

# SAHAYOG



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## Annual Day Function 2008

UGC-DAE Consortium for Scientific Research (CSR) celebrated its 18<sup>th</sup> Annual Day on December 5, 2008 with a key note lecture by **Padmashri Dr. S. Banerjee**, an eminent Scientist and Director, Bhabha Atomic Research Centre, Mumbai. He recalled the initial days of the formation of the Consortium and its development through successive Directors starting with Dr. V. G. Bhide, Prof. R Srinivasan, Dr. B.A. Dasannacharya, Prof. V.N. Bhoraskar and present Director Dr P. Chaddah into a unique scientific institution providing state of the art facilities to the university community. True to the spirit of CSR, he chose a scientific talk for the occasion. The topic of his talk was “Structural Transitions: Discrete verses Continuous”. He introduced the field of phase transitions and the basic concepts of order and disorder etc. which could be in the chemical, magnetic or electric properties of the system. After explaining the thermodynamics of the first and second order transitions, he introduced the concepts of Landau plots between free energy and an appropriate order parameter to explain the two types of transitions in an unambiguous way. He gave examples from his own transmission electron microscopy work on Ni-Mo and Zr - Al alloy systems and related theoretical work during the course of his lecture. Finally, he gave related real life analogies to some of the terms used in the course of his lecture. The lecture was followed by a lively scientific interaction with the audience.



The function started with Dr. P. Chaddah welcoming the guests. He highlighted the activities of the three centres of the Consortium during the last one year and informed the specific achievements of the consortium such as the utilization and development of facilities on the Indus -1 synchrotron, Dhruva reactor neutron beam as well as the VECC cyclotron at Kolkata. He also mentioned the starting of a new Consortium node at the IGCAR, Kalpakkam. This has led to an increased interaction between the DAE facilities and the

university academic fraternity as brought out by the ongoing more than one hundred collaborative research schemes. He also introduced the chief guest to the gathering highlighting his scientific achievements, recognitions and awards received. Dr. Ganesan proposed vote of thanks.

Apart from the CSR Centre-Directors, scientists, staff and students, the function was attended by scientists and academicians from RRCAT, DAVV and other institutions. The Annual Day Lecture of Dr Banerjee was followed by a poster session highlighting the different research activities of the three Centres (Indore, Kolkata and Mumbai), a visit to the laboratories and theses presentations by senior students of the Consortium. The day ended with a cultural programme of instrumental music by Dr Chetan Yadav and vocal by Mrs. Smita Mokashi.

### **A new facility for multidisciplinary research: Cobalt-60 Gamma Irradiation Setup**

Kolkata Centre of the Consortium has installed a Co-60 gamma irradiation chamber obtained from BRIT, Mumbai for use by university researchers. The source strength of this chamber is about 3.7 kCi having a dose rate of 6.8 kGy/hr and provides for uniform, homogeneous and whole-body (like mice) irradiation. It has features for rotating/stirring samples during irradiation and is fitted with programmable logistic control unit for automated irradiation time and a thermocouple sensor for irradiation temperature measurement. To reduce dose rate, concentric lead attenuators are available with the set-up.



The radiation technique is an important tool for free radical research, which has great ramifications in investigating the underlying mechanism in different chemical and biological processes. Gamma photons having an average energy of 1.25 MeV interact with matter through Compton process and results in ionization, which in turn, leads to different chemical processes, like formation of free radicals, radical-radical recombination, molecular rearrangement, etc. For chemical and biological systems, water is considered to be a versatile medium. When  $\gamma$ -photon impinges on aqueous systems, it generates one of the strongest oxidizing group (hydroxyl radical, OH) (redox potential = 2.7V) and strong reducing species (solvated electron,  $e_{aq}^-$ ) (redox potential = -2.9V). Depending on the requirement, one can remove any of these species selectively by employing appropriate radical scavenger and can initiate further reactions leading to modifications of materials of interest. Recently, a group from Chemistry Department of Jadavpur University has shown that their synthesized molybdenum complex can help in radiation-induced DNA damage by modulating the radical

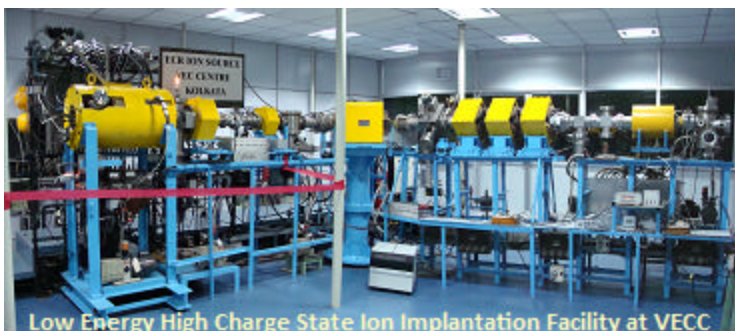
reaction pathways.

Radiation route is considered to be one of cleanest methods for synthesis of a variety of molecular systems, polymers, nanomaterials, hydrogels, etc. Interestingly, in our laboratory, we have demonstrated that gamma irradiation method can be useful for simple, one-pot synthesis of surface-functionalized nanoparticles at room temperature. Further, it is also established as an efficient technique to tailor the particle size and distribution of nanoparticles by controlling radiation dose and dose rates. Microhardness of polymer blends and conductivity of polymer electrolytes can be effectively increased by gamma irradiation. Effects of radiation in the space can be simulated providing testing of radiation detectors, radiation hardness of semiconductor devices, optical coatings, etc. Thus, the gamma source has been put to a variety of multi-disciplinary research use, by the scientists from disciplines like physics, chemistry, zoology, etc. Research

groups interested in the use of this facility may contact Dr A Saha, UGC-DAE CSR, Kolkata Centre (abhijit@alpha.iuc.res.in).

### Low Energy High Charge State Ion Implantation Facility

A low energy heavy ion implantation facility is being developed by VECC in collaboration with the Consortium. This facility utilizes highly charged ion beams available from the ECR ion source at VECC, which are transported through a glaser lens and a scanner to an irradiation chamber. The irradiation chamber is equipped with a High Voltage insulated sample holder. A Glassman power supply provides a negative high voltage on the sample resulting in irradiation by higher energy beams. At present, with this setup, maximum ion beams energy of 35keV per charge state has been achieved. Two trial experiments have been carried out using this facility. In the first experiment D-9 Stainless Steel sample was irradiated with 315 keV



Ar ions. In the second experiment 1cm x 1cm scanned beam of 306 keV Ar ions was used to irradiate polymer samples. Other beams available are C, O, N, He, Ne, Ar, Kr, Xe. There are plans to develop Fe, Ti, Hf and Ni beams in the near future.

More details for the use of this facility may be obtained from Dr. G. S. Taki, VECC (gstaki@veccal.ernet.in) and J.B.M. Krishna

UGC-DAE CSR, Kolkata Centre (jbmk@alpha.iuc.res.in).

- Dr. Praveen Chaddah, F.N.A., F.A.Sc., F.N.A.Sc., Director, UGC-DAE Consortium for Scientific Research, was elected a Member of the Asia Pacific Academy of Materials (APAM), during the General Assembly of the Academy held at New Delhi on November 20, 2008.
- Dr. Alok Banerjee has been selected for the Prof. Y.T. Thathachari Research Award for Science 2008.

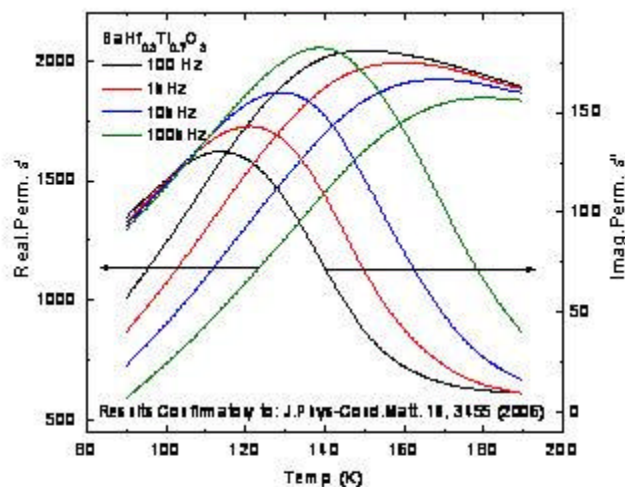
### Impedance Analyzer

Recently, an advanced broadband frequency response analyzer has been commissioned in Thermodynamics Laboratory of the CSR at Indore Centre. The Alpha-A analyzer (from NovoControl Technologies) covers broadest frequency bandwidth, ultra-wide impedance/capacitance ranges, ultra-high phase-resolution, noise-rejection, harmonic analysis, and auto-configuration. The system has been checked with standard specimens, and dielectric characterization carried out on unreported materials from RT down to LN2. The operational facilities for lower (cryogenic) and higher (above ambient) temperatures are nearing completion.

Key features of the set up include:

- Frequency bandwidth---  $3 \times 10^{-5}$  to  $2 \times 10^7$  Hz: low frequencies for characterization of dielectric relaxations, electrochemical and high impedance effects.
- Impedance range---  $10^{-3}$  to  $10^{15}$   $\Omega$  (18 decades) covers conductors to best insulators.

- Capacity range---  $10^{-15}$  F to 1 F allows broadband measurement of capacitances.
- Absolute accuracy for phase ( $2 \times 10^{-3}$  degrees) and loss-tangent ( $3 \times 10^{-5}$ ) of low-loss dielectric materials' broadband characterization.
- Supports non-linear Dielectric, Conductivity and Impedance Spectroscopy.
- Widest sample-temperature window from LHe to  $\sim 900$  °C accessible.



*In-house*



*fabricated sample-cell for permittivity measurements at cryogenic temperatures*

### **National workshop on Radiation Science and applications**

A National workshop on Radiation Science and Applications, jointly organized by UGC-DAE CSR Kolkata Centre and Dept. of Physics, Burdwan University, was held during November 10-13 at the Bardhaman Science Centre. This was done with a view to exploit the cross disciplinary potentials of radiation sciences and also aimed to encourage and familiarise potential collaborators from Universities and Institutes. About sixty-five delegates comprising researchers from Burdwan University, UGC-DAE CSR, VECC, Jadavpur University and a number of young faculties from colleges affiliated to Burdwan and Calcutta Universities attended the workshop.

Prof. S. K. Pradhan, Head Physics Department, Burdwan University, welcomed all the delegates and participants to the workshop, while Prof. Subrata Pal, Honourable Vice Chancellor, Burdwan University, inaugurated the workshop. In his inaugural speech, Prof. Pal highlighted the importance of authentic and quality scientific research for the progress of science and development. In his introductory address, Dr. Praveen Chaddah, Director, UGC-DAE CSR highlighted the role of the Consortium in promoting research, using the DAE facilities, in universities and affiliated colleges. Chief Guest, Dr. R. K. Bhandari, Executive Director, Variable Energy Cyclotron Centre, Kolkata delivered the keynote address where an outline of the

research and developmental work on accelerator science in the country was highlighted. In all there were 18 oral presentations and 25 poster presentations.



Dr. A.V. Pimpale, Centre Director, Mumbai Centre, talked about the applications of neutron scattering techniques for studying static and dynamic properties of different materials e.g., magnetic materials, glasses, plastics etc. Prof. G. C. Bhar, Ramkrishna Mission Vivekananda University discussed about generation of terahertz laser radiations and their social and security applications. Prof. P. K. Sarkar, VECC, Kolkata gave an outline of effect of radiation on biological systems and the philosophy of radiation protection. Dr. N. P. Lalla, UGC-DAE CSR, Indore gave an outline about the usefulness and importance of x-ray diffraction technique in material characterization. A brief overview of production of synchrotron radiation and some novel experiments carried out using the Indus-1 facility at RRCAT, Indore were presented by Dr. S. K. Deb, RRCAT, Indore. Prof. B. C. Sarkar, Physics Dept. Burdwan University talked about different aspects of chaos-based telecommunication. Prof. Sourangshu Mukherjee, Physics Dept. Burdwan University described about an electronic method to make LDR response linear for better signal detection. Prof. P. K. Mallick, Physics Dept. Burdwan University talked about application of Raman spectroscopy to molecular research. An overview of the research facilities at UGC-DAE CSR, Indore was given by Prof. Ajay Gupta, Centre Director, UGC-DAE CSR Indore. Prof. Manoranjan Sarkar, SINP, Kolkata described an EDXRF system developed in his laboratory which can be operated for quantitative analysis without requiring the use of a standard. Dr. A. K. Sinha, Centre Director, UGC-DAE CSR, Kolkata gave an overview about exciting aspects of nuclear science and future research possibilities in the field. Prof. S. K. Pradhan highlighted the application of radiation-based techniques, particularly XRD, for characterization of microstructure of different nanomaterials. Dr. Alok Chakrabarti, VECC, Kolkata described the upcoming radioactive ion beam facility at VECC Kolkata and related R & D work. Dr. D. Das, UGC-DAE CSR, Kolkata gave an overview of the low-temperature high magnetic field facility to be created at the Kolkata Centre. Dr. S. K. Das, VECC, Kolkata discussed about the application of TDPAC technique to get structural information in interesting systems like  $\text{Mo}_7\text{O}_{24}$ ,  $\text{MgB}_2$  and  $\text{TiO}_2$ . Dr. M. K. Das, VECC, Kolkata gave an outline about applications of radioisotope and radiation for therapeutic use and as medicine.

### **Awareness Workshop of UGC-DAE Consortium for Scientific Research**

UGC-DAE Consortium for Scientific Research, Mumbai Centre, in association with the Charotar Institute of Applied Sciences (CIAS, now known as P.D.Patel Institute of Applied Sciences), Education Campus Changa (ECC), Anand, had organized a two-day awareness workshop at Changa during January 8-9, 2009. The main objective of the workshop was to create awareness among scientists and research students from various universities, colleges and other academic institutions on the kind of research that can be carried out using the highly sophisticated research facilities available at the different centres of the Consortium and the Department of Atomic Energy.

A total of 30 participants comprising 20 faculty members and 10 students from various universities and research institutes in the Gujarat region participated in the workshop.



The workshop was inaugurated in the traditional manner by lighting of the lamp by Dr. P. Chaddah, Director, UGC-DAE Consortium for Scientific Research, Mr. M. Patel, and Dr. S.P. Kosta, Director, ECC. Prof. R.V. Upadhyay, Director, CIAS, and local convener for the workshop, welcomed the gathering while Mr. Devang Joshi, Registrar, ECC, briefly outlined the campus activities and courses undertaken at the Institute. Dr. Chaddah explained the purpose of the workshop and hoped that it would induce some of the participating academicians to submit proposals for research. Dr. T.K. Chaudhuri proposed a vote of thanks.

Dr. P. Chaddah, in his Keynote lecture, talked about study of first-order phase transitions in a variety of materials and, using the example of half-doped manganites, showed the importance of studying such transitions using the two thermodynamic control parameters, namely, temperature and magnetic field and elucidated the novel concept of kinetic arrest in the formation of magnetic glass.

The workshop sessions started with a lecture on National Facility of Neutron Beam Research (NFNBR) at Dhruva reactor by Dr. R. Mukhopadhyay, BARC. He gave an overview of the NFNBR and provided details of the spectrometers, both in operation as well as those under development. Using illustrative examples, he showed the kind of science that could be carried using the available spectrometers.

Dr. S.K. Deb from RR-CAT, Indore, gave an introduction to synchrotrons and described the INDUS synchrotron at RR-CAT. He discussed the various beamlines in operation at INDUS-I synchrotron and also those under development on the INDUS-II synchrotron. He also showed results of some recent experiments on the INDUS-I beamlines and hoped that these would fuel interest in the scientific community for greater participation in the experiments.

Prof. Ajay Gupta, Centre Director, CSR Indore gave an overview of the research facilities at CSR Indore and emphasized studies undertaken on thin films and multilayers using x-ray reflectivity and other techniques.

Dr. A. Banerjee, CSR Indore, talked about the low temperature and high magnetic field facility for magnetism research and described the novel and interesting physics of half-doped manganites. Dr. N.P. Lalla, CSR Indore, emphasized the use of TEM techniques in materials research for microstructure and phase characterization in nanomaterials. Dr. A.V. Pimpale, Centre Director, CSR Mumbai, outlined the basic aspects of neutron scattering in condensed matter and also described the facilities available at the Mumbai Centre. Dr. S.K. Deshpande, CSR Mumbai spoke on analysis of powder diffraction data and applications of dielectric spectroscopy. Dr. V. Siruguri, CSR Mumbai, described the neutron powder diffractometer with special sample environment of low temperature and high magnetic field installed by CSR Mumbai at Dhruva reactor with some applications for determining chemical and magnetic structures. Dr. P.S. Goyal, Pillai Institute, Navi Mumbai, talked about application of small angle neutron scattering (SANS) technique to soft condensed matter. Prof. R.V. Upadhyay, CIAS Changa, described his studies on ferrofluids using SANS techniques. Dr. G. Ghosh, CSR Mumbai, described the technique of dynamic light scattering with some applications to colloidal particles and gels.

During the concluding session, the participants were appreciative of the lectures during the course of the workshop and also thanked the local organizers for their excellent hospitality. Prof. S.G. Shah, Deputy Director, Academics, ECC gave away certificates to the participants.

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## Ashwani Kumar (1965-2008)

Dr. Ashwani Kumar passed away in Indore on 17<sup>th</sup> May, 2008. At the peak of his academic career, his life was cut short by a tragic road accident when he was hit by a speeding bus while returning from work. His death has left us stunned in grief.



Ashwani did his Ph.D. at UGC-DAE Consortium for Scientific Research (CSR) at Indore. His was the first Ph.D. thesis from the institute in 1997. He worked on EXAFS studies of chalcogenide glasses for his thesis. After finishing Ph.D., Ashwani worked in I.I.Sc, Bangalore, Fritz-Haber-Institute in Berlin, RRCAT, DAVV, Indore.. Later, at the IPS Academy, Indore he joined hands with Prof. B. Saraf to set up different innovative experiments related to physics education.

A great quality of Ashwani that contributed to his success in his academic career was his abundant energy for performing hard work and a profound commitment to research and teaching. Besides being an excellent scientist, his humane nature endeared him to all. His sad demise is an irrecoverable loss to his relatives and friends. Ashwani is survived by his wife Prof. Meeta Jain.



## Superannuation:

**Mr. C.M. Baphana** had joined the consortium's Indore Centre on September 12, 1991 as Administrative Officer (Stores). He was responsible for all work related to purchase of scientific instruments and other items, maintaining stock register, etc. Since he joined the Consortium at its initial stages, he was involved in framing and setting in motion the procedures for purchase of the equipments as per the government rules where he has made appreciable contributions. At times, he has also handled the purchases of other centre's requirements. Apart from his routine work, he also took active interest in many other activities like auditing, workshop arrangements, annual day function etc.



Mr. Baphana has superannuated from the Consortium on November 30, 2008. The staff and students will remember his contributions to the development of this Consortium for a long time and wish him and his family a very healthy, pleasant and peaceful life ahead.

## New Faculty:

**Dr. Dileep Kumar Gupta** joined Indore Center of CSR in Sept 2008 as Scientist-D.



After completing MSc from Aligarh Muslim university, Dileep joined CSR, Indore for research in 2002. He got his PhD in 2007, for his thesis on *magnetic ultra thin films and multilayers* which he studied with an aim to emphasize the effect of surface and interface roughness on magnetic, transport and magneto-transport properties. This work was done under the supervision of Prof. Ajay Gupta (Center Director, Indore Center). After his Ph.D, he joined the Nuclear Resonance Scattering Group of European Synchrotron Radiation Facility (ESRF), Grenoble, France as Post-Doctoral Fellow. Here his main motivation was to make nuclear resonance scattering (NRS) depth resolved under  $x$ -ray standing wave conditions in order to study interface structures in terms of the diffusion, alloying and mixing in magnetic multilayer systems.

**Dr. Sudhir Kumar Pandey** joined Indore Center of CSR in Oct. 2008 as Scientist-D.



After completing MSc from Jawaharlal Nehru University, New Delhi in 2002, Sudhir joined CSR as a research student. He obtained his Ph.D in 2007 for his work on *Structural and electronic studies of perovskite type transition metal oxides* under the supervision of Dr. A V Pimpale. After his Ph.D., he joined Tata Institute of Fundamental Research, Mumbai (2007-2008) for his post doctoral work with Dr. Kalobaran Maiti. He studied the spin state transitions in cobaltates using high resolution PES and *ab initio* electronic structure calculations. He also studied the electronic and magnetic properties of quasi-one-dimensional spin-chain systems using electronic structure calculations. His current research is towards understanding the role of spin, orbital, charge and lattice degrees of freedom in correlated electron systems.

## CSR Indore Centre participates in teaching the MPhil Course of DAVV Indore

For several years now, the students of M.Sc., M.Phil., and BE from various universities and colleges have been carrying out their project work, or undergoing their summer training under the guidance of CSR faculty. Last year, CSR Indore Centre decided to participate in the teaching of ongoing MPhil programme of School of Physics, Devi Ahilya Vishwavidyalaya (DAVV), Indore. To facilitate CSR participation, the M.Phil. Syllabus was revised to include some advanced topics in basic physics and materials characterization. The various research facilities of the Consortium were also made available for the laboratory course. Almost all the faculty members of the Centre were involved in offering three specialized classroom courses and a laboratory course in the first semester. Other courses of the programme were offered by the faculty of School of Physics. Some of these students are now carrying out their research projects (second semester) in the Consortium.

### Talks given by CSR Faculty:

1. Traversing  $T$  and  $H$  using liquid helium – phase transition studies, P. Chaddah and A Banerjee, Talk at SBNBCBS Symposium to commemorate 100 years of helium liquefaction (July 2008).
2. Structural studies of few perovskites using Electron microscopy and diffraction, N.P.Lalla, at Department of Physics, Pune University (July 2008).
3. Studies on phase transitions-traversing  $T$  and  $H$  using liquid helium, P Chaddah, at National Physical Laboratory (September 2008).
4. Study of magnetic materials with nanometer depth resolution, Ajay Gupta at the Discussion Meeting on Nano-science with Nanosized high energy Photon Beam during (September 2008).
5. Series of lectures on Interface studies in multilayers , Ajay Gupta at S.N.Bose National Centre for Basic Sciences under distinguished lecturer programme (September 2008).
6. Glass-like metastabilities across magnetic transitions -- our results and some new concepts, P Chaddah, at IIT Kanpur (October 2008).
7. Electronic properties of Complex Metals, S. R. Barman, at TASC Laboratories, INFN, Trieste, Italy on (October, 2008).
8. Materials and their applications at Nanoscale, G S Okram, at UGC sponsored Special School in Basic Sciences, organized by Department of Physics and Academic Staff College, Manipur University, Imphal, (October 2008).
9. Nanocrystalline Nickel, at UGC sponsored Special School in Basic Sciences, G S Okram, organized by Physics Department and Academic Staff College, Manipur University, Imphal, (October 2008).
10. What is Nano material?, G S Okram, Paradise English School, Thoubal, Manipur, (October 2008).
11. Materials applications at Nanoscale, G S Okram, organized by Physics Department, Dhanamanjuri College of Science, Manipur University, Imphal, (October 2008).
12. Materials at Nanoscale, G S Okram, at Department of Chemistry, Manipur University, Imphal, organized by Department of Chemistry, Manipur University in association with Manipur Association for the Promotion of Science, (October 2008).
13. Thin film facilities at UGC-DAE CSR, Indore, D.M. Phase, at National Seminar on Thin film techniques (TFT08) held at Solapur University (November, 2008).
14. Spectroscopy of Nearly Spherical Nuclei using the Indian National Gamma Array, S S Ghugre, at Cyclotron Institute, Texas A & M University, College Station, Texas (November 2008).
15. Amorphous and nanocrystalline soft-magnetic thin films, Ajay Gupta at International Conference on Advances in Nano-Technology ( November, 2008).
16. Pulsed laser deposition of magnetite thin films on different substrates, D.M. Phase, at Saurashtra University, Rajkot (December, 2008).
17. A high resolution neutron diffractometer with special sample environment for structural studies, Vasudeva Siruguri, Invited Talk at 53rd DAE Solid State Physics Symposium, (December 2008)

18. Atomic diffusion in thin films and multilayers, Ajay Gupta, Invited Talk at DAE Solid State Symposium, Mumbai (December 2008)

### Talks given at CSR:

1. Electro-Exploded Metal Nanoparticles: Some Properties and Applications, Prof. Prasenjit Sen, JNU (N. Delhi) at Indore centre.
2. Pseudogap Behavior of Phase Separated CMR Systems: A Comparative Photoemission Study with Double Exchange, Dr. B. Raja Sekhar, Institute of Physics (Bhubaneswar).
3. Exotic Quantal Rotation: Wobbling, Chirality and Octupole Condensation, Prof. Umesh Garg, Department of Physics, University of Notre Dame, Notre Dame, USA.
4. Resistive Switching Behavior in Diluted Magnetic Semiconductor System Co: TiO<sub>2</sub>, Dr. S.B. Ogale NCL, Pune.
5. Functional Nanomaterials: Shapes, Forms, and Functions, Dr. S.B. Ogale, NCL, Pune.
6. Controlled Phase Formation by Energetic Ion Beams, Dr. Dinakar Kanjilal, IUAC, N. Delhi.
7. A Novel Cluster Aggregation Technique for Surface-Functionalized Nanoclusters, Dr. Ovidiu Crisan, National Institute for Materials Physics, Romania.

### Following students of the Consortium obtained their PhD during July-December 2008

Student	Thesis Title	University	Supervisor
Shilpa Tripathi (Indore Centre)	Synthesis and investigation of electronic and structural properties of Si/Ge thin film nanostructures	DAVV, Indore	Dr. T. Shripathi
Anupam Sharma (Indore Centre)	Investigation of magnetic, electronic and transport properties of Co and Co/Semiconductor thin films	DAVV, Indore	Dr. T. Shripathi
Ranjeet Brajpuriya (Indore Centre)	Fe/Al multilayer system: Synthesis and investigation of its structural, magnetic and electronic properties	DAVV, Indore	Dr. T. Shripathi
Ajay Shukla (Indore Centre)	Electronic structure and growth of metals on quasicrystalline and crystalline surfaces	DAVV, Indore	Dr. SR Barman
S. Kavita (Indore Centre)	Study of FePt and CoPt alloys exhibiting huge magnetic anisotropy	DAVV, Indore	Prof. Ajay Gupta
Samrat Mukherjee (Kolkata Centre)	Microstructural, magnetic and hyperfine characterization of iron and iron oxide based nanocomposites	Jadavpur University	Dr.D.Das
Sandeep Kumar Chaudhuri (Kolkata Centre)	Radiation damage in detector grade silicon irradiated by oxygen ions and fabrication of radiation hardened silicon surface barrier detectors	Jadavpur University	Dr.D.Das
Anagha Choudhury (Kolkata Centre)	Spectroscopy of Nearly Spherical Nuclei at Higher Angular Momentum	University of Calcutta	Dr S S Ghugre and Prof S. Sarkar (BESU)
Sudatta Ray (Kolkata Centre)	Nuclear Structure Studies in 90 < A > 100 Region by in-beam gamma ray spectroscopy	University of Calcutta	Dr S S Ghugre
Amiya Priyam (Kolkata Centre)	Some Selected Cadmium Chalcogenide Nanoparticles: Synthesis and its Applications in Biological Systems	Jadavpur University	Dr. Abhijit Saha
Anindita Chatterjee (Kolkata Centre)	Synthesis and Characterization of some selected Group-11 B Sulphide Nanoparticles and its Biological Applications	Jadavpur University	Dr. Abhijit Saha

### Foreign Visits : Employees / Students July 08 to December 08

Sl. No	Name	Place visited	Date from	Date to	Purpose
1	Ms. Vaishali Phatak	ESRF, Grenoble, France and Clausthal University of Technology	6.7.08	10.9.08	For experiments in the area of material science.
2	Ms. Swati Pandya	RAI Congress Center in Amsterdam, Netherlands	6.8.08	13.8.08	To attend 25th International Conference on Low Temp. Physics.
3	Dr. S. R. Barman	FHI Berlin	01.10.08	01.11.08	For performing synchrotron experiments on electronic structure of thin metal films.
4	Mr. R. S. Dhaka	FHI Berlin	01.10.08	01.11.08	For performing synchrotron experiments on electronic structure of thin metal films.
5	Mr. Sunil D'souza	FHI Berlin	01.10.08	01.11.08	For performing synchrotron experiments on electronic structure of thin metal films.
6	Dr S S Ghugre	Argonne National Laboratory, IL, USA and Nuclear Structure Laboratory, at the University of Notre Dame, IN, USA.	03.11.08	30.11.08	To participate in the experiment Search for Chiral Bands in $^{133}\text{Ce}$ : Testing the Theoretical Predictions and Affirming Chiral Behaviour in the A ~130 Region.
7	Mr. Ajay Soni	Biopolis, Singapore	3.11.08	7.11.08	To attend the 2008 Asian Conference on Nanoscience and Nanotechnology.
8	Ms. Parasmani Rajput	Abdus Salam International Centre for Theoretical Physics, Trieste, Italy	10.11.08	21.11.08	For participating in the Joint ICTP-IAEA Workshop on the training in Basic Radiation Effects Studies and Development of Advanced Radiation-Resistant Materials.
9	Dr. Mukul Gupta	Paul Scherrer Institut (PSI), Viligen, Switzerland & ESRF, Grenoble, France	17.11.08	15.12.08	For experiments at SINQ neutron scattering facility and at the ESRF.
10	Ms. Ranjeeta Gupta	ESRF, Grenoble, France	09.11.08	16.12.08	For using the beam time.
11	Prof. Ajay Gupta	ESRF, Grenoble, France	22.11.08	16.12.08	For doing experiments at three different beamlines.
12	Dr. Dileep Kumar	ESRF, Grenoble, France	28.11.08	15.12.08	For using the beam time.
13	Ms. S. Kavita	ESRF, Grenoble, France	5.12.08	15.12.08	For using the beam time.
14	Dr. V. Raghavendra Reddy	National Institute of Materials Physics, Bucharest, Romania	07.12.08	20.12.08	For discussing about the achieved results within the Bilateral Agreement.
15	Mr. Satish Potdar	National Institute of Materials Physics, Bucharest, Romania	07.12.08	20.12.08	To participate in EXAFS measurements.



CSR news:

- 691 users availed the access to various in-house research facilities of the three centres of the consortium during 2007-08.
- 111 ongoing collaborative research schemes with various university groups at the three centres of the consortium during the year 2007-08.
- During the same period, there were about 200 publications in refereed journals and 104 presentations in conferences / symposia.

For more details see [http://www.csr.ernet.in/csr/annual/annualreport\\_2008.pdf](http://www.csr.ernet.in/csr/annual/annualreport_2008.pdf)

Ms. J. Mona, Fergusson College, Pune, was awarded best poster award (1st Prize) at the DAE-BRNS International Symposium on Materials Chemistry (ISMC-2008), Mumbai held during December 2-6, 2008. She has extensively used the CSR facilities.

Details at [http://www.csr.ernet.in/csr/ar/ar\\_user.html](http://www.csr.ernet.in/csr/ar/ar_user.html)