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ACADEMY NEWS

COUNCIL MEETING

The Council at its meeting on October 11, 2014 at Visva-Bharati University, Santiniketan elected 37 Indian scientists as INSA Fellows, 3 overseas scientists as Foreign Fellows and 2 scientists as Pravasi Fellows. It also decided to offer the INSA Teachers Award to 10 outstanding teachers, as detailed below.

Fellows Elected 2014 (*Effective from 01 January 2015*):

Nahid Ali (*b* 01.08.1956), PhD, Chief Scientist, Indian Institute of Chemical Biology, Jadavpur, Kolkata.

For her outstanding contributions in understanding the immunology of Leishmania and for identifying parasitic antigenic epitopes effective for Leishmania vaccine.

Pushan Ayyub (*b* 13.03.1957), PhD, Senior Professor, Chairperson, Department of Condensed Matter Physics & Material Science, Tata Institute of Fundamental Research, Mumbai.

For his fundamental and pioneering contributions to the physics of nanocrystalline solids and for showing that size-induced changes in crystal symmetry produces significant changes in important properties of ferroelectrics, ferromagnets and superconductors.

Raj Kamal Bhatnagar (*b* 07.10.1955), PhD, Associate Scientist and Group Leader, Insect Resistance, International Centre for Genetic Engineering & Biotechnology (ICGEB), New Delhi.

For analysing the mechanism of development of insect resistance against BT proteins and for developing a patented, commercial biopesticide formulation 'BIOPRAHAR'. He established RNAi knockdown technique in insect larvae.

Rakesh Bhatnagar (*b* 11.07.1951), PhD, Professor, School of Biotechnology, Jawaharlal Nehru University, New Delhi.

For his contributions towards the development of anthrax, rabies vaccines and understanding immunology of these infectious agents.

Srivari Chandrasekhar (*b* 09.03.1964), PhD, Chief Scientist & Head, Division of Natural Products Chemistry, Natural Products Laboratory, CSIR-Indian Institute of Chemical Technology, Hyderabad.

For his extensive contribution in the total synthesis of bioactive natural products applying the methodologies developed by him.

Chetan Eknath Chitnis (*b* 03.04.1961), PhD, Head, Malaria Parasite Biology and Vaccines Unit, Department of Parasites and Insect Vectors, Institut Pasteur, Paris.

For his seminal contribution to the understanding of the pathogenic mechanisms that mediate erythrocyte invasion and cytoadherence by malarial parasites.

Abhijit Chowdhury (*b* 20.06.1959), MD, DM, Professor and Head, Department of Hepatology, School of Digestive and Liver Diseases, Institute of Post Graduate Medical Education & Research, Kolkata.

For his contribution relevant to Indian population in the area of characterization of lean-nonalcoholic fatty liver disease as the third world phenotype of evolving metabolic syndrome, molecular epidemiology of Hepatitis B and C virus as well as *Helicobactorpylori*.

Amol Dighe (*b* 23.10.1970), PhD, Professor H, Department of Theoretical Physics, Tata Institute of Fundamental Research, Mumbai.

For his important work to present technique to analyse

neutrino oscillation in extremely dense medium. His other work in flavor physics is acknowledged in the high energy physics community. He is playing an important role in INO project underway now.

Pradip Dutta (*b* 02.10.1960), PhD, Professor, Department of Mechanical Engineering, Indian Institute of Science, Bengaluru.

For his outstanding contributions in basic and applied research in heat transfer, energy systems and thermal technologies.

Lalit Chander Garg (*b* 17.06.1952), PhD, Staff Scientist VII, National Institute of Immunology, New Delhi.

For his valuable contributions towards the development of technologies in the field of animal vaccines and demonstrating the ability to translate molecular findings into potential therapeutic molecules.

Kailash Chand Gupta (*b* 25.07.1952), PhD, Nucleic Acids Research Laboratory, CSIR-Institute of Genomics and Integrative Biology, Delhi University Campus, Delhi.

For his outstanding contributions in nanoparticle-based non-viral vectors for delivery of drugs and nucleic acids.

Bhavanath Jha (*b* 01.03.1958), PhD, Chief Scientist, Head & Coordinator, Discipline of Marine Biotechnology and Ecology, CSIR-Central Salt and Marine Chemicals Research Institute, Bhavnagar.

For his outstanding contributions in marine biotechnology. He studied distribution, diversity and molecular phylogeny of Indian sea weeds and has developed technology for their commercial cultivation. He has cloned and characterized many salt-resistance genes of *Salicorniabrachiata*.

Santosh Kapuria (*b* 22.02.1968), PhD, Rajat Gupta Chair Professor, Department of Applied Mechanics, Indian Institute of Technology Delhi, New Delhi.

For his pioneering work in coupled zigzag analytical models for analysis of smart piezoelectric laminated beams, plates and shells.

Paturu Kondaiah (*b* 25.07.1954), PhD, Professor, Department of Molecular Reproduction, Development and Genetics, Indian Institute of Science, Bengaluru.

For his significant contribution on TGF-β iso type signaling and its regulation in normal and tumor cells and for identifying biomarkers for glioma, breast cancer and in the progression of oral sub-mucous fibrosis using genomic approaches.

Pradeep Kumar (*b* 20.07.1957), PhD, Scientist G (Chief Scientist), Head, Division of Organic Chemistry, CSIR-National Chemical Laboratory, Pune.

For his significant contributions in developing protocols for the construction of enantiopure polyols and its application in total synthesis of natural products.

Smita Dilip Mahale (*b* 03.01.1957), PhD, Scientist G and Director, National Institute for Research in Reproductive Health, Mumbai.

For her seminal contributions in the field of fertility regulation using rodents and marmoset animal models. Her contribution on structure-function relationship of FSH and its receptor has immensely benefitted in addressing limitations of female's response for superovulation for IVF.

Nirupama Mallick (*b* 23.03.1964), PhD, Professor, Department of Agricultural & Food Engineering, Indian Institute of Technology Kharagpur, Kharagpur.

For her important work on tolerance and removal of heavy metal toxicity and biodegradable films from cynobacteria and micro algal biofilms and for developing a low cost process for extraction of C-phycocyanin from cyanobacteria which has considerable potential in pharmaceutical industry.

Rakesh Kumar Mishra (*b* 14.04.1961), PhD, Senior Principal Scientist and Group Leader, CSIR-Centre for Cellular & Molecular Biology, Hyderabad.

For his outstanding contributions in the area of epigenetic regulation of development and gene expression.

Usha Kant Misra (*b* 10.04.1952), MD, DM, Professor & Head, Department of Neurology, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow.

For his significant and novel contributions in the field of neurological disorders due to Japanese encephalitis and dengue and emphasizing the importance of thalamus and its connection in the movement disorder.

Uma Charan Mohanty (*b* 29.06.1948), PhD, Visiting Professor, School of Earth, Ocean & Climate Sciences (SEOCS), Indian Institute of Technology Bhubaneswar, Bhubaneswar.

For his outstanding contribution to storm surge and numerical weathering prediction.

Ramaswamy Murugavel (*b* 30.07.1964), PhD, Professor and Head, Department of Chemistry, Indian Institute of Technology Bombay, Powai, Mumbai.

For his outstanding contribution in the area of inorganic and materials chemistry and towards developing models for silicate and phosphate materials.

Kavassery Sureswaran Narayan (*b* 26.01.1964), PhD, Professor and Dean (R&D), Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Jakkur, Bengaluru.

For his significant contributions to the design of small molecules and polymers for the development of polymer based-semiconductor materials and devices. His research efforts have focused on a microscopic understanding of the underlying phenomena which has led to the improved designs.

Sudhakar Panda (*b* 23.02.1959), PhD, Director, Institute of Physics, PO Sainik School, Bhubaneswar.

For his outstanding contributions to string theory and cosmology. His derivation of tachyon effective action taking into account duality symmetry is internationally recognized as path breaking.

Himanshu Pathak (*b* 02.02.1965), PhD, Professor and Principal Scientist, Centre for Environment Science and Climate Resilient Agriculture, Indian Agricultural Research Institute, New Delhi.

For his outstanding contributions in the field of Green House Gas (GHG) emissions from Indian agriculture and for developing technologies for major crops to mitigate GHG emissions.

Pradip (*b* 01.08.1956), PhD, Vice-President, Tata Consultancy Services (TCS), Chief Scientist and Head, Process Engineering Innovation Lab, Tata Research Development & Design Centre, Hadapsar Industrial Estate, Pune.

For his important contributions made in the area of mineral engineering and particulate technology, particularly for model based optimization of comminution, floatation and filtration processes; studies on interface/attachment between particles and surfactants; and sintering of ceramic particles.

Manchikatla Venkat Rajam (*b* 02.02.1955), PhD, Head, Department of Genetics, University of Delhi, South Campus, New Delhi.

For developing novel RNAi strategies for the control of fungal and insect pests in crops and demonstrating the importance of polyamines in plant regeneration, transformation and stress tolerance.

Conjeevaram Srirangachari Rajan (*b* 21.05.1961), PhD, Professor (H), School of Mathematics, Tata Institute of Fundamental Research, Mumbai.

For his recent work on the interface of Lie groups, Representation Theory, Number Theory and Arithmetic Geometry which received high praise from leading experts in the subject.

Ravi Achutha Rao (*b* 14.04.1954), PhD, Professor (H), School of Mathematics, Tata Institute of Fundamental Research, Mumbai.

For his works in the area of Algebraic K-Theory of classical groups where he is widely recognized as a world leader. His most important recent contribution on earlier contributions of Quillen and Suslin on Serre's conjecture appeared in the most prestigious journal.

Valipe Ramgopal Rao (*b* 16.08.1965), P.K. Kelkar Chair Professor, Department of Electrical Engineering, Indian Institute of Technology Bombay, Powai, Mumbai.

For his fundamental contributions in the development of sub-100nm silicon nanoelectronics. His work has laid the foundation for understanding of circuit behavior with lateral asymmetric channel devices.

Girish Sahni (*b* 02.03.1956), PhD, Director, CSIR-Institute of Microbial Technology (IMTECH), Chandigarh.

For his outstanding contribution in developing clot-specific *Streptokinase*.

Srinivasan Sampath (*b* 25.05.1961), PhD, Professor, Department of Inorganic & Physical Chemistry, Indian Institute of Science, Bengaluru.

For his significant contributions to energy materials and materials for sensors. His work on materials science is characterized by a strong electrochemical flavor which is a unique signature of his work.

Pushkar Sharma (*b* 01.08.1969), PhD, Staff Scientist VI, National Institute of Immunology, New Delhi.

For his seminal contributions at dissecting signal transduction mechanisms in malaria parasite and mammalian neurons.

Shobhona Sharma (*b* 05.02.1953), PhD, Senior Professor (I) and Chair, Department of Biological Sciences, Tata Institute of Fundamental Research, Mumbai.

For her major contributions towards the identification of novel protective proteins of *Plasmodium falciparum* and serum biomarkers of cerebral malaria.

Sudeshna Sinha (*b* 07.06.1962), PhD, Professor, Indian Institute of Science Education & Research (IISER), Mohali.

For her outstanding contribution to wide range of problems in the field of nonlinear science, chaos theory, ranging from chaos control to complex networks particularly in developing novel concepts of chaos computing and logical stochastic resonance. Her work has been applied to chip designing.

K George Thomas (*b* 13.05.1961), PhD, Dean (Academics & Faculty Affairs), School of Chemistry, Indian Institute of Science Education & Research, Thiruvananthapuram, College of Engineering (transit campus), Trivandrum.

For his excellent contributions on studies related to light-matter interaction at the nanoscale and its application in surface-enhance spectroscopy.

Anil Kumar Tripathi (*b* 07.11.1959), PhD, Director, CSIR-Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow.

For his contributions towards elucidation of the role of sigma factors, anti-sigma factors and bacteriophytochrome during photooxidative stress response in bacteria.

Vidita Ashok Vaidya (*b* 15.11.1970), PhD, Associate Professor (G), Department of Biological Sciences, Tata Institute of Fundamental Research, Mumbai.

For her major contributions to the understanding of the basic biology of depression & mechanisms by which anti-depressants work also looking at early life effects on neuronal development plasticity.

Foreign Fellows Elected 2014 (*Effective from 01 January 2015*):

Manjul Bhargava (*b*. 1974), Professor, Department of Mathematics, Princeton University, Princeton, NJ 086544, USA.

Professor Bhargava has done spectacular work with his discovery of composition laws of higher degree, originally discovered by CF Gauss in the nineteenth century for quadratic forms. His work in algebraic number theory is profound and extraordinarily original. It has revolutionized the way in which number fields on elliptic curves are counted.

Rita Rossi Colwell (*b*. 1934), Distinguished University Professor, University of Maryland, College Park and Johns Hopkins Bloomberg School of Public Health, 3103 Biomolecular Sciences

Building 296, College Park, Blatimore, Maryland 20742, USA.

Professor Colwell is the most influential microbiologist in the world, whose work has had a profound impact on the protection of global waters. Her numerous seminal contributions towards solving the world's water and water-related public health problems range from very focused advances in scientific understanding of the ecology of infectious diseases to promotion of advanced technologies.

Rakesh Kumar Jain (*b*. 1950), Andrew Werk Cook Professor of Radiation Oncology (Tumor Biology) & Director, EL Steele Laboratory for Tumor Biology, Department of Radiation Oncology, Affiliated Faculty, Harvard-MIT Division of Health Sciences and Technology, Harvard Medical School and Massachusetts General Hospital, Boston, MA 02114, USA.

Professor Jain is highly regarded as a pioneer in both bioengineering and oncology disciplines who revealed the physical barriers to drug delivery and efficacy in tumors, then proposed novel strategies for overcoming these barriers. His discoveries have become core-principles for drug development. His research also represents a premier example of integration of engineering with oncology.

Pravasi Fellows Elected 2014 (*Effective from 01 January 2015*):

Aravinda Chakravarti (*b*. 1954), Director & Professor of Medicine, Pediatrics, Molecular Biology & Genetics, Centre for Complex Disease Genomics, McKusick-Nathans Institute of Genetic Medicine, Johns Hopkins University School of Medicine, Miller Research Building, Room 579, 733 North Broadway, Blatimore, MD 21205, USA.

Professor Chakravarti is one of the modern architects of human genetics. Specifically, his laboratory has made seminal contributions to the genetic dissection of complex genetic diseases, using molecular genetic, genomic and computational biology tools, to understand their pathophysiology. His specific studies have uncovered major pathways dysregulated in Hirschsprung disease, autism, hypertension and sudden cardiac death.

Prashant Vasudev Kamat (*b*. 1953), John A Zahm Professor of Science, Department of Chemistry and Biochemistry, 223, Radiation Laboratory, University of Notre Dame, Notre Dame, IN 46556, USA.

The outstanding contributions of Professor Kamat to the understanding of the basic principles that underlie light-induced charge-transfer processes across semiconductor nanostructure interfaces are unmatched in breadth and depth. The research achievements in the area of energy conversion and storage using nanostructure light harvesting assemblies have put him at the forefront of international scene.

INSA Teachers Awardees 2014

Professor Somnath Dasgupta, Vice Chancellor, Assam University, Silchar; **Professor Anil Kumar,** Head, Department of Molecular Biology & Genetic Engineering, G.B. Pant University of Agriculture & Technology, Pantnagar; **Dr Arvind Kumar,** Visiting Faculty, Centre for Excellence in Basic Sciences, University of Mumbai, Mumbai; **Professor Asok Kumar Mallik,** INSA Senior Scientist, Indian Institute of Engineering Science and Technology, Shibpur; **Professor Sharashchandra Harishchandra Patil,** Department of Physics, Indian Institute of Technology Bombay, Mumbai; **Professor Subramania Ranganathan,** Indian Institute of Chemical Technology, Hyderabad; **Professor Bimal Kumar Roy,** Director, Indian Statistical Institute, Kolkata; **Professor Sankar Kumar Som,** Department of Mechanical Engineering, Indian Institute of Technology Kharagpur, Kharagpur; **Professor Satish Chander Verma,** Department of Botany, Panjab University, Chandigarh; **Professor Murzban Sorab Wadia,** Department of Chemistry, University of Pune, Pune.

AWARD LECTURES DELIVERED

Professor Har Swarup Memorial Lecture (2014): Professor PD Prasada Rao, INSA Honorary Scientist, National Environmental Engineering Research Institute, Nagpur, delivered the Professor Har Swarup

Memorial Lecture on *Brain Regulation of Gonadotropins* in Fish at IISER Bhopal on August 19, 2014.

Professor PD Prasada Rao receiving a citation for the award lecture from Professor VK Singh, FNA

Professor GN Ramachandran 60th Birthday Commemoration Medal (2012): Professor B Bhattacharyya, Emeritus Professor, Department of Biochemistry, Bose Institute, Kolkata, delivered the Professor GN Ramachandran 60th Birthday Commemoration Medal Lecture on Taste of Turmeric Curcumin: *A Unique Molecule* at CSIR-Indian Institute of Chemical Biology, Kolkata, on August 22, 2014.

Professor B Bhattacharyya, FNA receiving the medal and citation from Dr SC Pakrashi, FNA; Professor HK Majumder, FNA is also present

The Srinivasa Ramanujan Medal (2013): Professor KR Parthasarathy, Emeritus Scientist, Indian Statistical Institute, New Delhi, delivered the Srinivasa Ramanujan Medal Lecture on *Quantum Stochastic Calculus and Quantum Gaussian Processes* at University of Delhi, South Campus, New Delhi on September 18, 2014.

The Chandrakala Hora Memorial Medal (2013): Dr Chandrima Shaha, Director and Head, Cell Death and Differentiation Research Laboratory, National Institute of Immunology, New Delhi, delivered the Chandrakala Hora Memorial Medal Lecture on *The Complex World of Cellular Defense in the Leishmania Parasite* at CSIR-Indian Institute of Chemical Biology, Kolkata on September 19, 2014.

The Homi Jehangir Bhabha Medal (2008): Professor Arup K Raychaudhuri, Director, SN Bose National Centre for Basic Sciences, Kolkata delivered the Homi Jehangir Bhabha Medal Lecture on *The World of Small Things* at Visva-Bharati University, Santiniketan on October 10, 2014.

Dr MR Das Memorial Lecture (2014): Dr Balaram Ghosh, Head, Genomics & Molecular Medicine Unit, CSIR-Institute of Genomics & Integrative Biology, Delhi delivered the Dr MR Das Memorial Lecture on *Involvement of microRNA in Allergic and Asthmatic Disorders* at University of Delhi, Delhi on October 21, 2014.

The Daulat Singh Kothari Memorial Lecture (2014): Professor HK Gupta, President IUGG, President GSI and Member, Atomic Energy Regulatory Board, delivered the Daulat Singh Kothari Memorial Lecture on *Triggered Earthquake in Koyna Region* at Indian Institute of Technology Bombay, Mumbai on October 30, 2014.

INSA-Vainu Bappu Memorial Award (2013): Emeritus Professor, Sir Arnold Wolfendale, Foreign Fellow, delivered the INSA-Vainu Bappu Memorial Award Lecture on *A Hundred Years of Cosmic Rays* at TIFR, Mumbai on November 10, 2014.

Professor Bal Dattatraya Tilak Lecture (2014): Professor Bijay Singh, Department of Soil Science, Punjab Agricultural University, Ludhiana, delivered the Professor Bal Dattatraya Tilak Lecture on *Site-specific and Need-based Management of Nitrogen Fertilizers in Cereals* at Bose Institute, Kolkata on November 13, 2014.

Sir Arnold Wolfendale, Foreign Fellow, INSA, receiving the medal and citation from Professor Mustansir Barma, FNA

Professor Vishnu Vasudeva Narlikar Memorial Lecture (2012): Professor RB Bapat, Stat Math Unit, Indian Statistical Institute, New Delhi delivered Professor Vishnu Vasudeva Narlikar Memorial Lectureon *Many Facets of Distances in Trees* at Savitribai Phule Pune University, Pune, on November 19, 2014.

Jawaharlal Nehru Birth Centenary Lecture (2014): Professor Mustansir Barma, Director, Tata Institute of Fundamental Research, Mumbai delivered the Jawaharlal Nehru Birth Centenary Lecture on *Fluctuations and Order: A Fine Balance* at University of Hyderabad, Hyderabad on November 14, 2014.

Professor KP Bhargava Memorial Medal Lecture (2014): Professor KN Agarwal, former Professor of Pediatrics, Univ College of Medical Sciences, Delhi delivered Professor KP Bhargava Memorial Medal Lecture on *Material Iron Deficiency and Brain* at Institute of Medical Sciences, BHU, Varanasi on November 24, 2014.

INTERNATIONAL ACTIVITIES

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

- Professor Raghavendra Gadagkar, President, INSA, is elected as Member of ICSU Executive Board for the term 2014-2017.
- Professor Krishan Lal, Immediate Past President, INSA, has been elected as President, Association of Academies and Societies of Sciences in Asia (AASSA) for the term 2014-2016.
- Dr K Subramaniam, Associate Professor G, Homi Bhabha Centre for Science Education, Tata Institute of Fundamental Research, Mumbai, has been nominated for membership of the Nominating Committee of International Commission on Mathematical Instruction (ICMI).
- Dr Chintalagiri Mohan Rao, CCMB, Hyderabad, elected as Member, International Union of Pure & Applied Biophysics (IUPAB) Council for the term 2014-2017.
- Dr Anil Kumar, Physical Chemistry Division, CSIR-National Chemical Laboratory, Pune has been nominated for the membership of Executive Committee of Committee on Data for Science & Technology (CODATA) for the term 2014-2016.
- The following 11 Indian scientists have been elected for various positions of the International Union of Crystallography (IUCr) Commissions:

  Dr K Byrappa, Crystal Growth Characterization Materials, University of Mysore, Mysore; **Dr SL Chaplot,** Head, Solid State Physics Division, BARC, Mumbai; **Dr Nandini Garg,** BARC, Mumbai; **Professor J Kumar,** Director, Crystal Growth Centre, Anna University, Chennai; **Dr N Gautham,** Centre of Advanced Study in Crystallography & Biophysics, University of Madras, Chennai; **Dr NK Mukhopadhyay,** Dept. of Metallurgical Engg., IIT (BHU), Varanasi; **Professor Ashwini Nangia,** School of Chemistry, University of Hyderabad, Hyderabad; **Professor Dhananjai Pandey,** School of Materials Science & Technology, IIT (BHU), Varanasi; **Dr DM Salunke**, Executive Director, Regional Centre for Biotechnology, Gurgaon; **Professor Milan K Sanyal,** Director, Saha Institute of Nuclear Physics, Kolkata; **Dr K Sekar,** Associate

Professor, Super Computer Education & Research Centre, IISc, Bengaluru.

Workshop/Symposia/Conference supported by the Academy

- The International Conference on *Data Sharing and Integration for Global Sustainability* (*SciDataCon-2014)* held during November 2-5, 2014 at Jawaharlal Nehru University.
- The 29th Committee on Data for Science & Technology (CODATA) General Assembly along with the Meeting of the World Data System was held at INSA premises during November 6-7, 2014. The meeting was attended by the participants, including CODATA Officers, Executive Committee Members, delegates from National and ICSU Union Members, task and working group representatives and spokespersons from other CODATA activities. Professor Geoffrey Boulton was elected as President, CODATA and Dr Anil Kumar, FNA has been elected as a Member, Executive Committee of CODATA.
- A three day INDO-US Workshop on *Challenges of Emerging Infections and Global Health Safety* was organized jointly by the Indian National Science Academy and US National Academy of Sciences at INSA premises during November 18-20, 2014 to strengthen cooperation and future possibilities of collaboration between the two Academies.The workshop was coordinated by Professor Indira Nath, Emeritus Professor, National Institute of Pathology, New Delhi on behalf of INSA. About 70-80 participants from India and USA attended the event.The workshop concluded with the release of a joint statement signed by Professor Indira Nath and Dr James W. LeDuc, Co-Chairs, Workshop Organizing Committee. A joint statement of INDO-US workshop is enclosed in ***Annexure-I***.
- To celebrate the International Year of Crystallography (IYCr 2014), an International Symposium cum Workshop on *Frontiers of Structural Biology: New Advances in X-ray Diffraction and Cryo-electron Microscopy*is organized by the Academy, jointly with UNESCO-Regional Centre for Biotechnology, Gurgaon, during December 15-17, 2014 at INSA premises.

Delegates at the CODATA General Assembly

Participants of INDO-US Workshop on *Challenges of Emerging Infections and Global Health Safety*

Support for Visiting Scientists during August-November 2014

- 123 Indian scientists were supported by the INSA for attending various ICSU/Non-ICSU sponsored international conferences abroad.
- 21 Indian and seven foreign scientists visited foreign countries under INSA Bilateral Exchange Programmes.

Overseas Visits by INSA Delegations

- Professor Raghavendra Gadagkar, President, INSA visited Japan, on an invitation from Science & Technology in Society Forum (STS Forum), Japan, to participate in the 11th Annual Meeting of STS Forum during October 5-7, 2014 in Kyoto, Japan.
- Professor Raghavendra Gadagkar, President, INSA visited Paris to participate in the IAP (Inter Academy Panel) - the global network of Science Academies Executive Committee Meeting, hosted by the French Academy of Sciences, France, during November 5-8, 2014.
- Dr TR Sharma, Project Director, National Research Centre on Plant Biotechnology, IARI, New Delhi visited Brazil to attend the International Conference on *Science for Poverty Eradication and Sustainable Development* at Manaus, Brazil, during December 3-5, 2014. The conference was organized by the IAP.

Visits of Overseas Delegates to INSA

Dr Bernie Jones and Dr John Holmes, Project Co-Leader, UK "Smart Villages" initiative of EASAC visited INSA on August 25, 2014 and had discussion meeting with Dr DM Salunke, Vice-President (International Affairs), INSA and Professor JN Nanda, INSA Honorary Scientist, to organize a workshop on *Energy off-grid in rural communities* in India, during mid-2015.

Scientific Meetings during August – December 2014

Summit of South Asian Academies and AASSA General Assembly

- The 3rd Summit of South Asian Academies along with the General Assembly of Association of Academies and Societies of Sciences in Asia (AASSA) was held during October 14-17, 2014 at INSA. The AASSA, a group representing 34

Academies from 30 countries, was established in 2012 to promote solidarity and cooperation among the scientific and technological academies in Asia and Australasia. It aims to stimulate regional co-operation and self-reliance by sharing each other's experience. A total of 70 overseas delegates and around 50 Indian scientists participated in the event. Around 25 students actively participated in all the sessions and contributed significantly to the discussions. A seminar on *Achieving Sustainable Agriculture through a Biotechnological Revolution* in collaboration with the UNESCO-Regional Centre for Biotechnology was organized on the first day. An International Symposium on *SHER Communication in Asia with a Special Focus on Science Festivals* was jointly organized on second day by IAP, INSA, Academy of Sciences of Malaysia and Korean Academy of Science and Technology to discuss and propose better ways to improve Science Literacy.

A meeting of the Special Committee on *Women in Science and Engineering (WISE)* was also held on October 16, 2014 along with the AASSA General Assembly.

A meeting of Inter Academy Exchange Committee was held under the chairmanship of Professor Raghavendra Gadagkar, President INSA, on October 17, 2014 at INSA where in 51 Indian Scientists were selected for visits abroad under the various bilateral exchange programmes; 3 Senior Scientists were selected as INSA Chair Awardee.

A joint statement of the Third Summit of South Asian Science Academies and AASSA General Assembly is enclosed in ***Annexure-II***

- A meeting of IAP Standing Committee on *Programmes, Monitoring and Evaluation* (PME) was held under the chairmanship of Professor Krishan Lal, Immediate Past-President INSA, at INSA premises during December 4-5, 2014.

- The 6th Indo-Israeli Meeting on *Frontiers in Condensed Matter Physics* was organized jointly by the Indian National Science Academy and the Israel Academy of Sciences & Humanities (IASH) during December 9-11, 2014 at Tel Aviv, Israel under the purview of INSA-IASH Bilateral Exchange Program. An Eleven member Indian delegation, led by Professor Sushanta Dattagupta, Vice-Chancellor, Visva Bharati, Santiniketan, West Bengal, was nominated by the Academy.

Delegates at the 3rd Summit of South Asian Science Academy & AASSA General Assembly

Agreements/MoUs

The Academy has signed two Agreements with Far Eastern Branch of Russian Academy of Sciences (Russian Federation) and Monogolian Academy of Sciences (Monogolia) on October 15 & 16, 2014 at INSA, New Delhi to establish Scientific Bilateral Cooperation.

SCIENCE AND SOCIETY PROGRAMME

Public-Experts Interaction Event on Climate Change Issues

An outreach programme on Climate Change Issues was held on August 22, 2014 at INSA Auditorium. The programme was supported under United Nations programmes on Climate Change. Professor V Rajamani, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, was the moderator of the programme. The programme was attended by Scientists, general public and students from Schools and Colleges who actively participated in the interactive session. The six member panel interactive session was led by moderator, Professor R Ramesh, Physical Research Laboratory, Ahmedabad, Professor Devesh Sinha, Delhi University, Professor Subimal Ghosh, IIT Bombay, Dr Kailash Bansal, IARI, New Delhi, Dr RC Dhiman, Malaria Institute, New Delhi and Professor MS Seshayee, University College of Agricultural Sciences, Bengaluru for interaction with the audience during the session.

Research Council in History of Science

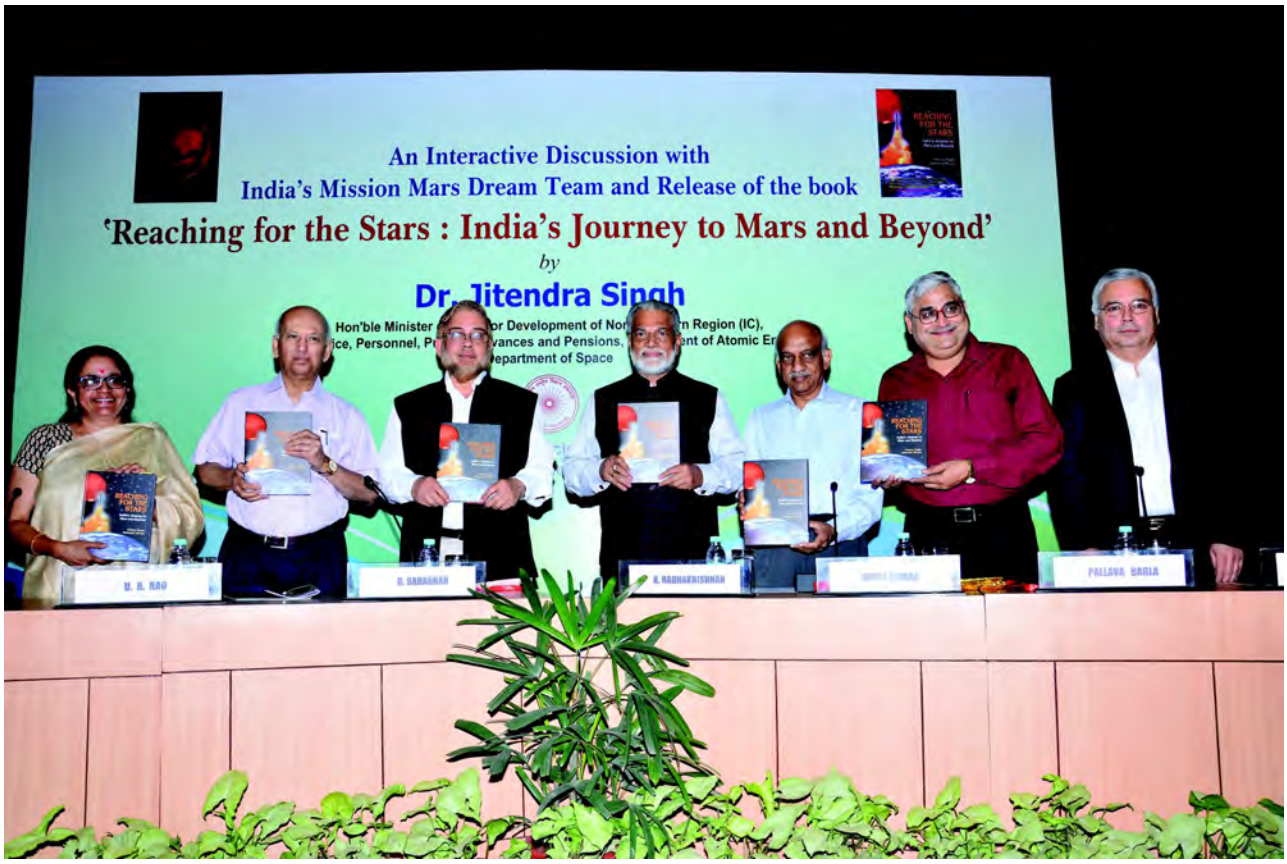
A lecture programme on History of Science and a joint Meeting of the Research Council and Indian National Commission was held on October 10, 2014 at the premises of Vishva Bharti University, Santiniketan. Professor Raghvendra Gadagkar, President, INSA and the Chairman, National Commission noted with happiness that the Academy is empowered to run the unique programme on History of Science. He stressed upon the need to look at the history with a scientific approach and science in a historical perspective. Following papers were presented during the day-long seminar: *Sir Asutosh and Rise of Modern Science in India* by Professor Kankan Bhattacharyya, Indian Association for the Cultivation of Science, Kolkata; *Rakhigarhi Archaeological Project: Revealing and Displaying Harappan Civilization's Contribution to the field of Science and Technology* by Professor Vasant Shinde, Deccan College, Post-Graduate and Research Institute, Deemed University, Pune; *A Glimpse of Early Indian Traditions in Mathematics and Astronomy in Cross Cultural Context* by Dr AK Bag, Editor, *Indian Journal of History of Science*, INSA, New Delhi; *History and Development of Genetics Research in India* by Professor DP Kasbekar, Haldane Chair, Center for DNA Fingerprinting and Diagnostics (CDFD), Hyderabad; *Medical Pluralism: Practices of Indigenous and Western Systems of Medicine in Nineteenth Century India (with special reference to Bengal)* by Dr Srabani Sen, Asiatic

Public-Experts Interactive session at the Climate Change Issues

Society, Kolkata and *100 years of X-ray Crystallography: A Historical Perspective* by Dr DM Salunke, Vice-President (International Affairs) INSA. Professor Sushanta Dattagupta, Vice-Chancellor, Vishva Bharti University, Santiniketan, also presented a beautiful narration entitled *Tagore, on Science—Through Songs*.

Discussion with the Indian Mars Mission Team

An Interactive discussion with India's Mission Mars Dream Team, led by Professor K Radhakrishnan, Chairman ISRO, with Professor Raghavendra Gadagkar, President INSA was held on November 12, 2014 at the INSA Auditorium. The session was followed by release of the *Reaching for the Stars: India's Journey to Mars and Beyond*, written by Pallava Bagla and Subhadra Menon.



Professor Raghavendra Gadagkar, President INSA, Professor K Radhakrishnan, Chairman ISRO, Professor UR Rao, Chairman, PRL Council, Shri AS Kiran Kumar, Director, Dept. of Space, Ahmedabad, Professor JP Khurana, Vice-President INSA alongwith Pallava Bagla and Subhadra Menon releasing the book

Public Lectures at INSA

Dr Fidel Castro Diaz-Balart Jr., Principal Scientific Adviser of the State Council, Republic of Cuba, during his visit to INSA for a discussion meeting, delivered a public lecture on *The Crossroad of Modern Sciences & Innovative Endeavours with Society: The Cuban Perspective* on September 10, 2014.

Professor N Mukunda, Chairman, Science Education Panel, Indian Academy of Sciences, Bengaluru, delivered a public lecture on *Mathematics as the Language of Nature - A Historical View* on September 29, 2014

Professor Vidya Nanjundiah, Centre for Human Genetics, Bengaluru, delivered a public lecture on *A Present-Day View of Evolutionary Theory* on November 3, 2014

Professor Padmanabhan Balaram, Former Director, Indian Institute of Science, Bengaluru, delivered a public lecture on *Ranking Indian Institutions: Choosing Courses for Horses* on November 25, 2014

Professor Lalit Kumar, Department of Medical Oncology, Dr BRA Institute-Rotary Cancer Hospital, AIIMS, New Delhi, delivered a public lecture on *Stem Cell Transplantation: Current Status* on December 2, 2014

AWARDS AND HONOURS TO INSA FELLOW

Dr DJ Bagyaraj, NASI Senior Scientist and Chairman, Centre for Natural Biological Resources and Community Development (CNBRCD), Bangalore, has been nominated as a Task Force Member of 'Global Soil Partnership (GSP)', a programme initiated by the Secretariat for the "International Year of Soils" based in FAO, Rome, to contribute towards Sustainable Soil Management using microorganisms. He has also been invited by

the European Commission (EC), Brussels to contribute on "Mycorrhizal Fungi"in the *Global Atlas of Soil Biodiversity* along with three other scientists, one each from USA, Brazil and China.

RECENT PUBLICATIONS OF THE ACADEMY

Indian Journal of History of Science (IJHS)

The Vol. 49, issue no. 3 (September 2014) of *IJHS* has been published. The issue includes papers on Parāśara's Six Season Solar Zodiac and Heliacal Visibility of Star Agastya, Methods of Interpolation in Indian Astronomy, Plant Diseases and their treatment in Early Sanskrit Literature, Nemicandra's Rules for Computing Multiplier and Divisor, Mathematical Complexity of *Sriyantra*, and Techno-Scientific Education and Indian National Congress (1885-1918). The historical note section includes papers on Palm Leaf Manuscripts on Health Care in Orissa State Museum, Nineteenth Century Indian Mathematicians prior to Ramanujan, Application of First Approachable *Sunya* and Bankim Chandra and popular Science. It also carries book reviews, project reports and news from the field of history of science.

Indian Journal of Pure and Applied Mathematics (IJPAM)

Vol. 45, issue Nos. 1, 2, 3, 4 & 5 (February, April, June, July and October) have been published.

Proceedings of the Indian National Science Academy

The Vol. 80 issue no. 3 (September 2014) of the *Proceedings of the Indian National Science Academy* has been published. This issue contains five Review Articles and eight Research Papers, besides the Editorial. The issue also included a special section, edited by Professor Alok Bhattacharya, JNU, New Delhi on *Data and Scientific Research* which contains a Preface, four Reviews and one Research Article.

A Special Issue, edited by Professor Sibaji Raha, Bose Institute, Kolkata on "*Science at High Altitudes: Facilities in India"* has been published in November 2014. This contains a Preface and seven Reviews articles.

OBITUARY

Fellows

Ravindra Kumar Lal

Ravindra Kumar Lal (*b* 14 October, 1936*; d* 19 October, 2014) obtained his PhD from University of Toronto, Canada with specialization in metamorphic petrology. On returning to India, he joined the Department of Geology, BHU from where he superannuated as Head of the Department. He later continued research as CSIR Emeritus Scientist and INSA Senior Scientist.

Major research contributions of Professor Lal and his co-workers include detailed petrological characteristics including geothermo-barometry of the Barrovian type of prograde metamorphism of meta-pelites from Sini, Singhbhum, Jharkhand and Takdah, Darjeeling Himalaya, and of granulites of the Southern Granulite Belt (SGB) and Dharwar Craton of Karnataka and Tamil Nadu, petrology of low-pressure and alusite-sillimanite type of regional metamorphism of the Khetri Copper Belt, Rajasthan, chemographic relationships of the high-grade silica-deficient sapphirine-bearing rocks of Sonapahar, Meghalaya.

Professor Lal received the La Touche Medal of the Mining Metallurgical and Geological Institute, Kolkata (1958); and was the first recipient of Professor MR Srinivasa Rao Cash Award by the Geological Society of India, Bangalore (1985) and the National Mineral Award of Ministry of Steel and Mines, Government of India, (1995). He was a Fellow of the Indian Academy of Sciences, Bangalore and the National Academy of Sciences (India), Allahabad.

Professor Ravindra Kumar Lal was elected to the Fellowship of the Indian National Science Academy in 1994.

Vikram B Mehta

Vikram B Mehta (*b* 15 August, 1946; *d* 04 June, 2014) obtained his PhD from the University of California with specialization in Algebraic Geometry. On return to India he joined the School of Mathematics, Tata Institute of Fundamental Research (TIFR), Mumbai from where he superannuated as Senior Professor. He later joined IIT Bombay as Raja Ramanna Fellow.

The work of Professor Mehta was mainly concerned with the study of semi-stable bundles and questions of Schubert varieties, where it made a great impact. A special feature of his work was that he had often relied on positive characteristic methods to deduce results even in characteristic zero. The notion of Frobenius split varieties introduced by Mehta along with Ramanathan is a land-mark work. This is considered as one of the most significant developments in the study of Schubert varieties and ranks among the very best contributions of Indian mathematicians. It is an entirely new way of handling the geometry of these varieties. In subsequent years, Professor Mehta and others continued to find new situations where the idea yielded many interesting results. In another significant and joint work with Ramanathan, he had shown that the restriction of a semi-stable bundle to a general hypersurface of sufficiently large degree remains semi-stable. Professor Mehta was a recipient of the SS Bhatnagar Prize (1991).

Professor Vikram B Mehta was elected to the Fellowship of the Indian National Science Academy in 1994.

Bal Raj Nijhawan

Bal Raj Nijhawan (*b* 22 September, 1915; *d* 06 April, 2014) obtained his Doctorate (Metallurgy) from the University of Sheffield, England. After returning to India, he worked in a defence establishment; then joined the newly established National Metallurgical Laboratory (NML) at Jamshedpur and became its first Indian Director; later he moved to United Nations Industrial Development Organization as Senior Industrial Adviser/Consultant and worked there for 28 years.

Dr Nijhawan was an outstanding engineer and technologist, an eminent researcher and an able administrator. He rendered invaluable and magnificent service to the metallurgical industries all over the world. He had pioneered research and development work on armour plate technology, armour failures and control of austenitic grain size of steels, all related to the defence needs of our country. He had also been responsible for research and development of production technologies of alloy steels from indigenous raw materials including the world acclaimed nickel-free austenitic stainless steels.

Dr Nijhawan received Padma Shri in 1958 and the SS Bhatnagar Prize for Engineering Sciences in 1964. He was also a recipient of several honors and awards from other countries for his work and contributions. He was a Fellow of the National Academy of Sciences (India), Allahabad.

Dr Bal Raj Nijhawan was elected to the Fellowship of Indian National Science Academy in 1957.

Naba Kishore Ray

Naba Kishore Ray (*b* 05 December, 1940; *d* 08 May, 2013) obtained his PhD from Indian Institute of Technology, Kanpur specializing in theoretical chemistry. He served as Professor (also Chairman), Department of Chemistry, University of Delhi. Professor Ray was the Founder Director, Centre for Professional Development in Higher Education, University of Delhi.

Professor Ray employed the simple molecular orbital theory to study the properties and molecular electronic structures, electron spin resonance hyperfine splittings and transition states of hydroboration and diboration reactions. He modified the FSGO model of Lewis and Langmuir by introducing various model potentials to simulate the core. The modification in conjunction with the fragment orbital approach has made the model suitable for the study of larger systems. Professor Ray's most interesting work was the molecular orbital study of surface-adsorbate interaction. He predicted the behaviour of CO on the surfaces of pure Pt, Pt anode and cathodic Pt (i.e. Pt with pre-adsorbed K) using the simple molecular orbital method.

Professor Ray was a recipient of the SS Bhatnagar Prize (1983). He was a Fellow, National Academy of Sciences (India), Allahabad and International Society of Quantum Biology and Pharmacology.

Professor Naba Kishore Ray was elected to the Fellowship of Indian National Science Academy in 1986.

Foreign Fellow

William Sefton Fyfe

William Sefton Fyfe (*b* 04 June, 1927; *d* 11 November, 2013) received his PhD from Otago University, New Zealand with specialization in Geology. He was a Professor at Berkeley, Imperial College, London and the University of Manchester before joining the University of Western Ontario. A geologist, past Chair of the Department of Earth Sciences and former Dean of Western Science, Professor Fyfe was among the world's most eminent geochemists and a leader in Canada's scientific community.

Professor Fyfe made important contributions to the knowledge of isomorphism by studying the behaviour of rock-forming minerals under high temperature and stress. Fyfe's research effort focused on the role of fluids and tectonics in creating deposits of precious metals, particularly gold. He carried out research on a range of biosphere-geosphere interactions, including the role of micro-organisms in concentrating metals and the role of geothermal systems in creating ocean nutrients. Concerned with the environmental implications of human energy consumption, Fyfe conducted research into problems associated with burning coal. His knowledge of the geology of ancient rocks and the movement of fluids in the Earth's crust waskey to research into the possibility of safe geological disposal of high-level nuclear waste.

Professor Fyfe received many medals and prizes, including the Arthur Day Medal, the Canada Gold Medal for Science and Engineering, the Roebling Medal etc., to name a few. He was a Fellow of The Royal Society London, The Royal Society of New Zealand, The Royal Society of Canada, The Brazilian Academy of Sciences, The Russian Academy of Sciences, The Geological Association of Canada and the Geological Society of America. He was also named as an Honorary Professor at China University, Beijing, and at the Institute of Geology in the Chinese Academy of Science.

Professor William Sefton Fyfe was elected to the Foreign Fellowship of the Indian National Science Academy in 1999.

ANNOUNCEMENT

INSA Visiting Scientist Programme 2015

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.org** or write to Mrs. Madhu Marwah, Programme Officer, Science Promotion Division, Indian National Science Academy, Bahadur Shah Zafar Marg, New Delhi 110 002 and submit the prescribed application before February 15, 2015.

Annexure-I

INDO-US Workshop on "Challenges of Emerging Infections and Global Health Safety" INSA, New Delhi, November 18-20, 2014

A three day INDO-US Workshop on *"Challenges of Emerging Infections and Global Health Safety"* is being organized jointly by Indian National Science Academy (INSA) and US National Academy of Sciences (US NAS) during November 18-20, 2014 at INSA premises, New Delhi to strengthen the cooperation and to open future possibilities of collaboration between the two Academies. This workshop is coordinated by Professor Indira Nath, FNA on behalf of INSA. About 60-70 participants (both from India and USA) will attend in the above event.

Scientists from India and the United States would examine global issues related to emerging infections and global health safety in the United States and India. In particular, the workshop would address challenges posed by infectious diseases, both within the countries and across national borders. Zoonotic infections have shown that the borderline between animal and human health are merging as exemplified by avian flu, anthrax and others. Thus, not only the current status of human and animal health issues would be discussed; surveillance in real time for impending infections and foresight to predict emerging epidemics would also be viewed. How to achieve prompt communication of suspected new infections and methods for transportation of infected material would be discussed in the context of the safe use, management, and operation of high containment (BSL 3-4) laboratories in India and the United States. In addition, new and exciting developments in technologies, such as the biotech revolution and synthetic biology as well as the need if any to have a code of ethics for avoiding improper use of pathogens would be explored. Regulatory issues in both countries as well as multilateral agreements on these issues would be visited. Finally, sustainability issues in maintaining surveillance, laboratory facilities and modeling for predicting epidemics would also be discussed.

The ultimate goal is to jointly share challenges and lessons learned regarding biological safety, laboratory management, and the general efficient and sustainable operation of laboratories for public health, animal, and plant health research and clinical applications for improving global health safety. A secondary goal is to encourage collaborative partnerships between Indian and American scientists in areas identified by both groups during the workshop keeping in mind the existing multilateral agreements between the two countries.

Annexure-II

Third Summit of South Asian Science Academies and
AASSA General Assembly
October 14-17, 2014
Indian National Science Academy, New Delhi

The Indian National Science Academy has undertaken focused efforts in the recent past to strengthen regional cooperation in science and technology including issues of common concern. Summit of South Asian Science Academies was organized at the Academy premises consecutively for past two years, 2012 and 2013. The 3rd Summit of South Asian Science Academies along with the General Assembly of Association of Academies and Societies of Sciences in Asia (AASSA) was organized during 14-17 October 2014 at the Academy. AASSA, a group representing 34 academies from 30 countries, was established in 2012 to promote solidarity and cooperation among the scientific and technological academies in Asia and Australasia. It aims to stimulate regional co-operation and self-reliance by sharing each other's experience.

During the first two Summits, the member countries deliberated on Energy Options, Health Care and Infectious Diseases, Education in Science, Inclusive Innovation, Women in Science, Urbanization and Climate Change (2012) and ICT Tools in Enhancing Quality of Higher Education, Sustainable Development-Post 2015 Scenario, Health and Well-being: Advances in Biotechnology, Agricultural Productivity, Food and Nutrition and Role of S&T and Innovation (2013).

The third Summit was a special event since it was held along with the AASSA General Assembly. A total of 70 overseas delegates spread across entire Asian region and around 50 Indian scientists (including a number of young researchers) participated in these events.

On day one, a seminar on ***'Achieving Sustainable Agriculture through a Biotechnological Revolution'*** in collaboration with the UNESCO-Regional Centre for Biotechnology was organized. On second day, an International Symposium on ***'SHER Communication in Asia with a Special Focus on Science Festivals'*** was jointly organized by IAP, INSA, Academy of Sciences of Malaysia and Korean Academy of Science and Technology to discuss and propose better ways to improve Science Literacy.

A meeting of the Special Committee on Women in Science and Engineering (WISE) was also held along with the AASSA General Assembly.

A notable feature of this meeting was the participation of 25 students from different parts of India. The students actively participated in all the sessions and contributed significantly to the discussions both during the sessions and outside. The opportunity for students to participate in the summit meetings is itself a way to reach out to society at large.

Representatives of the Science Academies and Organizations from the following countries participated in the event:

Afghanistan	**Australia**	**Bangladesh**	**Bhutan**
China	**IAP**	**India**	**Indonesia**
Iran	**Japan**	**Korea**	**Malaysia**
Mauritius	**Mongolia**	**Nepal**	**Pakistan**
Philippines	**Russia**	**Singapore**	**Sri Lanka**
Thailand	**Turkey**		

Seminar on '*Achieving Sustainable Agriculture through a Biotechnological Revolution*'

Representatives from India, Pakistan, Sri Lanka, Nepal, Bhutan, Bangladesh, Islamic Republic of Iran, Afghanistan, Mauritius and Mongolia provided an overview of the status of agricultural biotechnology in their respective countries. This was very useful as many of us were not adequately informed about the recent developments in our region. It was clear that there is an active programme and much interest in the possible use of biotechnology for achieving sustainable agriculture in all the countries of the region. Considerable research is already under way but much more intensive work needs to be done to meet the vast challenges of sustainable agriculture in the diverse environments and diverse human needs of the region.

Not surprisingly, there was much discussion on the impediments for implementation of biotechnological methods including adverse public perception. There was wide-spread consensus that addressing public concerns and making biotechnology acceptable should be part of the effort of achieving sustainable agriculture through biotechnology. Concerted efforts need to be made to accurately assess the benefits and risks of each biotechnological intervention and communicate these assessments to farmers and other members of the society. This led automatically to a more general discussion about the interaction between science and society, science communication and education and the need to integrate social sciences and humanities in these efforts. Based on the perceived benefits and risks, appropriate regulatory mechanisms have to be put in place in order to achieve consensus in the use of biotechnology for sustainable agriculture. Attention was also drawn to many biotechnological methods not involving genetically modified crops, that may be equally important and much less controversial.

A committee with Professor Anwar Nasim as Convener and Professor Vijaya Kumar, Dr Rekha Chhetri and Dr Sangita Shrestha as members, was set up to make recommendations about possible follow up actions resulting from this seminar. The committee was requested to submit its report within two months.

Symposium on '*SHER Communication in Asia with a Special Focus on Science Festivals*'

Delegates from Malaysia, Korea, Singapore, Philippines, Thailand, Indonesia, Nepal, Bangladesh, India and China provided fascinating stories about efforts in their countries to take science to the wider public, young and old. The use of science fairs and festivals has been especially effective in arousing interest not only in the products of modern science but also in the scientific method itself. These efforts are expected to inspire more young people to study science and opt for a career in science. They are also expected to make science more friendly and acceptable to society so that the society at large can actually participate in the production and application of scientific knowledge for solving many of our problems. Innovative use of modern information technology combined with creative use of traditional methods of communication was the highlight of many presentations. A special feature of this activity was a built-in formal mechanism to evaluate the success of these efforts. A separate session was devoted to "Evaluating Science Festivals" which showed how to obtain public feedback and thus make our efforts more useful.

Meeting of the Expert Committee on '*Women in Science and Engineering (WISE)*'

A Special Committee on WISE having 12 members from different member countries of AASSA was established in the Second Summit of the South Asian Science Academies held on September 24-27, 2013. During the AASSA/TUBA workshop held in Izmir, Turkey on May, 2014, this committee decided to prepare a country-wise report along with a survey of the status of women in science and engineering. This report was presented and discussed in this summit. The members present discussed the state of progress in their preparation of the project report on "Sustainable Development in Asia (SDA)" and the state of planning for the "Gender Summit Meeting" to be held in Seoul, in August 2015.

International Geological Congress (IGC) 2020

A brief overview of the current status of IGC 2020 and the opportunities it provided to enhance the geoscience base in the region, both in respect of basic and applied aspect was presented. It was decided that a mechanism will be set up to coordinate the activities of IGC 2020 and to ensure effective participation of all stake holders in the south Asian region.

Where Do We Go From Here?

- It was unanimously agreed that the successive summits of the South Asian Science Academies have been extremely useful in bringing awareness and enabling interaction and cooperation in our common goal of using science and technology to build a healthy and sustainable society.
- The delegates assembled here reaffirmed their commitment to continue these meetings in future years.
- The importance of scientific seminars by working scientists on specialized topics, along with more general discussions of policy, was considered essential to sustain long-term interest in these meetings.