



Issue - 37  
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Jawaharlal Nehru Centre for Advanced Scientific Research

Jakkur P.O., Bangalore-64

(A Deemed to be University)

# JNC

# NEWS

## *Focus*

*Dear Colleagues*

*It is heartening to see that the Centre continues to make significant progress in all spheres of academic and research activities.*

*Scientists in the Centre have received several prestigious awards in recognition of their contributions in their respective areas of research. Prof CNR Rao has been awarded with several honors as acknowledgement to his contributions in Science research and education, one such award is H K Firodia Lifetime Achievement Award, 2011. It is a matter of great pride that Prof S Balasubramanian, CPMU has been selected for the prestigious CSIR S S Bhatnagar award for 2011 in Chemical Sciences for his contributions in the field of chemistry.*

*The Centre continues to expand its formal ties with research organizations in India and abroad. Several of our inventions have been granted with national and international patents. Licensing of our inventions have also shown the application-oriented research flavor of our Centre.*

*The Science Outreach Program has become an important academic component of the Centre. Many school children and teachers were exposed to the excitement of Science through various programmes at the Centre.*

*The Centre has also witnessed a phenomenal growth in the infrastructural facilities for both scientific and student activities with enthusiastic support from Department of Science and Technology (DST).*

**M R S Rao**

President

### *inside this issue...*

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## From The Editor's Desk

The progress in the academic front has been very impressive. The current student strength has reached 265. 65 students joined the Centre during August session of 2011. 18 students have been awarded Ph D, 6 with M S (Engg), 2 with M S (by research) and 9 with M S (in Materials Science) degrees.

Under SRFP and JNC-CCSTDS fellowship programme 2011, 62 and 5 fellowships have been utilized respectively. 11 fresh fellowships under POCE have been offered and 10 students were shortlisted under the POBE programme, out of which 10 in POCE and 9 students joined the POBE Programme on 16th May 2011. Batch of 2009 have received their Diploma in Chemistry and Biology and the batch of 2010 returned for their training during this period to work under their respective faculty in the Centre. So far, 26 students have received the Diploma certificate in Chemistry and Biology each. For 2011-12, the Centre had received 16 applications for the Visiting Fellowship Programme; 7 have been selected under the Physical Sciences category and 3 under the Biological Sciences category.

In the newly launched programme - Post Graduate Diploma in Science Education (PGDSE) students have joined and presently undergoing their course work in the Centre. This programme is presently offered in the areas of Chemistry, Physics and Biology.

ICMS has launched an Annual Materials Lecture titled "Sheik Saqr lecture", (an international lecture series), Prof J M D Coey, Trinity College, Ireland has delivered the first lecture. A short term Visiting Fellowship Programme has been launched by ICMS for 3 to 10 teachers and research scholars to help the best of young researchers and teachers to obtain appropriate exposure to research. Recently, an MoU has been signed with RMIT University, Australia

C N R Rao Hall of Science and Education Technology Unit (ETU) organized the program to award the Prizes for Outstanding Science Teachers for the year 2010 donated by the C N R Rao Education Foundation. Shri Arvind Gupta and Mrs M S Prabhavathi were awarded the prizes. ETU and C N R Rao Hall of Science in association with the Oracle Education Foundation organized and conducted a lecture program 'Chemistry for students and teachers'. 220 Students and teachers participated in the program which was part of the IYC-2011 celebrations.

The book titled 'Chemistry Today' and 'Nanoworld' were translated into Kannada by ETU for distribution to schools and colleges. National Book Trust has published the first edition of the Hindi version of the Book 'Understanding Chemistry', 'Rasayan Vigyan Ki Duniya'. The book titled 'Climbing the Limitless Ladder' was translated into Kannada and published by the Karnataka Rajya Vijnana Parishath which has published the book in Kannada and was released on October 24, 2011.

Few of the major research findings in the recent past were:

**Flattening Gold Nanoparticles:** In a paper published in *Journal of American Chemical Society (JACS)*, Nisha Mammen and Shobhana Narasimhan, together with Stefano de Gironcoli, have suggested a novel and practicable way of changing the morphology of gold nanoparticles deposited on a metal oxide substrate, by doping the oxide with atoms of another metal. This can increase catalytic efficiency by changing the particle shape from three- to two-dimensional. Very recently, experiments in the group of Prof H J Freund, Department of Chemical Physics, Fritz-Haber-Institut der Max-Planck-Gesellschaft, Berlin, have shown the proof of this concept.

**Soaking up greenhouse gases:** In a paper published in *ChemSusChem*, 2011 (doi: 10.1002/cssc.201100197), Prof C N R Rao and Prof Umesh Waghmare have shown that an inorganic compound containing boron, carbon and nitrogen could absorb carbon dioxide (CO<sub>2</sub>) and methane



(CH<sub>4</sub>) – two greenhouse gases (GHGs) that contribute to global warming. This graphene-like layered compound may open up novel ways to reduce the levels of greenhouse gases in the atmosphere (Source: Nature India: *Research Highlights*).

**Cloud in the lab:** Cloud modelling is the largest source of uncertainty in climate change, and remains a weak link in tropical circulation models. Work carried out at EMU (Narasimha, Diwan, Subrahmanyam, Sreenivas and Bhat *PNAS* 108:16164-9) simulates, for the first time, cumulus cloud form, evolution and entrainment in the laboratory. It shows that diabatic heating provides the long-sought missing link between cloud microphysics and macrodynamics, and its inclusion is likely to make cumulus models more effective.

**Invention of a method to fabricate grating structures on bulk graphite to produce graphene ribbons** (Researchers: *Prof Giridhar U Kulkarni, Narendra Kurra and Abhay A Sagade, CPMU*): The electronic properties of graphene can be tuned from semi-metallic to semiconducting if the lateral dimensions are reduced to a few tens of nanometers. A method to fabricate grating structures on bulk graphite has been invented from which multi- or few layer graphene ribbons can be sourced repeatedly by lift-off (Source: *Advanced Functional Materials*, 2011 ; doi: 10.1002/adfm.201100832).

**Two-faced liquid silicon:** In a paper published in *Nature Physics* (doi: 10.1038/NPHYS1993) Prof Srikanth Sastry, Vishwas V Vasisht, Shibu Saw, Theoretical Sciences Unit, have reported that liquid silicon can actually transform between two different 'phases' – one at low temperature and pressure and one at high temperature and pressure. The finding may suggest novel avenues for making silicon in the crystal phase as well as different forms of amorphous silicon. The possibility of the multiple liquid states into which silicon may transform, in addition to being in the crystal phase, may also have implications for device applications (Source: Nature India: *Research Highlights*).

## SHORT TERM APPOINTMENTS

### Visiting Scientist

Dr Manish Kumar Niranjana (CCMS)  
 Dr Ahsanulhaq Qurashi (CCMS)  
 Dr Jayee Bhattacharya (CCMS)  
 Dr Rupashree Shyama Ray (CCMS)  
 Prof Suchismita Guha (CPMU)  
 Prof G L Brown (EMU)  
 Dr V Kartik (EMU)  
 Dr Ishan Sharma (EMU)  
 Dr Nahla Ali (MBGU)  
 Dr Sugata Mukherjee (TSU)  
 Dr Cristina Sissa (TSU)  
 Dr Apoorva Nagar (TSU)

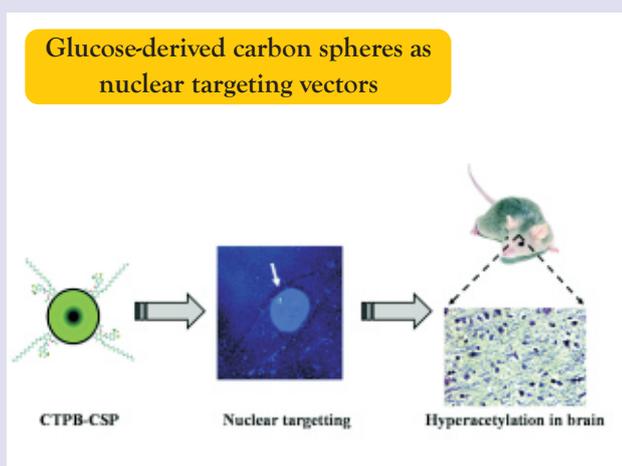
### Visiting Scholars

Mr Shantanu O Mundhada (CCMS)  
 Mr Shivam Upadhyay (CCMS)  
 Mr Sumant Upadhyay (CCMS)  
 Mr Shuvodeep De (EMU)  
 Mr Kunnal Soni (EMU)  
 Mr Soumalya Joardar (EMU)  
 Mr Nitesh Kumar Sinha (EMU)  
 Mr Juan Angel Tenderso Ventanas (EMU)  
 Ms Nabanita Saikia (ICMS)  
 Ms Anisha Dutta (ICMS)  
 Mr Blake Plowman (ICMS)

### Research Associates

Dr Shalini Prabhu  
 Dr Jolly Deb  
 Dr Rakesh Voggu  
 Dr K K R Datta  
 Dr Amol Marut Rao Marathe  
 Dr Abhishek Baghela  
 Dr Thirtankar Datta

## Intellectual Property



Patent applications have been filed for several of our inventions, 6 in India, 3 in PCT, 3 in US, 1 each in Europe and Japan. Out of the filed patent application 1 has been granted in India, one in Europe, one each in US and US Divisional. The Centre is actively pursuing licensing of inventions/technologies and considerable progress has been made. Recently three inventions [viz., (a) *Bulk heterojunction/electrolyte polymers as novel biocompatible photoactive multi color-sensing technology* by Prof K S Narayan, (b) *A novel chemical method for SWNT (single-walled carbon nanotube) separation using a coronene tetracarboxylic acid-based small molecule* by Prof C N R Rao, and (c) *Manufacturing strain sensitive sensors and/or strain resistant conduits from a metal and carbon matrix* by Prof G U Kulkarni] have been licensed to Invention Venturists.

### Research Associates (Provisional)

Mr Snigdhadip Dey  
Mr J M Pradeep Kanth  
Ms Divya Srivastava

**DST Ramanujan Fellow**  
Dr Ujjal K Gautam (NCU)

## ENDOWMENT LECTURES

**DAE Raja Ramanna Lectures in Physics 2011:** "Solving Quantum Field Theory using Black Holes in one higher dimension" Prof Spenta R Wadia, Director, International Centre for Theoretical Sciences, TIFR, Mumbai. Prize Lecture: "Condensed Matter Physics with Cold Atoms: From Bose Condensation to Synthetic Non-Abelian Gauge Fields" Prof Vijay B Shenoy, Associate Professor, Centre for Condensed Matter Theory, Department of Physics, IISc, Bangalore, September 30, 2011.

**Prof V Ramalingaswami Memorial Lecture,** "The Inside Story of the Impoverished Gut", Dr Gopinath Balakrish Nair, Director, NICED, Kolkata, July 8, 2011.

**Prof C N R Rao Oration Award Lecture 2011:** "Modifying materials for super-efficient Solar Cells and Light Emitting Diodes", Prof S M Shivaprasad, Chemistry and Physics of Materials Unit, JNCASR, August 5, 2011.

**ISAAC Newton Lecture:** "From Volta to Lithium and Beyond", Prof Jean Marie Tarascon, Professor of Chemistry, Université de Picardie Jules Verne, Amiens, France, August 22, 2011.

**ISRO - Satish Dhawan Lecture 2011:** "Lords of 33 villages: Mysore under the Wodeyars", Mr Vikram Sampath, October 14, 2011.

**ICMS Sheik Saqr Materials Lecture:** "Dilute Ferromagnetic Oxides and d-zero Magnetism; what can we believe?" Prof J M D Coey, School of Physics and CRANN, Trinity College, Dublin 2, Ireland, October 20, 2011.

**Special Lecture:** "Lattice kinetic theory across scales: from fluid turbulence to electron flows in grapheme", Prof Sauro Succi, Research Director, IAC-CNR, Rome, Italy, October 24, 2011.

## FLUID DYNAMICS COLLOQUIA

"Concentration Dependent Dynamics Of Semi-Dilute DNA Solutions", Dr J Ravi Prakash, Department of Chemical Engineering, Monash University Melbourne, Australia, July 8, 2011.

"Long-range spatial correlations in sheared colloidal glasses" Dr Vijayakumar K Chikkadi, Institute of Physics, University of Amsterdam, The Netherlands, August 10, 2011.

"Modelling bistability of mid-latitude atmospheric jets", Dr Manikandan Mathur, Laboratoire des Ecoulements Géophysiques et Industriels, Grenoble, France, August 19, 2011.

"Serrated flow in nanotether formation from vesicles", Dr B Ashok, Advanced Centre of Research in High Energy Materials (ACRHEM), University of Hyderabad, Hyderabad, August 16, 2011.

"Multiphase Lattice Boltzmann simulation of buoyancy-driven flow of two immiscible fluids in an inclined channel", Dr Kirti Chandra Sahu, Department of Chemical Engineering, Indian Institute of Technology Hyderabad, October 3, 2011.

"Stability of spinning, self-gravitating, rubble-pile asteroids", Prof Ishan Sharma, Assistant Professor, Department of Mechanical Engineering, IIT, Kanpur, November 11, 2011.



## WORKSHOP / SYMPOSIA

Afro-Asia Workshop on Advanced Topics in Chemistry, June 13-17, 2011.

TSU In-House Symposium, August 4, 2011.

## SEMINARS

"The onset of rigidity in a loose granular pack under compression", Dr Mahesh M Bandi, School of Engineering and Applied Sciences, Harvard University, Cambridge, USA, June 14, 2011.

"Novel Phases at Magnetic instability and Multipolar ordering", Dr Hirale S Jeevan, Physikalisches Instiut, Gottingen, Germany, June 17, 2011.

"Challenges in Materials Science of Sodium Cooled Fast Reactors and Fuel Cycle: Approaches" Dr Baldev Raj, President, Indian National Academy of Engineering President-elect, International Institute of Welding, June 24, 2011.

"The Rb-E2F Transcriptional Regulatory Pathway in Tumor Growth, Stemness and Metastasis: Novel Targets for Drug Discovery", Dr Srikumar P Chellapan, Prof & Chair, Dept. of Tumor Biology, Senior Member, H. Lee Moffitt Cancer Center and Research Institute, Tampa, FL 33612, June 29, 2011.

"Magnetocaloric effect and magnetic cooling near a field-induced quantum-critical point", Dr Deepshikha Jaiswal-Nagar, Physics Institute, Goethe University, Frankfurt, June 28, 2011.

"The Helium Ion Microscope: Technology Introduction", Dr Mohan Ananth, Carl Zeiss NTS, LLC, July 4, 2011.

"Non-affine droplets and deformation of crystalline solids", Prof Surajit Sengupta, Centre for Advanced Materials, Indian Association for the Cultivation of Science, Jadavpur, Kolkata, July 5, 2011.

"Recent Development in Detector Technology for Single Crystal X-ray Diffraction system, Single Crystal X-ray Diffraction" Dr Eric Hovestreydt, M/S Bruker AXS GmbH, Germany, July 8, 2011.

"Inorganic Functional Materials for Selected Applications: From Bio to Energy, Materials Division", Prof R Vijayaraghavan, School of Advanced Sciences, VIT University, TN, India, July 18, 2011.

"Structure-Property Relationship in Materials using Electron beam techniques", Dr Balaji I Birajdar, University of Erlangen-Nürnberg, Germany, July 19, 2011.

"Nanoscale chemical composition mapping at 100 nm spatial resolution with AFM-based infrared spectroscopy", Dr Curtis A Marcott, President of the Society of Applied Spectroscopy, July 19, 2011

"New approaches for the preparation of nanoparticle dispersions and superlattices", Dr B L V Prasad, Scientist, Materials Chemistry Division, National Chemical Laboratory, Pune, July 22, 2011.

MBGU Seminar, Dr. Sankar Bhattacharya, Institute of Pathology, Wuerzburg University, Germany, July 25, 2011.

"Self-Assembly Strategies for Charge Transport", Prof D Venkatraman, Department of Chemistry, University of Massachusetts, Amherst, August 1, 2011.

Indo-German conference on pathogenic fungi, JNCASR, 01 - 03 August, 2011.

"3he In Aerogel: A Dirty Superfluid", Dr Priya Shrama, Leverhulme Early Career Fellow, Royal Holloway University of London, Egham, Surrey, UK, August 5, 2011.

"Imaging protein activity in living cells: Src kinases at the leading edge", Dr Akash Gulyani, Department of Pharmacology, University of North Carolina, Chapel Hill, August 9, 2011.

"Electronic structure of the iron pnictide superconductors  $Ba_{1-x}K_xF_2As_2$  using laser photoemission spectroscopy", Dr Chainani Ashish Atma, RIKEN( Institute of Physics and Chemistry) Spring-8 Center, Japan, August 9, 2011.

"Multiscale materials modeling toward sustainable energy applications", Dr Mukul Kabir, Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, August 9, 2011.

"Charge storage in water and electrostatic charging with water", Prof Fernando Galembeck, Instituto de Química Universidade Estadual de Campinas Brazil, August 17, 2011.

"Wave Scattering by Stratification and Topography", Dr Manikandan S Mathur, LMD, Ecole Polytechnique, Palaiseau, France and LEGI, Grenoble, France, August 22, 2011.

"Hydrogen Bond Dynamics of Water Probed with Ultrafast Nonlinear IR Spectroscopy", Krupa Ramasesha, Tokmakoff Group, Department of Chemistry and George R Harrison Spectroscopy Laboratory Massachusetts Institute of Technology Cambridge, August 22, 2011.

"Nonuniversal tunneling resistance at the quantum critical point of mesoscopic SQUID array", Dr Sujit Sarkar, PPISR, September 2, 2011.

"Role of transcription factor NFATc1 in survival, immunoglobulin class switch and regulatory capacity of B lymphocytes", Dr Sankar Bhattacharyya, Department of Molecular Pathology, Institute of Pathology, University of Wuerzburg, Germany, September 5, 2011.

“Advances in Actuation and Sensing for Atomic Force Microscopy: Applications to Video Rate AFM and High Speed, Minimally Invasive Imaging”, Dr V Kartik, Visiting Faculty, JNCASR, Bangalore, September 6, 2011.

“Engineering nanopore sensors: laying the foundations of personal genomics”, Dr Swati Bhattacharya, University of Illinois, Urbana-Champaign, September 12, 2011.

“Boundary Conditions in CFD”, Prof S M Deshpande, JNCASR, Bangalore, India, September 15, 2011.

“Pattern, Designing, Measuring, and Controlling Molecular and Supramolecular Assemblies”, Dr Bala Krishna, California Nanosystems Institute, September 15, 2011.

“Perfect transmission and perfect absorption/anti-lasers”, Prof Subhasish Dutta Gupta, School of Physics, University of Hyderabad, September 16, 2011.

“Stratification dogmata”, Prof Rama Govindarajan, JNCASR, Bangalore, India, September 27, 2011.

“A unified picture of hydrogen bonding and of proton transfer”, Prof Ross McKenzie, Physics Department, University of Queensland, Brisbane, Australia, October 7, 2011.

“Exiting the cells without entering the secretory pathway”, Prof Vivek Malhotra, ICREA Research Professor, Group Leader and Coordinator of the Cell & Developmental Biology Programme at the Centre for Genomic Regulation (CRG), Barcelona, Spain, October 20, 2011.

“Frustrated lattice Boltzmann models for soft-flowing materials”, Prof Sauro Succi, Research Director, IAC-CNR, Rome, October 25, 2011.

## OTHER PROGRAMMES

### Hindi Week Celebration

Hindi Week was celebrated from 12-16<sup>th</sup> September 2011. Series of events were organized on this occasion such as Hindi workshop, Hindi noting and drafting competition, Essay writing, Debate, etc.

### Vigilance Awareness Week

The Vigilance Awareness Week was observed in the Centre from 31<sup>st</sup> October to 5<sup>th</sup> November, 2011. A talk has been organized on 4<sup>th</sup> November 2011 by Prof Narendar Pani, Professor, School of Social Sciences, National Institute of Advanced Studies, Indian Institute of Science Campus, Bangalore on “Ideologies of Corruption”.

## HONOURS RECEIVED BY FACULTY / HONORARY FACULTY / STAFF

### Prof C N R Rao

H K Firodia Lifetime Achievement Award, 2011

Kelly Lecture, Cambridge University (2009)

The First International Prize for Materials Science by MRSI (India) (2009)

A.D. Little Lectures in Chemistry, Massachusetts Institute of Technology (2010).

Honorary Fellow, Chinese Chemical Society, China (2010).

First PC Ray Lecture, IACS Kolkata (2010).

Doctorate of Science (*Honoris Causa*) from the University of Liverpool (2010).

EDGE Award for leadership in education (2011).

D.Litt. by Karnataka State Open University (2011)

Distinguished Lecture, Waterloo Institute of Nanotechnology.

D.Sc. (*Honoris Causa*) by SRM University, Chennai and Punjab University.

### Prof M R S Rao

Prof N Appaji Rao Best Mentor Award.

Elected as the Fellow of the National Academy of Medical Sciences (India).

### Prof Roddam Narasimha

National Leadership Award for S&T (2010) by L.Singhania-IIM Lucknow.

Distinguished Alumnus Award, University Visvesvaraya College of Engineering, Bangalore.

H K Firodia Award 2011 for Excellence in Science & Technology.

### Prof V Krishnan

IISc Distinguished Alumnus Award for the year 2011.

CRSI Gold Medal.

### Prof Amitabh Joshi

Young National Leadership Award for S&T (2010) by L. Singhania-IIM Lucknow.

J C Bose National Fellowship, 2011.

### Prof G U Kulkarni

MRSI-ICSC Superconductivity and Materials Science Annual Prize -2011.

### **Prof S M Shivaprasad**

Prof C N R Rao, Oration Award for 2011.  
MRSI's Superconductivity and Materials Science Award for 2011 (to be presented in Feb 2012).

### **Prof S Balasubramanian**

CSIR S S Bhatnagar Award for the year 2011.

### **Prof Shobhana Narasimhan**

Fellow of the National Academy of Sciences of India.  
Appointed to be on the Governing Council of the Malaviya National Institute of Technology, Jaipur.  
Appointed to the Physical Sciences Research Council of CSIR.

### **Prof A Surolia**

Themis Chemicals UICT Diamond Jubilee Distinguished fellow in Pharmaceutical Science (2010-2011);  
11<sup>th</sup> Smt. Pushpa Sriramachari Foundation Day Oration Award (2011),  
Institute of Pathology (ICMR)  
Thomson Reuters Innovation Award (2010);

### **Dr Subi J George**

Associate of Indian Academy of Sciences.

### **Dr T Govindaraju**

Associate of Indian Academy of Sciences.

### **Prof S Yashonath**

Fellowship of Indian National Science Academy, 2011.

### **Prof S Chandrasekaran**

President, Chemical Research Society of India (April 2011- March 2013).  
Doctor of Science (*Honoris Causa*), North Bengal University, Siliguri.  
Honorary Professor, IISc.

### **Prof Amitabha Chattopadhyay**

Elected as Handling Editor, the *Journal of Neurochemistry* (Wiley-Blackwell).  
Elected as Member, Editorial Advisory Board of the *Journal of Physical Chemistry* (ACS publication).

### **Prof Manmohan Sharma**

Hari Om Ashram Senior Scientist Award, Physical Research Laboratory, Ahmedabad.

### **Prof R A Mashelkar**

National Research Professor (for the period of 10 years – starting from July 2011).  
Foreign Fellow, American Academy of Arts & Sciences, 2011.

### **Prof Sabyasachi Bhattacharya**

Member, Presidency Mentor Group, Presidency University, Kolkata (2011-).  
Member, Technology Advisory Council, British Petroleum, UK (till 2015).

### **Prof U Ramamurthy**

CSIR Bhatnagar Award for the year 2011.

### **Mr Meheboob Peer**

Most Valuable Staff Member prize - 2011

## **DISCUSSION MEETINGS**

2<sup>nd</sup> National Molecular Virology Meeting, Prof C Durga Rao, IISc, April 29-30, 2011.

Science Outreach Programme – Summer 2011, Prof K S Valdiya, JNCASR, May 18-19, 2011.

Sourabh Diwan, “Entrainment and Universality in Jets and Plumes: an Integral Approach” Participants: Prof Narasimha Roddam, Prof S M Deshpande, May 26, 2011.

Indo-US Workshop on New Functional Materials, Manali, June 2-6, 2011.

Indo-US-Symposium on “New Functional materials Synthesis, Properties and methods”, Prof Ashok K Ganguli, IIT-D, June 2-7, 2011.

EICOON Meeting, June 13-17, 2011.

National Conference on “Nanoscience and Engineering for Better Ceramics NanoSEC-2011”, Prof Arun M Umarji, IISc, June 23-24, 2011.

Third Management Board Meeting, June 24, 2011.

Research Conference on Chemistry of Functional Materials, Prof R Murugavel, IIT-Bombay, August 12-14, 2011.

“Theoretical and Experimental Immunology”, Prof Dipankar Nandi, IISc, August 16, 2011.

7<sup>th</sup> Kannada Vijnana Sammelana, Prof K I Vasu, September 15-17, 2011.

JNCASR Research Conference, Kochi, October 1-3, 2011.

JSPS/DST Workshop in Graphene, Japan October 13-15, 2011.

Meeting on Chemistry & Physics of Advanced Materials, Prof A J Paul, IACS, Kolkata, October 29-31, 2011.

*Indo-Australia Joint Symposium on Nanomaterials*,  
November 2-4, 2011 at RMIT, Melbourne Australia.

Meeting with Dr Caroline Ash, Sr. Editor, Science  
Magazine, AAAS, November 4, 2011.

International Conference on “*Dynamics of Phase  
Transformation*”, November 28-30, 2011.

### FORTHCOMING MEETINGS

*Winter School on Chemistry and Physics of Materials*,  
December 5-10, 2011

Dr Santhosh Ansumali, 20<sup>th</sup> *Discrete Simulations of Fluid  
Dynamics (DSFD)*, JNCASR, 2012.

Prof Uday Maitra, “*Opening Scientific Doors: Exploration  
of Potential Areas for Collaboration in Chemistry and  
Physics*”, IISc, January 5-7, 2012,

Prof Srikanth Sastry, “*Unifying Concepts in Materials*”,  
JNCASR, February 1-8, 2012.

### ANNUAL FACULTY MEETING

The Annual Faculty Meeting of the Centre will be  
held on November 14, 2011. Prof Chandan Dasgupta,  
Prof Anuranjan Anand, Dr Subi Jacob George, Prof D D  
Sarma, Dr Subir K Das will deliver the lectures. A  
cultural programme will be held in the evening.

The annual In-house Symposium is scheduled on  
November 14 – 15, 2011 at Jakkur Campus.

