2010 (in press)

Sanjio S. Zade, Natalia Zamoshchik and Michael Bendikov, Oligo- and Polyselenophenes: A Theoretical Study, *Chem.- Eur. J.* 2009, *15*, 8613-8624.

Santanu Mandal, Nayan Sharma and **Balaram Mukhopadhyay**. H_2SO_4-silica promoted direct formation of β-glycosides of *N*-acetyl glycosylamines under microwave conditions, *Synlett* **2009**, 3111-3114.

Soumyajit Das and **Sanjio S. Zade**, Poly(cyclopenta[c]selenophene): a new polyselenophene, *Chem. Commun.* 2010, *46*, 1168-1170.

Soumyajit Das, Pradip K. Dutta, Snigdha Panda and **Sanjio S. Zade**, 3,4- Ethylenedioxythiophene and 3,4-Ethylenedioxyselenophene: Synthesis and Reactivity of Cα-Si Bond, *J. Org. Chem.* 2010, *75*, 4869-4871.

T. Das, A. Kumar, P. Ghosh, A. Maity, S.S. Jaffer, and **P. Purkayastha**, 20 nm Silver Nanoparticles loaded with a twisted intramolecular charge transfer probe deliver and differentially release the guest to the hydrophobic nanocavities of cyclodextrins, (communicated).

T. J. Hoffman, **J. Dash**, J. H. Rigby, S. Arseniyadis, J. Cossy, Enantioselective Organocatalytic Conjugate Reduction of β-Azole α,β-Unsaturated Aldehydes; *Org. Lett.* 2009, *11*, 2756-2759.

T. Lechel, **J. Dash**, P. Hommes, D. Lentz, H.-U. Reissig, Three-Component Synthesis of Perfluoroalkyl- or Perfluoroaryl-Substituted 4-Hydroxypyridine Derivatives and Their Palladium-Catalyzed Coupling Reactions; *J. Org. Chem.* 2010, *75*, 726–732.

Vishal Kumar Rajput, **Balaram Mukhopadhyay**. Syntheses of a tetra- and a trisaccharides related to the non-reducing O-linked oligosaccharides of *Pseudallescheria boydii*, *Trends in Carbohydrate Research* **2010**, 2, 5-13.

Vishal Kumar Rajput, Pooja Ratnakumar Jadhav, **Balaram Mukhopadhyay**. Synthesis of trisaccharide related to the non-reducing O-linked oligosaccharides of *Pseudallescheria boydii*, *Trends in Carbohydrate Research* **2009**, *1*, 1-8.

Yair H. Wijsboom, Asit Patra, **Sanjio S. Zade**, Yana Sheynin, Mao Li, Linda J. W. Shimon, and Michael Bendikov, Controlling Rigidity and Planarity in Conjugated Polymers: Poly(3,4- ethylenedithioselenophene), *Angew. Chem. Int. Ed.* 2009, *48*, 5443-5447.

Book Chapter

Amlan K. Roy, "A density functional method for general excited states in atoms", in "Quantum Mechanics", Jonathan P. Groffe (Eds.), (approx 39 pages), Nova Publishes, Hauppauge, NY, USA (in press).

Amlan K. Roy, "A general method for central potentials in quantum mechanics", in "Mathematical Chemistry", W. I. Hong (Eds.), (approx. 45 pages), Nova Publishers, Hauppauge, NY, USA (in press).

Sanjio S. Zade, and Michael Bendikov, Theoretical Studies on Thiophene-Containing Compounds, in "Thiophene Based Materials for Electronics and Molecular Optics", Eds. Dmitrii F. Perepichka and Igor Perepichka, *John Wiley and Sons*: Chichester, 2009.

DEPARTMENT OF EARTH SCIENCES

Journal

Baskar, S., Baskar, R., **Routh, J.** (2010) Biogenic evidences of moonmilk deposition in the Mawmluh Cave, Meghalaya, India (Geomicrobiology Journal, in press).

Bhowmik, S.K., Bernhardt, H-J. & **Dasgupta, S** (2010). Grenvillian age high pressure upper amphibolite-granulite metamorphism in the Aravalli-Delhi mobile belt, northwestern India: New evidence from monazite chemical age and its implication. Precambrian Research, 178, 168-184.

Bose, S, Das, K, Ohnishi, I., Torimoto, J., Karmakar, S, Shinoda, K & **Dasgupta, S** (2009). Characterization of oxide assemblages of a suite of granulites from the Eastern Ghata Belt, India: implication to the evolution of C-O-H-F fluid during retrogression. Lithos, 113, 483-497.

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Karmakar, S., Bose, S., Das, K. and **Dasgupta, S.** (2009). Proterozoic Eastern Ghats Belt, India – a witness of multiple orogenies and its lineage with ancient supercontinents. In: (Eds.) Talat Ahmad, Francis Hirsch, and Punya Charusiri, *Geological Anatomy of India and the Middle East,* Journal of the Virtual Explorer, Electronic Edition, ISSN 1441-8142, volume 32, paper 3.

Ranjan, R.K., **Routh, J.**, Ramanathan, AL (2010) Bulk organic matter characteristics in the Pichavaram mangrove-estuarine complex, south-eastern India (Applied Geochemistry, DOI: 10.1016/j.apgeochem.2010.05.003).

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DEPARTMENT OF MATHEMATICS

Journal

Asok K. Nanda (2010): Characterization of Distributions through Failure rate and Mean Residual Life Functions. *Statistics and Probability Letters*, 80, 752-755.

Asok K. Nanda and Amarjit Kundu (2009): On Generalized Stochastic Orders of Dispersion-Type. Special Triennial Volume of *Calcutta Statistical Association Bulletin*, 61(241-244), 155-182.

Asok K. Nanda, Subarna Bhattacharjee and N. Balakrishnan (2010): Mean Residual Life Function, Associated Orderings and Properties. *IEEE Transactions on Reliability*, **59(1)**, 55-65.

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