

ACADEMY NEWS

INSA MEETINGS

Council and General Body Meetings

Several meetings were held during July 27-30, 2015 in the Academy premises. The different Sectional Committees met for election of new Fellows of the Academy and selection of the Young Scientist Awardees. The Advisory Boards for the various INSA Awards also met. These were followed by meetings of the Council and General Body on July 30, 2015.

INSA Medal for Young Scientists

The Council at its meeting during July 29-30, 2015 approved the award of INSA Medal for Young Scientist 2015 to 29 young researchers below the age of 35. The award carries a medal, a certificate and cash prize of Rs. 25,000.

The following 29 young scientists were selected for the INSA Medal for Young Scientists.

1. **Dr B Anand** (*b* 06.01.1981), PhD, Department of Biosciences and Bioengineering, Indian Institute of Technology, Guwahati.

For his novel insights into mode of action of GTPases and diverse cellular functions that they regulate. His work on CRISPR-cas system has potential applications in genome engineering.

2. **Dr Rehna Augustine** (*b* 18.05.1981), PhD, National Institute of Plant Genome Research, New Delhi.

For her significant work on the manipulation of glucosinolate pathway in oilseed mustard (*Brassica juncea*). Her transgenics for *MYB2* gene could be of high agronomic value in developing low glucosinolate varieties and hybrids.

3. **Dr Jyotishman Bhowmick** (*b* 05.11.1981),

PhD, Stat Math Unit, Indian Statistical Institute, Kolkata.

For his outstanding results on quantum isometry groups of compact quantum groups which have attracted the attention of, and been put to good use by, established experts in the area.

4. **Dr Arup Kumar Das** (*b* 18.04.1980), PhD, Department of Mechanical and Industrial Engineering, Indian Institute of Technology, Roorkee.

For development of computational algorithms for dispersed two phase flow with complex interfaces and its experimental validation.

5. **Dr Rajendra Singh Dhaka** (*b* 10.06.1980), PhD, Department of Physics, Indian Institute of Technology, Delhi.

For his unique and significant experiments on rare-gas nanobubbles in metallic surfaces and establishing a general relation between the nanobubbles and the binding energies of the rare gas atoms.

6. **Dr Sumit Ghosh** (*b* 01.05.1980), PhD, Department of Plant Biotechnology, CSIR-Central Institute of Medicinal and Aromatic Plants, Lucknow.

For having cloned and functionally characterized novel amyryn synthase genes from sweet basil for the biosynthesis of medicinally important pentacyclic triterpenes. He also engineered slow ripening of tomato by silencing genes that control N-glycan processing.

7. **Dr Jitender Giri** (*b* 01.07.1980), PhD, National Institute of Plant Genome Research, New Delhi.

For discovering rice genes for stress-associated proteins (SAP 1 and SAP 11) and receptor-like

cytosolic kinase (RLCK 253) that confer abiotic stress tolerance in rice and in transgenic *Arabidopsis* plants.

8. **Dr Ashish Gupta** (*b* 22.08.1980), PhD, Department of Life Sciences, Shiv Nadar University, Greater Noida.

For discovering functional characterization of the homologue of eukaryotic Origin Recognition Complex (ORC) subunits in *Plasmodium* and for identifying the presence of proliferating cell nuclear antigen (PfPCNA) Interacting Protein (PIP) motif in PfOrcl and confirming the physical interaction between PfORC and PfPCNA by interaction studies and complementation assay.

9. **Dr Nilesh Prakash Gurao** (*b* 11.03.1983), PhD, Department of Materials Science and Engineering, Indian Institute of Technology, Kanpur.

For his outstanding work in elucidating deformation mechanisms at multiple length scales (from nanometer to millimeter), in particular, his demonstration of the similarity of deformation mechanisms in coarse grained and nanocrystalline Nickel on the basis of misorientation angles determined by electron back scattered diffraction.

10. **Dr Tanvi Jain** (*b* 17.05.1981), PhD, Indian Statistical Institute, New Delhi.

For her contribution in Matrix Analysis and proof of the variational principle for symplectic eigenvalues of strictly positive real matrices of even order.

11. **Dr Vikas Jain** (*b* 06.02.1980), PhD, Department of Biological Sciences, Indian Institute of Science Education and Research, Bhopal.

For his understanding of the interactions that occur between a bacterium and its phage. And for developing expression vectors for the rapid cloning and expression of proteins with hexahistidine tag at either termini.

12. **Dr Sameena Khan** (*b* 23.05.1984), PhD, Translational Health Science and Technology Institute, Faridabad.

For her outstanding work about the structural basis of aminoacylation of tRNA in *Plasmodium falciparum* which has potential application in development of novel therapies against Malaria.

13. **Dr Hima Bindu Kudapa** (*b* 22.04.1980), PhD, Center of Excellence in Genomics, International Crops Research Institute for the Semi-Arid Tropics, Greater Hyderabad.

For her excellent contributions on gall midge and legume transcriptome which is of high value and useful for breeding of chickpea.

14. **Dr Biman Behari Mandal** (*b* 07.07.1981), PhD, Department of Biosciences and Bioengineering, Indian Institute of Technology, Guwahati.

For developing innovative use of silk fibre base scaffolds for human tissue engineering and for demonstrating their versatility in applications ranging from skin repair to scaffolds for bone repair.

15. **Dr Athi Narayanan Naganathan** (*b* 28.11.1980), PhD, Department of Biotechnology, Indian Institute of Technology, Madras.

For developing statistical mechanical models for computational prediction of folding thermodynamics and for comparing predictions with experimental results on biologically important proteins like ACBP, I κ B α , RNaseH etc.

16. **Dr Rajesh V Nair** (*b* 24.05.1980), PhD, Department of Physics, Indian Institute of Technology Ropar, Punjab.

For synthesizing and studying high quality photonic crystals in the visible and near infrared wavelength ranges and for obtaining photonic band edge lasing from Si-nanophotonic structures.

17. **Dr Santanu Kumar Pal** (b 18.03.1981), PhD, Indian Institute of Science Education and Research, Mohali.
For his significant contributions on liquid crystal based sensors in detection of cellular analytes.
18. **Dr Vivek Vijay Parkar** (b 06.09.1980), PhD, Nuclear Physics Division, Bhabha Atomic Research Centre, Mumbai.
For his outstanding contributions on experimental measurements of fusion cross sections of weakly-bound nuclei on a range of targets which has opened novel possibilities for studying nuclei away from the line of stability.
19. **Dr Anbarasan Pazhamalai** (b 03.06.1982), PhD, Department of Chemistry, Indian Institute of Technology, Madras.
For his notable work on transition metal catalyzed methodology for synthesis of pharmaceutical and useful molecules through cross coupling reactions.
20. **Dr Vijay Kumar Prajapati** (b 05.07.1984), PhD, Department of Biochemistry, School of Life Sciences, Central University of Rajasthan, Ajmer.
For his important work on nanonization of amphoteresin B, a newer experimental approach in hamster animal model to increase the antileishmanial efficacy.
21. **Dr Upasana Ray** (b 11.10.1982), PhD, National Cancer Institute, National Institutes of Health, Bethesda, USA.
For establishing the existence of switch from translation to replication of HCV RNA and for designing peptide based antivirals that target La protein and HCV NS3 protein and which could inhibit the HCV RNA function.
22. **Dr Nitin Saxena** (b 03.05.1981), PhD, Department of Computer Science and Engineering, Indian Institute of Technology, Kanpur.
For his renowned contributions in the area of algebraic complexity theory and significant studies of the development of important deterministic algorithms for primality testing, polynomial identity testing and construction of hitting sets.
23. **Dr Maheswaran Shanmugam** (b 01.06.1980), PhD, Department of Chemistry, Indian Institute of Technology, Bombay.
For his comprehensive studies of the electronic and magnetic properties of molecular nanomagnets.
24. **Dr Narendra Pratap Singh** (b 23.03.1981), PhD, Stowers Institute for Medical Research, Kansas City, Missouri, USA.
For elucidating the divergence of the developmental roles of Drosophila Abd-a and Abd-b in determining segment identity and proliferation in body segments where they are co-expressed.
25. **Dr Pankaj Kumar Singh** (b 03.02.1980), PhD, Department of Translational Medicine and Neurogenetics, Institut de Genetique et Biologie Moleculaire et Cellulaire (IGBMC), France.
For unravelling cellular functions of Lafora disease proteins and proposing inhibition of SGK 1 as a potential therapeutic strategy for the treatment of the Lafora disease.
26. **Dr Hari Sridhar** (b 28.04.1982), PhD, Centre for Ecological Sciences, Indian Institute of Science, Bengaluru.
For his significant studies leading to the understanding of the relative roles of predation and forging success in driving multi-species flocking in birds.
27. **Shri Shashi Kant Tiwari** (b 10.07.1985), MSc, PhD (Thesis Submitted), Developmental Toxicology Division, Indian Institute of Toxicology Research, Lucknow.
For demonstrating the mechanisms by which Bisphenol A (BPA) affects the endogenous

neural stem cells and oligodendrocyte progenitor cells which lead to the identification of means of its amelioration by curcumin.

28. **Dr Gyana Ranjan Tripathy** (b 05.07.1981), PhD, Earth and Climate Sciences, Indian Institute of Science Education and Research, Pune.

For his significant work on $^{187}\text{Os} / ^{188}\text{Os}$ isotope ratios of the black shale and usefulness of this technique in estimating the atmospheric oxygen levels in the geological past and for focusing on low temperature weathering in the Himalayas and its linkage to the tectonic processes.

29. **Dr Shri Ram Yadav** (b 09.07.1980), PhD, Department of Biotechnology, Indian Institute of Technology, Roorkee.

For his outstanding contributions on the molecular mechanism of action of a gene that regulated floral organ specification and development in rice and for demonstrating the role of gene duplication and diversification of function during evolution of rice floral development.

INSA Medal/Lecture Awards 2015

The Academy announced the following nine medal/lecture Awards for 2015.

(A) Medals Instituted by the Academy

1. **The Satyendranath Bose Medal to Professor J Maharana, FNA**, Institute of Physics, Bhubaneswar.
2. **The Darashaw Noshervanji Wadia Medal to Professor S Sengupta, FNA**, INSA Senior Scientist, Department of Geological Sciences, Jadavpur University, Kolkata.
3. **The Golden Jubilee Commemoration Medal (for Animal Sciences) to Professor MD Gadgil, FNA**, DD Kosambi Visiting Research Professor, Goa University, Goa.

(B) Endowed Medals

4. **Vishwakarma Medal to Dr AB Pandit, FNA**,

UGC Research Scientist C (Professor Grade), Chemical Engineering Department, Institute of Chemical Technology, Mumbai.

5. **Professor GN Ramachandran 60th Birthday Commemoration Medal to Dr Amitabha Chattopadhyay, FNA**, JC Bose National Fellow and Outstanding Scientist (Director Level), CSIR-Centre for Cellular & Molecular Biology, Hyderabad.

6. **Professor Krishna Sahai Bilgrami Memorial Medal to Dr Yadvinder Singh, FNA**, INSA Senior Scientist, Department of Soil Science, Punjab Agricultural University, Ludhiana.

(C) Endowed Lectures

7. **Dr Nitya Anand Endowment Lecture to Professor TK Kundu, FNA**, Transcription and Disease Laboratory, Molecular Biology and Genetics Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru.

8. **Professor Vishnu Vasudeva Narlikar Memorial Lecture to Professor SK Khanduja, FNA**, Indian Institute of Science Education and Research, Mohali.

9. **Professor Vishwa Nath Memorial Lecture to Professor Subrata Sinha, FNA**, Director, National Brain Research Centre, Manesar.

Award Lectures Delivered

Professor Shyam Bahadur Saksena Memorial Medal Lecture (2011): Professor LC Rai, Centre of Advanced Study in Botany, Molecular Biology Section, Banaras Hindu University, Varanasi delivered Professor Shyam Bahadur Saksena Memorial Medal Lecture on *Decoding Cyanobacterial Survival under Arsenic Stress through Proteomic, Genomic and Bioinformatics Approaches* at Allahabad University, Allahabad on August 22, 2015.

The Syed Husain Zaheer Medal Lecture (2014): Professor B Yegnanarayana, International Institute of Information Technology, Hyderabad will be delivering The Syed Husain Zaheer Medal Lecture

on *The Problem in Signal Processing –Need to relook at the time frequency analysis of speech signals* at University of Hyderabad, Hyderabad on September 22, 2015.

INTERNATIONAL ACTIVITIES

Nominations/Election of Indian scientists for various positions at International Council for Science (ICSU) and its different Unions

- **Dr Anita A Rampal**, Department of Education, University of Delhi has been nominated for the membership of the Executive Committee of the International Commission on Mathematical Instruction (ICMI) which is commission of the International Mathematical Union (IMU).
- **Dr Sivaramakrishnan Rajan**, Director, National Centre for Antarctic and Ocean Research (NCAOR), Goa has been nominated for the membership of Ad-hoc Panel for the Joint review of the Scientific Committee on Antarctic Research (SCAR) and Scientific Committee on Oceanic Research (SCOR).
- **Professor SC Lakhotia**, Vice-President, INSA and Professor Emeritus & DAE-Raja Ramanna Fellow, Banaras Hindu University, Varanasi has been nominated as the National Focal Point for IAP's Science Education/Science Literacy activities from India. Professor Lakhotia is also a member of Science Education Programme of the Academy.
- **Dr Anindita Bhadra**, Indian Institute of Science Education and Research, Kolkata has been selected by IAP as IAP Young Scientist to attend the IAP Young Scientists Side Event on *Scoping the future: views and ideas of young scientists to tackle global challenges* and the World Science Forum (WSF) to be held during November 4-7, 2015 in Budapest.
- **Dr Mahesh Kumar**, Indian Institute of Technology Jodhpur was nominated to attend the workshop on *Realizing a Sustainable Energy Future: Roles and Tasks for the World's Academies* which was organised by the Royal

Netherlands Academy of Arts and Sciences on June 26, 2015.

- **Professor RB Singh**, Head, Department of Geography, Delhi School of Economics, University of Delhi has been nominated for the membership of Integrated Research on Disaster Risk (IRDR) programmes of ICSU and also as an expert for IAP International Committee to assist with implementation of the Sendai Framework on Disaster Risk Reduction.
- **Dr Ranjini Bandyopadhyay**, Raman Research Institute, Bengaluru has been elected as a Member of ICSU Committee on Freedom and Responsibility in the Conduct of Science for the term 2015-2018.
- **Professor LS Shashidhara**, Indian Institute of Science Education and Research, Pune has been re-nominated for the membership of IUBS Executive Board.
- **Professor Rohini Godbole**, Centre for High Energy Physics, Indian Institute of Science, Bengaluru has been nominated by the Academy to participate in the 11th AASSA Regional workshop on *Gender Issues in Science Research and Education* held during August 26-27, 2015 in Seoul, South Korea.
- **Professor AK Singhvi**, Physical Research Laboratory, Ahmedabad, has been elected as Vice-President, International Union of Quaternary Research (INQUA) for the term 2015-2019.

Workshop/ Symposia/ Conference supported by the Academy

The 15th SCA Conference on *Science and Technology for Culture* was organized by Institute of Technology of Cambodia in cooperation with the Ministry of Education, Youth and Sport of Cambodia, Ministry of Culture and Fine-Arts of Cambodia, and the Science Council of Japan. Professor Rajendra Prasad, Vice-President, INSA attended the conference in Siem Reap, Cambodia held during May 15-16, 2015 as an observer.

Support for Visiting Scientists during May – August 2015

- 13 Indian scientists were supported by the INSA for attending various ICSU sponsored international conferences abroad.
- 32 Indian scientists visited abroad under INSA Bilateral Exchange Programme.

Visit of Overseas Delegates to INSA

- Dr Vincent Caudrelier, City University London, Northampton Square, London recipient of Dr V Ramalingaswami Chair of INSA (2015-16) visited Saha Institute of Nuclear Physics, Kolkata; Jawaharlal Nehru University, New Delhi and Delhi University.
- Dr Saibal Roy, Tyndall National Institute, Cork, Ireland recipient of Dr AS Paintal Chair of INSA visited Indian Association for the Cultivation of Science, Saha Institute of Nuclear Physics, SN Bose National Centre for Basic Sciences and CSIR-Central Glass & Ceramic Research Institute, Kolkata.
- Professor Neelima R Sinha, University of California, USA recipient of Dr BP Pal Chair of INSA visited Delhi University, Indian

Institute of Science, Bengaluru and IISER Pune. During her visit, she delivered a lecture on *Heteroblasty and Heterophylly - What Happens When Two Programs Collide?* at Department of Botany, Delhi University on September 3, 2015.

SCIENTIFIC MEETINGS DURING MAY-AUGUST 2015

- An interactive session of Science Academies' Summer Research Fellows and their mentors was organized at the INSA premises on June 22, 2015. The meeting was chaired by Professor R Gadagkar, President INSA along with Professor Dipankar Chatterji, Molecular Biophysics Unit, Indian Institute of Science, Bengaluru. Professor Dipankar Chatterji, delivered a lecture on *Chance and Necessity: Nurturing the Young Talent*. A large number of summer research fellows, working in Delhi/ New Delhi, and their mentors interacted with the panel after the lecture. The fellows and mentors, while applauding the programme initiated by the three Academies viz., INSA, IASc and NASI, also discussed some problems faced by them during the period of research. Some local fellows of INSA also attended the session.



Interactive session of Summer Research Fellows and their mentors

- Annual meeting of the ICSU National Committee was held on July 28, 2015 at INSA premises.
- A discussion meeting of the Organizing Committee for the forthcoming INDO-US Workshop 2016 was held on August 5, 2015 at Jawaharlal Nehru University. The meeting was attended by Professor Rakesh Bhatnagar, Professor Pawan K Dhar and Ms. Jaishree from Jawaharlal Nehru University; Dr VS Reddy, International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi and Dr James LeDuc and Dr Rita S Guenther of US National Academy of Sciences.

SCIENCE & SOCIETY PROGRAMME

Indian National Young Academy of Sciences (INyas)

The newly established Indian National Young Academy of Sciences (INyas) meeting was held on June 20, 2015 in the Academy premises. During this meeting the 20 founding members of INyas selected by the council met for the first time for the selection of seven core committee members (one chair and six members) from among the founding members for regular activities of INyas. They discussed future activities, the *modus operandi* for inducting new members, and the short and long term goals of INyas etc.

The following seven were elected as the core committee members to run the activities of INyas:

Anindita Bhadra (Chair), Assistant Professor, IISER Kolkata; **Vijay Pal Yadav**, Assistant Professor, JNU, New Delhi; **Ranjani Viswantha**, Faculty Fellow, JNCASR, Bengaluru; **Sudarshan Ananth**, Associate Professor, IISER, Pune; **UK Anandavardhanan**, Associate Professor, IIT Bombay; **Rajeev Saraswat**, Scientist, NIO, Goa and **Saptarshi Mukherjee**, Associate Professor, IISER Bhopal as members of INyas.

AWARD AND HONOUR TO INSA FELLOW

- Professor R Rajaraman, Emeritus Professor of Theoretical Physics, School of Physical Sciences, Jawaharlal Nehru University, New Delhi was honoured by the Governor of the Hiroshima prefecture, H.E. Hidehiko Yusaki for his efforts on nuclear disarmament at the 70th Anniversary Commemoration ceremony of the Bombing of Hiroshima on August 6, 2015 at the Hiroshima Peace Park built at “Ground Zero” of the bomb explosion.



Professor Rajaraman with Ambassador Lalit Mansingh, a fellow invitee, in front of the “Dome”, the iconic building which survived despite being located directly below the exploding bomb

- Professor Raghavendra Gadagkar, President INSA, has been awarded the highest civilian honour of the Federal Republic of Germany, the “Cross of the Order of Merit” by the Consul General Joern Rohde for his contribution in the field of behavioural ecology and socio-biology as well as strengthening research linkages between India and Germany.



Mr. Joern Rohde pinning the Cross of the Order of Merit to Professor Gadagkar

RECENT PUBLICATIONS OF THE ACADEMY

Proceedings of the Indian National Science Academy

Volume 81, No.3 (June 2015) issue has been published. This issue contained five review articles, two book reviews, one research paper and a

commentary besides the Editorial. The issue also included a medal lecture by Professor VS Borkar, Department of Electrical Engineering, IIT Mumbai on *Playing Dice with the Universe: Algorithms for Random Environments*.

Indian Journal of History of Science (IJHS)

Volume 50, No. 2 (June 2015) of the 50th Anniversary year of *IJHS* has been published. The issue contains papers on classification of cancer in the Ayurvedic text, medicinal plants of Indian *purānas*, substances in medieval *Vaidyanighaṇṭus* (medical lexicons) ancient Indian mathematical sciences in Chinese compilation of Gautam Siddha, *Nārāyaṇā*'s generalisation of *mātrā-vṛtta-prastāra* and Virahāṅka-Fibonacci representation of numbers, rationale for *Vākyas* pertaining to the Sun in *Karanapaddhati*, Lālah Bulhomal Lāhorī and the production of traditional astronomical instruments, use of Ambergris in perfumery, traditional healing practices of North East India, historical antecedents of cancer surveillance and scientific exploration of the snow fungus. The issue also contains report on history of science project on metrological traditions of south India and review of the book *Indian Astronomy—Concepts and Procedures* apart from news from history of science.

Indian Journal of Pure and Applied Mathematics (IJPAM)

Volume 46, No.3 & 4 (June & August 2015) issue of *IJPAM* has been published.

OBITUARY**Fellows****Sarmukh Singh Bir**

Sarmukh Singh Bir (*b* 28 August 1929; *d* 26 August 2015) obtained his PhD from Punjab University. He began his career at Punjab University, Chandigarh and shifted to Punjabi University, Patiala in 1967 as Reader and Head, Department of Botany.



He was appointed Professor of Botany in 1969 and retired as Senior Professor in 1989. Professor Bir after retirement spent nearly 20 years at Punjabi University, Patiala as Professor Emeritus. He had been a CSIR Emeritus Fellow; INSA Senior Scientist (1995-2000) and Honorary Scientist (2001-04, 2006-09).

Professor Bir significantly contributed to the advancement of botanical knowledge about Indian flora. He was known for his comprehensive cytological, biosystematic, phytogeographic, taxonomic and morphological studies on more than 500 species of higher plants, ferns and fern allies from different floristic regions of India in Himalaya, Pachmarhi, Nilgiris and Palni Hills. Professor Bir's discovery and naming of over a dozen new taxa of Indian ferns is highly significant in pinpointing the vast diversity and richness of Indian vegetation. His postulate about the existence of polyploidy in ferns, ferns allies and woody taxa of forests has been well received by flora scientists.

Professor Bir was recipient of Professor P Maheshwari Memorial Medal (Indian Botanical Society), Professor DD Pant Medal & Oration Award (Society of Bionaturalists, India); Platinum Jubilee Lecture of Indian Science Congress; Birbal Sahni Foundation Medal to name a few. He was elected as fellow of National Academy of Sciences (India), Allahabad.

Professor Sarmukh Singh Bir was elected to Fellowship of the Indian National Science Academy in 1981 and served as its Council member during 1993-95.

Satyendra Nath Ghosh

Satyendra Nath Ghosh (*b* 15 August 1918; *d* 24 June 2015) obtained his DSc degree in Physics from Calcutta University. He was appointed as Head, Department of Physics, Senior Professor, Department of Electronics and Communication, Allahabad University and Sir Rashbehari Ghose Professor of Applied Physics, Calcutta University. After superannuation from Calcutta University, he joined as INSA Senior Scientist from 1985-87.



Professor Ghosh's studies focused mainly on Applied Physics, Communication, Space Science and Microwave Spectroscopy. He received many distinguished scholarships, such as Adir Dutt Research Scholarship and was ICI Research Fellow; Post-doctoral Research Fellow, Duke University; Scientist, Wentworth Institute; Post-doctorate Fellow, Harvard University; and Scientist, Geophysical Research Centre, USA. Professor Ghosh was recipient of Sampurnanand Prize of National Academy of Sciences, Allahabad. He was President of Engineering and Metallurgy Section of Indian Science Congress. A Lecture Hall is set up in Allahabad University in his name and a lecture, known as "Professor SN Ghosh Lecture", is delivered every year at Allahabad by a selected Eminent Scientist.

Professor Satyendra Nath Ghosh was elected to the Fellowship of Indian National Science Academy in the year 1968 and served the Council as an additional member during 1972-73.

Sethunathasarma Krishnaswami

Sethunathasarma Krishnaswami (*b* 21 May 1945; *d* 20 July 2015) obtained his PhD from Bombay University specializing in Geochemistry. He did his post doctoral research work on the applications of U-Th series nuclides in aquatic systems from Yale University. He then joined Physical Research Laboratory (PRL), Ahmedabad. After his superannuation from PRL, he was an INSA Senior Scientist. He served as Vice-President of IAPSO (International Association for the Physical Sciences of the Oceans), SCOR (Scientific Committee on Oceanic Research of ICSU) and as Executive Member and Treasurer of IGBP (International Geosphere-Biosphere Programme of ICSU).



Professor Krishnaswami's research focused on the applications of environmental radioactive and radiogenic isotopes to study the earth surface processes. His contributions in isotope geochemistry have provided new and powerful environmental radioactive and radiogenic tracers and approaches to understand and quantify natural processes, such as sedimentation and particle mixing in lakes and coastal oceans; growth history of marine and fresh-water ferromanganese deposits; contaminant transport in sea water and sub-surface aquifers; weathering and erosion in the Himalaya and Deccan traps and their influence on global change, etc.

Professor Krishnaswami received several awards including INSA Young Scientist Medal (1975), Krishnan Medal (1981) and SS Bhatnagar Prize (1984). He was a Fellow of the Indian Academy of Sciences, Bangalore, National Academy of Sciences (India), Allahabad, The Academy of Sciences for the Developing World, Trieste, American Geophysical Union, Geochemical Society and European Association of Geochemistry.

Professor Sethunathasarma Krishnaswami was elected to the Fellowship of the Indian National Science Academy in 1989 and served as Council

member during 2002-04.

Adusumilli Srikrishna

Adusumilli Srikrishna (*b* 01 January 1955; *d* 20 January 2013) obtained his PhD from Hyderabad University and carried out postdoctoral research in the Universities of Chicago and Columbia, USA. He joined the Department of Organic Chemistry, IISc, Bangalore, in 1985, as a Lecturer and later rose to be a Professor (1999). He also served the Department as the Chairman during 2003-05.



Professor Srikrishna made significant contributions in organic synthesis covering development of synthetic methodologies, total synthesis of natural products both in racemic and enantiomeric forms, development of new reagents for selective organic transformations, and investigation and application of molecular rearrangements in organic synthesis. He accomplished the total synthesis of a large number of sesquiterpenes, both in racemic as well as optically active, and in the process confirmed/established the absolute configuration of several natural products.

Professor Srikrishna received many awards and recognitions, including the INSA medal for young scientist, Dr SH Zaheer Young Scientist Award, BM Birla Science Award, Shanti Swarup Bhatnagar Prize, RD Desai Commemoration Medal, AB Kulkarni Endowment Lecture and Professor S Swaminathan Endowment Award. He was also DST JC Bose National Fellow. He was elected to the Fellowship of Indian Academy of Sciences, Bangalore and National Academy of Sciences, Allahabad. He was a member of the Editorial Board of the *Proceedings of the Indian National Science Academy* and *Indian Journal of Chemistry*.

Professor Adusumilli Srikrishna was elected to the Fellowship of Indian National Science Academy in the year 2003.

Foreign Fellows**Vladimir G Kadyshevsky**

Vladimir G Kadyshevsky (*b* 5 May 1937; *d* 23 September 2014) obtained his PhD in 1962. He was a well-known theoretical physicist in the elementary particle and quantum field theory. Since 1970 Professor Kadyshevsky had been Professor of the Physics at Moscow State University. He was the Director of JINR Laboratory of Theoretical Physics (1987-92) and Director of the Joint Institute for Nuclear Research (1992-2005). Since January 1, 2006 he was Scientific Leader of the Joint Institute for Nuclear Research.



Professor Kadyshevsky wrote a number of papers on the relativistic theory of elementary particles in the quantized space-time that anticipated the research in “non-commutative geometry” in the 1990s. His name was connected with the elaboration of a specific diagramme technique for the amplitudes on mass shell. Relativistic 3D equations, established in this framework, are known in the literature as “Kadyshevsky equations”. They are applied to calculate interactions of particles, nuclei and to describe the quark structure of hadrons. In recent years Professor VG Kadyshevsky had developed a new approach to describing strong and electroweak interactions beyond the scope of the Standard Model. Professor Kadyshevsky was a member of the Russian Programme for Science & Technology and the IUPAP Commission on Particles and Fields. He was the President of the Union of the Russian Scientific Societies (1993-99).

Professor Vladimir G Kadyshevsky was elected to the Foreign Fellowship of the Indian National Science Academy in the year 2004.

Charles Hard Townes

Charles Hard Townes (*b* 28 July 1915; *d* 27 January 2015) obtained his PhD from California Institute of Technology, USA specializing in Spectroscopy, Quantum Electronics and Astrophysics. He was the Chairman, Department of Physics, Columbia University (1952-55), Vice-President and Director of Research, Institute for Defence Analysis (1959-61), Provost, Massachusetts Institute of Technology and later from 1986, he was Professor Emeritus in University of California.



Professor Townes’ principal scientific work was in microwave spectroscopy, nuclear and molecular structure, quantum electronics, radio astronomy and infrared astronomy. He won the Nobel Prize for Physics in 1964 for original contributions to the maser and laser. Professor Townes’ work in astrophysics included development of new infrared techniques (and work in a high flying NASA airplane), discovery of stable molecules in galactic clouds, and evidence for a large black hole in the centre of our galaxy. He developed a pair of movable telescopes, for obtaining much more detailed infrared images of astronomical objects than had previously been possible.

Professor Townes was recipient of several awards including Nobel Prize in Physics (1964). He was a Fellow of National Academy of Sciences; Royal Society, London; American Physical Society (President 1967) and American Philosophical Society.

Professor Charles Hard Townes was elected to the Foreign Fellowship of the Indian National Science Academy in the year 1993.

ANNOUNCEMENTS

Nomination for Election of Fellows

The last date for receiving nominations for election of Fellows is **October 15, 2015**. Nominations received on or before October 15 will be included for consideration in the year 2016, while those received after October 15, will go for the year 2017. Nomination form can be downloaded from the INSA website www.insaindia.org.

Nomination for Election of Foreign and Pravasi Fellows

Nominations are invited from the Fellows of INSA for election of Foreign Fellows and Pravasi Fellows for the year 2016. Nomination form can be downloaded from the INSA website www.insaindia.org.

INSA Medal for Young Scientists - 2016

Nominations are invited for **INSA Medal for Young Scientists – 2016**. Those born on or after **January 1, 1981** are eligible for consideration in the year 2016. The awardee shall receive a **certificate**, a **bronze medal** and cash award of **Rs. 25000/-**. Proposals may be submitted by a Fellow of the Indian National Science Academy or by earlier recipients of this award. Scientific societies of national standing, university faculty, post-graduate departments of research institutions may also nominate eligible candidates. The last date for receiving nominations for INSA Medal for Young Scientists is **October 31, 2015**. Nomination proforma can be downloaded from the website www.insaindia.org.

Proposal by INSA Fellows for lectures to young students and teachers of schools and colleges in the remote/rural areas

The Academy has launched a programme under which INSA Fellows are encouraged to deliver Popular Lectures to young students and teachers of schools and colleges in remote/rural areas. Proposals are invited from Fellows with details like name and address of the school/college where they wish to deliver the lecture, title/s of lecture/s, proposed dates and the quantum of required travel support. Proposals may be sent to Executive Director, INSA at esoffice@insa.nic.in, insacouncil@gmail.com with a copy to sci-soc@insa.nic.in at the earliest.

Call for Research Proposal in History of Science

The Indian National Commission for History of Science approves, under the guidance of a Research Council, Research Projects on various subjects pertaining to history of science and technology in India. Through this programme, the Investigator can take up source and theme oriented study and compilations of important sources with commentaries; translation of important technical primary sources on mathematics, astronomy, medicine, alchemy, agriculture, natural products, life sciences, scientific traditions including oral traditions of scientific nature, metals and metallurgy, architecture and irrigation technology, for critical assessment relating to ancient and medieval periods. The Commission gives equal emphasis for historical evaluation of science and technology scenario in India during the 19th and 20th centuries. Study of pioneering institutions, popular perceptions of science development, tools, techniques and how the knowledge in each area of science has grown conceptually on the basis of International perspectives, are some examples of the research areas. Themes may also be selected depending on candidates' own aptitudes and specializations.

The last date for submitting research proposals is December 31, 2015. For all other details and application form, visit the website www.insaindia.org or mail at ijhs@insa.nic.in.

Nomination for INSA Awards

The last date for receiving nominations for the following INSA Awards due for the year 2016 is **October 15, 2015**:

1. INSA-Vainu Bappu Memorial Award
2. JC Bose Memorial Lecture
3. The Srinivasa Ramanujan Medal
4. The Jagadis Chandra Bose Medal
5. The Silver Jubilee Commemoration Medal
6. The Golden Jubilee Commemoration Medal (*for Chemical Sciences*)
7. Professor Brahm Prakash Memorial Medal
8. Professor K Naha Memorial Medal
9. The Chandrakala Hora Memorial Medal
10. Professor S Swaminathan 60th Birthday Commemoration Lecture
11. Professor Darshan Ranganathan Memorial Lecture
12. Dr Biren Roy Memorial Lecture

Nomination form can be downloaded from the INSA website www.insaindia.org.