

## ACADEMY NEWS

### ANNUAL GENERAL MEETING

The Annual General Meeting of the Academy was held on October 14, 2017 at Bose Institute, Kolkata. During a day's event, the following symposium and lectures were held:

#### ***Birth of Modern Science in India: Future Challenges***

An interactive meeting with Science Students (schools/colleges) of Kolkata on *Birth of Modern Science in India: Future Challenges* was chaired by Professor HK Majumder, FNA, CSIR-Indian Institute of Chemical Biology, Kolkata & Convener of Kolkata INSA Local Chapter. The following lectures were delivered during the session:

*CV Raman & Early Institutions in India* by Professor Kankan Bhattacharyya, FNA, Vice-President, INSA; *Bengal Renaissance and the Birth of Modern Science in India* by Professor Partha Ghose, Formerly Professor, SN Bose National Centre for Basic Sciences, Kolkata; *Astrophysics to Astronomy to Space Research* by Professor Somak Raychaudhury, Director, IUCAA, Pune; *GN Ramachandran & SN De: Crystallography to Cholera* by Professor P Balaram, FNA, Molecular Biophysics Unit, Indian Institute of Science, Bengaluru; *Sir U.N. Brahmachari and Kala Azar Research in India* by Professor Syamal Roy, FNA, Vice Chancellor, Cooch Behar Panchanan Barma University, West Bengal; *Computation Biology & Big Data* by Professor Sanghamitra Bandyopadhyay, FNA, Director, Indian Statistical Institute, Kolkata and *P.C. Mahalanobis, Birth of Population Diversity Studies in India and After* by Professor Partha P Majumder, FNA, Director, National Institute of Biomedical Genomics, Kalyani.

#### ***21st Century India: Opportunities and Challenges for Science Students***

A Panel discussion on *Science and Technology in 21st Century India: opportunities and challenges for science students* was also organized. This panel discussion highlighted how Indian S&T enterprise is expanding and provided information about new programs and schemes (both in Industry and Academia) and about the variety of new types of jobs that are being created in addition to increased opportunity for academic (teaching and research) jobs.

The Council in its October meeting approved the election of 31 Indian scientists as INSA Fellows, four overseas scientists as Foreign Fellows. It also decided to offer the INSA Teachers Award to 12 outstanding teachers and INSA Young Historian of Science Award to one young scholar as detailed below:

#### **FELLOWS ELECTED 2017 (Effective from 01 January 2018)**

**Kithiganahalli Narayanaswamy Balaji** (b 1966), PhD, Professor, Department of Microbiology and Cell Biology, Indian Institute of Science, Bengaluru.

For his outstanding contributions towards elucidating immune evasion strategies employed by pathogenic mycobacteria and for identifying the novel roles for host signaling pathways, micro RNAs and epigenetic modifiers.

**Hemalatha Balaram** (b 1956), PhD, Professor, Molecular Biology and Genetics Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru.

For her work revealing the fascinating crosstalk between purine metabolism and Krebs's cycle

operative in the intra-erythrocyte stages of parasite that recycles fumarate to aspartic acid.

**Jitendra Kumar Bera** (*b* 1968), PhD, Professor, Department of Chemistry, Indian Institute of Technology Kanpur, Kanpur.

For developing organometallic catalysts for the utilization of molecules to valuable chemicals exploiting bifunctional activation strategy.

**Shalabh Bhatnagar** (*b* 1968), PhD, Professor, Department of Computer Science and Automation, Indian Institute of Science, Bengaluru.

For his studies of reinforcement learning and simulation based optimization.

**Shinjini Bhatnagar** (*b* 1960), MBBS, PhD, Dean Clinical Research/Scientist H+, Translational Health Science and Technology Institute, Faridabad.

For leading an independent group that has established the role of Zinc as an adjunct treatment in serious bacterial infections and in severe pneumonia in children and for conducting successful clinical research towards the understanding of preterm birth.

**Debasis Chattopadhyay** (*b* 1967), PhD, Scientist VII, National Institute of Plant Genome Research, New Delhi.

For his important contributions in the field of plant genomics of tomato and chickpea specially the role of auxin transport and signaling in root growth and drought tolerance and for extensive work on plant virus interactions.

**Kedar Damle** (*b* 1970), PhD, Professor, Tata Institute of Fundamental Research, Mumbai.

For his original approach to condensed matter physics.

**Subhasish Dey** (*b* 1958), PhD, Professor, Department of Civil Engineering, Indian Institute of Technology, Kharagpur.

For his study on fluvial hydrodynamics and environmental fluid mechanics.

**Srubabati Goswami** (*b* 1966), PhD, Professor, Theoretical Physics Division, Physical Research

Laboratory, Ahmedabad.

For her outstanding contributions in study of neutrino oscillation experiments and determination of the neutrino masses and mixing angles.

**Maneesha Shreedhar Inamdar** (*b* 1967), PhD, Professor, Molecular Biology and Genetics Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru.

For her studies on establishment of human embryonic stem cells and for discovery of novel genes involved in hematopoiesis.

**Navin Chandra Khanna** (*b* 1956), PhD, Group Leader, Recombinant Gene Products Laboratory, International Centre for Genetic Engineering & Biotechnology, New Delhi.

For his significant contributions in translational science and technology encompassing designing and developing novel recombinant protein diagnostic reagents for Dengue, HIV, HCV and HBV.

**Ashish Kishore Lele** (*b* 1967), PhD, Chair, Polymer Science and Engineering Division, CSIR-National Chemical Laboratory, Pune.

For his studies on Polymer science & Engineering with many first conceptual breakthroughs.

**MJ Mahan** (*b* 1968), PhD, Full Professor (H), School of Mathematics, Tata Institute of Fundamental Research, Mumbai.

For his achievement in the resolution of a long-standing conjecture of Thurston that the limit set of a Kleinian group is locally connected.

**Gautam Mandal** (*b* 1962), PhD, Senior Professor, Department of Theoretical Physics, Tata Institute of Fundamental Research, Mumbai.

For his pioneering contributions to black hole physics, including discovery of the two-dimensional black hole in string theory, and derivation of Hawking radiation in a class of near-extremal black holes.

**Jarugu Narasimha Moorthy** (*b* 1964), PhD, Dr Jag Mohan Garg Chair Professor, Department of

Chemistry, Indian Institute of Technology Kanpur, Kanpur.

For his contributions towards designing molecules by manipulating steric and electronic factors for desired thermal and photochemical reactivity.

**Pradeep P Mujumdar** (*b* 1958), PhD, Professor, Department of Civil Engineering, Indian Institute of Science, Bengaluru.

For his outstanding work in the field of Hydrology and Water Resources Research.

**Dulal Panda** (*b* 1964), PhD, Chair Professor, Department of Biosciences & Bioengineering, Indian Institute of Technology Bombay, Mumbai.

For his contributions towards understanding the linkage between microtubule dynamics and cell cycle progression and elucidation of the mechanism of action of several microtubule-targeted anticancer drugs.

**Aryampilly Jayanthan Parameswaran** (*b* 1962), PhD, Professor (I), School of Mathematics, Tata Institute of Fundamental Research, Mumbai.

For his significant contributions to a wide variety of topics, including singularity theory, fibre bundles, Schubert varieties and representation theory.

**Vinod Kumar Paul** (*b* 1955), MBBS, MD, PhD, Member, National Institution for Transforming India, NITI Aayog, Government of India, New Delhi.

For his extensive contribution of research in new born and child health and for developing a low cost indigenous lung surfactant for premature new borns. His scientific contributions have improved neonatal healthcare by influencing public health policies globally.

**Madhavan Radhakrishna Pillai** (*b* 1960), PhD, MRCPATH, FRCPATH, Director & Professor, Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram.

For his outstanding contribution in Oncological research specially the epithelial tumor progression and the role of human papilloma virus. His

contributions has enormous impact on public health not only in India but for many other countries.

**Vijayamohanam Kunjukrishna Pillai** (*b* 1960), PhD, Director, CSIR-Central Electrochemical Research Institute, Karaikudi.

For his important contributions to materials, electrochemistry and their applications in molecular electronics and energy storage.

**Appa Rao Podile** (*b* 1960), PhD, Vice Chancellor, University of Hyderabad, Hyderabad.

For his important contributions in the field of plant-microbe interactions. His work on chitinases has enabled the development of alternatives to toxic antifungal compounds for plant protection.

**Dhruv Raina** (*b* 1958), PhD, Professor, Zakir Husain Centre for Educational Studies, School of Social Sciences, Jawaharlal Nehru University, New Delhi.

For his contributions to our understanding of the cultural assimilation of modern science since the 18<sup>th</sup> century and the creation of a new scientific and technological research ecosystem in India.

**Rajender Singh Sangwan** (*b* 1958), PhD, Director, Academy of Scientific and Innovative Research (AcSIR), Ghaziabad.

For his outstanding contributions to the subject of bioprocesses and bioproducts related to secondary metabolites/nutraceuticals and metabolism in commercially cultivated medicinal plants, particularly Ashwagandha, and other bioresources.

**Kaustuv Sanyal** (*b* 1969), PhD, Professor, Molecular Mycology Laboratory, Molecular Biology & Genetics Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru.

For using the human pathogenic fungi *Candida* and *Cryptococcus* as model systems that has made seminal contributions in centromere evolution and chromatin biology.

**Ranjan Sen** (*b* 1967), PhD, Staff Scientist VII, Centre for DNA Fingerprinting and Diagnostics, Hyderabad.

For his studies on transcription termination and antitermination which are fundamental processes of gene regulation.

**Kulinder Pal Singh** (*b* 1952), PhD, Visiting Professor, Department of Physical Sciences, Indian Institute of Science Education and Research, Mohali.

For successfully designing, developing and deploying one of the most sophisticated soft X-ray imaging telescopes on India's first space observatory, AstroSat.

**Byrana Nagappa Suresh** (*b* 1943), PhD, Honorary Distinguished Professor, Department of Space, ISRO, Bengaluru.

For his significant contributions to the development of critical aerospace systems, which have resulted in a series of highly reliable launch vehicles for a variety of space craft.

**Qudsia Tahseen** (*b* 1964), PhD, Professor, Department of Zoology, Aligarh Muslim University, Aligarh.

For her fundamental contributions to the taxonomy and systematics of free-living soil nematodes and for the novel ecological approaches to nematode bio-systematics.

**Shubha Tole** (*b* 1967), PhD, Professor, Department of Biological Sciences, Tata Institute of Fundamental Research, Mumbai.

For her fundamental contributions to the genetic mechanisms that regulate the development of mammalian brain.

**Dalip Kumar Upreti** (*b* 1958), PhD, Deputy Director, CSIR-National Botanical Research Institute, Lucknow.

For his studies on lichens and discovering over 100 species that has facilitated capacity building on lichens in several institutions in India. He has advanced application of Lichenometric studies in pollution monitoring and bioprospection.

### **FOREIGN FELLOWS ELECTED 2017** (*Effective from 01 January 2018*)

**Shiv IS Grewal** (*b* 1965), NIH Distinguished Investigator, Chief of the Laboratory of Biochemistry and Molecular Biology, Head, Chromosome Biology Section, National Cancer Institute, National Institutes of Health, Bethesda, MD, 20892, USA.

For his pioneering contributions on the role of epigenetic modifications in heterochromatin assembly and discovery of relation between heterochromatin assembly and RNAi.

**Chennupati Jagadish** (*b* 1957), Distinguished Professor and Head of Semiconductor Optoelectronics and Nanotechnology Group, Department of Electronics Materials Engineering, Research School of Physics and Engineering, Australian National University, Canberra, ACT2601, Australia.

For his pioneering contributions to semiconductor optoelectronics and nanotechnology, in particular, to the development of quantum well, quantum dot and nanowire lasers, photodetectors and solar cells.

**Philip Kumar Maini** (*b* 1959), Statutory Professor of Mathematical Biology, Director, Wolfson Centre for Mathematical Biology, Mathematical Institute, University of Oxford, Andrew Wiles Building, Radcliffe Observatory Quarter, Woodstock Road, Oxford OX2 6GG, UK.

For his mathematical and computational modeling of biological processes relevant to wound healing and vascular tumour growth, scar formation and cancer therapy.

**Peter Smith** (*b* 1965), Professor of Soils & Global Change, Institute of Biological and Environmental Sciences, University of Aberdeen, 23 St Machar Drive, Aberdeen, AB24 3UU, Scotland, UK.

For his pioneering experimental and modelling studies on greenhouse gas emissions from managed land.

**INSA TEACHER AWARDEES 2017**

**Professor AL Ramanathan Alagappan** (*b* 25.01.1962), School of Environmental Sciences, Jawaharlal Nehru University, New Delhi.

Professor AL Ramanathan is a pioneering teacher in geology, who has motivated a large number of students to take up innovative studies on glacier-climate interactions and geohydrological systems in the Himalaya.

**Dr Sunita Bhagat** (*b* 28.05.1964), Department of Chemistry, ARSD College, University of Delhi, Delhi.

Dr Sunita Bhagat is a committed and devoted teacher of organic chemistry at undergraduate and postgraduate levels and has been a role model for many young women.

**Professor Ajit Kumar Chaturvedi** (*b* 15.08.1965), Department of Electrical Engineering, Indian Institute of Technology Kanpur, Kanpur.

Professor Ajit Kumar Chaturvedi is an inspiring academic who has made a mark as a dedicated teacher and researcher at three different institutions (IT-BHU, University of Roorkee and IIT Kanpur). His name evokes respect in all the institutions he has served.

**Professor Renu Chugh** (*b* 08.12.1962), Department of Mathematics, MD University, Rohtak.

Professor Renu Chugh has been an inspiring teacher stressing on concept clarity, and motivating students to undertake research.

**Professor Pratulananda Das** (*b* 26.10.1970), Department of Mathematics, Jadavpur University, Kolkata.

Professor Pratulananda Das has successfully motivated his students through his in-depth inspiring teaching and commendable research to take up teaching and research in Pure Mathematics, particularly in Topology and Analysis.

**Professor Vikram Manohar Gadre** (*b* 30.10.1966), Department of Electrical Engineering, Indian Institute of Technology Bombay, Mumbai.

Professor Vikram Manohar Gadre is an innovative teacher who has inspired scores of students over the years. His teaching encourages active student participation to explore the subject to the best of their ability.

**Dr Ajit Hazarika** (*b* 20.02.1968), Department of Zoology, Chaiduar College, Assam.

Dr Ajit Hazarika has educated and inspired a large number of students in remote areas of Assam to attain their highest potential in education and subsequent career.

**Professor Srihari Keshavamurthy** (*b* 07.02.1967), Department of Chemistry, Indian Institute of Technology Kanpur, Kanpur.

Professor Srihari Keshavamurthy has demonstrated that research and teaching are inseparable. His dedication to teaching, motivational skills and innovative teaching methods have inspired generations of young chemists.

**Professor Somen Misra** (*b* 11.11.1962), Department of Ophthalmology, All India Institute of Medical Sciences, Raipur.

Professor Somen Misra, a practicing neurophthalmologist in rural area, has devised innovative problem based learning with live surgical demonstrations, bedside clinics etc for medical students.

**Professor Raghuram Nandula** (*b* 24.01.1965), School of Biotechnology, Guru Gobind Singh Indraprastha University, New Delhi.

Professor N Raghuram is an example of a selfless teacher with core values for institution building, and who has promoted all round excellence in students in modern biology and biotechnology.

**Dr Bikram Phookun** (*b* 15.11.1964), Department of Physics, St. Stephen's College, Delhi.

Dr Bikram Phookun is a dedicated teacher who strives hard to get students to grasp difficult and subtle concepts in Physics using all the tools and techniques that are available. He inspires his students to attain highest standards in research careers.

**Professor Satish Bola Sadashiva Rao** (b 22.09.1962), Department of Radiation Biology and Toxicology, School of Life Sciences, Manipal University, Manipal.

Professor Satish Rao uses innovative pedagogy to promote independent, critical and creative thinking in students in basic biology, biotechnology and cell biology.

### INSA YOUNG HISTORIAN OF SCIENCE AWARDEE 2017

**Dr Nisha Yadav** (b 23.07.1983), PhD, Scientific Officer (C), Department of Astronomy and Astrophysics, Tata Institute of Fundamental Research, Mumbai.

For her statistical analysis and computational studies of the Indus Valley script, which have shed some light on its grammatical structure.

### AWARD LECTURES DELIVERED UNDER LOCAL CHAPTERS

**Kalpathi Ramakrishna Ramanathan Medal (2017):** Professor Sulochana Gadgil, former Professor, Centre for Atmospheric and Oceanic Sciences, Indian Institute of Science, Bengaluru delivered Kalpathi Ramakrishna Ramanathan Medal lecture on *Oceans and the Indian Monsoon* at INCOIS, Hyderabad on August 9, 2017.

**Sunder Lal Hora Medal (2017):** Professor Mewa Singh, JC Bose National Fellow, Distinguished Professor, Department of Psychology, University of Mysore, Mysore delivered Sunder Lal Hora Medal lecture on *Behavioural Biology and its Application for the Management of Endangered Species* at Amity University, Noida on September 7, 2017.

**Dr MR Das Memorial Lecture (2017):** Professor R Sankaranarayanan, Chief Scientist, Structural Biology Laboratory, CSIR-Centre for Cellular and Molecular Biology, Hyderabad delivered Dr MR Das Memorial Lecture on *Chiral Proofreading during translation of the genetic code* at Banaras Hindu University, Varanasi on November 13, 2017.



Professor R Sankaranarayanan delivering the award lecture at BHU, Varanasi

**Bires Chandra Guha Memorial Lecture (2017):** Dr SC Mande, Director, National Centre for Cell Science, Pune delivered Bires Chandra Guha Memorial Lecture on *Structural Basis of Redox Homeostasis in M. tuberculosis* at Banaras Hindu University, Varanasi on November 14, 2017.



Professor Lakhota & Professor Dash felicitating Dr Mande after the award lecture

## INTERNATIONAL ACTIVITIES

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

- Dr Ashima Anand, FNA, Principal Investigator, Exertional Breathlessness Studies Laboratory (DST), Vallabhbhai Patel Chest Institute, Delhi University has been elected as Member of International Union of Physiological Sciences (IUPS).
- Dr V Prakash, Distinguished Scientist of CSIR-India at JSS-MVP, JSS Technical Institutional Area, JSS CMS, Mysore has been elected as Vice-President, International Union of Nutritional Sciences (IUNS) for the term 2017-2021.
- 14 Indian scientists have been elected for various positions at International Union of Pure & Applied Physics (IUPAP) Commissions.
- Dr Arup Bose, ISI, Kolkata has been nominated as Member at Large of the Commission for Developing Countries (CDC).
- Dr Mythily Ramaswamy, TIFR Centre for Applicable Mathematics, Bengaluru has been nominated as Member at Large of the Commission for Developing Countries (CDC).
- Dr Dipendra Prasad, TIFR, Mumbai has been nominated for the position of Secretary or Member at Large of the Commission for Developing Countries (CDC).
- Professor TR Ramadas, FNA, Chennai Mathematical Institute, Kelambakkam has been nominated as Member at Large of the IMU Executive Committee.
- Professor SG Dani, FNA, Department of Mathematics, Indian Institute of Technology Bombay, Mumbai has been re-nominated as IMU representative to the International Commission on the History of Mathematics (ICHM).

- Professor Avadhesh Surolia, FNA, Molecular Biophysics Unit, Indian Institute of Science, Bengaluru has been re-nominated for the membership of International Union of Biochemistry and Molecular Biology (IUBMB) Executive Committee for another three years term.
- Professor A Jayaraman, Director, National Atmospheric Research Laboratory, Department of Space, Gadanki has been nominated for the position of Vice-President of the Committee on Space Research (COSPAR).
- Professor V Srinivas, FNA, School of Mathematics, Tata Institute of Fundamental Research, Mumbai has been nominated for the position of Vice-President of International Mathematical Union (IMU).
- Professor R Balasubramanian, FNA, The Institute of Mathematical Sciences, Chennai has been nominated as Member-at-Large of Executive Committee of International Mathematical Union (IMU).

### Workshop/Symposia/Conference supported by the Academy

- AASSA-INSA-NISCAIR Regional Workshop on *Sustainable Development Goals: Communication Strategies* was organised jointly with Association of Academies and Societies of Sciences in Asia, Indian National Science Academy and CSIR-National Institute of Science Communication and Information Resources at NASC Complex, PUSA, New Delhi during November 16-18, 2017.
- The 7<sup>th</sup> INSA-Leopoldina joint seminar on *The challenge to learn: New Approaches to Study the Problem of Stability vs Plasticity in the Brain* was organised under the aegis of the MoU signed between Indian National Science Academy and German National Academy of Sciences at LV Prasad Eye Institute, Hyderabad during November 28-29, 2017. On behalf of INSA, Professor NR Jagannathan, Vice-

President (Resource Management) participated in the symposium. There were total 18 invited lectures covering various aspects of problems of Stability Vs Plasticity in the Brain. In addition, there was a poster session where around 20 posters were displayed.

### Visit of Overseas Delegates to INSA

- INSA Chair Awardees

#### Dr BP Pal Chair Award (2017-18)

Dr Thomas JV Higgins, Fellow of the Australian Academy of Sciences, CSIRO Agriculture and Food, Canberra and Professor, Science and Technology, Queensland University of Technology, Brisbane, Australia, visited India during September 11 to October 1, 2017 as Dr BP Pal Chair of INSA. Dr Higgins visited Assam Agricultural University, IIT Guwahati and Delhi University.

Dr Higgins visited various laboratories at DBT-AAU Centre and the Department of Agricultural Biotechnology, Assam Agricultural University, Jorhat, during September 12-19, 2017. He delivered a talk on “Development of GM cowpea for Africa” and conducted an in-house workshop for PhD

scholars and Research Fellows on “How to win a research project”. This workshop helped students to identify their strengths and weaknesses in preparing a scientific presentation, both in verbal delivery and in the organization of visual material. On September 16, Dr Higgins held in-depth discussions with the faculty at DBT-AAU Centre.

He also visited nearby tea garden to observe the tea cultivation and processing of both black and green tea.

Dr Higgins visited IIT Guwahati and interacted with faculties and students of the Department of Biosciences and Bioengineering during September 20-24, 2017. He delivered a talk on “Bt Cowpeas are protected against *Maruca podborers*” on September 21, 2017.

He held discussions with the group leaders, Prof. Lingaraj Sahoo and Dr GJN Rao, and shared his experience in application of gene technology for plant improvement and field trial of transgenic insect pest resistant food legumes in Africa.

Dr Higgins visited the Department of Genetics, University of Delhi South Campus, New Delhi during September 26-30, 2017, where Dr M Rajam



Dr Higgins with Genetic Engineering group members at Assam Agricultural University, Jorhat



acquainted him about the research activities in the field of Plant Transgenics and RNA interference being carried out in the department, and about other research programs in different science departments in the South Campus. Dr Higgins discussed the status of GM crops in India, including the GM crops which are in the pipeline for commercialization. He met Professor Deepak Pental, and held discussion on GM mustard developed by his group and which is now ready for commercialization.

Later, he met research students and postdoctoral fellows at the Department of Genetics and interacted with them about their research works. He delivered a lecture on “Bt Cowpeas are Protected against *Maruca podborers*” at the South campus.

He also met, Dr NK Singh, Project Director, National Research Centre for Plant Biotechnology (NRCPB), Indian Agricultural Research Institute (IARI).

Dr Higgins visited International Centre for Genetic Engineering and Biotechnology (ICGEB), National Institute of Plant Genome Research (NIPGR) and Jawaharlal Nehru University (JNU) on September 29 and interacted with scientists and research students of these institutions. He appreciated the kind of research work which is being done in these three institutions.



Dr Higgins in the campus of NIPGR, New Delhi

#### Dr DS Kothari Chair Award (2017-18)

Professor Rabah Boukherroub, Institute of Electronics, Microelectronics and Nanotechnology (IEMN), UMR, France, awardee of Dr DS Kothari Chair of INSA visited India during October 29, 2017

to November 11, 2017 as distinguished overseas scientist nominated by Dr Suman Lata Jain, Senior Scientist, Head Synthetic and Applied Chemistry Area, Chemical Sciences Division, CSIR-Indian Institute of Petroleum, Dehradun. During his visit to India, Professor Rabah visited NCL Pune, CSIR-National Environmental Engineering Research Institute (CSIR-NEERI), Nagpur, IIT Bombay, CSIR-IIP Dehradun and IIT Delhi.

#### Dr Vikram Sarabhai Chair Award (2017-18)

Professor Efim Zelmanov, Fields Medallist, Department of Mathematics, University of California, USA awardee of Dr Vikram Sarabhai Chair visited India during December 4-11, 2017 as distinguished overseas scientist nominated by Professor Ajit Iqbal Singh, INSA Emeritus Scientist. During his visit, Professor Zelmanov visited IISER Mohali, University of Delhi, TIFR Mumbai and Dr BR Ambedkar Marathwada University, Aurangabad. Professor Zelmanov also delivered a public lecture on “Mathematics: Science or Art ?” on December 4, 2017 at Delhi University.

- Dr Matthias Kiesselbach, Director along with Dr Vaibhav Agarwal, Deputy Director, German Research Foundation, DFG India Office, New Delhi visited INSA on November 6, 2017 and had a discussion meeting with Dr Chandrima Shaha, Vice-President (International Affairs) and Professor NR Jagannathan, Vice-President (Resource Management), INSA to strengthen the existing bilateral cooperation between INSA and DFG.
- Professor Dr Jorg Hacker, President, German Academy of Science of Leopoldina visited India during December 2-8, 2017 along with Dr Ruth Narmann, Deputy Head of the International Relations Department. On December 4, 2017, Professor Hacker delivered second lecture of INSA-Leopoldina Lecture series entitled “How to combat infectious diseases: The role of Science Academies” at Indian Institute of Science, Bengaluru. Later, on December 6, he visited INSA and had a meeting with President INSA and other officials.

### Support for Visiting Scientists during August-November 2017

- 13 Indian scientists were supported by the Academy for attending various ICSU sponsored international conferences abroad.
- 30 Indian scientists and one INSA Young scientist awardee were supported by the Academy for attending various Non-ICSU sponsored international conferences abroad.
- 12 Indian scientists and eight foreign scientists were exchanged under INSA Bilateral Exchange Programme with overseas academies.
- Two Indian scientists visited Australia under the Indo-Australia Early and Mid-Career Researchers Fellowship Programme 2016-2017.

### SCIENTIFIC MEETINGS DURING AUGUST – DECEMBER 2017

#### INSA-NAS Belarus MoU

- The Agreement between the Indian National Science Academy (INSA) and the National Academy of Sciences of Belarus (NASB) on Scientific and Technological Cooperation for mutual benefit in the areas of science, technology, agriculture, etc. was exchanged on September 12, 2017 at INSA, New Delhi during the visit of Belarus President H.E. Mr. Alexander Lukashenko to India. The Agreement is aimed at identifying, assessing, developing and commercializing globally competitive technologies from India and Belarus. It will support institutions in both countries by way of research, technology transfers, exchange of visits and joint workshops leading to scientific and economic benefit.
- A joint meeting of Research Council and Indian National Commission for History of Science along with a seminar on *Technology during Harappan Times* coordinated by Professor Vasant Shinde, Member, Research Council was organized during September 15-16, 2017 in Academy premises. During the meeting, six



The visiting President of Belarus and the Hon'ble Prime Minister of India during the exchange of MoU

shortlisted candidates out of 15 were invited for presentations. Dr Nisha Yadav, TIFR, Mumbai was recommended for INSA Young Historian of Science Award for the year 2017 on the basis of her statistical analysis and computational studies of the Indus Valley script. During the day-long seminar, papers on Harappan water management system; shell industry; stone bead technology; lithic technology; ceramic industries; Harappan textile; artisan in the Indus script, Harappan kilns; copper utensils in the Indus valley and Binjor: a Harappan craft centre were presented by invited scholars from different parts of India.

- The Inter Academy Exchange Committee at its meeting held on November 17, 2017 selected 69 Indian scientists to visit abroad under the various bilateral exchange programmes. The Committee also selected two Indian scientists as INSA Chair Awardee named after PC Ray Chair and V Ramalingaswamy Chair.
- A meeting of IUGS National Committee members, Vice-President (International Affairs) & INSA Officials with IUGS Executive Committee members *viz.* Professor Qiuming Cheng, President, Professor Stanley Charles Finney, Secretary General and Dr Hiroshi Kitazato, Treasurer was held at INSA on

November 23, 2017 as a part of IGC 2020.

- A two day India-Turkmenistan round table meeting on S&T was organised at INSA during December 4-5, 2017. Around 20 scientists in the field of Biotechnology, Chemistry, Seismology and Renewable sources of energy participated in the meeting. On December 5, the delegates visited labs of National Institute of Plant Genome Research, National Institute of Immunology & Jawaharlal Nehru University, New Delhi.

### SCIENCE & SOCIETY PROGRAMME

- The Asiatic Society in collaboration with Indian National Science Academy organized a one day national seminar on *The Lost River Saraswati: Geodynamic Context* delivered by Professor KS Valdiya, FNA, Honorary Professor, JNCASR, Bengaluru on October 12, 2017 at Asiatic Society, Kolkata.
- INYAS organized “Marie Curie Sesquicentennial Conference-2017” during November 5-7, 2017 at the Jawaharlal Nehru University, New Delhi.

### RECENT PUBLICATIONS OF THE ACADEMY

#### *Proceedings of the Indian National Science Academy*

Volume 83, No. 3 (September 2017) issue of *Proceedings* has been published. This issue contained a meeting report, five review articles, eight research papers, a book review and Academy News besides an editorial by Professor SC Lakhota, Vice-President (Publication & Informatics), INSA.

#### *Indian Journal of History of Science (IJHS)*

Volume 52, No. 3 (September 2017) issue of *IJHS* has been published. This issue includes papers on identification of mosquitoes, its diseases and treatment in early Sanskrit literature; importance of plants as depicted in *Purāṇas*, *Strīvilāsa* – an Ayurvedic manuscript on female diseases and medicines; western medicine in French Pondichéry (1690-1954); nursing as profession in twentieth

century Bengal; Jain school of Indian mathematics; mango in ancient Indian sculptures; why and when were the Vijaynagara walls built and BB Ray and Controversy over the spectral Raman-lines. This issue also features book reviews and project reports.

#### *Indian Journal of Pure and Applied Mathematics (IJPAM)*

Volume 48, No. 3 (September 2017) issue of *IJPAM* has been published.

### OBITUARY

#### Narendra Kumar

Narendra Kumar (*b* 01 February 1940; *d* 28 August 2017) obtained his PhD in Physics from IIT, Mumbai and did his post-doctoral studies at the University of British Columbia, Canada. He joined Indian Institute of Science as an Assistant



Professor of Physics and later served as Professor. He was appointed as the Director of Raman Research Institute where he served until his superannuation in 2005. Post-retirement, he continued his association with RRI as the Homi Bhabha Distinguished Scientist and DAE Chair Professor and was also associated with JNCASR and TIFR as Honorary & Adjunct Professor. He was also a Visiting Scientist at several universities such as UNAM, Mexico; Liege, Belgium; Warwick, UK; Drexel, USA; ICTP, Italy, etc.

Professor Kumar’s research was focused on super conductivity, disordered systems, metal-insulator transition, magnetism and statistical physics. His key research findings were the development of (i) maximum-entropy theoretic approach to conductance fluctuation in n-channel disordered quantum resistors (wires); the DMPK (Dorokov-Mello-Pereyra-Kumar) equation, (ii) C-axis normal-state resistivity of layered high-temperature superconductors based on blocking of interlayer tunnelling by strong intralayer scattering, and (iii) light localisation in random amplifying medium and

Lévy fluctuations of the emitted intensity (Random lasers). Dr Kumar published about 180 research papers in international journals and authored four books including an advanced monograph on *Quantum Transport in Mesoscopic Systems*. He was a member of editorial board of *Journal of Physics: Condensed Matter* and various committees of The World Academy of Sciences.

Professor Kumar received several awards including TWAS Award, the SS Bhatnagar Prize, Distinguished Alumnus Award of IIT Mumbai, Mahendra Lal Sircar Prize in Physics, Goyal Award, FICCI Award, CV Raman Birth Centenary Award, Jawaharlal Nehru Birth Centenary Lecture Award, Meghnad Saha Medal and Sir Jagadis Chandra Bose Memorial Lecture of INSA, RD Birla Award and Distinguished Materials Scientist of the Year 2006 Award. He was awarded Padma Shri in 2006 and also honoured with the Fellowship of the Institute of Physics, UK (2007). He was elected as Fellow of the Indian Academy of Sciences, Bangalore (1983), National Academy of Sciences, Allahabad (1994); American Physical Society (1994); and the Academy of Sciences for the Developing World (TWAS) (1995).

Professor Narendra Kumar was elected to the Fellowship of the Indian National Science Academy in the year 1987.

### Supriya Mohan Sengupta

Supriya Mohan Sengupta (*b* 28 June 1932; *d* 29 August 2017) obtained his DSc (Geology) from Calcutta University and postdoctoral research on sedimentology at the Universities of Groningen, the Netherlands and Uppsala, Sweden. He started his career as Geophysicist at Standard-Vacuum Oil Company and worked in the Bengal basin in 1950s. He then joined as Faculty Member at Indian Statistical Institute (ISI), Kolkata, and later as Professor of Geology. He was also Professor and Head of



Department of Geology and Geophysics at IIT Kharagpur. He also served as INSA Senior Scientist (1993-97) and INSA Honorary Scientist (2001-04).

Professor Sengupta's acumen in innovation and instrumentation contributed to his designing a petrographic slide-rule. This led to the design and construction of a recirculating flume in ISI (first in India) and subsequently two in IIT Kharagpur, to quantitatively study sediment movement in water currents. He deciphered the trends of crystallization of minerals within Para Lavea (buchites) produced by spontaneous combustion of coal in the Jharia coalfield. His later contributions were mainly in the fields of sedimentology and physical stratigraphy. His researches contributed significantly to our knowledge of the subsurface geology of the Bengal basin. He also worked out the mode and pattern of sedimentation in the Vindhyan Basin of central India, and in several Gondwana basins of country. His laboratory experiments provided insight into the processes of grain sorting during sediment transportation. He collaborated with statisticians and mathematicians of ISI and developed new techniques for granulometric studies, geological mapping, and directional data analysis.

Professor Sengupta was a recipient of the S Ray Memorial Lecture Award and Twelfth Abaninath Chaudhuri Memorial Lecture Award. He was elected as a Life Fellow of Geological, Mining and Metallurgical Society of India. He was elected twice to the Council of the International Association of Sedimentologists, and also served as India's National Correspondent to this association for two terms. He chaired sessions at the International Sedimentological congresses held at Heidelberg and Hamilton. He taught courses on sedimentology, physical stratigraphy and petroleum geology and also guided research on fluvial sedimentology.

Professor SM Sengupta was elected to the Fellowship of the Indian National Science Academy in the year 1982.

### Pratap Narain Srivastava

Pratap Narain Srivastava (b 01 July 1927; d 19 June 2017) obtained his DPhil from University of Allahabad and began his career as a Lecturer there. He worked as Council of Canada's Post-doctoral Fellow with Dr FR Hayes, FRS, at Dalhousie University,



Halifax. He then moved to Rajasthan University, Jaipur as a Reader in 1961 and became a full Professor in 1966 receiving substantial research funding from Rockefeller Foundation, Ford Foundation, NIH, DAE-India. He later moved to School of Life Sciences, Jawaharlal Nehru University, New Delhi where his continued efforts led to the establishment of the Nuclear Science Centre (now the UGC Inter University Accelerator Centre) as a facility for all the universities. He was appointed as Rector and Vice-Chancellor at Jawaharlal Nehru University, Member of Planning Commission of Government of India, New Delhi and Chancellor of Manipur University, Imphal.

Professor Srivastava made significant contributions on the effect of radiation on various tissues at cellular and sub-cellular level and showed that the liver cannot be regarded as a radio-resistant organ. His research, especially in the fields of low dose internal irradiation by  $^3\text{H}$  (tritium), radiation protection and sensitization, and hyperthermia, has been example of high quality research. His findings form the basis of several global standards of radiation-induced damage and radioprotection. As Member of

the Technical Expert Committee, IAEA (1987-90), he co-authored the technical report series: *Impact of Deep Sea Disposal of Low Level Radioactive Wastes on Living Marine Resources*.

Professor Srivastava received several awards and honours including FICCI Award, Aryabhata Medal of INSA (1989), Atma Ram Award by the Ministry of Human Resources Development, KN Bahl Memorial Gold Medal by Indian Society of Biosciences, JC Bose Award by the University Grants Commission, Scholarly Award by the Institute of Oriental Philosophy (Japan), Goyal Foundation Award, Silver Medal by the Japanese Academy of Medical Sciences, Sir Asutosh Mookerjee Gold Medal, and Jawaharlal Nehru Birth Centenary Award by Indian Science Congress Association. He was President of the Zoology, Entomology and Fisheries Section, Indian Science Congress (1977), Section of Biological Sciences, National Academy of Sciences (1978), Indian Society for Development Biology (1983-85), Indian Society of Radiation Biology (Founder President) (1988-90), General President, Indian Science Congress Association (1993-94), and Indian Society of Scientific Values (1992-95 and 1995-98). He was elected Fellow of the National Academy of Sciences, Allahabad, National Academy of Medical Sciences, Royal Microscopical Society, UK Linnaean Society, London, NY Academy of Sciences.

Professor PN Srivastava was elected to the Fellowship of the Indian National Science Academy in the year 1977 and served as its Treasurer during 1985-88.

## ANNOUNCEMENTS

### **INSA Visiting Scientist Programme-2018**

Since 1991, the Academy is supporting scientists from less endowed institutions to conduct Research and Training in advanced research Institutions/Laboratories within India under the Visiting Scientist Programme. The main objective of the programme is to facilitate scientists to acquire advanced research capabilities, for undergoing training in specific techniques, or for utilizing facilities not available in their own institution. Scientists holding a regular position in a R&D Organization including Universities or Affiliated Colleges in India are eligible to apply under the programme. The Fellowship period varies from one month to six months depending upon the proposed work or purpose.

Interested Scientists may download the prescribed application form from the INSA website **[www.insaindia.res.in](http://www.insaindia.res.in)** or write to DED-I (Scientific), Indian National Science Academy, Bahadur Shah Zafar Marg, New Delhi 110 002 and submit the prescribed application before January 31, 2018.

### **Proposal for Lectures in the Remote/Rural Areas**

The Academy has launched a programme under which INSA Fellows, Young Scientists, Teachers' Awardees & Indian National Young Academy of Science (IN-YAS) members are encouraged to deliver Popular Lectures to young students and teachers of schools and colleges in remote/rural areas in India.

Proposals are invited from Fellows, INSA young scientists, INSA teacher awardees and IN-YAS members 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 **[esoffice@insa.nic.in](mailto:esoffice@insa.nic.in)** and **[sci-soc@insa.nic.in](mailto:sci-soc@insa.nic.in)** at the earliest.

### **Nomination for Election of Fellows, Foreign Fellows and Pravasi Fellows**

Nominations are invited from the Fellows of INSA for election of Fellows, Foreign Fellows and Pravasi Fellows. Nomination forms can be downloaded from the INSA website **[www.insaindia.res.in](http://www.insaindia.res.in)**.