

## Focus



*Dear Colleagues*

*I heartily welcome you all as we step into the 25th year of establishment of the JN Centre. The Centre has achieved several milestones in research and development through individual and collaborative efforts. Our sincere thanks to Prof. CNR Rao for his visionary guidance and leadership. I hope that our combined focus will lead us to many more achievements in coming years.*

*With the set up and inauguration of Sheikh Saqr Laboratory, the Centre has further enhanced its research infrastructure. It was an honor to confer the honorary fellowship to His Highness Sheikh Saud Bin Saqr Al Qasimi.*

*We have witnessed a growing interest for science among school and college students and teachers with their enthusiastic participation in our science outreach activities. The Centre continued to receive new patents for important discoveries and efforts are on-going to commercialize the inventions.*

*President*



Inauguration of Sheikh Saqr Laboratory (on left) at International Centre for Materials Science (ICMS) by His Highness Sheikh Saud Bin Saqr Al Qasimi (right side).

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# FROM THE EDITOR'S DESK

As we begin the Silver Jubilee Celebrations of JNCASR we are happy to bring this newsletter which includes highlights of the Centre's activities for the last six months.

Several faculty members received prestigious awards. Prof. Roddam Narasimha received Lifetime Excellence Award in the sphere of Earth System Sciences - 2013' from the Earth System Science Organization, Ministry of Earth Sciences; Prof. Tapas Kumar Kundu received Journal of Biochemistry (JB) Prize for 2013 instituted by The Japanese Biochemical Society; Prof. Swapan Kumar Pati received TWAS (The World Academy of Science) Prize in Chemistry (shared) in September, 2013; and Prof. Tapas Kumar Maji received MRSI medal for 2014. Our students also received Best Poster Awards in international symposia and conferences.

The Centre has obtained two patents, filed six Indian Provisional Patent Applications, five International Patent Applications under PCT, one US Patent Application and one US Continuation Application. Prof Tapas Kumar Kundu's research group in collaboration with Prof. Eswaramoorthy's group have discovered a novel brain enzyme activator that helps brain cell growth and increases the duration of memory retention in mice.

Honorary Fellowship has been conferred on His Highness Sheikh Saud Bin Saqr Al Qasimi, ruler of Ras Al Khaimah, United Arab Emirates. Sheikh Saqr Laboratory has been inaugurated by Sheikh Saud Bin Saqr Al Qasimi on August 26, 2013. Prof. Meheboob Alam delivered the Prof. CNR Rao Oration Award Lecture for this year.

## Education Technology and Science Outreach Activities

The book produced by Education Technology Unit (ETU) titled *Science in India* was released in New Delhi by the Hon. Prime Minister Dr. Manmohan Singh on July 8, 2013. Under the POCE program, an hour long multimedia presentation was given to the students covering excerpts from CD-ROMs *Nanoworld* and *Understanding Chemistry*.

Under Science Outreach Program (SOP) several events were organised. To list a few, on June 28, 2013, teachers-students programs/workshop was conducted which was attended by 225 students and teachers. On this occasion, the CNR Rao Education Foundation sponsored 2012 prizes for Outstanding Science Teachers were awarded to Shri. Navneet Gupta and Shri. M.V.S. Swamy. JNCASR faculty members and scientists from other institution have delivered talks on *Program in Physics for students*, *Program in Chemistry* and *Program in Biology for Students*. *Science Orientation Workshop* was organised on October 22-25, 2013 for Class XI students of Jawahar Navodaya Vidyalaya. During this four-day workshop, seventy two students and eight teachers participated. Lectures in Physics, Chemistry and Biology on topics suggested by the teachers were conducted by JNCASR Faculty members along with demonstration of experiments. A *Science Quiz* was also conducted by students of Theoretical Sciences Unit in this workshop. All the participants were given a copy of the book '*Elements and the Periodic table*' developed and produced by ETU.





# ACADEMIC ACTIVITY

During the August 2013 admissions, forty four students joined JNCASR under different degree and diploma programmes. The current student strength at JNCASR is 289. There are 171 students registered for PhD, 22 for MS (Engg / Research), 87 for Integrated PhD, 4 for MS - PhD programme, 3 for Postgraduate Diploma in Materials Science and 2 for Postgraduate Diploma in Science Education programmes respectively. The notification for mid-year research admissions 2013 for the session commencing on January 1, 2014 has been announced on our web site. Applications for MS/PhD degree programmes are invited till November 7, 2013.

## Post Graduate Diploma in Science Education (PGDSE)

Four students who joined during the 2012-13 session under the Full time PGDSE programme have been awarded the Postgraduate Diploma in Science Education on August 7, 2013 on completion of the course requirements. The Centre received 203 applications in response to the advertisement for the PGDSE programme which was released on our website and 2 national newspapers during April 2013. The committee after interviewing the short listed candidates, selected 3 students to join this programme. They joined the Centre on August 1, 2013, and have been assigned to JNC faculty members, to undergo a short-term one year research-based training programme in the areas of chemistry and physics.

## Post Graduate Diploma in Materials Science

The Centre on behalf of ICMS (International Centre for Materials Science) had admitted 2 students during the mid-year session 2011-12 and 2012-13. These students were awarded the Postgraduate Diploma in Materials Science on August 7, 2013, on completion of their course requirements. Eighty four applications were received, in response to the advertisement for the PGDMS programme that was released on our website and 2 national newspapers during April 2013. Three students were selected to join this programme after the interview process. Two students have joined the programme on August 1, 2013. These students have been placed under the JNC faculty members to undergo a short-term, one year, research-based training in the areas of chemistry and physics.

## Student Awards and Scholarships

The Babu Matru Prasad Scholarship was awarded to the 1st year Int PhD student Ms. Ananya Mishra, Int PhD Chemical Science Programme, New Chemistry Unit, for securing the highest CGPA. The Babu Narayanswamy Prize for the best M S thesis of the Int PhD Programme in Materials Science and Int PhD programme in Chemical Science was awarded to Mr. Ram Kumar, CPMU (Research supervisor: Prof. CNR Rao) and Mr. Chandan Kumar, CPMU (Research Supervisor: Dr Rajesh Ganapathy).



Hon'ble Minister of Science and Technology and Earth Sciences, Mr. Jaipal Reddy addressed faculty members at Nevill Mott Hall, ICMS



# FELLOWSHIPS & EXTENSION PROGRAMMES

## Summer Research Fellowship Programme

Seventy three scholarships were offered in 2013 under this programme. Around 60 SRFP students were guided by JNC faculty and few by faculty from other institutions from the rest of the country.

## Project Oriented Biological Education

Four students joined the programme this year. The faculty from JNCASR and Indian Institute of Science conducted classes during the 6 weeks period. Nine students of 2011 batch received the Diploma in Biology.

## JNCASR-CICS (Centre for International Cooperation in Science) Fellowship

Two Fellows selected for the year 2009-10 have been given certificates on successful completion of their three-month training programme in India. Four Fellows have been given certificates for the year 2010-11. One Fellow has been awarded certificate for the year 2011-12. Of the eight selected under the programme for the year 2012-13, one has completed the programme successfully and the rest will be joining the programme later.

## Project Oriented Chemical Education

Ten students from 8 states were selected for the year 2013-15. These ten students from the batch of 2013 along with the students of 2012 and 2011 batch joined the Centre on 13 May 2013. The second and the third year batches were assigned to faculty of the Centre. The faculty from JNCASR and Indian Institute of Science had conducted classes during the 6 weeks period. Eight students of 2011 batch received the Diploma in Chemistry and all have joined M.Sc programmes in various institutions. One of the POCE students of 2008 -10 batch is a co-author of a paper published by Prof. T. Maji.

## Visiting Fellowship Programme

Seven candidates under the Physical Sciences and two under Biological Sciences category were selected this year for the Visiting Fellowships Programme 2012-13. Three have completed the programme and four have completed their first spell of the programme.

The advertisement for the Visiting Fellowships 2013-14 was announced on our web site and in Current Science. Six applicants under the Physical Sciences category have been selected to join the faculty of the Centre for a period of 2-3 months.

## Honorary Fellowship & Sheikh Saqr Laboratory Inauguration

Honorary Fellowship conferred on His Highness Sheikh Saud Bin Saqr Al Qasimi, Ruler of Ras Al Khaimah, United Arab Emirates, August 26, 2013.

Sheikh Saqr Laboratory was inaugurated by His Highness, Sheikh Saud Bin Saqr Al Qasimi, Ruler of Ras Al Khaimah, United Arab Emirates, August 26, 2013.





# INTELLECTUAL PROPERTY

## Patents obtained

### The Centre has obtained two patents for the following inventions:

1. Korean Patent (No. 10-2012-7002975) issued on 6th September 2013 for 'Optimal Wing Planforms for Reducing the Induced or Total Drag of the Wing of an Aircraft Driven by Wing-Mounted Tractor Propellers/Rotors' developed by Prof. Roddam Narasimha, Madhusudan Deshpande, Praveen Chandrashekarappa and Rakshith Belur Raghavan, and

2. US Patent (No. 8,541,058 B2) issued on 24th September 2013 for 'Palladium Thiolate Bonding of Carbon Nanotubes' developed by Prof. Giridhar U Kulkarni, Timothy S Fisher, Stephen L Hodson, Baratunde A. Cola and Thiruvelu Bhuvana.

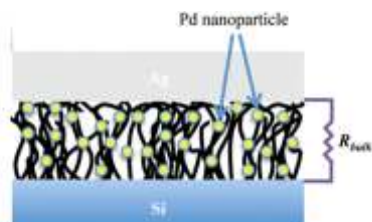


Fig.: A thermal interface material: Si/CNT/CNT/Cu decorate with Pd nanocrystals  
US Patent No.8,541,058 issued on 24th Sep 2013  
Invention: Palladium Thiolate Bonding of carbon Nanotubes  
Inventors: Giridhar U Kulkarni, Timothy S Fisher, Stephen L Hodson, Baratunde A Cola, Thiruvelu Bhuvana

## National Patent Applications

### Six Indian Provisional Patent Applications have been filed for the inventions of:

1. Dr. Govindaraju Thimmaiah.

2. Prof. Kavassery Sureswaran Narayan, Dr. Subi Jacob George, Kotagiri Venkata Rao and Ravichandran Shivanna.

3. Dr. Sebastian Chirambatte Peter and Pradeep Prasannamurthy Shanbogh.

4. Dr. Govindaraju Thimmaiah, Kolla Rajashekhar and Dr. Ravi Manjithaya.

5. Dr. Jayanta Haldar, Yarlagadda Venkateswarlu, Goutham Belagula Manjunath and Mohini Mohan Konai.

6. Prof. Kavassery Sureswaran Narayan, Zade Sanjio Shankarrao, Asatkar Ashish Kumar and Senanayak Satyaprasad Premswarup.

## International Patent Applications

### Five International Patent Applications under PCT has been filed for the inventions:

1. 'A Composition Comprising Nanosphere and Histone Acetyltransferase (HAT) Activator, Processes and Methods Thereof' developed by Prof. Tapas Kumar Kundu, Anne-Laurence Boutillier, Snehajyoti Chatterjee, Dr. Muthusamy Eswarmoorthy, Puspak Mizar, Chantal Mathis, Jean-Christophe Cassel, Romain Neidl, Mohankrishna Dalvoy Vasudevarao and Vedamurthy Bhusainahalli Maheswarappa.

2. 'Nanoparticle Compositions of Antibacterial Compounds and Other Uses Thereof' developed by Dr. Jayanta Haldar, Divakara Siva Sathyanarayana Murthy Uppu, Akkapeddi Padma and Goutham Belagula Manjunath.

3. 'Assay to Monitor Autophagy' developed by Dr. Ravi Manjithaya.

4. 'Monoclonal Antibodies against NPM1 and Acetylated NPM1, and Process Thereof' developed by Prof. Tapas Kumar Kundu, Parijat Senapati, Gopinath Kodaganur Srinivasachar, Deepthi Sudarshan, Manjula Das, Smitha Pazhoor

Kumaran, Manjunath Shivasangappa Devaraman and Ajithkumar Sumitrappa.

5. A Method of Oxidizing an Organic Compound' developed by Prof. Chintamani Nagesa Ramachandra Rao, Dr. Ujjal Kumar Gautam and Srinivasa Rao Lingampalli.

### One US Patent Application and one US Continuation Application has been filed for the inventions:

1. 'Self Assembly of Naphthalene Diimide Derivatives and Process Thereof' developed by Dr. Govindaraju Thimmaiah, Manjula Basavanna Avinash and Makam Pandeewar, and

2. 'Palladium Thiolate Bonding of Carbon Nanotubes' developed by Prof. Giridhar U Kulkarni, Timothy S Fisher, Stephen L Hodson, Baratunde A. Cola and Thiruvelu Bhuvana.

### One Chinese and One European Patent Applications have been filed

for the invention 'Artificial Retina Device' developed by Prof. Kavassery Sureswaran Narayan, Vini Gautam and Monijit bag.

## Inventions Licensed

Monoclonal Antibodies Against NPM1 and Acetylated NPM1, and Process Thereof, developed by Prof. Tapas Kumar Kundu and his group has been licensed to three companies viz. M/s. EMD Millipore, M/s. Bionees, M/s. Abcam.



# APPOINTMENTS AND AWARDS

## Promotions

Associate Professors  
Dr. Subir K Das  
Dr. Kavita Jain

## New Appointments

Faculty Fellow  
Dr. Meher K Prakash (TSU)  
Senior Associate  
Prof. C.P. Rajendran (GDU)

Faculty Affairs  
Prof. G.U. Kulkarni  
Academic Affairs  
Prof. Shobhana Narasimhan  
EMU Chairman  
Prof. K. R. Sreenivas

### Visiting Scientists

Dr. D.Krishna Bhat  
Dr. Sailaja Bandam  
Dr. Vinay Kariwal  
Prof. Garry Brown  
Dr. Mrinmoy De  
Dr. Jagran Acharya  
Dr. Prashant Dubey  
Dr. Celine Gerard  
Dr. Irshad Ahmad  
Dr. Utpal Sarkar

### Visiting Scholars

Mr. Ruban Preet Singh Sran  
Mr. Koushik Ghosh  
Mr. Vishal  
Mr. Satwik Prabhu  
Mr. Mathieu Senghor  
Ms. Sikha Rani  
Mr. A. Nijamudheen  
Ms. Arsila Ashraf  
Ms. Anindita Ravikumar

Mr. Nilabh Ghosh  
Ms. Aruna Nair  
Mr. Vichal

### Research Associate

Dr. Kathiresan Natarajan  
Dr. Sandeep Kumar Reddy  
Dr. Rambabu Angalakurthi  
Dr. Bodhisatta Nandy  
Dr. Aravinda K Chavalmane  
Dr. Sarmistha Halder Sinha  
Dr. B Raghava  
Dr. Atul Kumar Dwivedi

### Research Associate (P)

Mr. Sorb Y A  
Mr. K N Harish  
Ms. Manjulata Singh  
Mr. Alope Kumar Ghosh  
Mr. Rajiv Kumar Chouhan  
Ms. Sutapa Roy  
Mr. Jamshid Moradi Kurdestany (Outside JNC, IISc)

### NBHM- Postdoctoral fellow

Dr. Virendra Kumar

### DBT-Research Associate

Dr. Roshan Fatima Begum

### System Support Staff

Mr. Sujeet Singh

## Awards & Recognitions

### Prof. Roddam Narasimha

Life Time Excellence Award in the sphere of Earth System Sciences - 2013, The Earth System Science Organization, Ministry of Earth Sciences

### Prof. Tapas Kumar Kundu

Journal of Biochemistry (JB) Prize for 2013 instituted by The Japanese Biochemical Society.

### Prof. Swapan K Pati

TWAS (The World Academy of Science) Prize in Chemistry (shared) in September, 2013.  
J.C. Bose National Fellowship (September 2013- August 2018).

### Prof. Tapas Kumar Maji

MRSI (Materials Research Society of India) Medal for 2014

### Dr. Ranjani Viswanatha

Associate of Indian Academy of Sciences. (2013-2016)

### Mr. V. R. Sathyendranath

Most Valuable Staff Member - 2013

## Awards Received by Students

**Mr. Ankit Jain (PhD student; Research Supervisor: Dr. Subi George, NCU)** was awarded Best Poster Prize in the 3rd Federation of Asian Polymer Societies Conference and MACRO- 2013, held during May 15-18, 2013.

**Mr. M. Pandeewar (PhD student; Research Supervisor: Dr. T. Govindaraju, NCU)** received Best Poster Award at Indo-US Symposium on Molecular Materials, held at Indian Institute of Science (IISc), Bangalore during July 15-17, 2013.

**Mr. Soumik Sidhant, (PhD student; Research Supervisor: Prof. Chandrabhas Narayana, CPMU)** bagged Best Poster Award in the 7th International Conference on Materials for Advanced Technology held in Singapore during June 30 - July 05, 2013.



# SEMINARS & LECTURES

## Endowment Lectures

**Prof. V. Ramalingaswami Memorial Lecture:** "The Science and Art of making Vaccines", Dr. Maharaj Kishan Bhan, Former Secretary, Department of Biotechnology (DBT), Government of India, July 18, 2013.

**Prof. C.N.R. Rao Oration Award Lecture:** "Exotic Patterns in Driven Granular Matter", speaker: Prof. Meheboob Alam, Engineering Mechanics Unit, JNCASR, August 7, 2013.

**Linus Pauling Lecture:** "Science Shapes Our Future", speaker: Prof. Ryoji Noyori, Nobel Laureate, President, RIKEN, September 16, 2013.



Linus Pauling Lecture: "Science Shapes Our Future", by Prof. Ryoji Noyori, Nobel Laureate, President, RIKEN, September 16, 2013

**DAE-Raja Ramanna Lecture in Physics:** "Extreme Light, Hot Electrons and Laser Fusion", speaker: Prof. G. Ravindra Kumar, TIFR, Mumbai. Prize Lecture: "Orbital ordering in transition metal oxides-a route to high polarization multiferroics", Prof. Priya Mahadevan, S.N. Bose National Centre for Basic Sciences, Kolkata, September 20, 2013.

## Fluid Dynamics Colloquia

1. Martensitic phase transitions and compatibility, Mr. Vivekanand Dabade, Aerospace Engineering & Mechanics, University of Minnesota, Minneapolis, USA, August 8, 2013.

2. Dissolution driven convection for carbon dioxide sequestration: the stability problem, Prof. Shreyas Mandre, Assistant Professor, The School of Engineering, Brown University, August 14, 2013.

## Discussion Meetings

1. Science outreach programmes - Summer, convenor: Prof. K. S. Valdiya, May 15-16, 2013.

2. Conference on "Being social: an inter disciplinary conference on social behaviour", convenor: Prof. R. Sukumar, IISc, June 28, 2013.

3. Theme Meeting on Materials Chemistry, convenor: Dr. R. Vijayaraghavan, VIT University, Vellore, July 25-27, 2013.

4. 2nd Joint Indo - South Africa PMGC Meeting, August 01-03, 2013.

5. 9th JNC Research Conference on Chemistry of Materials, convenor: Dr. Subi J. George, October 14-17, 2013.

6. FCBS Workshop for Postgraduate Students and Teachers, convenor: Prof. M. V. George, October 23-25, 2013.

## Seminars

1. Work Fluctuations and the 2nd Law of Thermodynamics, Prof. K. P. N. Murthy, School of Physics, Director, Centre for Integrated Studies, Centre for Modelling, Simulation, and Design (CMSD) University of Hyderabad, May 03, 2013.

2. Chromatin dynamics during mouse primordial germ cell development, speaker: Dr. Roopsha Sengupta, Research Associate, Surani Lab, Gurdon Institute, University of Cambridge, May 6, 2013.

3. Earth-Abundant Semiconductor Nanotube/Nanorod Arrays for Light Harvesting Applications, speaker: Dr. Karthik Shankar, Department of Electrical & Computer Engineering University of Alberta Edmonton, May 6, 2013.

4. Spatial structures and Giant Number Fluctuations in models of active matter, speaker: Prof Dibyendu Das, Associate Professor Physics Department IIT Bombay, Powai, Mumbai, May 14, 2013.

5. DNA-Directed Assembly of Nanoparticle Superlattices for the Construction of Plasmonic Materials, speaker: B Radha, CPMU, JNCASR, May 20, 2013. 6. Fractal Signatures in Multi-Scale Domain Morphologies, Prof. Varsha Banerjee, Department of Physics, Indian Institute of Technology Delhi, New Delhi, May 28, 2013.

7. Chromosomes spatially reorganize while repairing their DNA damages, Prof. B J Rao, Senior Professor, Department of Biological Sciences, Tata Institute of Fundamental Research, May 29, 2013.

8. Micromanaging neuronal network : Role of neuronal wiring and plasticity by microRNAs, Dr. Sourav Banerjee, Associate Professor, National Brain Research Center, Haryana, June 07, 2013.

9. SERB School on Chronobiology, convenor: Prof. V.K. Sharma, EOBU, June 24, 2013.

10. Life is organic chemistry, Prof. H. Ila, JNCASR, June 25, 2013.

11. Lasing in Photonic Crystal Microcavities,



## PAST AND FORTHCOMING EVENTS

R.Vijaya, Dept of Physics, IIT Kanpur, July 19, 2013.

12. Magnetism in diluted magnetic semiconductors: From homogeneous systems to nanoscale inhomogeneities, Dr. Akash Chakraborty, School of Engineering and Science, Jacobs University Bremen, Germany, August 1, 2013.

13. Nanosheet and granular structures for electrochemical energy storage, Prof. Timothy S. Fisher, School of Mechanical Engineering and Birk Nanotechnology Center, Purdue University, West Lafayette, USA, August 5, 2013.

14. Workshop on ethics in scientific research, Dr. Vinayaka Prasad, Albert Einstein College of Medicine, New York, August 13, 2013.

15. Nanowire-Photonics with Plasmons and Excitons, Dr. G.V. Pavan Kumar, Photonics and Optical Nanoscopy Laboratory Departments of Physics and Chemistry Indian Institute of Science Education and Research, Pune, August 14, 2013.

16. Journey from DNA double helix to intelligent biocompatible surface, Dr. Banani Chakraborty, Alexander Von Humboldt Post Doctoral Fellow, Institut for Organic Chemistry, RWTH Aachen University, Aschen, Germany, August 19, 2013.

17. Divergent polarity in leaf growth and its regulation by miR396, Prof. Utpal Nath, Department of Microbiology and Cell Biology, IISc, Bangalore, August 27, 2013.

18. Asexual Evolution (Through the Lens of Theory), Dr. Nisheeth K Vishnoi, Microsoft Research India, Bangalore, September 10, 2013.

19. Rational Design of Functional Materials using Soft Matter Self-Assembly as a Tool, Dr. Ramanathan Muruganathan, Materials Scientist Center for Nanophase Materials Science Oak Ridge National Laboratory Oak Ridge, USA., September 11, 2013.

20. Functional Nanomaterials for Energy Storage and Conversion, Dr. Vinodkumar Etacher, Department of Chemistry, Michigan Energy Institute, University of Michigan, USA, September 17, 2013.

21. Genomic Instability in Cancer: lessons from spindle assembly checkpoint regulatory network, Susanta Roychoudhury, Indian Institute of Chemical Biology, September 19, 2013.

22. Taking shape: how Drosophila renal tubules make their way, Prof. Helen Skaer, Professor of Developmental Biology, University of Cambridge, September 27, 2013.

23. Fracture, adhesion and locomotion of soft materials, Animangsu Ghatak, Professor, Department of Chemical Engineering Indian Institute of Technology, Kanpur, October 4, 2013

24. Two Species Semipermeable Exclusion Processes, Dr. Arvind Ayyer, Department of Mathematics, IISc. Bangalore, October 15, 2013.

25. Microhydrodynamics Lectures, speaker: Prof. Ganesh Subramanian, JNCASR, October 18, 2013.

26. Exploring Electronic Structure of a Few Biomolecules and Graphitic Materials, speaker: Mr Arun Kumar Manna, TSU, JNCASR, October 22, 2013.

27. Transcriptional control of cell fate and circuitry in the brain, speaker: Prof. Shubha Tole, Department of Biological Sciences, Tata Institute of Fundamental Research, Mumbai, October 29, 2013.

### Other Programmes

#### Hindi Week

Hindi Week was celebrated from 17-25 September 2013. Series of events were organized on this occasion such as comedy/mimicry show, antakshari competition, Hindi workshop, Hindi quiz competition, etc.

#### Vigilance Awareness Week

The Vigilance Awareness Week was observed in the Centre from October 28 to November 2, 2013. A lecture was organised titled "Challenges Facing Governance" by Prof. M. V. Rajeev Gowda, Indian Institute of Management, Bangalore on Thursday, October 31, 2013 at Kanada Hall, Jakkur

campus.

**MBGU Day** was celebrated on October 4, 2013.

### Forthcoming Events

1. FCS 2013: National Fluorescence Workshop, convener: Prof. Chandrabhas Narayana, November 24-28, 2013.

2. International Conference on "Directions in Materials Science", convener: Prof. Umesh V Waghmare, November 30 - December 1, 2013.

3. Numerical Many-Body Methods for Quantum Systems in Chemistry and Physics, convener: Prof. S.Ramesha, December 8, 2013.

4. IUMRS-ICA 2013, convener: Prof. S. B. Krupanidhi, IISc, December 16-20, 2013.

5. Symposium on Fragility, convenors: Dr. Rajesh Ganapathy and Prof. Srikanth Sastry, January 5-8, 2014.

6. IUTAM Symposium, convenors: Dr. Santhosh Ansumali, JNCASR and Prof. V. Kumaran, IISc, January 20-24, 2014.

### Silver Jubilee Year Celebration

The Centre will celebrate the 25th Year of its establishment in the form of a series of events to be held during the "Silver Jubilee Year" (Nov. 2013 - Nov. 2014). The inaugural event will be a music concert by sarod maestro Ustad Amjad Ali Khan and his sons, Amaan and Ayaan Ali Khan, to be held on November 12, 2013.

### Annual Faculty Meeting

The Annual Faculty Meeting of the Centre will be held on November 18-20, 2013. An In-House Symposium is scheduled to be held on November 19, 2013 at Jakkur Campus.