



## From the President's desk

Dear all,

Bharat Ratna Prof. C. N. R. Rao continues to inspire us with his achievements, extending the message "we are not slowing down". Adding yet another feather to his cap, Prof. Rao has made us all at JNCASR and all Indians proud by being the first Asian ever to have received the prestigious **Von Hippel Award**. The Materials Research Society's highest honor, the award will be presented to Prof. Rao in Boston on November 29, 2017. It is indeed a great honor to the Centre and to us all. Several of our faculty have received prestigious awards and honors listed in the part of this news letter. These include Academy fellowships, GDBirla award, Raja Ramanna Award, Swarna Jayanthi fellowship, other young scientist fellowships, DBT Tata Innovation Fellowship and many others. Our students have also not lagged behind and received many awards. I congratulate all the achievers and wish all colleagues more success, awards and recognitions in the years ahead.



Now that JNCASR was placed 11<sup>th</sup> in the overall list of top educational institutions in India and 4<sup>th</sup> place in the list of top Universities in the NIRF rankings, we have an important task of maintaining this standing. I am pleased to say that our faculty and students are making efforts in that direction with continued high impact publications and other associated R&D activities. Very recently, JNCASR won the Clarivate Analytics India Research Excellence Award 2017 in the category of Engineering & Technology. Another elevating moment in this context is that two of our start ups made it to the list of top 100 most innovative startups selected by Karnataka Government. During the year several MoUs were executed by the Centre with institutions within India and abroad. Many patent applications were filed, some granted and Copy rights obtained, apart from technology transfers.

With a long history of partnering with schools, the CNR Rao Hall of Science & Education technology unit(ETU) of the Centre organized a range of outreach programs as our continued commitment to improve access of school and college students to science and technology. ETU arranged several lectures and programmes on Physics, Chemistry and Biology, Workshops, Students Mentoring Programme, Multimedia presentation, Quiz etc. The campus also saw a number of teaching faculty and students (national and international) benefit from out fellowship and extension program.

Several other activities in the centre are under at various stages of progress. Long awaited new modern, auditorium in the campus with 500 seating capacity is now ready for use. It The Chamundi campus infrastructure work (rain water harvesting, planting of trees, pre-fabricated units etc) has gained momentum. Several other initiatives are taking shape. Thus, I believe we have a an exciting period ahead.

Our thanks to DST for continuous support in all our activities and hope that increased funding will be made available to augment the ongoing activities as well as to support our new initiatives.

With best wishes

**Prof. V. Nagaraja**  
President, JNCASR



Prof. C.N.R. Rao, first Indian and Asian to be awarded the Von Hippel Award 2017, the highest international prize in materials research.

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## RESEARCH NEWS

### Does total darkness or light alter the body clock? Fruit fly experiments reveal persistent circadian rhythm

Experiments carried out on 330 generations of drosophila (fruit flies) confirmed that circadian rhythm was persistent in flies that were kept in complete darkness or complete light 24 hours a day for over 19 years. This may be due to the intrinsic value of the body's time-keeping system in coordinating our internal physiological functions.

This was the finding of a study by a group of scientists led by Prof. Vijay Kumar Sharma at the Chronobiology Lab (where study of the biological clock is carried out) at Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bengaluru.

The results of the study help dispel the notion that continuous darkness may regress the body's biological clock and show that absence of light may have caused the evolution of a more robust clock in flies. The results were recently published in Chronobiology International.

Source: The Hindu, Sept. 10, 2017

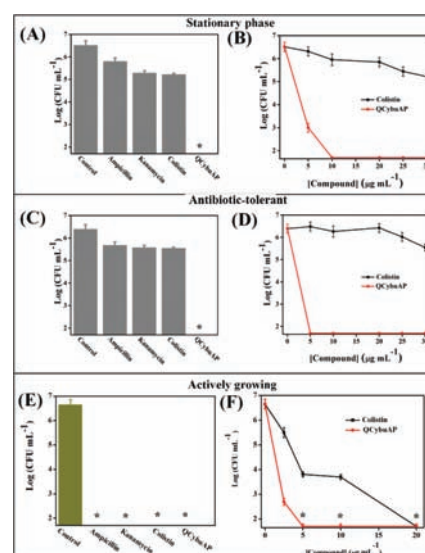
### Novel compounds destroy biofilm-forming bacteria

Two new molecules capable of destroying bio-film forming bacteria have been developed by scientists at the Bengaluru-based

Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR). The molecules performed better than conventional antibiotics in killing the bacteria during the dormant phase. Biofilms are communities of microorganisms that attach to each other and to surfaces and are able to act as barriers to antibiotics. When used in combination with existing antibiotics, the molecules reduced the microbial burden in the case of burns and surgical wounds.

The effect of these macromolecules on chronic biofilm causing pathogens like *E. coli*, *Acinetobacter*, *Klebsiella* were studied and the results were recently published in PLOS ONE.

Source: The Hindu, September 2, 2017 <https://goo.gl/WVWRrTw>



**Fig reproduced from PLOS ONE:** Antibacterial activity of antibiotics and QCybuAP against *E. coli*.  $\sim 10^6$  CFU mL<sup>-1</sup> of bacteria in M9 media were treated with compounds for 2 h. Stars represent

no survival detected (limit of detection < 50 CFU/mL).

<https://doi.org/10.1371/journal.pone.0183263.g002>

### Cell cleaning molecule that sucks up toxic cellular junk

Scientists have identified a potential drug molecule<sup>1</sup> that ramps up the ability of a diseased cell to clean itself. The small molecule called 6-Bio cleans up toxic protein clumps in brain cells. Protein clumps are known to lead to disorders such as Parkinson disease and the finding may hold therapeutic promise.

Researchers say there might be a way to restore this essential intracellular quality control mechanism. They found that the small molecule 6-Bio can clear accumulated cellular junk and avert further neuronal loss. "6-Bio has potent autophagy-inducing ability, which helps cells clear these protein aggregates," said Ravi Manjithaya, corresponding author of the study and an Assistant Professor at the Molecular Biology and Genetics Unit of the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) in Bangalore.

Source: Nature India, June 16, 2017 <http://go.nature.com/2sx68pv>

**Original research article:** A novel autophagy modulator 6-Bio ameliorates SNCA/ $\alpha$ -synuclein toxicity. S. N. Suresh, Aravinda K. Chavalmane, Vidyadhara DJ, Haorei Yarreiphang, Shashank Rai, Abhik Paul, James P. Clement, Phalguni Anand Alladi & Ravi Manjithaya, *Autophagy* Vol. 13, Issue. 7, 2017 <http://dx.doi.org/10.1080/15548627.2017.1302045>



# ACADEMIC, FELLOWSHIPS & SCIENCE OUTREACH

## ACADEMIC ACTIVITIES

### Degree Programmes

55 students have joined different degree programs at the Centre through admissions in August, 2017. On August 3, 2017, the Academic Office organized an Orientation Program for the new students and for those who could not participate in the earlier Orientation programs. JNC faculty gave presentations on various topics ranging from research ethics, computer usage and ethics, safety measures to protection of women at workplace. These were followed by an interactive workshop with the Counsellor at Dhanvantari.

The current student strength is 320. The notification regarding admissions to M.S. (Engg./Research) and Ph.D. program for the January session of 2017-18 has been advertised in newspapers, and announced on our web site, with a deadline of November 10, 2017 for online applications at [www.jncasr.ac.in/admit](http://www.jncasr.ac.in/admit).

## FELLOWSHIPS & EXTENSION PROGRAMMES

### Student Buddy Programme

Under this programme, during the first series when it was launched in 2015, 71 students from from Jawahar Navodaya Vidyalaya and Kendriya Vidyalaya benefitted. During 2016, 94 students from Jawahar Navodaya Vidyalaya and Kendriya Vidyalaya participated in the programme. In the current year, 26 students from JNV Belgaum were invited to participate in our student buddy programme. 25 students from JNV Udipi will be coming on October 27, the third batch from JNV Mundugod will be visiting the Centre during November and the last batch will be coming during the last week

of November 2017. The Student Buddy programme has been highly successful and the students of JNV have expressed their desire to come to JNCASR on a more periodic basis. Student buddies from JNC have also given feedback that they would like to participate again.

### Visiting Fellowship Programme

The Centre received 13 applications for the Visiting Fellowships Programme 2017-18 for different categories. Nine teaching faculty from research institutions/universities across the country were selected. The selected Fellows will be hosted under faculty of the Centre.

### Summer Research Fellowship Programme

77 students availed the scholarship for SRFP 2017 and 12 SRFP students of 2016 had their SRFP tenure renewed for another year. These students received research training in various areas of Physics, Chemistry, Biology or Engineering at research institutes in Bangalore, and elsewhere in the country.

The notification inviting applications for SRFP 2018 will be shortly put up on the JNCASR website.

### Project Oriented Chemistry Education (POCE)

This year 10 students from 10 states were selected for POCE program. There was wide variation in examination dates of B.Sc programmes of universities all over India. So, to accommodate students of all over India, POCE-1st year classes were started on 22 June, 2017. Ten students of POCE-2015-17 batch were awarded Diploma in Chemistry and two of them have been selected by IITs, two by NITs, two (one of 2014-16 batch) by JNCASR (and IISc) and others have joined state universities for their higher studies.

### Project Oriented Biology Education (POBE)

240 applications were received for POBE 2017. Ten students were selected from different parts of the country. The classes for the POBE batch of 2017 commenced

on May 28, 2017. The second and third year batches came early to complete their project tenures. 09 students of POBE 2015 received their Diplomas in Biology on successful completion of their three year POBE tenure.

## EDUCATION TECHNOLOGY UNIT

The CNR Rao Hall of Science & ETU organized the 'Student Mentoring Program' from May 1- 31 2017. There were two batches of Class X and Class XI students participated in this program supported by the CNR Rao Education Foundation. This class-room teaching based residential program also included laboratory sessions, library work, sports and recreational activities.

On May 6-8, 2017, Science Outreach Program (SOP) was organized by Himalayan Gram Vikas Samiti, Uttarakhand and supported by the CNR Rao Hall of Science. Faculty Members from the Centre participated and delivered lectures and demonstrated experiments in Physics and Chemistry to the participating students and teachers.

The SOP-POCE laboratory conducted the POCE program in May-June 2017. On May 25-26, 2017, a multimedia presentation on 'Nanoworld' and a multimedia Quiz presentation from the CD-ROM 'Understanding Chemistry' were put forth to the students. The students visited the Chemistry of Materials Exposition and Prof. CNR Rao Archives.

The Unit also organized the prize distribution ceremony on June 5, 2017 for the National Prizes for Research on Interfaces between Chemistry and Biology sponsored by AVRA Laboratories, Hyderabad. Prof. G. Mugesh (IISc, Bangalore) and Prof. Sandeep Verma (IIT, Kanpur) by Prof. K. N. Ganesh (Director, IISER Pune) were the recipients of the award.



## AWARDS & RECOGNITIONS

### Prof. C.N.R. Rao

Bharat Ratna Prof. C. N. R. Rao has received the Materials Research Society's highest honor – the von Hippel Award. The award will be presented in Boston on November 29, 2017. Prof. C.N.R. Rao is the first Asian to receive the award.

1. Hon. Doctorate of IIT, Guwahati (June 2017)
2. Wockhardt Research Prize (September 2017)
3. Hon. Doctorate of University of Guwahati (2017)

### Prof. Amitabh Joshi:

Selected for the Prof. Har Swarup Memorial Lecture award of INSA (2017)

### Prof. M.R.S. Rao

Member of the Governing Body of CSIR

### Prof. K.B. Sinha

President of the "Association of Quantum Probability and Infinite Dimensional Analysis" (AQPIDA) since 2014.

### Prof. S. M. Shivaprasad

Director of Higher Education Academy, Dharwad

### Prof. Kaustuv Sanyal

DBT Tata Innovation Fellowship for the year 2016-17

### Prof. Tapas Kumar Kundu

Lifetime Distinguished Professorship of University of Mysore

### Dr. Ranjan Datta

MRSI Medal 2018

### Dr. Jayanta Halder

1. CRSI Bronze Medal 2018
2. Editorial advisory board member of the journal "ACS Infectious Diseases" of American Chemical Society-2017
3. Editorial advisory board member of the journal "Biomacromolecules" of American Chemical Society-2017

### Dr. Kanishka Biswas

Young Scientist Wiley Award by International Union of Materials Research

A teachers-students' program was conducted under the auspices of the Science Outreach Program on June 30, 2017. The recipients of the CNR Rao Education Foundation sponsored 2016 prizes for Outstanding Science Teachers were Shri. Channappa K. M. and Dr. Yogendra Kumar Kothari. The foundation stone of the 'Bharat Ratna Prof. C.N.R. Rao Science Centre' was unveiled by Prof. C.N.R. Rao. This Centre will be built at Laxmeshwar, Gadag.

Between July 24, 2017 to September 11, 2017 three programs were organized viz., A '**Program in Physics for students'** '**Program in Chemistry for students'** '**Program in Biology for students'** were organized. These programs were attended by over 400 students.

The Student Mentoring Program was organized during September 23 – October 3, 2017. The two batches of Class X and Class XI students participating in this program also attended the summer session held in May 2017. During their stay at JNCASR, the participants attended regular classes along with interactive sessions with the student mentors in various science subjects.

## INTELLECTUAL PROPERTY

### Patents Granted

USPTO issued patent (No. 9,636,356) for 'Nanoparticle compositions of antibacterial compounds and other uses thereof' developed by Dr. J. Halder et al.

EPO issued patent (No. 2475769) for 'Inhibition of histone acetyltransferases by CTK7A and methods thereof' developed by Prof. T.K. Kundu et al.

Canadian Patent Office issued patent (No. 2,855,753) for 'Cationic antibacterial composition' developed by Dr. J. Halder et al.

Indian Patent Office issued patent (No. 282705) for 'A metal nanosponge and a process thereof' developed by Prof. M.

Eswaramoorthy et al.

Indian Patent Office issued patent (No. 281909) for 'A synthetic cyclic dipeptide and a process thereof' developed by Dr. T. Govindaraju.

### Patent Applications Filed

Four Indian Provisional Patent Applications filed for the inventions developed by:

Dr. C.P. Sebastian et al. (Patent Appl. Nos. 201741010595 and 201741010611, filed on 25-03-2017)

Dr. T. Govindaraju (Patent Appl. No. 201741020511, filed on 12-06-2017)

Dr. S.S. Agasti et al. (Patent Appl. No. 201741029226, filed on 17-08-2017)

One International Patent Application filed under PCT:

A polymer network, method for production, and uses thereof

Dr. J. Halder et al.

Six National Phase Patent Applications filed for:

Glycopeptides and uses thereof, and

Glycopeptides conjugates and uses thereof

Dr. J. Halder et al. Filed in: USA, Europe, Canada

### Copyright

ANUROOP: A compressible DNS code to simulate and study flow over turbine blades

Prof. R. Narasimha et al.

Diary No. 12289/2016-CO/SW, Registration Certificate issued on: 10/08/2017.

### Technology Transfer:

'Inhibition of histone acetyltransferases by CTK7A and methods thereof' developed by Prof. T.K. Kundu has been licensed to M/s. Sigma-Aldrich Co. LLC.

'A Composition and Methods Thereof' developed by Prof. M. Eswaramoorthy jointly with ICAR's faculty Dr. K. Subaharan has been licensed to M/s. Bio Pel Organics & Formulations Pvt. Ltd, Secunderabad, and M/s. Agri Phero Solutionz, Hyderabad.



# AWARDS & APPOINTMENTS

Societies in IUMRS-ICAM 2017 Japan.

Profile selected in "New Frontier in Indian Research" by Royal Society of Chemistry (RSC), UK

### Prof. Tapas Kumar Maji

Editorial Board Member for five years for an Inorganic Chemistry Journal named *Inorganica Chimica Acta*, published by Elsevier.

### Dr. Ranjani Viswanatha

MRS medal 2018

### Dr. Subi Jacob George

Editorial Advisory Board, *Material Horizons* (RSC)

### Dr. T.N.C. Vidya

Prof. CNR Rao Oration Award

### Dr. Sarit Agasti

SERB Early Career Award,

DAE-Young Scientist Award

Wellcome Trust Intermediate Fellowship

### JNCASR Startups one among top 100 most innovative startups selected by Karnataka Govt.

The State Government on August 30, 2017 selected two new startup companies founded by JNCASR Faculty members among top 100 most innovative startups.



1) **Dr. Meher Prakash & Dr. T. Govindaraju** - vNIR Life

2) **Dr. Sebastian C. Peter & Prof. Umesh V. Waghmare** - Breathe Applied Sciences Pvt Ltd; and under the government's ELEVATE 100 programme for funding of Rs. 35 Cr.

## Awards received by students



Ekashmi Rathore (Ph.D. student) wins the Falling Walls Lab India 2017 - India for her presentation 'Breaking the Walls of slow death - safer water, smarter tomorrow'. Her win qualifies Ekashmi to participate in the Finale in Berlin, Germany and participation in the prestigious Falling Walls Conference where renowned scientists from the world over present their research. Her visit will be sponsored by the German House for Research and Innovation (DWIH) New Delhi.

Dr. Nikhil KL, alumnus (Research supervisor: Late Prof. Vijay K. Sharma) received Humboldt Fellowship for Postdoctoral Researchers, presently working in Universitätsmedizin Berlin.

Ms. Vijaya Verma, Ph.D. Student from Chelliah Lab, was awarded the best poster at 16<sup>th</sup> Molecular cellular and Cognition Society conference held at National University of Singapore from 1-3 August 2017. She also received a travel grant of \$500 to attend this conference.

Dr. Radha Boya (JNCASR alumnus) for being selected to the MIT technology review innovators of 2017.

### The Most Valuable Staff Member Award

Mrs. Shashi Karthikeyan, Sr. Personal Assistant has been awarded for 'The Most Valuable Staff Member' prize for the year 2017.

## INTERNATIONAL COLLABORATION

MOU with the International Iberian Nanotechnology Laboratory (INL), Braga, Portugal for promotion of research in Nano Science and Technology, signed on June 24, 2017.

## APPOINTMENTS & PROMOTIONS

### New Appointments

#### Administrative Officer

Lt. Cdr. Joydeep Deb

#### Technical Assistant (Instrumentation)

Mr. Shivakumar K M

### Promotions

#### Professor

Prof. Kaustuv Sanyal

Prof. Ganesh Subramanian

Prof. Tapas Maji

#### Associate Professor

Dr. Sheeba Vasu

Dr. Ranjani Viswanatha

Dr. Sebastian Peter

Dr. Ravi Manjithaya

Dr. TNC Vidya

#### Vigilance Officer

Prof. K.R. Sreenivas

#### Hon. Professors

Prof. Sandeep Trivedi (TIFR)

Prof. Rajesh Gopukumar (ICTS)

Prof. Anurag Kumar (IISc)

Dr. Baldev Raj (NIAS)

Prof. R. Sukumar (IISc)

Prof. R. Murugavel (IIT-Bombay).

#### Visiting Scientists

Dr. Puja Yadav, MBGU

Dr. Salman Sultan, ICMS

#### Visiting Students

Ms. Arpita Sen, TSU

Mr. Jonathan Whitchurch, MBGU

Mr. Sajan Chinnan, CPMU

Mr. Nathan Leoux, ICMS

Mr. Mohammed Elezzi, ICMS



# LECTURES & MEETINGS

## Research Associates

Dr. Somnath Ghara, Dr. Chayanika Das, Dr. Deepak Govind Madival, Dr. Revathy M Parameswaran, Dr. Shreya Ahana Ayyub, Dr. S. Raja Bhaskar Kanth, Dr. Komala Pandurangan, Dr. Koushik Pal, Dr. Saikat Chakraborty, Dr. Kishore Singh Patel, Dr. Jaishree Jeyaraman, Dr. Subba Reddy Marri, Dr. Bappaditya Roy, Dr. S. Dasaradha Ramarao, Dr. Pralok Kumar Samanta, Dr. Matukumilli V D Prasad

## Research Associates (Provisional)

Mr. Prajith K, Mr. Sourav Pal Chowdhury, Mr. Saikat Saha, Ms. Stephanie Roshni Kaypee, Mr. Sourav Chatterjee, Mr. Piyush Mishra, Mr. Chenikkayala Balachandra, Mrs. Nabadyuti Barman, Mr. Manoj Kumar Jana, Mr. Rukhsan UI haq

## LECTURES

### Endowment Lectures

#### A.V. Rama Rao Foundation Lecture in Chemistry

Bifunctionality in Organometallic Catalysis, Dr. Jitendra K. Bera, Department of Chemistry, IIT Kanpur; Prize Lecture: Non-Covalent Interactions in Asymmetric Catalysis: From Rationalizations to Predictions, Prof. Raghavan B. Sunoj, Department of Chemistry, IIT Bombay, May 16, 2017.

#### Prof. V. Ramalingaswami Memorial

**Lecture:** Opportunities and Challenges to Meet the Health SDGs, Prof. Soumya Swaminathan, Director General, Indian Council of Medical Research (ICMR), May 29, 2017

#### ISRO Satish Dhawan Lecture 2017:

India's Journey in Space, Shri. A. S. Kiran Kumar, Chairman, ISRO, Bangalore, June 1, 2017.

#### Prof. C.N.R. Rao Oration Award Lecture (18th in the series)

Sociality in Asian elephants, Dr. T.N.C. Vidya, Evolutionary and Integrative Biology Unit, JNCASR, August 14, 2017.

#### DAE Raja Ramanna Lectures in Physics

Light: A powerful tool to study liquid crystals, Dr. S. Krishna Prasad, CeNS, Bangalore. Prize lecture: Structures and

states with atomic membranes, Dr. Arindam Ghosh, IISc, September 14, 2017.

### Special Lecture

Multiple strategies to maintain better cardiac health, Dr. Nagaraj Desai, Eminent Cardiologist, October 5, 2017.

### Symposium / Workshops / Conference / School

1. A joint workshop involving JNCASR, CeNS and DRDO, Frontiers in Nanoscience & Technology, July 4 - 5, 2017.
2. 13th JNCASR Research conference on chemistry of materials, Goa from August 17-20, 2017.
3. Zeiss-JNCASR workshop on Confocal & SR microscopy, September 7 - 8 2017.
4. TWAS ROCASA Young Scientists Conference of Young Scientists on the topic "Infectious diseases: biology to intervention strategies", September 7 - 9, 2017.
5. JNCASR Conference on "Chemistry of Materials", Kovalam, Kerala, October 1 - 3, 2017.

### Unit Seminars/Lectures/Colloquia

#### Chemistry and Physics of Materials Unit

1. Muon Spin Rotation/Relaxation Studies of Unconventional Superconductors, Dr. Amitava Bhattacharyya, Department of Physics, Ramakrishna Mission, Vivekananda University, Belur Math, Howrah, West Bengal, India. May 1, 2017.
2. 2D CdSe Nanoplatelets - Self-assembly and Living polymerization, Dr. Santanu Jana, Marie Curie Research Fellow Laboratoire de Chimie, Ecole Normale Supérieure (ENS) de Lyon, France, May 19, 2017.
3. Diheme Enzyme MauG: Nature's Sniper for Long-range Electron Transfer, Prof. S. P. Rath, Department of Chemistry, Indian Institute of Technology, Kanpur, June 14, 2017.
4. Metallic Hydrogen, Prof. Isaac F. Silvera, Lyman laboratory of Physics Harvard University, Cambridge, June 16, 2017.
5. Enzyme-powered motility in buoyant organoclay/DNA microcapsules, Dr. Pavan Kumar Bosukonda, Bristol University, U.K., July 19, 2017.
6. Metadynamics Enhanced Langevin Modeling: Recovering Long Time scale Protein Dynamics from Short Trajectories, Dr. Mithun Biswas, University of Freiburg, Germany, August 07, 2017.

7. Structural distortion and Orbital ordering in Vanadium Spinels, Prof. Alexander J. Browne, Centre for Science at Extreme Conditions and School of Chemistry, University of Edinburgh, Edinburgh EH9 3FD, U.K., August 29, 2017.

8. Unconventional Magnetic order in  $\text{GeFe}_2\text{O}_4$ , Prof. Perversi, Giuditta, Centre for Science at Extreme Conditions and School of Chemistry, University of Edinburgh, Edinburgh EH9 3FD, U.K., August 29, 2017.

9. Recent Adventures with Porous Materials: Triggered Release and Anti-aging membranes, Prof. Matthew Hill, CSIRO, Monash University, Australia, August 29, 2017.

10. Infrared Photo-Induced Force Microscopy (IR PiFM), Dr. Sung Park, CEO of Molecular Vista, September 22, 2017.

11. 60-years of research in materials chemistry, Prof. C. N. R. Rao FRS, National Research Professor, Linus Pauling Professor & Honorary president, Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru, October 18, 2017.

### Engineering Mechanics Unit Colloquia

1. Non-conservative pressure-based compressible formulation for multiphase flows with heat and mass transfer, Dr. Chidambaram Narayanan, Head, Industry Division, ASCOMP AG, Technoparkstrasse, Zurich Switzerland, July 27, 2017.
2. Characterizing coastal flows and in situ oceanic particle distributions using particle image velocimetry and digital holography, Dr. Aditya R. Nayak, Harbor Branch Oceanographic Institute, Florida Atlantic University, July 31, 2017.
3. Instability of a train of neutrally buoyant particles in a channel flow, Dr. Anupam Gupta, Genie des Interfaces & Milieux Divisés, Laboratoire de Genie Chimique, ENSIACET, University Toulouse, France, August 3, 2017.

### Evolutionary and Integrative Biology Unit

1. Bacteria network for growth and survival, Dr. Samay Pande, ETH, Zurich, July 7, 2017.

### Molecular Biology and Genetics Unit Seminars

1. Nanoclusters of integrins underlie cell matrix adhesions, Rishita Changede, Senior Research Fellow, Michael P. Sheetz



Laboratory, Mechanobiology Institute, National University of Singapore, Singapore, May 1, 2017.

2. Transcriptional regulation and neural differentiation in *Drosophila*, Professor Angela Giangrande, Directeur de Recherche CNRS, IGBMC, STRASBOURG, FRANCE, May 2, 2017.

3. Increasing Global Access to Medical Diagnostic Testing using Paper-Based Microfluidics, Bhushan J. Toley, PhD, Assistant Professor, Department of Chemical Engineering, Indian Institute of Science, June 15, 2017.

4. Autophagy in malaria parasite: an atypical and essential process, Dr. Puran Singh Sijwali, Centre for Cellular & Molecular Biology, Hyderabad, August 8, 2017.

5. Nuclear Mechanogenomics & Early Disease Diagnosis, Prof. G.V. Shivashankar, Mechanobiology Institute, National University of Singapore, Singapore & FIRC Institute of Molecular Oncology (IFOM), Milan, Italy, August 10, 2017.

6. Thymic induction of immunological self-tolerance: the role of AIRE and its partners, Kushagra Bansal, PhD, Department of Microbiology and Immunobiology, Harvard Medical School, Boston, USA, August 28, 2017.

7. Evolution of animal models of Parkinson's disease, Dr. Poonam Thakur, Post doctorate fellow Neuroscience Centre, Institute of Neurophysiology (Physiologisches Institut II), Goethe University, Germany, August 31, 2017.

8. ZEISS Cell Discoverer 7: Your Automated Platform for Live Cell Imaging, Dr. Xianke Shi, Product and Applications Sales Specialist, Life Science LM, Asia Pacific, Microscopy Business Group, September 20, 2017.

9. Cleavage-independent removal of cohesin during meiosis, Akira Shinohara, Professor, Department of Biological Sciences, Osaka University, Osaka, Japan, September 22, 2017.

10. Morphogenesis in the fungal pathogen *Candida albicans*: A complex interplay between transcription factors, Christophe d'Enfert, Professor and Head, Mycology Unit, Pasteur Institut Paris, France, September 26, 2017.

### **Molecular Biology and Genetics Unit Lecture Series**

1. Possible and Impossible Cells, Dr. Mukund Thattai, National Centre for Biological Sciences, Bangalore, September 1, 2017.

### **New Chemistry Unit**

1. Designed peptidomimetics disrupt protein-protein interactions mediating amyloid peptide aggregation, Prof. Sandrine Onger, Molecules Fluores Et Chimie Medicinale, Biocis Faculty of Pharmacy, University Paris Saclay, France, June 8, 2017.

2. Quantification of constrained topology and thermodynamics in soft matter, Dr. Durgesh Kumar Rai, Nuclear Reactor Laboratory, Massachusetts Institute of Technology, Cambridge, June 8, 2017.

3. Targeting environmental and metabolic stress signaling to restore tissue homeostasis in aging related diseases, Prof. Arvind Ramanathan, Buck Institute for Research on Aging, California, U.S., June 8, 2017.

4. Metal/Semiconductor Superlattices: Promise for a New Paradigm in Solid-State Energy Conversion, Dr. Bivas Saha, Department of Materials Science and Engineering University of California, Berkeley, California, U.S., July 6, 2017.

5. Catalysis Engineering research in University of Amsterdam: An Overview, Dr. Shiju. N. Raveendran, Van't Hoff Institute for Molecular Sciences, University of Amsterdam, Amsterdam, The Netherlands, August 10, 2017.

6. Catalysis Challenges in Commercialization of Technologies, Dr. Kishan Gurrum, Director, Sabic Technology Center, Bangalore, September 6, 2017.

7. Molecular recognition enabled by nonribosomal amino acids, Dr. Anupam Bandyopadhyay, Post-Doctoral Associate, Dept. of Chemistry, Massachusetts Institute of Technology, U.S., September 12, 2017.

8. Minimalistic peptide self-assembly as a model for protein aggregation and a novel nanobiotechnology paradigm, Dr. Sudipta Mondal, Department of Biotechnology and Microbiology, Tel Aviv University, Israel, September 27, 2017.

9. Nanomachines to Nano clusters: From

Sensors to regulators of Mitochondrial Cristae, Dr. Souvik Modi, Department of Neuroscience, Physiology and Pharmacology, University College, London, U.K., November 3, 2017.

### **Neuroscience Unit**

1. "Rhesactome" protein network as a "molecular brake" for motor behaviors in mice, Dr. Srinivasa Subramaniam, Associate Professor, Department of Neuroscience, The Scripps Research Institute, Florida, July 25, 2017.

2. Mechanisms Regulating Reactive Astroglia in the Mammalian Central Nervous System, Dr. Naren Ramanan, Assistant Professor, Centre for Neuroscience, Indian Institute of Science, Bangalore, September 11, 2017.

3. Modeling human PI3K-related brain malformations and epilepsy – time, cause and treatment, Dr. Achira Roy, Postdoctoral Fellow, Dr. Kathleen Millen's lab, Center for Integrative Brain Research, Seattle Children's Research Institute, Seattle, WA, USA, September 12, 2017.

4. A potential role of p75 neurotrophin receptor in mediating synaptic changes in sleep, deprivation, Dr. Saji Kumar Sreedharan, Department of Physiology, Yong Loo Lin School of Medicine, and Life Sciences Institute, National University of Singapore, Singapore, September 20, 2017.

5. Regulation of protein synthesis: from nucleus to the synapse, Dr. Ravi Muddashetty, Assistant Professor, Institute for Stem Cell Biology and Regenerative Medicine (InStem), GKVK, Bangalore, October 23, 2017.

### **Theoretical Sciences Unit**

1. The Hidden World of Sand, Prof. Bulbul Chakraborty, Brandeis University, USA, May 23, 2017.

2. Statistical Physics of Molecular Machines: single-machine kinetics and collective phenomena, Prof. Debashish Chowdhury, IIT Kanpur, June 27, 2017.

3. The Dynamics of Foraging and Starvation, Prof. Sidney Redner, Santa Fe Institute, US, July 10, 2017.

4. US Presidential election: does critical noise lead to a minority victory?, Prof.



## PAST AND FORTHCOMING EVENTS

Parongama Sen, Professor, Department of Physics, University of Calcutta, Kolkata, July 11, 2017.

5. Stochastic spatial predator-prey models: population oscillations, predator extinction, and the effects of randomness and evolution, Prof. Uwe C. Tauber, Department of Physics, Virginia Tech, July 12, 2017.

6. Rheology of jammed materials: theory of the divergence of viscosities for non-Brownian suspensions, Prof. Hisao Hayakawa, Yukawa Institute for Theoretical Physics, Kyoto University, Kyoto, Japan, September 12, 2017.

7. Shear jammed state for frictional grains under oscillatory shear, Prof. Hisao Hayakawa, Yukawa Institute for Theoretical Physics, Kyoto University, Kyoto, Japan, September 12, 2017.

8. Hydrogen storage materials research at the U.S. Department of Energy: Theory & modeling, Prof. Brandon C. Wood, Lawrence Livermore National Laboratory, September 13, 2017.

9. Odd viscosity in chiral active fluids, Dr. Debarghya Banerjee, Instituut-Lorentz for theoretical physics, Leiden University, The Netherlands, September 19, 2017.

10. The universal force of critical fluctuations: Casimir effect in soft matter, Prof. Andrea Gambassi, SISSA - International School for Advanced Studies and INFN, Trieste, Italy, September 20, 2017.

11. Static and dynamic phase transitions in glassy systems, Prof. Robert Jack, University of Cambridge, Cambridge, U.K., September 22, 2017.

12. Morphological Evolution Dictated by Surface Kinetics, Dr. Bharathi Madurai Srinivasan, Scientist, Nano Mechanics, Institute of High-Performance Computing, Singapore, October 5, 2017.

13. Modelling Thermal Transport and Machine Learning for Nanomaterials, Dr. Ankita Katre, DTNM Theory Group, LITEN, CEA - Grenoble, France, October 10, 2017.

14. Drugs bacteria can't resist: Theory of it, Dr. Meher K Prakash, TSU, JNCASR, Bangalore, October 24, 2017.

### Discussion Meetings

1. Philosophy of Science, Prof. Srikanth Sastry, June 2017.

2. Research Conference on Chemical Frontiers 2017, Prof. R. Murugavel, IIT-Mumbai, August 17-20, 2017.

3. PETRA - III Beam Line Project--- Steering Committee and Users Meeting, JNCASR, Bengaluru, October 9, 2017.

4. JNCASR-FCBS Workshop, Prof. M.V. George, NIIST, Trivandrum, October 26-28, 2017.

### Other Programmes

#### Hindi Workshop

Hindi Workshop organized by Shri M. Savadatti, Asst. Director (Rtd), Hindi Teaching Scheme, Bangalore, July 27, 2017

#### Hindi Week

Hindi Week Celebrations held at our Centre from September 15 - 21, 2017. The events organized include:

1. Lecture in Hindi: "क्या हम ब्रम्हांड में अकेले हैं" by Prof. Ram Sagar, NASI Senior Scientist, Indian Institute of Astrophysics, Founder Director of Aryabhata Research institute of Observational Sciences (ARIES), September 15, 2017.

2. Hindi Quiz competition, conducted by Dr. S.N. Mahesh, Sr. Hindi Translator, CAIR, DRDO, Bengaluru, September 18, 2017.

3. Essay Competition and Story Writing in Hindi, conducted by Shri M. Savadatti, Asst. Director (Rtd), Hindi Teaching Scheme, Bangalore, September 18, 2017.

4. Hindi Workshop organized by Prof. Prabha Shankar, Retd. Head, Hindi Department, Bangalore University, September 19, 2017.

5. Cultural Programmes (Singing, antakshari, poetry recitation etc.) on September 20, 2017.

The Week concluded on September 21, 2017 with prizes distributed to the participants by Shri A.N. Jayachandra, Sr. Administrative Officer, JNCASR.

#### Vigilance Awareness Week

On account of Vigilance Awareness Week from October 30 - November 04, 2017 with the theme "My Vision-Corruption Free India", a pledge was taken by all faculty,

students and staff of the Centre on November 2, 2017. The pledge was followed by A Vigilance Awareness Week Lecture was delivered by Prof. (Dr.) R. Venkata Rao, Vice Chancellor, National Law School of India University, Bangalore.

#### International Yoga Day Programme

The 3rd International Day of Yoga was celebrated at the Centre on June 21, 2017. A lecture was organized with an Introduction to Yoga and its relevance in digital age followed by Science and Yoga (Science of Pranayama) and Demonstration of Pranayamas by Shri. Raghu Prasad, Shri. Srikar and Shri. Sudhama, professionally trained Yoga Practitioners from Yogapeeth, Haridwar.

### Forthcoming Events

1. I2CAM School on Clean and Renewable Energy Technologies via Chemical Route, Dr. Sebastian C Peter, November 27 - December 2, 2017

2. The Seventh Annual "Sheik Saqr Materials Lecture", by Professor Stefan Elliott, University of Cambridge, December 4, 2017.

3. Winter School on Frontiers in Materials Science - December 4-8, 2017

4. India-UK workshop on Thermoelectric Materials for Waste-Heat Harvesting, Bangalore, India, January 8-10, 2018.

## ANNUAL FACULTY MEETING

The Annual Faculty Meeting and In-House Symposium is scheduled on November 13 and 14, 2017. Talks by eminent scientists from the Centre and other scientific institutions have been scheduled, followed by In-house Symposium. A Hindustani Classical Concert by Dr. Soma Ghosh is also scheduled on November 13, 2017 at 6:30 pm at the New Auditorium at JNCASR Jakkur Campus.