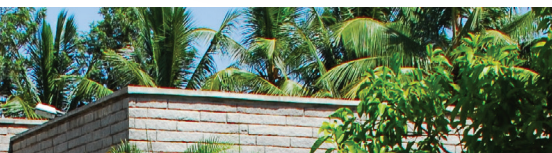




# JAWAHARLAL NEHRU CENTRE FOR ADVANCED SCIENTIFIC RESEARCH



Bi-annual Newsletter



## JNC News

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[www.jncasr.ac.in](http://www.jncasr.ac.in)

### Message from the President

Let me begin by sharing what has been a proud moment for us all – recently, JNCASR was declared 7<sup>th</sup> in the list of the Top 10 academic institutions in 2018 (normalised Nature Index 2018). I congratulate all of us on achieving this.

In the past few months, several of our faculty have received academic honours and accolades. This includes Shanti Swarup Bhatnagar Prize by Prof. Tapas K. Maji in Chemical Sciences for the year 2019; SERB J.C. Bose Fellowships by both Prof. Hemalatha Balaram and Prof. Maneesha S. Inamdar; Dr. Raja Ramanna State Award in science education by Prof. G.U. Kulkarni and Sir C. V. Raman State Award for Young Scientists in chemical sciences by Dr. Ranjani Viswanatha. Our faculty have also been sought for as experts in international scientific organizations and journals. There have been many important scientific breakthroughs and findings.



The Centre continues to be engaged in a variety of outreach activities, to promote science among students as well as the general public. In the past six months, we have organised and conducted many successful workshops and interactive lectures on various topics. International Year of Periodic Table (IYPT) was celebrated in various platforms by JNCASR. Notably, in the last month, we collaborated with the Science Gallery (Bengaluru) and The Royal Society of Chemistry in organising a week-long interactive exhibition – 'ELEMENTS: Stuff that Matters'. The event was a huge success and I hope that we continue to participate in such endeavours.

Let these achievements encourage and inspire us to accomplish our goals..

With best wishes,

*K.S. Narayan,*  
President I/c

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Prof. Tapas K. Maji, CPMU was selected for the prestigious Shanti Swarup Bhatnagar Prize in Chemical Sciences for the year 2019



Prof. C.N.R. Rao, Prof. Tapas K. Maji and Prof. A. Sundaresan at the CPMU Special Seminar delivered by Prof. Maji followed by felicitation programme held on September 27, 2019 at Nevill Mott Hall, JNCASR.

JNCASR featured 7<sup>th</sup> in the list of the Top 10 academic institutions in 2018: normalised Nature Index 2018.

In the latest release of Nature Index 2019 Young Universities- JNCASR stands 40<sup>th</sup> among top 100 young universities <https://go.nature.com/31Xr14x>; 17<sup>th</sup> among top 50 young universities in chemistry <https://go.nature.com/2PxcDny>; and also recorded 61.6% international collaboration <https://go.nature.com/2q81r64>.

# Leading News



1. **Dr. Nikhil K.L.** (Research Supervisor: Late Prof. V.K. Sharma), **Dr. Rohan J. Khadilkar** (Research Supervisor: Prof. Maneesha S. Inamdar), and **Dr. Vikas Yadav** (Research Supervisor: Prof. Kaustuv Sanyal) won the *INSA Medal for Young Scientists 2019* for their notable research contributions in Science and Technology.

2. **Prof. Tapas K. Maji**, from the Chemistry and Physics of Materials Unit, was declared among the top 10% of highly cited authors in the General Chemistry portfolio (2018) of journals of the Royal Society of Chemistry. He was also selected as *Fellow of the Royal Society of Chemistry (FRSC)* under 'Leaders in the Field' scheme.

3. **Dr. Kanishka Biswas**, Associate Professor, from New Chemistry Unit, was declared among the top 10% of highly cited authors in the Materials Portfolio (2018) of journals of the Royal Society of Chemistry.

4. The study by **Sorb, YA**, *et al.*, a collaboration between Prof. Chandrabhas Narayana's and Dr. Sebastian C. Peter's laboratories, was declared to be among the top 1% of most-cited papers in physics during the period 2016-2018 published by Institute of Physics.

5. To mark the **International Year of the Periodic Table**, the Centre volunteered to help the Science Gallery (Bengaluru) and the Royal Society of Chemistry organise the week-long exhibition, "*ELEMENTS: Stuff that Matters*". (photo below)



## Visiting Scientists

Dr. Ram Sagar

Dr. Srinivas Rao Varanasi

Dr. Pradeep Kumar Shukla

## Visiting Students

Mr. Ayuk Corlbert Ayuk

Mr. Aina Toyin

Mr. Yousuf Waidi

Ms. Doha Berraouan

Mr. Abdo Hezman

Ms. Himani Medhi

# Research Highlights



## Battling cancer

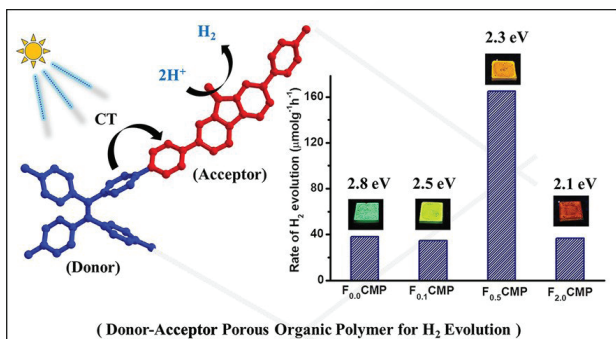
A team led by Prof. Tapas Kundu and Dr. Ravi Manjithaya (from MBGU) have been working together to understand regulation of autophagic processes through which human cells can become resistant to radiation, such as that used in cancer therapy. Recently, they found a key protein, called positive co-activator 4 (PC4), whose absence can lead to increased autophagy, allowing cells to withstand high radiation. These novel findings can be valuable in developing future autophagy inhibitor-based cancer therapeutics. This news was reported in the Hindu newspaper based on original study published in the FEBS journal. Sikder, S., *et al.* (2019), Nonhistone human chromatin protein PC4 is critical for genomic integrity and negatively regulates autophagy. *FEBS J.* doi:10.1111/febs.14952.

## Monitoring foraging in the wild: Are we doing it right?

Dr. TNC Vidya and her research team from EIBU found that remotely sensed indices, which are increasingly used in wildlife studies, are unreliable in informing elephant forage, particularly in case of the Asian elephants in southern Indian tropical forest. These results that confirm the inutility of NDVI in mapping foraging behaviour of elephants may also have implications for studies on other herbivores. This research was published in the journal *Biotropica* (Gautam H, Arulmalar E, Kulkarni MR, Vidya TNC. NDVI is not reliable as a surrogate of forage abundance for a large herbivore in tropical forest habitat. *Biotropica*. **2019**; 51: 443– 456, <https://doi.org/10.1111/btp.12651>) and was covered by The Hindu newspaper.

## Photocatalytic hydrogen evolution

Photocatalytic hydrogen evolution is a promising and sustainable alternative to generating hydrogen for solar energy conversion. Prof. Tapas K. Maji and his research group at CPMU described the regulation of charge transfer in conjugated microporous polymers for the photocatalytic production of hydrogen. This work was recently published: Mothika VS, Sutar P, Verma P, Das S, Pati SK, Maji TK. Regulating charge-transfer in conjugated microporous polymers for photocatalytic hydrogen evolution. *Chem. Eur. J.* **2019**; 25: 3867–3874.

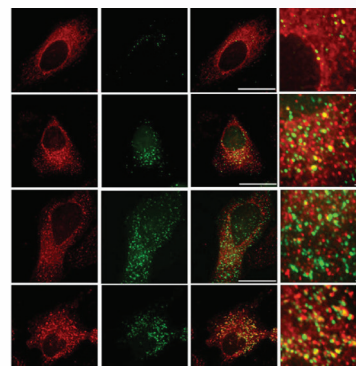


## Keeping track of biological rhythms

An open-source App “RhythmicAlly” was developed by Mr. Abhilash Lakshman and Dr. Sheeba Vasu of the Neuroscience Unit for the analysis of biological rhythms. Among its several features, the app allows subjective marking of phases on actograms, provides high interactivity with graphs, and facilitates visualisation and storing of data for a batch of individuals simultaneously. The details regarding this tool was published in the Journal of Biological Rhythms (Abhilash L & Sheeba V. RhythmicAlly: Your R and Shiny-Based Open-Source Ally for the Analysis of Biological Rhythms. *J. Biol. Rhythms* **2019**; 34(5): 551–561. <https://doi.org/10.1177/0748730419862474>).

## A new tool to understand autophagy

Somya Vats, along with her supervisor Dr. Ravi Manjithaya, from MBGU characterised EACC, a novel small molecule that was found to inhibit late autophagy, without perturbing the general endo-lysosomal traffic. This reversible tool could prove to be useful for studying autophagy-specific SNAREs, which has been difficult to do, so far, due to a lack of autophagy-specific inhibitors. This exciting work was recently published: Somya V, Manjithaya R. A reversible autophagy inhibitor blocks autophagosome–lysosome fusion by preventing Stx17 loading onto autophagosomes. *Mol. Biol. Cell* **2019**; 30(17): 2097–2347. <https://doi.org/10.1111/btp.12651>.



## Understanding genetic risk factors of bipolar disorder

Although not fully understood, bipolar disorder (BPD) is thought to have a genetic component. A study by researchers from the laboratory of Prof. Anuranjan Anand from JNCASR in collaboration with researchers from the National Institute of Mental Health and Neurosciences (NIMHANS) in Bengaluru, carried out a decade-long study on four generations of a family with several members in each generation affected by the condition. Their excellent work identified variations in two specific genes (KANK4 and CAP2) that could be related to BPD, thereby providing new and beneficial insights into this poorly understood condition.

# Academic Activities

## Degree Programmes

A total of 50 students joined different degree programmes at the Centre through admissions in August 2019, in addition to the 07 students who had joined through the mid-year admissions earlier in January 2019. On 2<sup>nd</sup> August, 2019, the Academic Office organised an Orientation Programme for new students. The current student strength of the Centre is now 339. The notification regarding admissions to M.S. (Engg./Research) and Ph.D. programme for the January session of 2019-20 has been advertised in newspapers, and announced on our website, with a deadline of October 27, 2019 for online applications at [www.jncasr.ac.in/admit](http://www.jncasr.ac.in/admit)



## Intellectual Property

### Patents Granted

#### Indian Patent Office issued:

- ◆ Patent (No. 317610) for 'Method of Oxidizing an Organic Compound' developed by Prof. Chintamani Nagesa Ramachandra Rao *et al.*
- ◆ Patent (No. 316516) for 'Semiconductor Nanocrystals with Defects for High Efficiency Emission' developed by Prof. Ranjani Viswanatha *et al.*

### Technical Research Centre

TRC continues to support the JNCASR scientific community in translating scientific discoveries and technological inventions into products and services of industrial and societal relevance. In the last six months, TRC has been instrumental in building R&D commercialisation and innovation promotion ecosystem by structuring industry-academia partnerships, out-licensing technologies and know-hows, setting-up platforms for two new start-ups, and initiating dialogues with multiple stakeholders of national and global ecosystems. TRC itself is set to be translated into a technology business incubator meant to support the entrepreneurship and R&D commercialisation ecosystem with partnership from internal and external stakeholders.

Recently, the TRC team out-licensed a set of antibacterial assets developed at Prof. Jayanta Haldar's Lab at NCU and covered by three patents. The biotech company Vipragen Biosciences Pvt. Ltd. is securing resources and expertise required for further trials and development of the compounds, which are poised to work against resistant strains of bacteria.

- ◆ Patent (No. 314430) for 'A Method of Synthesising Intermetallic Compounds and Applications Thereof' developed by Prof. Sebastian Chirambatte Peter *et al.*
- ◆ Patent (No. 318791) for 'A Process for Identification and Separation of Xylene Isomers' developed by Prof. Ujjal Kam Gautam *et al.*

#### Japanese Patent Office issued:

- ◆ Patent (No. 6533466) for 'Antimicrobial Compounds, Their Synthesis and Applications Thereof' developed by Prof. Jayanta Haldar *et al.*

### Patents Filed

#### Three Indian Provisional Patent Applications were filed for inventions developed by:

- ◆ Prof. Kanishka Biswas *et al.* (Patent Appl. No. 201941028467, filed on 15/07/2019)
- ◆ Prof. Maneesha Shreedhar Inamdar *et al.* (Patent Appl. Nos. 201941039036 and 201941039037, filed on 26/09/2019)



#### IP Licensing Agreement Signing at JNCASR on August 2, 2019

From left to right – Prof. Chandrabhas Narayana (Dean R&D), Prof. K.S. Narayan (President I/c), Dr. Chaitra Harsha (Vipragen Biosciences Pvt. Ltd.), Dr. Chandrashekar S., MD, (Vipragen Biosciences Pvt. Ltd.), Dr. Kripa V. Jalapathy (TRC), Mr. Joydeep Deb (Administrative Officer), Sourabh Gargav (Head-Business Development & New Venture Creation, TRC), Ms. Ranjeetha Mary (TRC)

# Outreach Activities



## Education Technology Unit

**Science outreach programme at Gangolihat Uttarakhand (May 6-8, 2019)** organised by Himalayan Gram Vikas Samiti, Uttarakhand and CNR Rao Hall of Science. Faculty members from JNCASR, IIT Bombay, and Kumaun University, Uttarakhand gave lectures and demonstrated experiments in Physics and Chemistry. ~150 XI & XII students from across Uttarakhand participated.

**International Year of the Periodic Table conducted at the J.N. Tata Auditorium, IISc, Bengaluru (May 29, 2019) and at Srujana Rangamandira, Karnataka College, Dharwad (September 6, 2019)** organised by JNCASR, CeNS, and IISc (Bengaluru), Karnataka State Higher Education Academy, CeNS, and JNCASR (Dharwad). Prof. CNR Rao inaugurated the event and delivered a talk, "*The periodic table*". Dr. Indumati Rao delivered a lecture on "*The Agony and Ecstasy of Mendeleev's Life*". Participants were shown various science demos on superconductivity and levitation and a display of the elements in their real states. A series of games and quizzes based on the periodic table were also conducted. ~850 PUC students and teachers (Bengaluru). ~750 PUC students and teachers (Dharwad) participated in this event.

**2018 Prizes for Outstanding Science Teachers (July 2, 2019) organised by ETU.** The award winners were Shri. B. S Gireesh and Shri. Ajay Kumar Bahri. The award function was followed by two lectures in Physics and Biology by

Prof. A. K. Sood (IISc) and Prof. Sheeba Vasu (JNCASR), respectively. The event also comprised of a music recital by Ustad Rafique Khan & team. ~225 students (Class XI & XII) and teachers from various schools and colleges of Karnataka participated in this event.

**Interactive lecture programme in Chemistry** organised by CNR Rao Hall of Science and ETU.

**Aug 26<sup>th</sup>:** Lectures by Prof. T. Govindaraju and Prof. Sridhar Rajaram of JNCASR, followed by a Q&A session.

**Sept 19<sup>th</sup>:** Lectures by Dr. Dasaradhi Palakodeti (NCBS) and Dr. Phalguni Anand Alladi (NIMHANS), followed by a Q&A session.

In both events, students also visited the '*Chemistry of Materials Exposition*' and the '*Prof. C.N.R. Rao Archives*'. ~125 school and 200 college students (Class XI and XII) and teachers participated.

**Workshop on 'Experiments Using College Chemistry Kit'** organised by CNR Rao Hall of Science and ETU. Post workshop, students also visited the '*Chemistry of Materials Exposition*' and the '*Prof. C.N.R. Rao Archives*'.

**Sept 23-24:** 24 students and 4 teachers (Class XII) from Swami Vivekananda Youth Movement, Mysore.

**Oct 4:** 24 students and 2 teachers (Class XI & XII) from St. Claret PU College, MES ring road, Jalahalli.

## Fellowships and Extension Programmes

### Summer Research Fellowship Programme (SRFP)

A total of 147 students were offered fellowship under SRFP 2019, of which 128 availed the scholarship in various areas of Physics, Chemistry, Biology, or Engineering at research institutes in Bangalore and elsewhere in the country.

### Project Oriented Chemistry Education (POCE) 2019

Out of 385 students that applied, 10 were selected. Six students of POCE-2017-19 batch were awarded Diploma in Chemistry.

### Project Oriented Biology Education (POBE) 2019

Out of 453 applications, 11 students from 10 different states were selected. Ten students of POBE-2017-19 batch were awarded the Diploma in Biology.

### Visiting Fellowships Programme

The Centre received 23 applications for the Visiting Fellowships 2019-20 in different disciplines. Of these, 13 were selected under Physical Sciences, 3 were selected under Biological Sciences and 1 was selected under Engineering Sciences category.

### Student Buddy Programme

The 2019 programme is under way and will run between the months of September- December. The first programme was conducted in October, wherein 35 students and 2 teachers from JNV-Bangalore Urban, Bagalur visited JNCASR on 1st October 2019.

### Institutional Visits

A total of 257 students and 20 teachers from six colleges visited JNCASR campus and different labs (Biology, Chemistry, Physics & Engineering) during July to September 2019.

# Awards and Achievements

## Awards received by Faculty

### Prof. CNR Rao

- Prof. M.G.K. Menon Memorial Award (2019) by the National Academy of Sciences, India.
- D.Sc. (honoris causa) from Jadavpur University, Kolkata and University of Kerala, Thiruvananthapuram.
- Named one among the top 0.01% of scientists across fields, by a paper in PLoS Biology based on total citations, h-index data as well as co-authorship adjusted impact and author position. (doi:10.1371/journal.pbio.3000384)

### Prof. Roddam Narasimha

- The Department of Aerospace Engineering, IISc has instituted an annual Endowment Lecture in honour of Prof. Roddam Narasimha.

### Prof. K.S. Narayan

- Newton prize from International Union of Pure and Applied Physics in India.

### Prof. G.U. Kulkarni

- Dr. Raja Ramanna State Award for Scientist for the year 2018 in the field of science education awarded by Karnataka State Council for Science and Technology (KSCST).

### Prof. Hemalatha Balaram & Prof. Maneesha S. Inamdar

- SERB J. C. Bose Fellowship for the year 2019.

### Prof. Chandrabhas Narayana, Prof. Tapas K Maji, and Dr. Subi J. George

- Fellowships of Indian Academy of Sciences.

### Prof. K.B. Sinha

- Srinivasa Ramanujan Medal (2019) in Mathematics from Indian National Science Academy.

### Prof. H. Ila (2019)

- CRSI Life-time Achievement Award Gold Medal.

### Prof. Shobhana Narasimhan

- Member of the Editorial Board of Physical Review Research.

### Prof. T. Govindaraju

- CDRI Award 2019 for Excellence in Drug Research in Chemical Sciences category and Visiting Professorship, University of Paris-Sud, France.

### Prof. Ranjani Viswanatha

- CRSI Bronze medal 2020
- Sir C V Raman State Award for Young Scientists for the year 2018 in chemical science awarded by Karnataka State Council for Science and Technology (KSCST)

### Prof. Tapas K. Maji

- Shanti Swarup Bhatnagar Prize in Chemical Sciences for the year 2019.
- Among the top 10% of highly cited authors of RSC in 2018 in general chemistry portfolio of journals, and the Fellow of the Royal Society of Chemistry (FRSC) (Invited) in Leader in the Field Category in 2019.

### Prof. Kanishka Biswas

- Among the top 10% highly cited authors in the Materials Portfolio of journals of the Royal Society of Chemistry in 2018.

### Dr. C.P. Rajendran

- Awarded the Indian Society of Earthquake Science Order of Merit Award 2019 during the Federation of Indian Geosciences Associations 2nd Triennial Congress at National Geophysical Research Institute, Hyderabad (October 13 – 16, 2019).



## Appointment

### Faculty

Dr. Bani Kanta Sarma (New Chemistry Unit)

### Warden

Prof. Jayanta Haldar

### Associate Warden

Dr. Princy J. Pereira

## Awards received by Students

**Ms. Ananya Mishra** from NCU (supervisor: Dr. Subi George) won the BIRAC-SRISTI Gandhian Young Technological Innovation Award, presented by Honourable Vice President Mr. Venkaiah Naidu. (photo below)



**Mr. Premkumar** received Best Poster Presentation Award in Magnetic Crystallography at the 53rd Course of the International School of Crystallography held at Erice, Italy from May 31 - June 9, 2019.

**Ms. Chaitali Sow** from CPMU (supervisor: Prof. G.U. Kulkarni) received the best poster award at the 10th International Conference on Materials for Advanced Technologies held from June 23-28, 2019, Marina Bay Sands, Singapore.

**Ms. Anvitha S.** and **Ms. Medha Rao** (visiting students, EIBU) won speed-talk prizes at SPEEC-UP 2019, Bengaluru, an event held at JNCASR on August 30, 2019 wherein talks were given on behavioural science, ecology, evolution, and conservation.

**Ms. Pooja Barak** from MBGU (supervisor: Prof. Anuranjan Anand), received the 2019 Developing Country Travel Award to attend the American Society of Human Genetics Annual Meeting in Houston, USA from Oct 15-19, 2019.

**Ms. Geetika Dhanda** from NCU (supervisor: Dr. Jayanta Haldar) received Babu Narayanswamy Award for the Best Master's thesis in Chemical and Materials Science, 2019 from the Centre; she also won best short oral presentation at the Chemical Frontiers conference at Goa, 2019.

**Mr. Sumukh Purohit** from CPMU (supervisor: Prof. K.S. Narayan) won best poster prize at Sunrise Symposium at the University of Oxford, UK sponsored by NSG Pilkington, NA.

# Lectures, Meetings and Events

## Discussion Meetings & Conferences

- ◆ **28<sup>th</sup> Discrete Simulations of Fluid Dynamics**  
Meeting 2019, organised by Prof. Santosh Ansumali (July 22-26, 2019).
- ◆ **Chemical Frontiers Goa-CFG 2019**, organised by Prof. R. Murugavel, IITB (August 22-25, 2019).
- ◆ **15<sup>th</sup> JNC Conference on Chemistry of Materials 2019**, organised by Prof. Subi J George, JNCASR (Sep 30–Oct 2, 2019).
- ◆ **Workshop for College Chemistry Students and Teachers**, organised by Dr. Joshy Joseph, NIIST, Trivandrum (October 31 – November 02, 2019).



### Vigilance Awareness Week

As per the notification from the Central Vigilance Commission, the Centre observed Vigilance Awareness Week from October 28 to November 02, 2019 on the theme "*Integrity-a way of life*". On this occasion, faculty, students and staff members of the Centre took a pledge on vigilance on October 28, 2019 administered by Shri Joydeep Deb, Administrative Officer, JNCASR.

### Rashtriya Ekta Diwas

A 5-Km Marathon "*RUN FOR UNITY*" was organised and enthusiastically participated by JNCASR community on the occasion of "*RASHTRIYA EKTA DIWAS*" (National Unity Day) on October 31, 2019.

## Endowment Lectures

### Prof. C.N.R. Rao Oration Award Lecture (20<sup>th</sup> in the series)

was delivered on "*Swalpa Ajust Maadi: Tweaking longevity pathways in stem cells*" by Prof. Maneesha S. Inamdhar, MBGU, JNCASR, on Tuesday, August 13, 2019 at AMRL Conference Hall, JNCASR.



Prof. Ganapathy Baskaran  
The Institute of Mathematical Sciences, Chennai



Prof. E. V. Sampathkumaran  
TIFR, Mumbai

### DAE-Raja Ramanna Lectures in Physics 2019

(1) "*Room Temperature Superconductors: Ephemeral, Elusive to stable Ones*" by Prof. Ganapathy Baskaran, The Institute of Mathematical Sciences, Chennai and (2) PRIZE LECTURE on "*Geometrically frustrated magnetism: Observation of intrinsic spin-glass anomalies in metallic kagome lattices, R3Ru4Al12*" by Prof. E. V. Sampathkumaran, TIFR, Mumbai on September 18, 2019 at AMRL Conference Hall.

Events contd...

## International Yoga Day

The Centre organised an **awareness programme on International Yoga Day** on June 21, 2019 at 3.00 PM in the Kannada Hall at Jakkur Campus. The programme began with an Introductory lecture, followed by the release of Yoga Poster by Prof. CNR Rao. A lecture was also delivered by Dr. Shankar B.S., Orthopaedic Surgeon at Fortis Hospital, Bangalore on 'Art of Stress-Free Living'. The event concluded with 45-minutes of demonstration of Asanas for 'Stress Relief' by yoga trainers from Shuddham Yoga Studio, Bangalore.



## Events Organised by Hindi Cell

On June 12, 2019 Hindi workshop was conducted on the topic "कार्यालयीन कामकाज में हिंदी की समस्याएँ" and another workshop organised on August 6, 2019 on "कार्यालयीन वाक्यरचना". An orientation programme was organised on August 29, 2019. Several programmes were organised on the occasion of Hindi Week celebrations from September 18-20, 2019, which included *Hindi Diwas Samaroh*, *Hindi Crossword competition*, and *Hindi news reading Competition*. Staff members of the Centre enthusiastically participated in all the events and won prizes.



## Upcoming Events

- ◆ **Annual Faculty Meeting:** The Annual Faculty Meeting and In-House Symposium is scheduled on November 13 and 14, 2019. Speakers for the two-day event include Prof. Amitabh Joshi, Prof A. Sundaresan, and Prof. Umesh V. Waghmare from the Centre, Prof. J. Dasgupta, TIFR, and Praveen Kumar Vemulla, inStem. A play "*Bharat Bhagya Vidhata*" by Shrimad Rajchandra Mission, Dharampur is also scheduled on November 13, 2019 at 6:30 pm at the New Auditorium in JNCASR Jakkur Campus.
- ◆ **16<sup>th</sup> Asian Congress of Fluid Mechanics** is scheduled from December 13-17, 2019, organised by Prof. K.R. Sreenivas, JNCASR.
- ◆ The **Bangalore Science Habba (BaSH)**, will be held in January 2020 at ICTS, Bangalore with Prof. Rajesh Gopakumar as the convener.
- ◆ The **MLK@80 Symposium** is scheduled to occur at JNCASR from February 18-20, 2020, with Prof. S. Balasubramanian and Prof. Umesh Waghmare as the conveners.
- ◆ The **International Conference on Perspectives on Vibrational Spectroscopy 2020**, will be held at JNCASR from February 24-29, 2020, with Prof. Chandrabhas Narayana, Prof. Umesh Waghmare, and Prof. A. Sundaresan as the organisers.



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