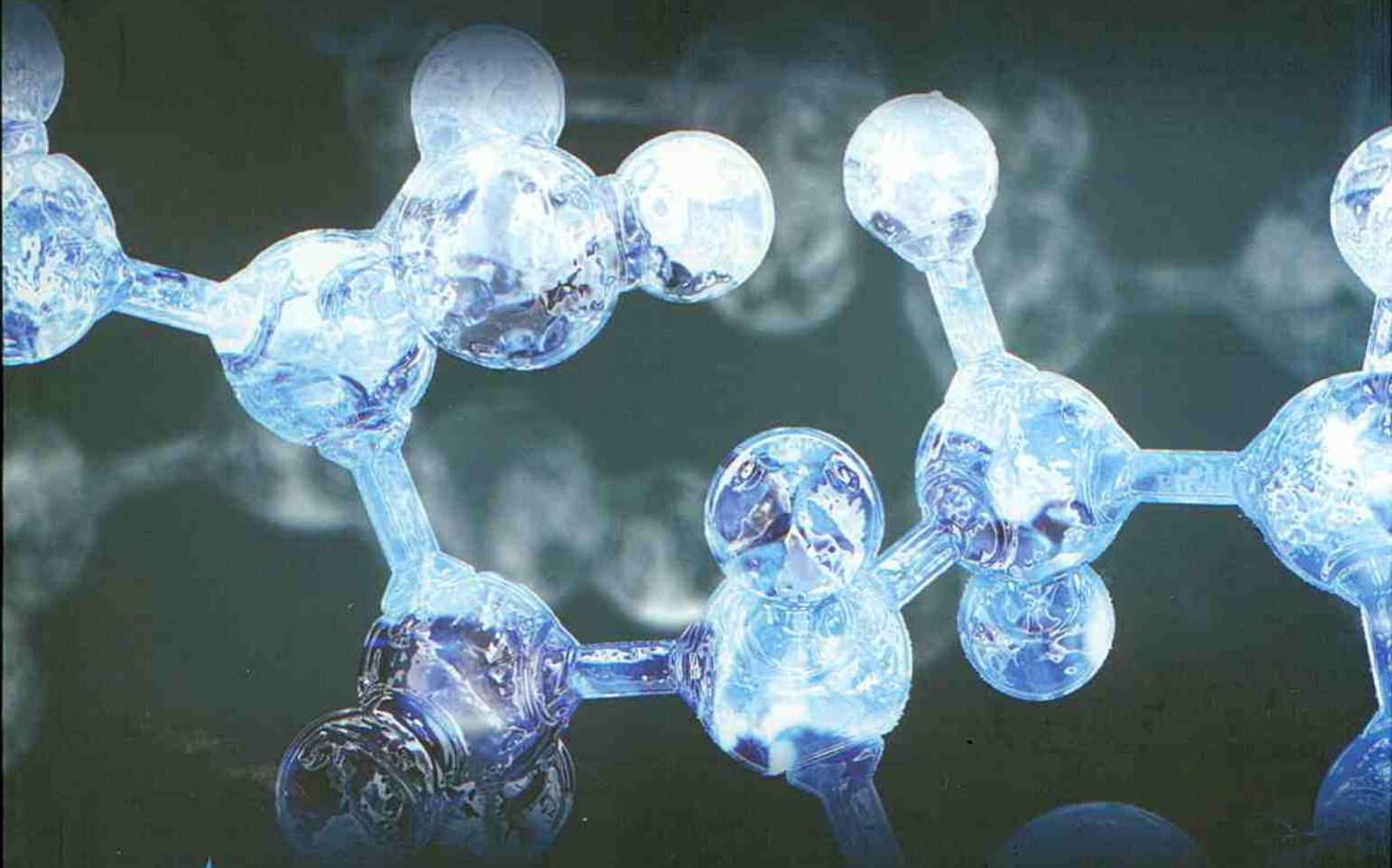


Annual Report

2007-08



भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान, कोलकाता

Indian Institute of Science Education and Research, Kolkata

Published by :
Director, Indian Institute of Science Education and Research, Kolkata

□

Compiled by :
Dr. V. K. Thomas, Librarian, IISER-K

□

Printed at :
SAILEE, 4A Manicktola Main Road, Kolkata 700 054, Phone : 2352 2263

□

Cover pix courtesy :
www.photoshoptalent.com

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ENGLISH
PART – A



J C Bose Building: The Academic Hub



Annexe Building for the Research Laboratories



A Class in Progress



Physics Teaching Laboratory



IISER-K Library



Chemistry Teaching Laboratory



IISER-K Library



A P C Roy Hall: Boys' Hostel



Lilavati Hall: Girls' Hostel



IISER-K Residential Quarters - A Partial View



Land for IISER-K Permanent Campus: A Partial View



A Panoramic View of the Campus

I. Foreword

The high points of this period are that the under-graduate student strength increased to about 110, the research students numbered about 30 and the faculty strength became 24. We have a skeleton of staff members and much of our activities are outsourced. The faculty members have already got down to the task of publishing their research contributions, in addition to performing their normal teaching duties. The research activity is reflected in a healthy publication profile, presented in this report.

Another noteworthy event is the beginning of the renovation work in the erstwhile buildings of the West Bengal University of Animal and Fishery Sciences at Mohanpur, Nadia. Kolkata Metropolitan Development Authority (KMDA) was entrusted with the task of renovating four major buildings: the APC Roy Boys' Hostel, the Anatomy building (now called J.C. Bose building), the Annexe building and the adjoining canteen. Besides, our own engineering department carried out renovation work in the girls' hostel and certain residential quarters. It is expected that classes of 2008 – 09 batch will start in these renovated buildings, on time. As far as the main campus is concerned there was satisfactory progress in the construction, again by the KMDA, of the boundary wall, and the appointment of architects : M/s. Suresh Goel & Associates of New Delhi. Major construction works in the main campus will be carried out by the CPWD. We expect the first set of buildings in our main campus to be ready by August, 2010.

Through regular seminars, colloquia and journal clubs, we are trying to preserve the interdisciplinary character of the Institute. The spirit of interdisciplinarity is also being maintained in our integrated and innovative course curricula. The undergraduate students are being continuously initiated into research by means of projects carried out during the semester vacations in laboratories all over the country.

Overall, I am pleased with the progress we have made. We hope to maintain the momentum in the coming years.

Sushanta Dattagupta
Director

II. Members of the Society

1. **Shri Sudeep Banerjee** *Chairman*
Secretary
Ministry of Human Resource Development
Department of Secondary & Higher Education
Shastri Bhawan, New Delhi
2. **Shri K. M. Acharya** *Vice-Chairman*
Additional Secretary
Ministry of Human Resource Development
Department of Secondary & Higher Education
Shastri Bhawan, New Delhi
3. **Prof. Bikash Sinha** *Member*
Director
Saha Institute of Nuclear Physics
Kolkata
4. **Prof. S. K. Dube** *Member*
Director
Indian Institute of Technology, Kharagpur
Kharagpur
5. **Shri S. K. Ray** *Member*
Joint Secretary & Financial Advisor
Ministry of Human Resource Development
Department of Secondary & Higher Education
Shastri Bhawan, New Delhi
6. **Shri Ravi Mathur** *Secretary*
Joint Secretary (Technical)
Ministry of Human Resource Development
Department of Secondary & Higher Education
Shastri Bhawan, New Delhi
7. **Smt. Irina Garg** *Member*
Director (Technical)
Ministry of Human Resource Development
Department of Secondary & Higher Education
Shastri Bhawan, New Delhi

III. Board of Governors

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-560064*
2. **Shri R. P. Agrawal** *Member*
*Secretary
Ministry of Human Resource Development
Department of Secondary & Higher Education
Shastri Bhawan
New Delhi – 110001*
3. **Prof. Sushanta Dattagupta** *Member*
*Director, Indian Institute of Science Education &
Research (IISER), Kolkata
IIT Kharagpur Kolkata Campus, Salt Lake
Kolkata –700106*
4. **Prof. K. N. Ganesh** *Member*
*Director, IISER, Pune &
Division of Organic Chemistry (Synthesis)
National Chemical Laboratory
Pune-411008*
5. **Prof. Damodar Acharya** *Member*
*Director
Indian Institute of Technology Kharagpur
Kharagpur-721302*
6. **Prof. P. Balaram** *Member*
*Director
Indian Institute of Science
Bangalore-560012*
7. **Dr. G. Madhavan Nair** *Member*
*Chairman
Indian Space Research Organisation
ISRO Headquarters, Antariksh Bhavan
New BEL Road, Bangalore-560094*

- | | | |
|-----|--|----------------------------------|
| 8. | Dr. M. K. Bhan
<i>Secretary</i>
<i>Department of Biotechnology</i>
<i>Ministry of Science & Technology</i>
<i>Block-2, 7th Floor</i>
<i>CGO Complex, Lodi Road, New Delhi-110003</i> | <i>Member</i> |
| 9. | Dr. T. Ramasami
<i>Secretary</i>
<i>Dept. of Science & Technology</i>
<i>Technology Bhawan, New Mehrauli Road</i>
<i>New Delhi-110016</i> | <i>Member</i> |
| 10. | Shri A. K. Deb
<i>Chief Secretary</i>
<i>Government of West Bengal</i>
<i>Writers' Building, Kolkata-700001</i> | <i>Member</i> |
| 11. | Prof. Bikash Sinha
<i>Director</i>
<i>Saha Institute of Nuclear Physics</i>
<i>Block-AF, Sector-I, Salt Lake</i>
<i>Kolkata – 700064</i> | <i>Member</i> |
| 12. | Prof. M. R. S. Rao
<i>President, Jawaharlal Nehru Centre</i>
<i>for Advanced Scientific Research (JNCASR)</i>
<i>Jakkur Campus, P. O. Jakkur</i>
<i>Bangalore-560064</i> | <i>Member</i> |
| 13. | Prof. Kalyan B. Sinha
<i>Bhatnagar Fellow</i>
<i>Jawaharlal Nehru Centre for Advanced</i>
<i>Scientific Research (JNCASR)</i>
<i>Bangalore-560064</i> | <i>Member</i> |
| 14. | Prof. Gautam R. Desiraju
<i>School of Chemistry</i>
<i>University of Hyderabad</i>
<i>Hyderabad-500046</i> | <i>Member</i> |
| 15. | Shri Sanat Kumar Ray
<i>Joint Secretary & Financial Adviser</i>
<i>Ministry of Human Resource Development</i>
<i>Department of Education</i>
<i>Shastri Bhawan, New Delhi-110001</i> | <i>Permanent Special Invitee</i> |
| 16. | Registrar, IISER, Kolkata | Secretary |

IV. Staff and Students

Faculty Members

Professors

Sushanta Dattagupta (Director)	<i>Condensed Matter Physics (Theory)</i>	Ph.D.- Physics (St.John's / Brookhaven National Laboratory, 1973/74), FNA, FNASc, FASc, FTWAS
Amitava Bagchi	<i>Computer Science</i>	Ph. D.- Electrical Engineering (MIT, 1972)
Sanjib Bagchi	<i>Photochemistry, Experimental Spectroscopy</i>	Ph.D.- Chemistry (Calcutta, 1979)
Narayan Banerjee	<i>Gravitation & Cosmology</i>	Ph.D.- Physics (Jadavpur Univ., 1986)
Somnath Dasgupta	<i>Geochemistry, Petrology</i>	Ph.D.- Geology (Jadavpur,1979), FNA, FNASc, FASc, FTWAS
Amitava Datta	<i>High Energy Physics</i>	Ph.D. - Physics (Viswa Bharati, 1974), FNA
Swapn Datta	<i>Experimental Nuclear Physics</i>	Ph.D.- Physics (North Carolina, 1974), FNASc
Bidyendu Mohan Deb	<i>Theoretical Chemistry, Chemical Physics</i>	D.Phil (Oxon, 1969), FNA, FASc, FTWAS
Nibir Mandal	<i>Structural Geology, Tectonics</i>	Ph.D.- Geology (Jadavpur University, 1991), FASc
Prasanta Panigrahi	<i>Field Theory</i>	Ph.D. (University of Rochester, 1988)

Associate Professors

Ratnesh Gupta	<i>Condensed Matter Physics (Experimental)</i>	Ph. D.- Physics (DAVV, Indore, 1992)
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Assistant Professors

Ananda Dasgupta	<i>Quantum Phenomena</i>	Ph. D.- Physics (SINP / Jadavpur University, 2001)
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Pradip Kumar Ghorai	Computer Simulation, Diffusion in porous solids and liquids, Electron transfer, Self-assembly	Ph. D.- Chemistry (IISc, Bangalore, 2005)
Swadhin Mandal	Organometallic Catalytic Transformations, Nanomaterials	Ph. D. - Chemistry (IISc, Bangalore, 2002)
Chiranjib Mitra	Quantum Information Processing, Quantum Magnetism, Strongly Correlated Electron Systems and Magneto-optics	Ph. D. - Physics (TIFR, Mumbai, 2001)
Balaram Mukhopadhyay	Synthetic Organic Chemistry (Carbohydrate), Glyco-nanotechnology	Ph. D. - Biological Chemistry (Jadavpur University, 2001)
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)
N. G. Prasad	Sexual conflict, Evolution of life-history and stress resistance	Ph.D. - Biology (JNCASR, Bangalore, 2005)
Amlan K. Roy	Theoretical Chemistry	Ph. D.- Chemistry (Panjab University, Chandigarh, 1998)
Srimonti Sarkar	Cell Biology	Ph. D.- Biology (Penn State, 2001)
Tapas K. Sengupta	mRNA Stability, Gene Regulation, Bioremediation	Ph. D.- Biology (Calcutta University, 1996)
P. A. Sreeram	Quantum Many Body Theory	Ph. D.- Physics (IOP / Utkal University, 2000)
Sanjio S. Zade	Organic Electronics Materials	Ph. D.- Chemistry (IIT, Mumbai, 2004)

Visiting Faculty

Parna Gupta Bhattacharya	Ph.D. (Jadavpur)
Ranjan Bhattacharya	Ph.D. (SUNY at Stonybrook, 1976)

Adjunct Professors

R. Balasubramanian	Ph.D. (Bombay), FNA, FNASc, FASc
Kankan Bhattacharya	Ph.D. (Calcutta), FNA, FNASc, FASc
Dipankar Chatterji	Ph.D. (IISc), FNA, FNASc, FASc
Gautam Desiraju	Ph.D. (Illinois), FNA, FNASc, FASc, FTWAS
Raghavendra Gadagkar	Ph.D. (IISc), FNA, FNASc, FASc, FTWAS, FIAE
K.N. Ganesh	Ph.D. (Delhi and Cambridge), FNA, FASc, FTWAS
Vinod Gaur	Ph.D. (London), FNA, FNASc, FASc, FTWAS
Debashis Mukherjee	Ph.D. (Calcutta), FNA, FNASc, FASc, FTWAS
Arup K. Raychaudhuri	Ph.D. (Cornell), FNA, FNASc, FASc
Ashok Sahni	Ph.D. (Minnesota), FNA, FNASc, FASc, FTWAS
Milan K. Sanyal	Ph.D. (Bombay), FNA, FNASc, FASc
D. D. Sarma	Ph.D. (IISc), FNA, FNASc, FASc
Bikas C. Sinha	Ph.D. (London), FNA, FNASc, FASc, FTWAS
Kalyan B. Sinha	Ph.D. (Rochester), FNA, FNASc, FASc, FTWAS
Ajay K. Sood	Ph.D. (IISc), FNA, FNASc, FASc, FTWAS

Senior Scientific Officers

Uday Kumar	Ph.D. -Physics (Bombay University, 2003)
K. Srikanth	Ph.D. - Chemistry (IIT, Bombay, 2001)

Academic Personnel

Sushanta Dattagupta	Director
Sukumar Mallick	Acting Registrar & Academic Co-ordinator
Swapan Kumar Datta	Faculty-in-Charge, Laboratory
V. K. Thomas	Librarian

Administrative Personnel

- | | | |
|----|---------------------------|-----------------------------------|
| 1. | Mr. Bhaskar Chandra Layek | Office-on-Special-Duty (Estate) |
| 2. | Mr. Sudhansu Sekhar Panja | Officer-on-Special-Duty (Finance) |
| 3. | Mr. Sanad Kumar Shukla | Public Relations Officer |
| 4. | Mr. Dayanidhi Pradhan | Documentation Officer |
| 5. | Mr. Rana Bhadra | Technical Officer |
| 6. | Mr. Immanuel Alexander | P.S. to Director |
| 7. | Mr. Biswajit Das | Accountant |

Staff on Contract

- | | | |
|-----|--------------------------------|---|
| 1. | Mr. Barendra Lal Bhattacharjee | Engineer (Civil) |
| 2. | Ms. Saberi Sen | Information Officer |
| 3. | Mr. Shibajee Das | Jr. Engineer (Civil) |
| 4. | Mr. Siladitya Jana | Library Technician |
| 5. | Ms. Sharmistha Ghosh | Office Assistant |
| 6. | Mr. C.S. Ganesan | Supervisor-cum-Cashier |
| 7. | Mr. Sukhendu Chatterjee | Assistant |
| 8. | Mr. Shibnarayan Paul | Jr. Assistant |
| 9. | Puskar Das | Jr. Assistant |
| 10. | Ms. Niharika Behera | Trainee (Library) |
| 11. | Mr. Sunil Kumar Prasad | Hostel Attendant |
| 12. | Mr. Ajay Kumar Das | Attendant (Director's Office) |
| 13. | Mr. Subhas Malo | Attendant (Physics Teaching Laboratory) |
| 14. | Mr. Sudhanshu Maiti | Attendant (Biology Teaching Laboratory) |
| 15. | Mr. Sujit Sarkar | Attendant (Computer Teaching Laboratory) |
| 16. | Mr. Saroj Kumar Nayak | Attendant (Chemistry Teaching Laboratory) |
| 17. | Mr. Shyamal Sana | Attendant (Hostel) |
| 18. | Ms. Sarati Biswas | Helper (Library) |

Students**Post-Doctorated Scholars**

Sl. No.	Name	Category	Designation	Subject/ Dept.	Guide
1.	Tridib Ganguly	GE	RA	Biology	Tapas Sengupta
2.	SukanyaChakraborti	GE	RA	Earth Science	Somnath Dasgupta
3.	Shamik Sarkar	GE	RA	Earth Science	Nibir Mondal

Ph. D Scholars

Sl. No.	Name	Category	Designation	Subject/ Dept.	Guide
1.	Imroze Khan	GE	SRF	Biology	Dhrubajyoti Chattopadhyay
2.	Manas Roy	GE	SRF	Physics	Sushanta Dattagupta
3.	Amretashis Sen Gupta*	GE	JRF	Physics	Sushanta Dattagupta
4.	Nilanjana Sorcar	GE	JRF	Earth Science	Somnath Dasgupta
5.	Mainak Sadhukhan	GE	JRF	Chemistry	B.M.Deb
6.	Debdeep Dasgupta	GE	JRF	Biology	Tapas Sengupta
7.	Soumyajit Das	GE	JRF	Chemistry	S.S.Zade
8.	Bodhisatta Nandy	–	JRF	Biology	N.G.Prasad
9.	Sananda Mandal	SC	JRF	Biology	Srimonti Sarkar
10.	Amiya Baruah	GE	JRF	Earth Science	Nibir Mondal
11.	Arup Mukherjee	GE	JRF	Chemistry	Swadhin Mandal
12.	Harkirat Singh	SC	JRF	Physics	Ratnesh Gupta
13.	Subhankar Santra	GE	JRF	Chemistry	Swadhin Mandal
14.	Somnath Dasgupta	GE	JRF	Chemistry	Balaram Mukhopadhyay
15.	Bimalendu Roy	GE	JRF	Chemistry	Balaram Mukhopadhyay
16.	Vishal Kr. Rajput	GE	JRF	Chemistry	Balaram Mukhopadhyay
17.	Santanu Mandal	GE	JRF	Chemistry	Balaram Mukhopadhyay
18.	Priya Verma	GE	JRF	Chemistry	Balaram Mukhopadhyay
19.	Gregor P.J.	GE	JRF	Biology	Tapas Sengupta
20.	Kaustav Chatterjee	GE	JRF	Earth Science	Nibir Mandal
21.	Abhishek Sinha	GE	JRF	Biology	Dr.Srimonti Sarkar
22.	Brinta Chakraborty	GE	Project Fellow	Biology	Tapas Sengupta
23.	Sumana Banerjee	GE	Project Fellow	Biology	Srimonti Sarkar
24.	Paromita Banerjee (nee Mukherjee)	GE	Project Fellow	Biology	Tapas Sengupta
25.	Jishad Kumar T.M.	GE	Project Fellow	Physics	P.A.Sreeram

*Since resigned [GE – General, SC – Schedule Case]

Undergraduate Students

Batch 2006 - 07

Sl .No.	Students' Name	Category	Stream
1	Challenger Mishra	GE	IIT-JEE
2	Arghya Modak	GE	KVPY
3	Sambit Bikas Paul	GE	KVPY
4	Ujani Chakraborty	GE	IIT-JEE
5	Shubham Dipt	GE	IIT-JEE
6	Abhishek Shukla	GE	IIT-JEE
7	Abhishek Dasgupta	GE	KVPY
8	Sayan Choudhury	GE	KVPY
9	Aabhaas Vineet Mallick	GE	KVPY
10	Abhinav Kumar	GE	IIT -JEE
11	Abhiket Gaurav	GE	IIT -JEE
12	Anish Mallick	GE	IIT -JEE
13	Ebad Kamil	GE	IIT -JEE
14	Sunil Kumar	GE	IIT -JEE
15	Kapil Dev	GE	IIT -JEE
16	Ritesh Kumar	GE	IIT -JEE
17	Gouri Shankar Seal	GE	IIT -JEE
18	Asit Singh	GE	IIT -JEE
19	Priyadarshi Ranjan	GE	IIT -JEE
20	Salman Hasan	GE	IIT -JEE
21	Rahul Kumar Mishra	GE	IIT -JEE
22	Nishant Kumar	GE	IIT -JEE
23	Nayan Sharma	GE	IIT -JEE
24	Anshul Saini	GE	IIT -JEE
25	Bradraj Pandey	GE	IIT -JEE
26	Sonu Kumar	GE	IIT -JEE
27	Vipin Kumar Kabra	GE	IIT -JEE

Sl .No.	Students' Name	Category	Stream
28	Kaushik Kant Panda	GE	IIT -JEE
29	Alok Kumar Mallick	SC	IIT -JEE
30	Arijit Halder	SC	IIT -JEE
31	Raghu C.	SC	IIT -JEE
32	Debashis Hira	SC	IIT -JEE
33	Dharam Rajkumar	SC	IIT -JEE
34	Pankaj Kumar	SC	IIT -JEE
35	Mrinal Chayengia	ST	IIT -JEE
36	Manish Roshan Aind	ST	IIT -JEE
37	Ipshita Satpathy	GE	KVPY
38	Ashish Goyal	GE	IIT -JEE

Batch 2007 - 08

Sl .No.	Students' Name	Category	Stream
1	Shankhadip Biswas	GE	IIT-JEE
2	Ashim Dubey	GE	IIT-JEE
3	Sameer S.Desai	GE	IIT-JEE
4	Swapnil V. Fulmali	SC	IIT-JEE
5	Deepak Kr. Agarwal	GE	IIT-JEE
6	Ritu Raj	GE	IIT-JEE
7	Anukriti Sharma	GE	IIT-JEE
8	Mayank Gupta	GE	IIT-JEE
9	Sk.Mohd. Shakil Hasmi	GE	IIT-JEE
10	Satyendra Kumar	SC	IIT-JEE
11	Vikash Kumar	GE	IIT-JEE
12	Saif	GE	IIT-JEE
13	Ravi Kumar	GE	IIT-JEE
14	Apurv Saxena	GE	IIT-JEE
15	Ashish Rathie	GE	IIT-JEE

Sl .No.	Students' Name	Category	Stream
16	Ankur Shringi	GE	IIT-JEE
17	Amit Nag	GE	IIT-JEE
18	Shubhankar	GE	IIT-JEE
19	Kumar P.Ashok	SC	IIT-JEE
20	Satyam Kumar	GE	IIT-JEE
21	Debjyoti Ganguly	GE	IIT-JEE
22	Atif Jahangeer	GE	IIT-JEE
23	Kumar Shiladitya	GE	IIT-JEE
24	Akshay Kr Singh	GE	IIT-JEE
25	Amit Kumar	SC	IIT-JEE
26	Arunabha Sarkar	GE	IIT-JEE
27	Amit Anand	GE	IIT-JEE
28	Prashant Kumar	GE	IIT-JEE
29	Irfan Raza	GE	IIT-JEE
30	Piyush Pushkar	GE	IIT-JEE
31	Vaibhav Mishra	GE	IIT-JEE
32	Manish Arya	SC	IIT-JEE
33	Mayur Dhingra	GE	IIT-JEE
34	Devendra Baghel	GE	IIT-JEE
35	Dhirendra K. Jeevani	SC	IIT-JEE
36	Narendra Mukherjee	GE	IIT-JEE
37	Manish Garg	GE	IIT-JEE
38	Abhishek Kumar	GE	IIT-JEE
39	Shyam Nandan	GE	IIT-JEE
40	Prashant Anand	SC	IIT-JEE
41	Utsav Mannu	GE	IIT-JEE
42	Krishna H.Chakravarty	GE	IIT-JEE
43	Shashi Bhushan Sinha	GE	IIT-JEE
44	Manoranjan Mishra	GE	IIT-JEE
45	Aniket Patra	GE	IIT-JEE
46	Anirban Mandal	SC	IIT-JEE

Sl .No.	Students' Name	Category	Stream
47	Mayukh Mondal	SC	IIT-JEE
48	Debashish Sanyal	GE	IIT-JEE
49	Antareep Mandal	GE	IIT-JEE
50	Saurav Dutta	GE	IIT-JEE
51	Sudipta Tung	GE	IIT-JEE
52	Sibasish Banerjee	GE	IIT-JEE
53	Madhuri Mallela	GE	IIT-JEE
54	Anwar Mohiuddin	GE	IIT-JEE
55	Sayantana Das	SC	IIT-JEE
56	Sandaka V.N. Avinash	GE	IIT-JEE
57	Badusha Badarudeen	GE	IIT-JEE
58	Aditi Chandrasekar	GE	IIT-JEE
59	Ashish Agarwal	GE	IIT-JEE
60	Satyam Singhal	GE	IIT-JEE
61	Anish Bhardwaj	GE	IIT-JEE
62	Nilesh Kr Jaiswara	SC	IIT-JEE
63	Siddharth Satpathy	GE	KVPY
64	Apurv Mishra	GE	KVPY
65	Debanjan Basu	GE	KVPY
66	Jyoti V. Nair	GE	KVPY
67	Syed Zeeshan Ali	GE	KVPY
68	Dibya Chakraborty	GE	PYD
69	Satish Kumar	GE	IIT-JEE
70	Harsh Purwar	GE	IIT-JEE
71	Sashankaditya Upadhyay	GE	IIT-JEE
72	Siddharth Sharma	GE	IIT-JEE
73	Shiv Shankar	GE	IIT-JEE
74	Sudhanshu Pandey	GE	IIT-JEE
75	Rajarshi Roy Chowdhury	GE	IIT-JEE
76	Nethi Vamsidhar	GE	IIT-JEE
77	Mohd.Yusuf Jameel	GE	IIT-JEE

V. Seminars, Colloquia & Journal Clubs

Seminars

1. Dr. Anup Kumar Misra, Medicinal and Process Chemistry Division, CDRI, Lucknow, *Quest for Carbohydrate-based Antibacterial Vaccine Leads*, 5th July '07
2. Dr. Neeraj Sinha, Univ of California, USA, *Solid State NMR of Biological Systems*, 5th July '07
3. Dr. Balaram Mukhopadhyay, CDRI, Lucknow, *Carbohydrates: The Sweet World*, 5th July '07
4. Dr. John Lourdasamy, Dept. of Humanities and Social Sciences, IIT Madras, Chennai, *Caught between Colonialism and Geology: Pramatha Nath Bose's Achievements and Predicaments*, 14th September '07
5. Dr. Sulagna Banerjee, Dept. of Molecular & Cell Biology, Boston University Medical Center, Boston, *Functional Glycomics : the story of the protists*, 14th September '07
6. Dr. Tajdarul Hasan Syed, Dept. of Earth System Science, University of California, *Estimates of Terrestrial Freshwater Discharge: Basin to Continental Scales*, 24th September '07
7. Prof. Lakshmidhar Satpathy, Institute of Physics, Bhubaneswar, *How to learn/teach Newton's Laws of Motion*, 6th November '07
8. Dr. Athimoolam Arunachalampillai, University of Lund, Sweden, *Organometallic Chemistry of Late and Inner-transition Metal Complexes: A Focus on Small Molecule Activation and Catalysis*, 16th November '07
9. Prof. Sudip Sen, Visiting Professor, Dept. of Nuclear Engineering, Kyoto University, Japan, *Inhomogeneous Parallel Flow in Ionosphere and Magneosphere*, 30th November '07
10. Dr. Sumit Mukhopadhyay, Lawrence Berkeley National Laboratory, California, *Modeling Heat Transfer and Non-Isothermal Multiphase Transport in Porous Media: Concepts and Some Application*, 14th December '07
11. Dr. Somshubhro Bandopadhyay, Universite de Montreal, Canada, *Monogamy and Polygamy of Quantum Correlations in N spin 1/2 particles*, 14th December '07
12. Dr. C. Malla Reddy, Institute of Nanotechnology, Germany, 18th December '07
13. Dr. Raja Shunmugam, University of Massachusetts, Amherst, USA, *Engineering Metal-Ligand Polymers for Hierarchical Self-Assembly*, 25th January '08
14. Prof. Raghavendra Gadagkar, IISc and JNCSAR, Bangalore, *What can we learn from Insect Societies?* 31st January '08

Wednesday Colloquia

1. Dr. Jayasri Das Sarma, Dept. of Neurology, Thomas Jefferson University, Philadelphia *Cellular And Molecular Aspects Of Virus Induced Demyelination - Insights From Mouse Model*, 4th April '07
2. Dr. Somnath Bhattacharyya, Advanced Technology Institute, University of Surrey, UK, *Resonant Tunneling And Microwave Switching In Amorphous Carbon Quantum Wells*, 11th April '07
3. Dr. Taraknath De, Quantum Optics and Quantum Information Science Group, Oklahoma State University, *Controlling Light by Light - Stoppage, Storage and Superluminal Propagation*, 13th April '07
4. Dr. Mayurika Lahiri, Department of Medicine, Harvard Medical School, USA *The DNA Damage Surveillance Pathway In Human Pathologies*, 18th April '07
5. Dr. Aurnab Ghose, Department of Cell Biology, Harvard Medical School, USA, *Receptor Tyrosine Phosphatases In Neuronal Development*, 18th April '07
6. Dr. Ratnesh Gupta, Devi Ahilya University, Indore, *Tailoring Magnetic Structures By Ion Beam Irradiation*, 25th April '07
7. Dr. Tulika Maitra, University of Twente, Netherlands, *Electronic Structure And Magnetic Properties Of Some Correlated Systems*, 25th April '07
8. Dr. Jayanta Mukhopadhyay, Waksman Institute, Rutgers University, New Jersey, *Transcription: Structure And Mechanism*, 27th April '07
9. Dr. Mousumi De Sarkar, GE India Technology Centre, Bangalore, *Polymer Nanocomposites*, 2nd May '07
10. Dr. Santanu Sengupta, The Weizmann Institute of Science, Israel, *Semi-classical Initial Value Representation Study Of Inelastic He Atom Scattering On Cu Surface*, 9th May '07
11. Dr. Amit Chattopadhyay, University of Padova, Italy, *A Mathematical Model Of Immunological Synaps*, 9th May '07
12. Dr. Bhag Chand Chauhan, CFTP-IST, Portugal, Lisbon, *Solar Neutrinos And Time Modulations*, 16th May '07
13. Dr. Tapas Sil, VIT, Vellore, *Nuclear Physics*, 16th May '07
14. Dr. Amritanshu Shukla, University of North Carolina, USA, *Double Beta Decay And Nuclear Structure*, 17th May '07
15. Dr. Arindam Das, Dept. of Physics and Astronomy, University of Sheffield, *Nanoscience*, 23rd May '07

16. Dr. Sudit Mukhopadhyay, M.D. Anderson Cancer Centre, Houston USA, *Molecular Biology*, 23rd May '07
17. Dr. Sanjay Kumar Chamoli, Weizmann Institute of Sciences, Israel, *Electromagnetic Moments Measurement in Neutron Rich Nuclei*, 25th May '07
18. Dr. Adrish Sen, Stony Brook University, USA, *Virus Tales - Viral COOH-Tail domains mediating assembly of Rotavirus Factories and Pandemic Influenza Virulence*, 30th May '07
19. Dr. Subhojit Bandyopadhyay, Columbia University, USA, *Multistate Photo-switchable Molecules*, 30th May '07
20. Dr. Abhik Datta, University of Kansas, USA, *Telomere and Telomerase dysfunctions in HTLV-I associated Adult T-cell leukemia*, 6th June '07
21. Dr. Utpal Sarkar, McMaster University, Ontario, Canada, *Density functional theory based calculations of chemical properties: Applications to atoms and molecules*, 27th June '07
22. Dr. Manjari Majumdar, National Cancer Institute, NIH, USA, *Molecular Motion Function In Cell Division and Disease*, 27th June '07
23. Dr. Suhrit Ghosh, University of Massachusetts, Amherst, USA, *Supramolecular Assembly-Disassembly In Custom Designed Polymers And Surfactants*, 25th July '07
24. Dr. Suman Kumar Banik, Virginia Polytechnic Institute and State University, USA, *Modelling Quorum Sensing Network in Vibrio Harveyi*, 8th August '07
25. Dr. Tanaya Bhattacharya, LMPT, University of Tours, France, *Aspects of Quantum Integrable Models*, 8th August '07
26. Dr. Subhendu Sekhar Bag, Chemical Genomics Laboratory, NEWCAT Institute, Nihon Universtiy, Japan, *Targeting the DNA: Design and Synthesis of Enediynes as DNA-Cleaving Agents and Novel Base-discriminating Fluorescent (BDF) Oligonucleotide Probes for SNPs Genotyping*, 29th August '07
27. Dr. Amlan Kusum Roy, Department of Chemistry, University of California, Los Angeles, USA, *A Grid Based DFT Method For Structure And Dynamics Of Many-Electron Systems*, 5th September '07.
28. Prof. Nigel Hughes, Department of Earth Science University of California, USA, *Stratigraphic tests of the structure of the Himalayan margin: implications for the Cambrian paleogeography of equatorial peri-Gondwanaland*, 12th September '07
29. Dr. Jitendra Thakur, Harvard Medical School and MGH Research Centre, USA, *Topic: Fungal Analogs of Metazoan Nuclear Receptors*, 12th September '07
30. Dr. Sabyasachi Sanyal, Center for Biotechnology, Novum Karolinska University, Sweden, *Involvement of Corepressor Complex Subunit GPS2 in Transcriptional Pathways Governing Human Pile Acid Biosynthesis*, 19th September '07

31. Dr. Bishwajyoti Dey, University of Pune, Pune, *Localizing energy through nonlinearity and discreteness: Energy transport in polymers and biopolymers*, 19th September '07
32. Dr. Sai Jag Mohan, Systems Biology Group, Strand Life Sciences, *Symmetry analysis of a bifurcation problem in Engineering*, 26th September '07
33. Dr. Krishnendu Sengupta, Saha Institute of Nuclear Physics, Kolkata, *Geometry, Interaction and Phase Transition: A perspective*, 3rd October '07
34. Prof. Arun M Jayannavar, Institute of Physics, Bhubaneswar, *Creative Role of Noise in Nature*, 3rd October '07
35. Dr. Samir Maji, Structural Biology Laboratory, Salk Institute, California, *Amyloid Aggregation : From Dark Sides to Novel Therapeutics*, 10th October '07
36. Dr. Annagiri Sumana, Department of Biology, Tufts University, *To be a queen in an insect society*. 12th October '07
37. Prof. Subhasis Chattopadhyay, Department of Immunology, University of Connecticut Health Center, USA, *Different Strokes in Immune Regulation*, 24th October '07
38. Dr. Saikat Chakrabarti, National Center for Biotechnology Information, NIH, USA, *Bioinformatics: The new Genie of Biological Knowledge-base & Towards understanding of structural, functional and evolutionary diversities among proteins*, 31st October '07
39. Dr. Dibyendu Nandi, Dept. of Physics, Montana State University, *The Sun's Magnetic Cycle - Current State of our Understanding*, 31st October '07
40. Dr. Santanu Ghosh, University of Texas, USA, *The Yeast Plasmid: An Impostor Chromosome in Segregation*, 7th November '07
41. Dr. Tapas Kumar Mandal, Dept of Chemistry & Chemical Biology, State University of New Jersey, USA, *Inorganic Solid State and Materials Chemistry: Development of New Synthetic Methods, Materials and Properties*, 14th November '07
42. Prof. Partho Chowdhury, University of Massachusetts Lowell, MA, USA, *Dizzy Physics at the Femto Scale*, 14th November '07
43. Dr. Tapas Manna, University of Massachusetts Medical School, USA, *Regulation of microtubule dynamics by Oncoprotein 18/stathmin and its phosphorylated isoforms*, 21st November '07
44. Prof. Uma Shaanker, University of Agricultural Sciences, Bangalore, *Data mining for fun and research: are weekdays hotter than weekends?*, 21st November '07
45. Dr. Jaydeep Majumder, Helsinki Institute of Physics, University of Helsinki, Finland, *String Theory : Where Do We Stand?*, 28th November '07
46. Dr. Rajdeep Chatterjee, Dept. of Physics, University of Padova, Italy, *Direct and Indirect Methods In Nuclear Astrophysics*, 28th November '07

47. Dr. Supriya Das, GSI, Darmstadt, Germany, *Compressed Baryonic Matter : A search for QCD critical point*, 19th December '07
48. Dr. Sumit Chakraborty, Ruhr University, Bochum, Germany, *Bridging scales in space and time: From nanometers to millions of years*, 2nd January '08
49. Dr. Rabeya Basu, Indian Statistical Institute, Kolkata, *Results related to Serre's conjecture on projective modules*, 9th January '08
50. Dr. Saugata Bandopadhyay, Section de Mathematiques, EPFL, Switzerland, *On a Partial Differential Equation involving the Jacobian Determinant and its extension to general differential forms*, 9th January '08
51. Dr. Pratik Sen, Molecular Spectroscopy Laboratory, RIKEN, Japan, *Common Chemistry in Uncommon Environment*, 16th January '08
52. Prof. Ole Krogh Anderson, Max-Planck Institut fuer Festkoerperforschung, Stuttgart, *Bonds and Bands - using Electronic-Structure Calculations To Understand And Design Materials' Properties*, 16th January '08
53. Dr. Bindu Chandrasekharan, Division of Digestive Diseases, Emory University, Atlanta, *Neuropeptide Y And Inflammatory Bowel Disease*, 23rd January '08
Topic:
54. Dr. Apratim Chatterji, Research Centre Juelich, Germany, *Basic Notions of Soft Matter Physics*, 23rd January '08
55. Dr. Anil Kumar, Insitut fur Physik, Johannes Gutenberg Universitat Mainz, Germany, *Effective Interactions in Like-Charged Colloidal Mixtures and Cluster Formation*, 23rd January '08
56. Dr. Samir Mondal, Photonics Group, Tyndall National Institute, Ireland, *Physics and Applications of Photonic Crystals*, 30th January '08
57. Dr. Sriparna Majumdar, Dept. of Neuroanatomy, Max Planck Institute of Brain Research, Germany, *Glycine Receptor Expression Pattern In The Mouse Retina*, 30th January '08
58. Dr. Partho Sarothi Ray, Dept. of Cell Biology, Lerner Research Institute, Cleveland Clinic, USA, *(Ribo) Switching the "GAIT" Shut: Translational Control of Vascular Endothelial Growth Factor in Inflammation and Hypoxia*, 30th January '08
59. Dr. Kamal L. Panigrahi, Dept. of Physics, IIT Guwahati, *String Theory : Is This A Theory Of Everything ?* 6th February '08
60. Dr. Prasenjit Gucchait, Dept. of Medicine, Thrombosis Research Section, Texas 6th February '08
61. Dr. Kripamoy Aguan, Brain Science Institute, RIKEN, Japan, *Astroglial Basis Of Epilepsy : A New Paradigm* 13th February '08

62. Dr. S. Arulanandababu, Dept. of Applied Chemistry, Osaka University, Japan, *Indium : A Talented Metal For Selective C-C Bond Formation*, 13th February '08
63. Dr. Pramit Chowdhury, Dept. of Chemistry, University of Pennsylvania, *Single Molecule Studies Of Protein Folding And Misfolding*, 13th February '08
64. Dr. Sarmistha Banik, University of Manchester, *Exotic Matter In Neutron Star Core*, 20th February '08
65. Dr. Biswadip Banerji, Institute of Chemical & Engineering Sciences, Biopolis, Singapore, *Targeting Cancer - From Small Molecules To Macrocyclic Natural Products As Inhibitors*, 20th February '08
66. Dr. Sujata Ray, B.P. Institute, University of Cambridge, *Microbial Responses and Population - Adaptation to Chemical Stress*, 27th February '08
67. Dr. Avik Mukherjee, Colorado State University, Colorado, *Food Microbiology & Food Safety: Research & Teaching*, 27th February '08
68. Dr. Kazi Mirajul Hoque, The John Hopkins University School of Medicine, Baltimore, *EPAC (Exchange Protein directly Activated by cAMP) - A New Player in Diarrheal Disease*, 27th February '08
69. Dr. Raja Paul, Department of Neurobiology, Physiology and Behaviour, University of California, Davis, USA, *Mechanical Regulation Of Cell Contractility And Spontaneous Cell Patterning*, 5th March '08
70. Dr. Rajinder Singh, Institute of Physics Research Group, University of Oldenburg, Germany, *How To Win The Nobel Prize ? - The Example of C V Raman*, 5th March '08
71. Prof. C.V. Vishweshwara, Indian Institute of Astrophysics and Emeritus Director, Jawaharlal Nehru Planetarium, Bangalore, *Black Holes - Facts, Fallacies and Fantasies*, 5th March '08
72. Dr. Subhendu Rakshit, Institute for Physics, University of Dortmund, Germany, *Ice Fishing for Neutrinos*, 12th March '08
73. Dr. Kaushik Chattopadhyay, Department of Microbiology & Immunology, Albert Einstein College of Medicine, USA, *Structural Basis of T-cell Costimulation by GITR Ligand*, 12th March '08
74. Dr. Arunika Mukhopadhyay, Department of Microbiology & Immunology, Albert Einstein College of Medicine, USA, *Dendritic cell mediated tolerization of autoreactive T cells: a novel therapeutic approach for Type 1 diabetes*, 12th March '08
75. Dr. Navendu Goswami, Dept. of Physics and Material Science & Engineering, Jaypee Institute of Information Technology University, Noida, *Understanding the Fundamentals of Nanoscience : Synthesis and Characterization of Semiconductor Nanoparticles*, 19th March '08

76. Dr. Ritabrata Munshi, Hill Assistant Professor, Rutgers University, New Jersey, *Elliptic Curves in Number Theory*, 19th March '08
77. Dr. Dipankar Ray, Dept. of Molecular Pharmacology & Biological Chemistry, Northwestern University, Chicago, *Ubiquitination : Role In The Maintenance Of Genomic Integrity*, 26th March '08

Saturday Journal Club

1. Dr. Rajesh Nayak, Assistant Professor, IISER Kolkata, *Why the Inner Ear is Snail-Shaped*, 9th February'08
2. Prof. Amit Basak , IIT Kharagpur, 23rd February'08
3. Dr. Sanjio S Zade, Assistant Professor, IISER Kolkata, *Chemistry Of Antithyroid Drugs And Related Selenium Analogue*, 8th March'08
4. Prof. Amitabh Joshi, JNCASR, Bangalore, *Origin and Evolution of Urdu Poetry*, 15th March'08
5. Shri Abhishek Dasgupta, 2nd Year Integrated MS student, IISER Kolkata, *An Algorithm For Tree Edit Distance*, 29th March'08

VI. Facilities

IISER-K Library

The IISER-K Library, established in 2006, is a special library, catering to Basic Sciences. Its collection consists of documents (Books, e-books, print and online journals, multimedia DVDs etc.) in the fields of Physics, Chemistry, Mathematics, Biology, Geosciences, Computer Science, History of Science etc. It is mainly meant for the staff members, research scholars and students of Indian Institute of Science Education and Research, Kolkata. However, outside users are also welcome.

The Library also extends the facility for general reading. Books in Social Sciences, Humanities, Fictions (in English, Hindi and Bengali), and several magazines and newspapers are procured for satisfying the users' quests in this regard. The institutional membership with the British Council Library (BCL) also serves this purpose.

The Library shifted from the original location in the 3rd floor of IIT Extension Centre to ground floor of Annexe Building in July. Dr. V. K. Thomas joined the Library as its first Librarian in the same month, followed by other staff.

The Library added 5045 books during this period. Apart from giving more emphasis on collection development of printed books, the Library purchased about 2300 e-books. Several educational DVDs on scientific subjects were procured during the year.

It subscribed to more than 2,600 online (including backfiles) and 50 print journals. The Library also subscribed to *SciFinder Scholar* from Chemical Abstract Service to augment its services, besides EndNote.

The Library has procured Virtua Library Management & Digital Library software from VTLS (USA) during the reporting year to fully automate its services. Consequently, all transactions (check-in, check-out, reservations etc) at the Library have been fully automated and the Library's database (catalogues, patron account, online journals etc) is made searchable through the web. The patrons can also access their Circulation Account online and have books reissued online as well. RFID technology has also been introduced to make it a Digital Library in the true sense of the term.

Besides extending reference services to its users, the Library also provides photocopying and printing services to the user community. During this period it supplied 8318 copies to its patrons in photocopy/print service.

The Library extended the facility of displaying newly published books every week by various vendors/publishers for their review and selection.

The Library was open 6 days a week. The Library hours are:

Monday- Friday: 9.00 am to 8.00 pm

Saturday: 9.00 am to 5.00 pm

V K Thomas

Research & Teaching Laboratories

Chemistry

In Chemistry, during the financial year 2007-08, some major facilities have been developed. This includes procurement of several equipment, Glove-Boxes and fume hoods.

● **Teaching Laboratories:** Analytical Equipments like FT-IR, UV-VIS spectrophotometers, Polarimeter, HPLC system have been procured. Following is the list of items.

1. Perkin Elmer

Purpose: FT-IR Spectrometer Spectrum RX I (Instrument Serial No. 80001): Identifying the molecular structure of organic compounds. Specific information about chemical bonding and molecular structures, making it useful for analyzing organic materials and certain inorganic materials.

2. Hitachi U-4100 Spectrophotometer

Purpose: Identification of compounds and measuring Kinetics of chemical reactions

3. Waters HPLC and GPC System which includes

600 controller

600 pump

Inline Degasser AF

2475 Multi I Fluorescence detector

2998 Photodiode Array Detector

515 HPLC Pump

2414 Refractive Index Detector

Temperature control Module II

Pump Control Module II

Purpose: Analysis and Purification

4. Polarimeter

Purpose: Identification & characterization

● **Research Laboratories:** Equipment listed above are also used by research students. In addition to those the following items have been procured.

1. Glove-Box

Purpose: To maintain inert atmosphere and used for the manipulation of air and water sensitive materials

2. Fume Hood (#3)
Purpose: For keeping the environment in the chemistry lab clean and green
3. Microwave Reactor (Biotage)
Purpose: To perform reactions under microwave atmosphere
4. Beckmann Coulter Ultracentrifuge
Purpose: For separation
5. Chiller (#4)
Purpose: To maintain lower temperature
6. IKA Magnetic Stirrer
Purpose: To perform reactions which need heating and stirring simultaneously.
7. Analytical Balance
Purpose: Accurate weighing

Sanjib Bagchi

Geophysics Laboratory

The geophysics laboratory at IISER, Kolkata is presently concerned with experimental studies on deformations of rocks and other analogue materials. The laboratory has a hydraulic press with a load capacity of 2000 kN, which is equipped for performing deformation experiments under plane strain condition and low to moderate temperatures. It is possible to test several structural processes, such as fracturing, plastic yielding, buckling, by using analogue materials, e.g. PMMA, PS etc. An experimental facility is being developed in this laboratory, which can be used for tri-axial rock deformation experiments at 12 KBar pressure and temperatures up to 1500°C. The experimental set-up is expected to be ready shortly.

Nibir Mandal

Biology

During the indicated time period, both the first year (presently second year) and second year (presently third year) students of IISER-Kolkata completed two full semesters of theory and laboratory courses and also completed the project works related to their field of interests in biology. During this period, nine Ph.D. students and one Research Associate joined the Biology Department to pursue their research works under supervision of faculties of the Department.

For the first year students, 'Cell Biology' and 'Genetics' courses were taught in consecutive semesters. In the first semester, students learnt the basic and advanced techniques of cell biology in laboratories. Students learnt about principles and techniques of using compound microscope and fluorescent microscope to observe cell compartments and different stages of cell division.

Students also learnt principles and techniques of using visible- and UV-spectrophotometer. They extensively used spectrophotometer to estimate DNA, protein, to measure rates of enzymatic reactions and electron transfer related to the process of photosynthesis. During this period, students also learnt basic techniques of microbiology. In the second semester, students were taught about classical, bacterial and human genetics in the theory classes. In laboratories, students learnt basic and advanced techniques to conduct experiments to understand genetics and fundamentals of recombinant DNA technology. Students learnt principles and techniques of different kind of electrophoresis and microscopy.

For the second year students, 'Evolutionary Biology' and 'Systems Biology' were taught in consecutive semesters. In the first semester, students learnt basics of evolutionary biology initially by computer simulation and later they did experimentations using drosophila (fruit fly) as model system. Students gathered hands on experiences on handling, breeding and selecting different traits of drosophila using available sophisticated facilities in our laboratories. In the second semester, students learnt series of experiments related to immunology, gene expression, and genetic organizations. They learnt techniques of immunodiffusion, immunoelectrophoresis, western blotting, restriction mapping, gene transcription and polymerase chain reaction (PCR) by using available genomics and proteomics facilities in the laboratories.

All students of first and second year, during this period, conducted project works based on the theory and laboratory courses they learnt in both the semesters and presented their work in the form of seminars. They also wrote and submitted reports in the form of a journal paper. Some of them conducted their summer projects in Biology laboratories at IISER-Kolkata.

During this period, total nine students have joined to pursue their Ph.D. research work under supervision of faculties of the School of Life Sciences. Research in the Cell Biology Laboratory is directed towards gaining an understanding of how macro-molecules move from one cellular compartment to another. Studies of both the nucleo-cytosolic exchange and protein trafficking through the endomembrane system are underway. The laboratory uses genetic approaches to understand the basis of these complex processes. In the past year undergraduate students have been involved in short-term projects in the laboratory. The facilities in the laboratory include a state-of-the-art fluorescence deconvolution microscope that is attached to a high-resolution cooled CCD camera. There is also a tetrad dissecting microscope that is connected to a video camera for demonstration of tetrad dissection to the students. The laboratory has received funding from Council of Scientific and Industrial Research. The Evolutionary Biology Laboratory is engaged in research in the general field of Evolutionary Genetics. Specifically, our research focuses on the genetics of Inter-Sexual Conflict, Life History Evolution and Stress resistance. Our approaches include classic Experimental Evolution to Cytogenetic Cloning. The laboratory has also been involved in training more than 15 undergraduate students in research by hosting their research projects. The laboratory has all the facilities for large scale handling of Drosophila, including climate controlled chambers, automated fly anesthetizing system and equipment for molecular genetic analysis. The Bioremediation and Cancer Biology laboratory was engaged in characterization of poly-aromatic hydrocarbon containing oil degrading and Arsenic(V) resistant bacteria isolated from Kolkata port

and near by areas. This laboratory was also engaged in studying the effects of metal nano particles on cancer cells. During this period, research on Chandipura virus was also directed. Significant progress was made to understand structure-function relationship in interaction between the leader RNA and viral phosphoprotein, P.

Tapas K Sengupta

Electronics Laboratory

It is an introductory electronics laboratory. Students learn about the basic principles of analog and digital circuit design and operation in a practical, real-world laboratory setting. They work both with discrete components such as resistors, capacitors, diodes, and transistors as well as with integrated circuits (IC) such as operational amplifiers and digital TTL ICs. The course covers: Boolean algebra, flip-flops and registers, sequential logic circuits and combinational logic circuits. In addition, the students become familiar with the operation of basic electronic test equipment (digital multimeters, oscilloscopes, function generators, etc.). Each lab experiment consists of two modules: (i) a brief lecture module covering the background information and scope of the lab experiments and (ii) real experiments on bread boards. It incorporates experiment design and problem-based learning as pedagogical tools. Total ten experiments have been designed for this purpose. During the fourth quarter of the semester, the students will be working on a design project.

List of Experiments:-

1. Study of forward and reverse biased characteristics of p-n diode and Zener diode. Design of different simple logic gates such as OR, AND, NOT using diodes.
2. Study of DC regulated power supply with and without different types of filters.
3. Measure the input and output characteristics of a NPN transistor. Determine the value of h_{fe} .
4. Uses of transistors: as Amplifiers (single stage and two stage), switch (On/OFF).
5. Study of OPAMP IC741 as inverting and non-inverting amplifiers.
6. Study of OPAMP IC741 as feedback amplifier and determine the frequency response of the OPAMP and the gain bandwidth product.
7. Study of OPAMP IC741 as a mathematical tool : adder, multiplier, differentiator, integrator.
8. Verification of De Morgan's theorem and other Boolean identities.
9. Study of D, RS and JK flip flops and the use of these flip-flops in time division multiplexing operations.
10. Study of Ripple and ring counters.

In the Year 2007-08, a total of 73 students have done the course work and they learnt about the basic circuits and the operations of function generator, cathode ray oscilloscope. We procured

many equipment in electronics lab and in the future these facilities will be used to interface with the computers for the monitoring of many experiments in Physics lab.

Ratnesh Gupta

Physics

During the indicated period, the First Year and Second year teaching and laboratories continued in Physics. Two semesters were completed within this time. For the First Year, Mechanics was taught in the first semester and Electromagnetism in the second semester. There were 72 students enrolled for the courses. In Physics laboratory, experiments were conducted in Mechanics and general properties of matter e.g. Elasticity, Surface tension and viscosity. Mechanics experiments included experiments with Air Track, Air Table, study of centrifugal and rotary motions as also projectile motions. Use of computers in data taking was introduced. In the Second semester, experiments were conducted on optics, electromagnetism and sound. Ten experiments were conducted in the first semester and nine in the second semester. Students also did a lot of projects with ingenious ideas as part of the lab course. Presentation in the form of seminars were encouraged. They also gave a printed report in the form of a journal paper.

In the Second year, 38 students were enrolled. The subjects taught were Quantum Mechanics in the first semester and the theme of the laboratory was Modern physics. This included such modern experiments as determination of Planck's constant, study of electron spin resonance, determination of e/m of electron, Franck & Hertz experiment and study of electron diffraction. There were seven experiments in all. Lab projects were undertaken as in first year. In the second semester, the Lab work consisted of computational physics with emphasis on numerical analysis and use of computer programs. No theoretical courses were offered in Physics as earlier a combined physics and chemistry course was given on Thermodynamics to the first year students along with normal physics and chemistry courses.

Swapan K.Datta

Computer Centre

The Computer Centre added the following during the year under report:

1. Mail Server 1
2. Library Server 1
3. Cluster Workstation 1
4. Desktop 15
5. Networking IIT Kolkata Extension and NITTTR.

Debjyoti Banerjee

VII. Faculty Profile

Sanjib Bagchi

Publication

1. Maitra , Angshuman and Sanjib Bagchi. 2008. Electronic spectroscopic study of solvation of a ketocyanine dye in ternary solvent Mixtures. *J. Phys. Chem. B* 112; 9847.
2. Ghosh, Ashish Kumar and Sanjib Bagchi. 2008. Fluorimetric study of electron donor-acceptor complex formation of asphaltene with ortho and para chloranil. *Energy and Fuels* 22; 1845.
3. Deb, N, M. Shannigrahi and S. Bagchi. 2008. Use of fluorescence probes for studying Kamlet- Taft solvatochromic parameters of micellar system formed by binary mixture of sodium dodecyl sulphate and triton-x 100. *J. Phys. Chem. B* 112; 2868
4. Banerjee, D , P. K. Das, H. Singha and S. Bagchi. 2008. Fluorimetric study of interaction of merbromin with trypsin. *Spectrochim Acta A* 70; 1109
5. Maitra, A, N. Deb and S. Bagchi. 2008. Study of solubility of indicator dyes in aqueous solution of pure and binary mixed surfactants. Aggregation and microenvironmental properties of homo and hetero-micelles of triton X 100 and sodium dodecyl sulphate. *Journal of Molecular Liquids* 139; 104
6. Maitra, A and S. Bagchi. 2008. UV – Visible spectroscopic study of solvation in ternary solvent mixtures: Ketocyanine dye in methanol + acetone + water and methanol + acetone + benzene. *J. Phys. Chem. B* 112; 2056
7. Maitra, A and S. Bagchi. 2007. Study of solute–solvent and solvent–solvent interactions in pure and mixed binary solvents. *Journal of Molecular Liquids* 137; 131.
8. Ghosh, A. K, S. K. Shrivastava and S. Bagchi. 2007. Study of self-aggregation of coal derived asphaltene in organic solvents : A fluorescence approach. *Fuel*, 86; 2528.
9. Das, P. K, D. Banerjee and S. Bagchi. 2007. Spectroscopic study of association of a hemicyanine dye in mixed aqueous binary solvents. *Spectrochim Acta A* 67A ; 225
10. Basu, J. M., Shannigrahi and S. Bagchi. 2007. Ground and excited state complexation of Ketocyanine dyes with alkaline earth metal ions. *J. Phys. Chem. A* 111

Ananda Dasgupta

Publication

1. Dasgupta, Ananda. 2007. A new look at two old problems in electrostatics or much ado with hemispheres. *Eur. J. Phys.* 28; 705-713
2. Dasgupta, Ananda. 2007. Relativistic kinetics from the Bondi K-calculus. *Eur. J. Phys.* 28;817-31

Teaching programme

1. *PH 111 Mechanics*, 5 years Integrated MS Course at IISER-K, Autumn Semester 2007.
2. *CS 111 Introduction to computation*, 5 years Integrated MS Course at IISER-K, Autumn Semester 2007.
3. *PH 221 Computational Methods in Physics Laboratory*, 5 years Integrated MS Course at IISER-K, Spring Semester 2008.
4. *EL 121 Basic Electronics and instrumentation*, 5 years Integrated MS Course at IISER-K, Spring Semester 2008.
5. *Classical Mechanics III*, 3 yr. B.Sc. Course at St. Xavier's College Kolkata, August- November 2007.
6. *Quantum Mechanics-I*, M.Sc. course at Lady Brabourne College, Kolkata, October-December 2007.
7. *Quantum Mechanics-II*, M.Sc. course at Lady Brabourne College, Kolkata, January-April 2008.

Supervision of students

Tapas Das, Jadavpur University (*Ph. D*)

Talks given

Physics education through FLOSS - invited lecture at 4 day workshop arranged by Indian Physics Association at Behala College, Kolkata, March 2008.

Physics through experiments: some thoughts - invited lecture at one day conference on physics education arranged by the Indian Association of Physics Teachers at the Scottish Church College, December 2007.

Other academic/educational activities

Joint convener- 4 day workshop on *Python and the PHOENIX data acquisition system* at the West Bengal University of Technology, Kolkata, 6th-9th March 2008.

Somnath Dasgupta

Teaching programme

Physics and Chemistry of the Interior of the Earth. Semester V, ES 311

Supervision of students

Nilanjana Sorcar, IISER-K (*Ph. D*)

Paramita Paul, Jadavpur University

Dr. Sukanya Chakraborti (DST Project) (*post-doctorate*)

Other academic/educational activities

Visited Ruhr University , Bochum, Germany under a re-invitation from Alexander von Humboldt Stiftung.

Sushanta Dattagupta

Publications

Journal

1. Vogl, G. , M. Sladeczek and Sushanta Dattagupta, 2007. Probing single jumps of surface Atoms, *Phys. Rev. Lett.* 99, 155902.
2. Bandopadhyay, M. and Sushanta Dattagupta, 2008. Quantum mechanics under rapidly varying external perturbations (with), *Pramana* 70, 382.

Book

Dattagupta, Sushanta, (2008). A paradigm called magnetism, World Scientific, Singapore.

Seminar Talks delivered

1. Dissipative Landau Diamagnetism, University of Paris, 24th July, 2007.
2. On the Kapitza Analysis of Systems under rapidly varying Perturbation, Colloquium at the Raman Research Institute, Bangalore, 21st September, 2007.
3. Dissipative Landau Diamagnetism, Feschrift Meeting for Prof. Hermann Grebert, Freiburg, Germany, 2nd November, 2007.
4. A Paradigm Called Magnetism, Ben Gurion University, Beer Sheva, 27th December, 2007.
5. Two lectures to college students on Nanomagnets, K.N. College, Berhampore, Symposium on "Concepts in Chemistry", 1st – 3rd February, 2008.

6. Relaxation in Nanomagnets, in an International Conference on "Non-equilibrium Phenomena" held in Indian National Science Academy (INSA), New Delhi, 21st – 22nd February, 2008.
7. Classical mechanics under Rapidly Varying Perturbation, Vidyasagar College, Kolkata, 18th March, 2008.

Meetings attended

1. Chaired the Board of Governors meeting of the NITTTR, Kolkata on 18th April, 2007.
2. Board of Governors meeting of IISER, Pune on 20th April, 2007.
3. Academic Council Meeting of Viswa Bharati, Santiniketan on 22nd April, 2007.
4. Executive Committee meeting of Science City, Kolkata on 8th June, 2007.
5. Shyam Prasad Mookerjee Fellowship Committee meeting at IICT, Hyderabad (9th – 11th July, 2007).
6. Council Meeting of the Indian Academy of Sciences, Bangalore, 13th – 14th July, 2007.
7. Chaired the 'Young Scientist Platinum Jubilee Award' Meeting of the National Academy of Sciences, Allahabad, 27th July, 2007.
8. Board of Governors meeting of IISER, Pune, 17th August, 2007.
9. Executive Committee meeting of Science City, Kolkata, on 23rd August, 2007.
10. Chaired the Research Advisory Committee meeting at IACS, Kolkata on 12th and 13th September, 2007.
11. The National Committee meeting of the Kishore Vaigyanik Protsahan Yojna (KVPY), Bangalore, 2nd September, 2007.
12. The Promotion and Assessment Committee meeting of the Indian Institute of Science, Bangalore, 22nd September, 2007.
13. Annual Meeting of the Academy of Sciences for the Developing World (TWAS), Trieste, Italy 12 – 14th November, 2007.
14. Chaired the Board of Governors meeting of NITTTR, Kolkata on 19th November, 2007.
15. Council Meeting of the Indian Academy of Sciences, Bangalore, 1st – 2nd December, 2007.
16. The Board of Governors Meeting of IISER, Pune, 17th January, 2008.

B. M. Deb

Publications

1. Deb, B. M and A. Poddar. (2007). A method for studying electron-density-based dynamics of many-electron systems in scaled cylindrical coordinates, *J. Phys. A : Math. Theor.* 40, 5981-93.
2. Deb, B. M. and A. Wadehra. (2007). Time-dependent quantum fluid density functional theory of hydrogen molecule under intense laser fields, *J. Chem. Sci. (Special Issue on Theoretical Chemistry Symposium 2006)* 119, 335-41.
3. Deb, B. M. and A. Sethi. (2007). Prediction of new organo-noble gas compounds by ab initio quantum chemical calculations, *Indian J. Chem.* 46A, 1565 - 1572 (2007). Corrigendum, 46A, 1978.
4. Deb, B. M. and M. Sadhukhan. (2007). Aspects of electron dynamics in a helium atom under an intense laser field, *Indian J. Phys. (Special Issue on Atomic and Molecular Physics)* 81(10), 969-81
5. Deb, B. M., M. Sadhukhan, S. S. Sinha, S. Sengupta and R. Biswas. (2008). An integrated and open-ended experiment; Study of chemical waves in time and space, *Resonance* 13 (1), 54-80.

Ratnesh Gupta

Collaborative research & project work

Laser nitriding and carburization of metals and steels and their studies by photoelectrons on INDUS-I. Dr. S. Kumar, RR Centre for Adv. Tech. Indore. Funded by Board of Research in Nuclear Sciences, Mumbai. January 2006 to March 2009.

The project involves the studies of laser nitriding and carburization on Fe, Ti, Al metals along with the interesting steels such as SS304 and MANET Steel. These steels are specifically used in nuclear reactors, aerospace applications and petrochemical industry. However, recent results have shown that the laser nitriding and carburizations have some problems such as cracking in TiN prepared by laser treatment. It is proposed to achieve the suitable alloys at the surface of the metals and in steels using a variety of parameters such as gas pressure, laser fluence, repetition of laser pulses and by varying the scan speed of the laser during the irradiation process. The physical properties of these materials are closely related to their electronic structure and these depend on the concentration of carbon and nitrogen. Different mixtures of gases will be used to get the carbonitritization process to achieve the alloy at the surface which has high melting point and hardness. Understanding of the mass transport during the laser interaction should give important hints on the carbon and nitrogen incorporation mechanism in metals.

Teaching programme

Electronics & Instrumentation, Integrated M.S., Spring Semester, 2008

Supervision of students

1. Mr. Ashish Khandelwal, Devi Ahilya Vishwavidyalaya, Indore (Ph. D).
2. Ms. Raisa Ansari, Devi Ahilya Vishwavidyalaya, Indore (Ph. D).
3. Mr. Harkirat Singh, IISER, Kolkata (Ph. D).

Other academic/educational activities

Presented a research paper titled *Swift heavy ion induced phase transition in thin Co film*, in *International conference on magnetic materials* held at Saha Institute of Nuclear Physics, Kolkata, December 2007.

Pradip Kumar Ghorai

Teaching programme

- i) Theory: *Chemical Reactions: Energetics and Dynamics*, Integrated M.S., Spring Semester, 2008
- ii) Practical : *Estimations and Computational Chemistry*, Integrated M.S., Spring Semester, 2008

Nibir Mandal

Publications

Journal

1. Misra, S., N. Mandal, (2007). Localization of plastic deformation in rocks containing stiff flaws: Insights from experimental and theoretical models. *Journal of Geophysical Research (Solid Earth)*, 112, B09206, doi:10.1029/2006JB004328.
2. Mandal, N., R. Dhar, S. Misra, C. Chakraborty, (2007). Use of boudinaged rigid objects as a strain gauge: insights from analogue and numerical models. *Journal of Structural Geology*, 29, 759-773.

Book

Mahmoud M. Y., A. K. Mitra, R. Dhar, S. Sarkar, N. Mandal, (2008), Repeated emplacement of syntectonic pegmatites in Precambrian Granite Gneisses: indication of pulsating brittle-ductile rheological transitions. In: *Indian Dykes* (Eds. Srivastava et al.). Narosa Publishing House Pvt. Ltd., New Delhi, India.

Teaching programme

Introduction to Earth Sciences.

Supervision of students

1. Atin Kumar Mitra, Jadavpur University, Kolkata (Ph. D).
2. Rajib Dhar, Jadavpur University, Kolkata (Ph. D).
3. Sujit Roy, Jadavpur University, Kolkata (Ph. D).
4. Kaustav Chatterjee, IISER, Kolkata (Ph. D).
5. Amiya Baruah, IISER, Kolkata (Ph. D).
6. Shamik Sarkar, IISER, Kolkata (post-doctorate).

Talks given

1. Mantle plumes: views from simple analogue and numerical experiments at Dept of Geology, University of Calcutta, December 2007.
2. Do solid rocks flow like fluids in nature: a quest for its evidence an analysis at Motilal Nehru College of Engineering, Allahabad, March 2008.

Project

Development of high strain zones in rocks: an experimental and theoretical investigation."(2003). Funding agency: DST, New Delhi

Swadhin Mandal

Collaborative research & project work

Cytotoxic effect of metal nano particles on prokaryotic and eukaryotic cells: Implications in anti-microbial and anti-cancer therapy, Dr. Tapas K. Sengupta, School of Biological Sciences, Indian Institute of Science Education and Research-Kolkata.

Presently, my laboratory and Dr. Tapas K. Sengupta's laboratory are collaborating to investigate potentials of different metal nano particles as anti-microbial and anti-cancer agents. We have synthesized and tested a number of metal nano particles to investigate their potentials and very recently we have observed the cytotoxic effect of copper nano particles on bacteria, yeast and cancer cells. Our preliminary work also revealed the probable mechanism of cytotoxic effect of copper nano particles. The future goals of our collaboration are: (1) to investigate and delineate the detailed mechanism of the cytotoxic effect of copper and other metal nano particles, (2) to investigate and develop delivery system(s) for better cellular and intracellular membrane trafficking of the metal nano particles, and (3) to investigate and find cell surface receptor molecules for metal nano particles for cell type- or tissue type-specific targeted therapy.

Teaching programme

Chemistry of Elements (Theory), Integrated MS at IISER-Kolkata, Autumn Semester (Semester I), 2007.

1. *Preparative Inorganic Chemistry and Qualitative analysis (Practical)*, Integrated MS at IISER-Kolkata, Autumn Semester (Semester III), 2007.
2. *Organic Qualitative analysis and Synthesis* Integrated MS at IISER-Kolkata, Spring Semester (Semester II), 2008.

Supervision of students

1. A. Mukherjee, IISER-Kolkata (Ph. D)
2. S. Santra, IISER-Kolkata (Ph. D)

Other academic/educational activities

1. A poster presented at the Symposium on *Modern Trends in Inorganic Chemistry (MTIC-XII)*, IIT-Madras, Chennai, India, December 6-8, 2007.
Title: "*Oxygen-Bridged Heterobimetallic Catalysts for Olefin Polymerization*" S. K. Mandal and H. W. Roesky
2. A poster presented at the Symposium on *India-UK Frontiers of Science Symposium*, Hyderabad, India, 4-7 March 2008.
Title: "*Phenalenyl Based Neutral Radical Molecular Conductors*" S. K. Mandal and R. C. Haddon.

Chiranjib Mitra

Teaching programme

Optics and Electromagnetism (Practical), Integrated MS at IISER-Kolkata, Spring Semester (Semester II), 2008.

Balaram Mukhopadhyay

Publication

1. Mukhopadhyay, Balaram and Vishal Kumar Rajput. (2008). Concise synthesis of a pentasaccharide related to the anti-leishmanial triterpenoid saponin isolated from *maesa balansae*. *Journal of Organic Chemistry* 73: 6924-27
2. Mukhopadhyay, Balaram, Claire L. Schofield, Sinead M. Hardy, M. B. McDonnell, Robert A. Field and David A. Russell. (2008). Colorimetric detection of ricinus communis agglutinin 120 using optimally presented carbohydrate stabilised gold nanoparticles. *Analyst* 133: 626-34.

Collaborative research & project work

Synthesis of galactose-heterocycle hybrids as novel anti-inflammatory and anti-tumor agents and of glyco *nanoparticles as galectin-targeting tumor markers*, Prof. Ulf J. Nilsson and Prof. Hakon Leffler, Lund University, Sweden. Funded by Swedish Research Council, January 2008 to December 2010.

The galectins are a family of fourteen galactose-binding proteins that play fundamental roles in inflammation, immunity, and cancer. The purpose of this project is to develop, through innovative and creative diversity-oriented chemistry, high-affinity galectin-binding galactose-heterocycle hybrid molecules, as well as galectin-targeting glyco-nanoparticles, in order to examine their effects in cell cultures and in vivo systems. The main goal of the project is to explore galectin biology. However, potent galectin ligands have the potential of being further developed into possible biomedical uses by improving their in vivo lifetime and bioavailability, thus leading to (i) galectin blocking anti-inflammatory and anti-tumor molecules and (ii) imaging reagents for tumor detection and diagnosis as bonus outcome.

Supervision of students

1. Mr. Somnath Dasgupta, Banaras Hindu University (Ph. D)
2. Mr. Bimalendu Roy, Bengal Engineering & Science University (Ph. D)
3. Mr. Vishal Kumar Rajput, IIT Roorkee (Ph. D)
4. Mr. Santanu Mandal, Banaras Hindu University (Ph. D)
5. Ms. Priya Verma, Banaras Hindu University (Ph. D)

Membership in committees/body

Life Member, Association of Carbohydrate Chemists and Technologists India (ACCTI)

Rajesh Kumble Nayak

Talks given

1. *Tomographic method for resolving Galactic binaries* at International Conference on Gravitation and Cosmology at IUCAA, Pune, Bangalore, 20 December 2007.
2. *Blackholes in cosmological backgrounds* at Jadavpur University, 19 February 2008.

Other academic/educational activities

The 6th International conference on gravitation and cosmology (ICGC-07), IUCAA, Pune, India, December 17-21, 2007.

Bipul Pal

Teaching programme

1. *Laboratory course on optics and modern physics*, Integrated MS students at IISER-K, Autumn Semester 2007.
2. *Laboratory course on modern physics and electricity-magnetism*, Integrated MS students at IISER-K, Spring Semester 2008.

Talks given

1. *Study of spin dynamics in InP quantum dots in the picosecond to millisecond timescale* at 2nd Indo-French Workshop for Young Scientists in Gif-sur-Yvette, France, 29 October 2007.
2. *Electron-spin relaxation by the interaction with nuclear-spins in InP quantum dots* at 14th International Workshop on the Physics of Semiconductor Devices at IIT-Mumbai, 17 December 2007.

Prasanta Panigrahi

Publication

Muralidharan, Sreraman and Prasanta K. Panigrahi, (2008) Perfect teleportation, quantum-state sharing, and superdense coding through a genuinely entangled five-qubit state, *Phys. Rev. A* 77:032321-032328 (was highlighted in Virtual Journal of Quantum Information)

Talks given

1. *Calogero Sutherland Model: Quantum Integrability* in Workshop on Integrable Models at Indian Institute of Science, Bangalore in February 2008.
2. *Teleportation through Brown state* in National Conference on Quantum Computation at Institute of Physics, Bhubaneswar in March 2008.
3. *Wavelet transforms and its applications*, Saturday Journal Club talk at IISER-Kolkata in March 2008.

N. G. Prasad

Publications

1. Bedhomme, S., N. G. Prasad, P-P. Jiang and A. K. Chippindale, 2008. Reproductive behaviour evolves rapidly when intralocus sexual conflict is removed. *PLoS ONE* 3(5): e2187. DOI:10.1371/journal.pone.0002187
2. Dey, S., N. G. Prasad, M. Shakarad and A. Joshi, 2008. Laboratory evolution of population stability in *Drosophila*: Constancy and persistence do not necessarily coevolve. *Journal of Animal Ecology* DOI: 10.1111/j.1365-2656.2008.01401.

Teaching programme

1. Bio 201- Evolution and Ecology
2. Bio 102- Genetics (co-taught with Drs. T K Sengupta and S Sarkar)

Supervision of students

1. Bodhisatta Nandy, IISER, Kolkata (Ph. D).
2. Imroze Khan, IISER, Kolkata (Ph. D).

Talk given

Invited teacher for Project Oriented Biology Education (POBE) programme conducted by JNCASR, Bangalore.

Srimonti Sarkar

Collaborative research & project work

Role of Phosphoinositides in intracellular protein transport of Giardia lamblia, Dr. Sandipan Ganguly, National Institute of Cholera and Enteric Disease Kolkata, Dr. Soumalee Basu, West Bengal University of Technology, Kolkata. Funded by Council of Scientific and Industrial Research, 36 months.

Teaching programme

Cell Biology, Integrated M.Sc., 1st Semester, 2007

Genetics, Integrated M.Sc., 2nd Semester, 2008

Supervision of students

1. Sananda Mandal, Calcutta University (Ph. D)
2. Sumana Banerjee, West Bengal University of Technology (Ph. D)
3. Abhishek Sinha, Calcutta University (Ph. D)

Other academic/educational activities

Attended workshop on *Laboratory Diagnosis of Enteric Parasites* from 18-20 February 2008 in Kolkata, India. This is an Indo-US joint collaborative effort from ICMR, India and CDC, USA.

Tapas K Sengupta

Publication

Sengupta, T. K., Leclerc G. M., Hsieh-Kinser T. T., Leclerc G. J., Singh I, Barredo J. C. (2007 Jul 10). Cytotoxic effect of 5-aminoimidazole-4-carboxamide-1-beta-4-ribofuranoside (AICAR) on

childhood acute lymphoblastic leukemia (ALL) cells: Implication for targeted therapy. *Mol Cancer*. 6: 46.

Collaborative research & Project work

1. *Cytotoxic effect of metal nano particles on prokaryotic and eukaryotic cells: Implications in anti-microbial and anti-cancer therapy.* Dr. Swadhin K Mandal. School of Chemical Sciences, Indian Institute of Science Education and Research-Kolkata

Presently, my laboratory and Dr. Swadhin Mandal's laboratory are collaborating to investigate potentials of different metal nano particles as anti-microbial and anti-cancer agents. Results of our work clearly indicated the cytotoxic effect of copper nano particles on bacteria, yeast and cancer cells. Our preliminary work also revealed the probable mechanism of cytotoxic effect of copper nano particles. The future goals of our collaboration are (1) to investigate and delineate the detailed mechanism of the cytotoxic effect of copper and other metal nano particles, (2) to investigate and develop delivery system(s) for better cellular and intracellular membrane trafficking of the metal nano particles, and (3) to investigate and find cell surface receptor molecules for metal nano particles for cell type- or tissue type-specific targeted therapy.

2. *Identification and characterization of biosurfactants produced by oil degrading bacteria isolated from marine water near Kolkata Port.* Dr. Balaram Mukhopadhyay. School of Chemical Sciences, Indian Institute of Science Education and Research-Kolkata.

In my laboratory, we are presently studying on poly aromatic hydrocarbon (PAH) containing oil degradation by microorganisms isolated from Kolkata Port area. One interesting criterion is that microorganisms, capable of degradation and/or utilization of PAH containing oils, do in general produce bio-surfactants to reduce surface and interfacial tension, and to form micro emulsions where hydrocarbons can be solubilized in aqueous medium. Today, bio-surfactants are considered as naturally occurring most versatile process chemicals as they confer excellent detergency, emulsifying, foaming and dispersing traits.

Our collaborative work is directed to identify and characterize the bio-surfactants produce by the isolated microorganisms. Results of our preliminary work indicate that the bio-surfactants produced by the isolated microorganisms are mainly glycolipids and lipopeptides in nature. The future directions of our collaborative work are (1) to identify the structures of the bio-surfactants, (2) to overproduce the bio-surfactants by manipulating environmental factors and genetic regulatory network, and (3) to investigate different applicability of the bio-surfactants.

Teaching programme

- *Genetics: Bacterial genetics and Recombinant DNA technology*, Integrated MS at IISER-Kolkata, Spring Semester 2007
- *Cell Biology: Enzymology*, Integrated MS at IISER-Kolkata, Autumn Semester 2007

- *System Biology: Developmental Biology*, Integrated MS at IISER-Kolkata, Spring Semester 2008
- *Genetics: Bacterial genetics and recombinant DNA technology*, Integrated MS at IISER-Kolkata, Spring Semester 2008
- *Microbial challenge and Host defense*, Integrated MS at IISER-Kolkata, Autumn Semester 2008

Supervision of students

1. Debdeep Dasgupta, IISER-Kolkata (Ph. D)
2. Brinta Chakraborty, IISER-Kolkata (Ph. D)
3. Paromita Banerjee (Mukherjee), IISER-Kolkata (Ph. D)
4. Gregor, P.J., IISER-Kolkata (Ph. D)

P. A. Sreeram

Teaching programme

Computational Course, Integrated M. S., Spring Semester, 2008.

Supervision of students

Jishad Kumar, T. M., IISER, Kolkata (Ph. D)

Shamik Sarkar

Publication

Book

Sarkar, S., M. Y. Mahmoud, A. K. Mitra, R. Dhar, and N. Mandal. (2008). Repeated emplacement of syntectonic pegmatites in precambrian granite gneisses indication of pulsating brittle-ductile rheological transitions, in Indian dykes: Geochemistry, geophysics and geochronology, ed. Rajesh K. Srivastava, Ch. Sivaji and N. V. Chalpathi Rao, Narosa Publishing House Pvt. Ltd., New Delhi. ISBN 978-81-7319-877-9: 495-510.

VIII. Faculty Publications

Journals

1. Maitra, Angshuman and **Sanjib Bagchi**. 2008. Electronic spectroscopic study of solvation of a ketocyanine dye in ternary solvent Mixtures. *J. Phys. Chem. B* 112; 9847.
2. Ghosh, Ashish Kumar and **Sanjib Bagchi**. 2008. Fluorimetric study of electron donor-acceptor complex formation of asphaltene with ortho and para chloranil. *Energy and Fuels* 22; 1845.
3. Deb, N, M. Shannigrahi and **S. Bagchi**. 2008. Use Of Fluorescence probes for studying Kamlet-Taft solvatochromic parameters of micellar system formed by binary mixture of sodium dodecyl sulphate and triton-x 100. *J. Phys. Chem. B* 112; 2868
4. Banerjee, D, P. K. Das, H. Singha and **S. Bagchi**. 2008. Fluorimetric study of interaction of merbromin with trypsin. *Spectrochim Acta A* 70; 1109
5. Maitra, A, N. Deb and **S. Bagchi**. 2008. Study of solubility of indicator dyes in aqueous solution of pure and binary mixed surfactants. Aggregation and microenvironmental properties of homo and hetero-micelles of triton X 100 and sodium dodecyl sulphate. *Journal of Molecular Liquids* 139; 104
6. Maitra, A and **S. Bagchi**. 2008. UV – Visible spectroscopic study of solvation in ternary solvent mixtures: Ketocyanine dye in methanol + acetone + water and Methanol + acetone + benzene. *J. Phys. Chem. B* 112; 2056
7. Maitra, A and **S. Bagchi**. 2007. Study of solute–solvent and solvent–solvent interactions in pure and mixed binary solvents. *Journal of Molecular Liquids* 137; 131.
8. Ghosh, A. K, S. K. Shrivastava and **S. Bagchi**. 2007. Study of self-aggregation of coal derived asphaltene in organic solvents : A fluorescence approach. *Fuel*, 86; 2528.
9. Das, P. K, D. Banerjee and **S. Bagchi**. 2007. Spectroscopic study of association of a hemicyanine dye in mixed aqueous binary solvents. *Spectrochim Acta A* 67A ; 225
10. Basu, J. M, Shannigrahi and **S. Bagchi**. 2007. Ground and excited state complexation of Ketocyanine dyes with alkaline earth metal ions. *J. Phys. Chem. A* 111
11. **Dasgupta, Ananda**. 2007. A new look at two old problems in electrostatics or much ado with hemispheres. *Eur. J. Phys.* 28: 705-713
12. **Dasgupta, Ananda**. 2007. Relativistic kinetics from the Bondi K-calculus. *Eur. J. Phys.* 28 : 817-31

13. Vogl, G. , M. Sladeczek and **Sushanta Dattagupta**. 2007. Probing Single Jumps of Surface Atoms, *Phys. Rev. Lett.* 99, 155902.
14. Bandopadhyay, M. and **Sushanta Dattagupta**. 2008. Quantum Mechanics under rapidly varying external perturbations (with), *Pramana* 70, 382.
15. **Deb, B. M** and A. Poddar. (2007). A method for studying electron-density-based dynamics of many-electron systems in scaled cylindrical coordinates, *J. Phys. A : Math. Theor.* 40, 5981-93.
16. **Deb, B. M.** and A. Wadehra. (2007). Time-dependent quantum fluid density functional theory of hydrogen molecule under intense laser fields, *J. Chem. Sci. (Special Issue on Theoretical Chemistry Symposium 2006)* 119, 335-41.
17. **Deb, B. M.** and A. Sethi. (2007). Prediction of new organo-noble gas compounds by ab initio quantum chemical calculations, *Indian J. Chem.* 46A, 1565 - 1572 (2007). Corrigendum, 46A, 1978.
18. **Deb, B. M.** and M. Sadhukhan. (2007). Aspects of electron dynamics in a helium atom under an intense laser field, *Indian J. Phys. (Special Issue on Atomic and Molecular Physics)* 81(10), 969-81
19. **Deb, B. M.,** M. Sadhukhan, S. S. Sinha, S. Sengupta and R. Biswas. (2008). An integrated and open-ended experiment; Study of chemical waves in time and space, *Resonance* 13 (1), 54 -80.
20. **Mandal, N.,** R. S. Dhar, S. Misra and C. Chakraborty. (2007). Use of boudinaged rigid objects as a strain gauge: insights from analogue and numerical models. *Journal of Structural Geology*, 29, 759-773.
21. Misra, S, **N. Mandal** (2007). Localization of plastic deformation in rocks containing stiff flaws: Insights from experimental and theoretical models. *Journal of Geophysical Research (Solid Earth)*, 112, B09206, doi:10.1029/2006JB004328.
22. **Mukhopadhyay, Balaram** and Vishal Kumar Rajput. (2008). Concise synthesis of a pentasaccharide related to the anti-leishmanial triterpenoid saponin isolated from *maesa balansae*. *Journal of Organic Chemistry* 73: 6924-27
23. **Mukhopadhyay, Balaram,** Claire L. Schofield, Sinead M. Hardy, M. B. McDonnell, Robert A. Field and David A. Russell. (2008). Colorimetric detection of ricinus communis agglutinin 120 using optimally presented carbohydrate stabilised gold nanoparticles. *Analyst* 133: 626-34.
24. Muralidharan, Sreraman and **Prasanta K. Panigrahi,** (2008) Perfect teleportation, quantum-state sharing, and superdense coding through a genuinely entangled five-qubit state", *Phys. Rev. A* 77:032321-032328 (was highlighted in Virtual Journal of Quantum Information)

25. Dey, S., **N. G. Prasad**, M. Shakarad and A. Joshi. (2008). Laboratory evolution of population stability in *Drosophila*: Constancy and persistence do not necessarily coevolve. *Journal of Animal Ecology* DOI: 10.1111/j.1365-2656.2008.01401.
26. Bedhomme, S., **N. G. Prasad**, P-P Jiang, and A. K. Chippindale. (2008). Reproductive behaviour evolves rapidly when intralocus sexual conflict is removed. *PLoS ONE* 3(5): e2187. DOI:10.1371/journal.pone.0002187
27. **Sengupta, TK**, Leclerc GM, Hsieh-Kinser TT, Leclerc GJ, Singh I, Barredo JC. (2007 Jul 10). Cytotoxic effect of 5-aminoimidazole-4-carboxamide-1-beta-4-ribofuranoside (AICAR) on childhood acute lymphoblastic leukemia (ALL) cells: implication for targeted therapy. *Mol Cancer*. 6: 46.

Book

1. Dattagupta, Sushanta, (2008). A paradigm called magnetism, World Scientific, Singapore.
2. Mahmoud M. Y., A. K. Mitra, R. Dhar, S. Sarkar, **N. Mandal**, (2008), Repeated emplacement of syntectonic pegmatites in Precambrian Granite Gneisses: indication of pulsating brittle-ductile rheological transitions. In: Indian Dykes (Eds. Srivastava et al.). Narosa Publishing House Pvt. Ltd., New Delhi, India.
3. **Sarkar, S.**, M. Y. Mahmoud, A. K. Mitra, R. Dhar, and N. Mandal. (2008). Repeated emplacement of Syntectonic pegmatites in Precambrian granite gneisses Indication of Pulsating Brittle-Ductile Rheological Transitions, in Indian Dykes: Geochemistry, Geophysics and Geochronology, ed. Rajesh K. Srivastava, Ch. Sivaji and N. V. Chalpathi Rao, Narosa Publishing House Pvt. Ltd., New Delhi. ISBN 978-81-7319-877-9: 495-510.

IX. Welfare Measures and Language Policy

The Institute has been taking special care of matters of welfare, security, and language policy.

The Institute set-up a sports committee to organize regular activities of sports, sports day, picnics and promote indoor/outdoor games extensively. Special efforts have been made to prepare a garden in front of the annexe building. Two buses and cars have been provided for the transport of students to and from hostels. The Medical Committee set up in March 2008 submitted the 'IISER-K Contributory Medical Scheme' for approval of the BOG. All students and some staff were provided with accommodation in various hostels in Sector I and V of Salt Lake city. The institute canteen catered to all students as well as staff.

The Institute has maintained the practice of producing bilingual nameplates, rubberstamps and letterheads. The Institute maintains GOI reservation policy in recruitment and promotion matters.

X. Equipment Purchased

List of Equipment (Indigenous): 2007 - 08

Supplier	Items	Amount (Rs.)
Saria Exports	PH Meter & Conductivity	86,839.00
OlympusSingapore Pvt. Ltd	Magms Stero Zoom Microscope	185,440.00
Instrumentations India	PH Meter Systromice Type -361	38,475.00
Instrumentation India	Biotech UV Visual Transllu meter	55,688.00
Instrumentation India	Orcon Electronic Balau	20,592.00
Sanmar Speciality Chem.ltd	UV Face Shiled & UV Lamp	26,325.00
Bharati Chemicals & Scientific Works	BOD, Inanbafor soft tech	54,563.00
Bharati Chemicals & Scientific Works	Orbital Shancer Inculator	30,825.00
Astha Digital	Sartorious Semi-micro Balance	130,000.00
Proficient Solution	Work Centre 238 with copier netwrok printer & 1 SS 2000 stablilizer	214,800.00
Astha Digital	Sartorius Balance + Precision Balance	104,000.00
Instrumentation	Hot air Oven	21,950.00
Indian Instrument Mfg. Co.	Rotary Vacuum Pump	28,990.00
Instrumentation India	Muffle Feummaue	9,450.00
Citizen Industries	Flume Hood	261,097.00
Instrumentation India	Digital Pirani Gauge	24,950.00
Indo Scientific Surgical	Hot air Oven	18,997.00
Bharati Chemicals & Scientific Works	Tempertane Controlled	11,200.00
S.B. Scientific Works	Rotary Vacuum Pump	35,360.00
Hindustan Minerals & Natural Hostony	Bimocular polurising Microscope, Centering Sever	159,000.00

Supplier	Items	Amount (Rs.)
Sciencetech Tech. Pvt. Ltd	Integrated Unit, Functional Generator, Frequency Counter, DC Power Supply	145,236.00
Caltrainx	5.5 Digil Multi meter	125,000.00
Associated Electricals & Equipment	Digital IC Tester	24,150.00
Gyanic Instruments	Mossbauer Electronic	247,510.00
Remco	Temperature Controller	12,656.00
Lab Analytics	Sodium Meter Wire Drawing Machine	54,562.00
Lab Analytics	Flow Meter	16,228.12
Citizen Industries	Fume Hood	275,668.00
4 near Engineers Pvt. Ltd	Gas Regulator & Gas Line work	51,700.00
Associated Electricals & Equipment	DC Power supply	82,368.00
A.K. Engineering	Pressure Vessel	125,000.00
Indo Scientific Surgical	Hot air Oven	18,997.00
Indo Scientific Surgical	Rotary Vacuum Pump	40,976.00
Astha Digital	Analytica Bath & Precision Bath	104,000.00
Analysicar Instrument	200 Ultrasonic Bath	76,500.00
Computer Exchange	6 nos Crinta len scanner	108,888.00
Pooja Industrial Corp.	Hot air Oven	683,171.41
Pooja Industrial Corp.	PA Meter	24,750.00
Pooja Industrial Corp.	Hot Plan	592,199.69
Thirno electron LLS India Pvt. Ltd	Acetic antiy driver	40,735.00
Amalgamated Supplier	2 nos. Dehumidifier	154,125.00
Amalgamated Supplier	Ultra Sonic Bath	33,188.00

List of Equipment (Foreign): 2007 – 08

Items	Supplier	Value
Planck's Constant Setup, Specific Electron Charges, Dualism of Wave & Particle, Franck-Hertz Experiment	LD-Didactic GmbH, Germany	€ 18,754.50
Revco USA Brand Horizontal Type 86 Deg C Ultra Low Temp Deep Freeze Model ULT790-3V with Full Load Inventory	Thermo Fisher Scientific, USA	\$9,882.00
Eppendorf Centrifuge 5415-R & 5414-D	Eppendorf AG, Hamburg, Germany	€ 5,216.00
Gel Doc XR System PC Version, White Light Conversion Screen for Gel	Bio-Rad Laboratories Pty Ltd, Australia	\$11,325.00
Leica DM EP Trinocular Microscope for Both Polarisation & Biological Applications with Digital Imaging Workstation	Leica Mikrosysteme Vertrieb GmbH, Germany	€ 14,477.00
Non Refrigerated Microfuge, Refrigerated Microfuge, Refrigerated Centrifuge, Clinical Centrifuge, Mixmate	Eppendorf AG, Hamburg, Germany	€ 38,596.00
96 Well PCR, Gradient 96 Well, Teaching PCR, Pipettes and Thermomixer Comfort	Eppendorf AG, Hamburg, Germany	€ 38,670.00
Beckman Coulter Model Optima Max Table Top Ultracentrifuge along with Rotors	Beckman Coulter International SA, Switzerland	\$53,835.00
Beckman Coulter L-90 Ultracentrifuge along with Rotors	Beckman Coulter International SA, Switzerland	\$51,233.00
Beckman Coulter Avanti JE High Speed Floor Model Centrifuge, Allegra 15R Bench Top Refrigerated Centrifuge & DU 730 UV/VIS Spectrophotometer	Beckman Coulter International SA, Switzerland	\$39,432.00
Horizontal Electrophoresis System for IEF: Protean IEF System with Accessories & Experion System 220V/240V for RNA Analysis	Bio-Rad Laboratories Pty Ltd, Australia	\$22,414.00
Mini Protean Tetra Cell, 10-Well, 1.00 mm Thickness, 4 Gel System and other items for Biology Lab	Bio-Rad Laboratories Pty Ltd, Australia	\$58,686.00

Items	Supplier	Value
Rotavapor R-215/V Advanced, Vacuum Controller V-850 and Vacuum Pump V-700	Buchi Labortechnik AG, Switzerland	SFr. 9,064.00
Measuring Velocity Light, Coulomb's Law with Cobra3 & Equipment for Equipotential Lines	Phywe Systeme GmbH & Co. KG, Germany	€ 7,411.32
Analytical Digital Polarimeter Model: Autopol-IV Six Wavelength System with Temptrol Control	Rudolph Research Analytical, USA	\$20,000.00
Glove Box Workstation	Mbraun Inertgas Systeme GmbH, Germany	€ 38,880.00
Gaussian 03 and Gauss View 4 License Software	Gaussian INC, USA	\$7,630.00
Olympus IX 81 Deconvolution Microscope Workstation with DP 30 High Resolution Digital Cooled CCD Camera	Olympus Singapore Pte. Ltd., Singapore	JPY6,021,710.00
CellP Advanced Image Processing & Analysis Software	Olympus Singapore Pte. Ltd., Singapore	JPY 1,150,570.00
Single Walled Carbon Nanotube	Carbon Solution INC, USA	\$1,895.00
Leica MZ6 Binocular Stereozoom with Cold Light Source & Reflected Light Illumination System & Leica MZ6 Microscope Trinocular with Digital Camera	Leica Mikosysteme Vertrieb GmbH, Germany	€ 27,844.00
Model VCX 130 (Vibra-Cell) Ultrasonic Liquid Processor 150ul to 150 ml	Sonic & Materials INC, USA	\$4,360.00
JULABO Immersion Cooler Model FT 902 with Temp. Control & JULABO Recirculating Cooler Model FL 1701	Julabo Labortechnik GmbH, Germany	€ 10,350.00
U-4100L UV-VIS-NIR Spectrophotometer	Techcomp (Macao Commercial Offshore) Ltd., China	JPY 6,286,269.00
Perkin Elmer Spectrum RX-1 FT-IR Spectrophotometer	Perkin Elmer Singapore Pte. Ltd., Singapore	\$17,500.00
MVT-1000 Mossbaure Velocity Transducer, CMCA-550 Data Acquisition Module including Software & LND-45431 Proportional Counter	Wissenschaftliche Elektronik GmbH, Germany	€ 8,243.00

Items	Supplier	Value
Mossbauer Source 57 Co/Rh	Cyclotron Instruments, Germany	\$3,050.00
M 2475 Multi Wave Length Fluorescence Detector	Waters Ges.m.bH, Vienna, Austria	\$13,263.00
Analytical Cum Preparative HPLC System with All Standard Accessories	Waters Ges.m.bH, Vienna, Austria	\$48,574.00
GPC System with All Standard Accessories	Waters Ges.m.bH, Vienna, Austria	\$38,590.00
Rotavapor R-215/V Advanced, Vacuum Controller V-850 and Vacuum Pump V-700	Buchi Labortechnik AG, Switzerland	SFr. 9,064.00
Rotavapor R-215/V and Vacuum Pump V-700 with All Standard Accessories	Buchi Labortechnik AG, Switzerland	SFr. 7,765.00
Buchi V-850 Vacuum Controller with Power Pack	Buchi Labortechnik AG, Switzerland	SFr. 2,902.00
Buchi Glass Oven B-585 Kugelrohr with All Standard Accessories	Buchi Labortechnik AG, Switzerland	SFr. 9,952.00
Dual Phase Digital Signal Processing Lock In Amplifier Model: SR830	Stanford Research Systems, USA	\$9,980.00
R-30989: Red HeNe Laser, ULM: Mount Laser Mount, M-340-RC: Rod Clamps, 70: Heavy Duty Rod System, M-300-P: Rod Platforms	Newport Corporation, USA	\$1,572.48
Zero Order Quartz Radiation Plate Diameter: 25.4 mm	CVI-Melles Griot BV, Netherlands	€ 482.00
Photoelastic Modular System with All Standard Accessories, Photodiode Detector / Preamplifier, 16mm ² , Silicon, Photoconductive, Linear Polarizer Option, Visible	Hinds Instruments, Inc	\$8,895.00
KEITHLEY Make - Model 2602 Dual Sourcemeter, Model KUSB-488A USB to GPBI Interface, Model 2600-BAN Banana Jack Interface Cable, Model 5804 General Purpose 4 Terminal Test, Model 2182A Nanovoltmeter	KEITHLEY Instruments GmbH, Germany	\$29,063.00

Items	Supplier	Value
Si Wafers - 4 Inch Diameter, P-Type (Borne Doped), Resistivity: 5-10 ohmcm, (100) orientation. Thickness (approx): 525um, Single Side Polish	Y-Mart, Inc, Florida, USA	\$870.00
Carl Zeiss Binocular Stereo Zoom Microscope Model: STEMI DV 4 with All Standard Accessories	Carl Zeiss MicroImaging GmbH, Gottingen, Germany	€ 10,585.14
Edwards Make RV12, Rotary Oil Vacuum Pump with All Standard Accessories	Edwards Ltd., Crawley, West Sussex, England UK	GBP 7,747.00
STARLAB Electrophoresis System and Power Supply with All Standard Accessories	Starlab GmbH, Ahrensburg, Germany	€ 11,382.00
ILMVAC Two Stage Diaphragm Pump and Maintenance Kit	ILMVAC GmbH, Germany	€ 2,828.00
IKA Make Magnetic Stirrer with Heating and its All Standard Accessories	IKA Works Guangzhou, China	\$11,698.00
1 No. Solar Simulator with All Standard Accessories	Newport Corporation, USA	\$11,825.20
1 No. Initiator 2.0 Microwave with All Standard Accessories, 1 No. Process Vials 2-5 ML and 1 No. Process Vials 0.5-2 ML	Biotage Sweden AB, Sweden	\$24,530.00
Vector NTI Software, Make: Invitrogen, Advance PC Static Kit, Version 10 with 1 Manual	Imperial Life Science Inc., USA	\$10,575.00
2 Nos. Buchi Rotary Evaporator with Vacuum Pump and Vacuum Controller with All Standard Accessories	Buchi Labortechnik AG, Switzerland	SFr. 18,817.00
2 Nos. B-740 Recirculation Chiller / 800 Watts with All Standard Accessories	Buchi Labortechnik AG, Switzerland	SFr. 14,137.00
Singer MSM System 300 TSA, Singer Micro Zapper and CCTV	Singer Instruments Company Limited, England	£18,995.00
2 No. Buchi Rotary Evaporator with Vacuum Pump V-700 & Vacuum Controller and Spare Parts Kit 29/32 with All Standard Accessories	Buchi Labortechnik AG, Switzerland	SFr. 18,652.00

Items	Supplier	Value
Beckman Coulter L-90 Ultracentrifuge along with Rotors	Beckman Coulter International SA, Switzerland	\$51,233.00
2 No. Rotary Vane Pump Model 2015 SD with All Standard Accessories and Maintenance Parts	Alcatel Vacuum Technology, France	€ 5,949.00
2 No. JULABO Recirculating Cooler Model FL1701 and Model FL601 with All Standard Accessories	Julabo Labortechnik GmbH, Germany	€ 8,595.00

E N G L I S H
PART – B

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

BALANCE SHEET AS AT 31st MARCH, 2008

(Amount - Rs.)

Sl. No.	LIABILITIES / ASSETS	Schedule	Current Year (2007-2008)	Previous Year (2006-2007)
	CORPUS/CAPITAL FUND AND LIABILITIES			
I	Corpus/Capital Fund	1	183774415	29578228
II	Reserves & Surplus	2	23265915	0
III	Current Liabilities And Provisions		30797429	
	Total		237837759	63857699
	ASSETS			
I	Fixed Assets	4	135026830	12922757
II	Current Assets, Loans, Advances Etc.	5	102810929	50934942
	Total		237837759	63857699
	Significant Accounting Policies	11		
	Contingent Liabilities and Notes on Accounts	12		



(S. S. Panja)
OSD (Finance)



(S. Dattagupta)
Director

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

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st MARCH, 2008

(Amount - Rs.)

Sl. No.	PARTICULARS	Schedule	Current Year (2007-2008)	Previous Year (2006-2007)
	INCOME			
II	Grants/Subsidies	6	119004344	27955440
III	Fees/Subscriptions	7	1464200	507000
VI	Interest earned	8	2622787	1073485
	TOTAL (A)		123091331	29535925
I	Establishment Expenses	9	16062001	4267953
II	Other Administrative Expenses etc.	10	51855414	14549791
V	Depreciation (Net Total at the year end - corresponding to Schedule 8)		31908001	2483982
	TOTAL (B)		99825416	21301726
	Excess of Income over Expenditure (A-B) Transferred to Capital Fund		23265915	8234199
	BALANCE CARRIED FORWARD TO RESERVE & SURPLUS		23265915	0
	Significant Accounting Policies	11		
	Contingent Liabilities And Notes On Accounts	12		



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(S. Dattagupta)
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**INDIAN INSTITUTE OF SCIENCE EDUCATION & RESEARCH
KOLKATA**

SCHEDULE – 1 : CAPITAL FUND

(Schedule forming part of Balance Sheet as at 31.03.2008)

(Amount - Rs.)

PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
	Balance at beginning of the year	29578228		0
Add : Capital grant-in-aid	154196187	183774415	21344029	
Excess of income over expenditure		8234199		29578228
Balance as at the Year -end		183774415		29578228

SCHEDULE – 2 : RESERVES & SURPLUS

(Schedule forming part of Balance Sheet as at 31.03.2008)

(Amount - Rs.)

PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
	Balance at beginning of the year		0	
Excess of income over expenditure c/f		23265915		
Balance as at the Year -end		23265915		0



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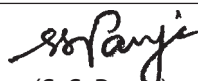
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KOLKATA**

SCHEDULE – 3 : CURRENT LIABILITIES & PROVISIONS

(Schedule forming part of Balance Sheet as at 31.03.2008)

(Amount - Rs.)

PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
A. CURRENT LIABILITIES				
Grant in Aid Refundable to GOI			33200531	
Income Tax	122712		2076	
Lien Contribution - Employee share (CPF)	6955			
SNBNCBS - KVPY			1632	
Advance Tuition Fees	377100		90000	
Advance Gymkhana Fees			1900	
Advance Hostel Rent			9500	
Advance Elect. & Water Charges			5700	
Earnest Money	340000			
Security Deposit	120201			
Food Charges	490936			
Suspense (Project Overhead)	164000			
Corpus Fund	1521875			
Hostel Caution Money	148000			
Institute Caution Money	148000			
Library Caution Money	74000			
Profession Tax	9378			
Sales Tax Deduction	66208			
Outstanding liability for Capital Expenditure	13209076			
Outstanding liability for Revenue Expenditure	6346216	23144657		33472910
B. PROVISIONS				8065
C. OTHER LIABILITY				
Externally Funded Project (Credit Balance)		7652772		
TOTAL		30797429		34279471


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SCHEDULE - 4 : FIXED ASSETS

(Schedule forming part of Balance Sheet as at 31.03.2008)

DESCRIPTION	GROSS BLOCK		DEPRECIATION		NET BLOCK	
	Cost/ valuation as of the year	Additions during the year	As at the beginning of the year	On Additions during the year	As at the Current year-end	As at the Previous year-end
A. FIXED ASSETS						
1. Land		60001		0	60001	0
2. Buildings :						
3. Plant Machinery & Equipment:						
Lab Equipment	2354315	37690883	235431	3837245	35972522	2118884
4. Vehicles :	0	0				0
5. Furnitures Fixtures :	2716145	7759672	271614	1049978	12069439	2444531
6. Office Equipment :	1896472	2957911	379294	819671	3655418	1517178
7. Computer & Accessories	4765913	8852051	953182	5531151	5837980	3812731
Networking System	2770723	649786	554144	2411513	454852	2216579
8. Asset Costing Upto Rs 10,000/-		267958		267958	0	
9. Kitchen Utensils	204570		204570	0	0	184113
10. Library Books & Journals	698601	55780834	69860	19610048	36799527	628741
B. CAPITAL WORK IN PROGRESS						
Boundary wall & Roads	0	40177091		0	40177091	
TOTAL	15406739	154196187	2668095	33527564	1619563	34576096
		0	169602926		135026830	12922757


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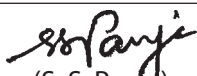
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KOLKATA**

SCHEDULE – 5 : CURRENT ASSETS, LOANS, ADVANCES ETC.

(Schedules forming part of Balance Sheet as at 31st March, 2008)

(Amount - Rs.)

PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
A. CURRENT ASSETS :				
1. Cash Balance in hand including imprest		87445		22455
4. Bank Balances :				
a) With Scheduled Banks :				
On Current Accounts :				
SBI, Kalyani	1017651			
SBI, KGP.	0		3628461	
On Deposit Accounts :				
Investment with IOB/SBI	1000000		15000000	
Investment with ICICI Bank	0		20509590	
On Savings Accounts :IOB				
IOB A/c No - 11530	3174669		2819375	
IOB A/c No - 12359	5000			
		5197320		41957426
B. LOANS, ADVANCES AND OTHER ASSETS				
1. Loans				
a) Staff:				
2. Advances and other amounts recoverable in cash or in kind or for value to be received				
a) Outside Scholarship (CSIR)	0		81900	
b) On capital Account (As per Separate Sheet)	0			
c) Prepayments/Prepaid	420934			
d) Others	2654509		15000	
e) Margin Deposit with Bank	15827046		8417273	
f) Security Deposit	500000	19402489	4000	8518173
3. Income accrued				
a) On investments from on Investment from STD	27046		0	
b) On investments - others	0		436888	
c) On loans and Advances	0	27046	0	436888
4. Externally Funded Project (Debit Balance)		3174754		0
5. Corpus Fund Investment (including accrued interest of Rs. 21,875/-) SBI, Kalyani.		1521875		0
6. Claim Receivable				
Grants-in-aid receivable from MHRD		73400000		0
TOTAL		102810929		50934942


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SCHEDULE - 6 : GRANTS / SUBSIDIES

(Part of Income & Expenditure for the year ended on 31st March, 2008)

(Amount - Rs.)

Particulars	Current Year	Previous Year
GRANTS / SUBSIDIES :		
Grant from Central Government	119004344	27955440
TOTAL	119004344	27955440

SCHEDULE - 7 : FEES / SUBSCRIPTIONS

(Part of Income & Expenditure for the year ended on 31st March, 2008)

(Amount- Rs.)

Particulars	Current Year	Previous Year
FEES / SUBSCRIPTIONS :		
1) Institution Fee:		
Tution fees etc.	1464200	507400
TOTAL	1464200	507400

SCHEDULE -8 : OTHER RECEIPTS

(Part of Income & Expenditure for the year ended 31st March, 2008)

(Amount - Rs.)

Particulars	Current Year	Previous Year
A) Interest from Bank	2364164	1073485
B) Miscellaneous Receipts	258623	0
TOTAL	2622787	1073485



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SCHEDULE – 9 : ESTABLISHMENT EXPENSES

(Part of Income and Expenditure for the year ended on 31st March, 2008)

(Amount - Rs.)

PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
ESTABLISHMENT EXPENSES				
A) Salary & Honorarium				
Salary & Honorarium	11723266		3398474	
Lien Contribution (CPF & Leave Salary)	99790		3346	
Employer's Contribution to NPS	77542			
Reimbursement of Membership Fees			48972	
Health Care Expenses	73300	11973898	7161	3457953
B) Scholarship & Fellowship				
Fellowship & Bookgrant	2102603			810000
Scholarship & Stipend	1985500	4088103		
TOTAL		16062001		4267953



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SCHEDULE – 10 : ADMINISTRATIVE EXPENSES

(Part of Income and Expenditure for the year ended on 31st March, 2008)

(Amount - Rs.)

PARTICULARS	CURRENT YEAR		PREVIOUS YEAR	
A) Academic Expenses				
Academic Expenses	300892		293236	
Lab Consumables	4564161		962323	
Seminer & Conference	99005		1951	
Relocation Expenses	377259		236504	
Student Welfare & Amenities	50091	5391408	57123	1551137
B) Operating Expenses				
Computer Consumables & Stationery	274801		116774	
Lien Contribution			59220	
Advertisement	5164918		5608965	
Meeting Expenses	895333		1083743	
General Contingency	761773		372285	
Postage	62794		128166	
Printing & Stationery	377792		33385	
Rent	2713845		737634	
Maintenance of Equipments & Computers	268843		263486	
Hospitality Expenses	256094		1482538	
Bank Charges	433723		17423	
Travel & Conveyance	1895278		1160800	
Housekeeping & Estate Maintenance	28990762		214859	
Tranport Hire Charges	2695992		944477	
Telephone, Fax & Internet Charges	791916		606096	
Electricity & Power	812579		168803	
Legal Expenses	67563	46464006	-	12998654
TOTAL		51855414		14549791



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Schedule – 11 : SIGNIFICANT ACCOUNTING POLICIES

1. The financial statements are prepared on the basis of accrual method of account Fees, Salary, Contractual obligations are taken on accrual basis.
2. All investments are made individually and interest is provided on accrual basis.
3. Fixed assets are stated of cost of acquisition inclusive on inward freight, duties and taxes and incidental and direct expenses related to acquisition. Condemned/unserviceable assets/ stores are written off in accounts as and when arise/adjusted.
4. Government grants sanctioned but not received during this year are accounted on accrual basis.
5. Transactions denominated in foreign currency are accounted at the exchange rate prevailing at the date of transaction.
6. The depreciation has been charged on straight line method as per rates specified in the Income Tax Rules 1962. Depreciation on assets acquired after 30th September has been charged @ 50% of applicable rates. Assets which are fully depreciated have been retained at Re. 1/-.



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

Schedule – 12 : CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS.

1. The current assets, loans and advances have a value on realization basis.
2. Income and surplus of the Institute fund are not subject to the provision of the Income Tax Act,1961
3. Exemption/concession of Excise Duty, Custom Duty and Sales Tax are available to the Institute having scientific /research activity.
4. Grants received during the year Rs 27,32,00,531/- includes:
 - (a) Rs. 7, 34, 00,000/- lakhs received in April 208.
 - (b) Rs. 3, 32, 00,531/- being unspent balance of 2006-07.
5. Application of the grant apportioned to capital and revenues for Rs.
15,41,96,187/- and Rs. 11,90,04,344/- respectively.
6. In case of laboratory stores, minor accessories, stationery items including computer stationeries, the value of purchase made during the year has been charged to Income and Expenditure Account.



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

RECEIPTS AND PAYMENTS FOR THE YEAR ENDED 31st MARCH, 2008

(Amount in Rupees)

SI. No.	R E C E I P T S	Schedule	Current Year (2007-2008)	Previous Year (2006-2007)
I.	Opening Balance	A	6470291	0
II.	Grant-in-aid from Govt. of India	B	166600000	82500000
III.	Encashment of Investment	C	145509590	20000000
IV.	Income on Investments from	D	0	608837
V.	Interest Received	E	2774006	27760
VI	Other Income	F	5841788	614100
VII	Other Receipts	G	30801761	4548996
	TOTAL		357997436	108299693

(Amount in Rupees)

SI. No.	P A Y M E N T S	Schedule	Current Year (2007-2008)	Previous Year (2006-2007)
I.	Expenses			
	a) Establishment Expenses	H	14789822	3762987
	b) Administrative Expenses	I	48494201	15974672
II.	Investments and deposits made	J	112500000	55513590
III.	Expenditure on Fixed Assets	K	135395046	15406739
IV.	Other Payments	L	42553602	11171414
V.	Closing Balances	M	4264765	6470291
	TOTAL		357997436	108299693



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

RECEIPTS FOR THE YEAR ENDED 31st MARCH, 2008

Schedule - A : OPENING BALANCE FOR 2007-2008

(Schedule forming part of Receipts and Payments for the year ended 31st March, 2008)

(Amount - Rs.)

RECEIPTS	Current Year		Previous Year	
OPENING BALANCE				
a) With Banks	6447836			0
c) Cash in hand	22455	6470291		0
TOTAL		6470291		0

Schedule - B : STATEMENT OF GRANT-IN-AID FOR THE YEAR 2007-2008

(Schedule forming part of Receipts and Payments for the year ended 31st March, 2008)

P L A N

(Amount in Rupees)

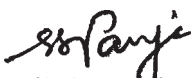
RECEIPTS	Current Year		Previous Year	
GRANTS RECEIVED				
Grant-in-aid		166600000		82500000
From Govt. of India				
Non -Recurring (Plan)				
TOTAL		166600000		82500000

Schedule - C : INVESTMENT / SHORT TERM DEPOSIT

(Schedule forming part of Receipts and Payments for the year ended 31st March, 2008)

Amount in Rupees

RECEIPTS	Current Year		Previous Year	
Encashment of Short Term Deposit		145509590		20000000
TOTAL		145509590		20000000


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OSD (Finance)


(S. Dattagupta)
Director

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

Schedule - D : INTEREST ON INVESTMENT

(Schedule forming part of Receipts and Payments for the year ended 31st March, 2008)

(Amount in Rupees)

RECEIPTS	Current Year		Previous Year	
Income on Investments From				608837
TOTAL				608837

Schedule - E : INTEREST RECEIVED

(Schedule forming part of Receipts and Payments for the year ended 31st March, 2008)

(Amount in Rupees)


RECEIPTS	Current Year		Previous Year	
INTEREST RECEIVED		2774006		27760
TOTAL		2774006		27760

Schedule - F : OTHER INCOME

(Schedule forming part of Receipts and Payments for the year ended 31st March, 2008)

(Amount in Rupees)

RECEIPTS	Current Year		Previous Year	
OTHER INCOME				
Admission Fee/Application Fee	4026900		132600	
Registration Fee			15400	
Tuition Fee			366000	
Examination Fee			30800	
Sports Fee			7700	
Hostel Rent			38500	
Electricity & Water Charges			23100	614100
License Fees	27586			
Other Deduction	56265			
Misc. Receipts	1731037	5841788		
TOTAL		5841788		614100


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Schedule - G : OTHER RECEIPTS

(Schedule forming part of Receipts and Payments for the year ended 31st March, 2008)

(Amount in Rupees)

RECEIPTS	Current Year		Previous Year	
OTHER RECEIPTS				
a) Adjustment / Refund				
Salary & Honorarium	27375		4645	
Scholarship & Fellowship	10175		22500	
Other Travelling & Conveyance	202227		94483	
Washing & Toilets			18350	
Electricity Charges			93017	
Inaugural Day Celebration			1317327	
Lab Consumables			69954	
Outside Scholarship			11700	
Prize & Award			5000	
Advance against Recurring Expenses			2287995	
Bank Charges	1172		12600	
Loans and Advances	778355			
Liabilities for Expenses	341472			
Account Payable Fellowship	11700			
Laboratory Equipment	4911285			
Advance to Staff	110639			
Car A/c	4202			
Margin Deposit / Letter of Credit	14693132			
TA/DA to Academic Staff	78313			
Advertisement	4800			
Meeting Expenses	5818			
Postage	25			
Scholarship / Stipend	12000	21192690		
b) Transferable Receipts				
Income Tax	879480		221009	
P.Tax	48786		12803	
CPF (Employees Contribution)	49069		24070	
SNBNCBS-KVPY	0		353543	611425
Earnest Money Deposit	840000			
GSLI	800			
House Building Loan	33650			
Security Deposit Received / Recovered	57597	1909382		


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Schedule - G : contd...

c) Receipts from Other Fund Agencies on External Project / Scheme				
J C Bose Fellowship Award	580000			
CSIR - Manas Kr. Roy	447106			
Cyclic Oligomers.....- DST	1450000			
Dev. Of High Strain- DST	1940323			
Geo Dynamic Evolution.....- DST	384000			
J C Bose Fellowship - S Dattagupta	534536			
KVPY A/C	650000			
New Poland Type Legends- DST	850000			
Role of Phosphoi..... Lambliia- CSIR	756000			
Syn. Of Bio Active	97724			
C N R Rao Education Foundation	10000	7699689		
Total		30801761		4548996

Schedule - H : ESTABLISHMENT EXPENSES

(Schedule forming part of Receipts and Payments for the year ended 31st March, 2008)

(Amount in Rupees)

RECEIPTS	Current Year		Previous Year	
ESTABLISHMENT EXPENSES				
a) Salary & Honorarium, Lecture Fees		10704825		2956587
b) Scholarship & Fellowship				
Fellowship & Bookgrant	2264497		724500	
Scholarship / Stipend	1820500	4084997	81900	806400
TOTAL		14789822		3762987


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SCHEDULE - I : ADMINISTRATIVE EXPENSES

(Schedule forming part of Receipts and Payments for the year ended 31st March, 2007)

(Amount in Rupees)

PAYMENTS	Current Year		Previous Year	
ADMINISTRATIVE EXPENSES				
1. Academic Expenses				
Academic Expenses	147352		11736	
Lab Consumables and Chemicals	1707641		1032277	
Seminar/ Conference	95575		1951	
Hostel Expenses	0		236504	
Sitting Fees	90000	2040568		1282468
2. General Contingency & Other Charges				
Office Stationery	0		116774	
Lien Contribution	101560		54930	
Advertisement	5132136		5608965	
Meeting Expenses	419946		1083743	
General Contingency	679908		372285	
Telephone,Fax, Internet and Broadband	713097		117354	
Printing & Stationery	374653		33385	
Rent	2468065		737634	
Maintenance of Equipment & Campus	268843		232936	
Selection Committee Expenses			44910	
TA/DA for institute Guest			236590	
Inauguration Day Celebration			2799865	
Bank charges	326360		30023	
Travel & Conveyance	2070674		1255283	
Sanitation			90854	
Hospitality Expenses	231853			12815531
Postage	44311			
Computer and Consumable	221275			
Canteen A/c	1262919			
Legal Expenses	67563			
House Keeping and Estate Maint.	28389848	42773011		
3. Faculty Perks				
Reimbursement of Membership Fee	0			48972
Relocation Expenses	377259	377259		
4. Transport Service		2519833		799802
5. Health Facilities		24896		7161
6. Electricity Charges				
Electricity & Power	708543		215164	
Electrical Works	0	708543	142355	357519
7. Bandwidth charges		0		606096
8. Students' Support Service		50091		57123
TOTAL		48494201		15974672

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Schedule - J : INVESTMENT AND DEPOSITS MADE

(Schedule forming part of Receipts and Payments for the year ended 31st March, 2008)

(Amount in Rupees)

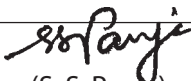
PAYMENTS	Current Year		Previous Year	
INVESTMENTS AND DEPOSITS MADE				
a) Short Term Investment	111000000			55509590
b) Security Deposit (Telephone)	0			4000
c) Corpus Fund Investment	1500000	112500000		0
TOTAL		112500000		55513590

Schedule - K : EXPENDITURE ON FIXED ASSETS

(Schedule forming part of Receipts and Payments for the year ended 31st March, 2008)

(Amount in Rupees)

PAYMENTS	Current Year		Previous Year	
EXPENDITURE ON FIXED ASSETS				
A. FIXED ASSETS				
1. PLANT MACHINERY & EQUIPMENT		30214995		3410772
2. KITCHEN UTENSILS		0		204570
3. FURNITURES & FIXTURES		7698359		2716145
4. OFFICE EQUIPMENT		2878038		840015
5. NETWORKING SYSTEM		0		2770723
6. COMPUTER & PERIPHERALS		5651362		4765913
7. LIBRARY BOOKS		48447243		698601
8. CAMPUS CONSTRUCTION		40177091		
9. LAND		60000		
10. ASSETS COSTING UPTO Rs. 10000		267958		
TOTAL		135395046		15406739


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Schedule - L : OTHER PAYMENTS

(Schedule forming part of Receipts and Payments for the year ended 31st March, 2008)

(Amount in Rupees)

PAYMENTS	Current Year		Previous Year	
OTHER PAYMENTS				
a) General Advances				
Advance against Recurring Expenditure	3596186		2302995	
Letter of Credit	32706706		8417273	10720268
Liabilities for Expenses	563493			
Outstandig Liabilities for Expenses	39700			
Vehical Operator	19183			
Account Payable - Fellowship	11700			
Account Payable - TDS	48491	36985459		
b) Refund against Receipts				
CPF (Employee Contribution)	45460		24070	
Income Tax	1015280		218933	
P.Tax	39718		12803	
Outside Scholarship	0		5000	451146
Earnest Money Deposit	500000			
GSLI	800			
House Building Loan	33650			
Income Tax (A/c Contractor)	134165			
Prof. Amitava Datta	8615			
Security Deposit Received / Recovered	41129			
Advance to Staff and Others	500000			
Imprest Account	20000			
Prepaid Expenses	420934			
Security Deposit paid by IISER, K	500000			
Admission Fees	148700	3408451		
b) Payment on account of External Project/ Scheme				
J C Bose Fellowship Award	240000			
CSIR - Manas Kr. Roy	3255			
Dev. Of High Strain- DST	740026			
Geo Dynamic Evolution..... - DST	108215			
J C Bose Fellowship - S Dattagupta	540998			
KVPY A/C	422755			
Role of Phosphoi..... Lamblia- CSIR	94443			
C N R Rao Education Foundation	10000	2159692		
TOTAL		42553602		11171414

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SCHEDULE - M : CLOSING BALANCE FOR 2007-08

(Schedule forming part of Receipts and Payments for the year ended 31st March, 2008)

(Amount in Rupees)

PAYMENTS	Current Year		Previous Year	
CLOSING BALANCE				
a) In Current Accounts (SBI Kharagpur)	0		3628461	
b) In Current Accounts (SBI Kalyani)	1017651			
c) In Savings Account (IOB, Salt Lake)	3174669		2819375	
d) In Savings Account (IOB, Salt Lake - A/c NPS)	5000			
e) Cash in hand	67445	4264765	22455	6470291
TOTAL		4264765		6470291



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