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Important Events/ Meetings

Sectional Committee meetings (online) were held during August, 2023 to consider the nominations of INSA Associate Fellows and INSA Distinguished Lecture Fellows. The recommendations of both categories by the Sectional Committees will be considered by the Council at its next meeting to be held in September, 2023.

Indira Gandhi Prize for Popularization of Science Award (2020) on Fairness in Sharing Resources delivered by Professor R Ramanujam, Institute of Mathematical Sciences, CIT Campus, Chennai on 4 September, 2023 at Ramaiah University of Applied Sciences, Bengaluru under INSA Bengaluru Local Chapter.

INSA Annual General Meeting (Hybrid mode) was held on September 12, 2023. The following activities / announcements were organized:

1. Fellows elected as Council members for Council 2024 (Annexure-I)
2. 45 Indian scientists elected as INSA Fellows (Annexure-II)
3. 6 Overseas scientists elected as Foreign Fellows (Annexure-III)
4. 10 Recipients of INSA Distinguished Lecture Series 2023 (Annexure-IV)
5. 40 Recipients of INSA Associate Fellows 2023 (Annexure-V)

INSPIRE

A total of 2121 applications were received in INSPIRE Faculty Fellowship 2023. Applications are under process.

Discussion meeting on International Science Council (ISC) regional presence in South Asia was held on 5th July 2023, with ISC secretariat including Mr Salvatore Aricò, CEO and others. INSA was represented by Professor Ashutosh Sharma, President; Professor Narinder K Mehra, Vice President (IA) along with members of international division of INSA. Discussions centred on modalities of establishing the ISC regional centre in India and the expectations from INSA.

The 4th Yusuf Hamied Bilateral Workshop between INSA and the Royal Society (UK) was jointly organized by the two academies at INSA during 24-25th July 2023. The theme of the workshop was 'Artificial intelligence' and it was addressed by 9 speakers from UK and 12 from India.



The 4th Yusuf Hamied Bilateral Workshop

A discussion meeting on revival of Bilateral Cooperation between The Royal Society, UK and Indian National Science Academy was held on 24th July at INSA. The meeting was attended on the INSA side by Professor Ashutosh Sharma, President, INSA, Professor Narinder Mehra, Vice President (International), Dr Brajesh Pandey, Executive Director, Mr Sunil Zokarkar, DED-I, Dr Brotati Chattopadhyay, AED-I and other members of the international division of INSA. The Royal society was represented by Professor Alison Noble, Foreign Secretary, Dame Julie Maxton, Executive Director and Laura Witton, Head (IA).



Discussion meeting between The Royal Society, UK and Indian National Science Academy

The first meeting of the IAP consortium on predatory journals was held on 11th July 2023. The meeting was attended by the Indian National Young Academy of Science (INYNAS) members and the INSA International division. Dr Kutubuddin Molla INYNAS fellow was elected as the program coordinator.

Prof Narinder K Mehra, Vice President (international affairs) has been elected as a member of Urban Health and wellbeing Scientific Committee of the International Science Council until May 2024.

As nominated by INSA, Dr VM Tiwari, FNA has been elected as a member for the IUGG Bureau for the term 2023-2027.

Discussions on revival of bilateral cooperation between the German National Academy of Sciences, Leopoldina and the Indian National Science Academy were held on 19th July 2023 at INSA. The meeting was attended on the INSA side by Professor Ashutosh Sharma, President, Professor Narinder Mehra, Vice President (International affairs), Dr Brajesh Pandey ED, Mr Sunil Zokarkar and other staff of the international division. Leopoldina was represented by Prof. Gerald Haug, President and Dr Ruth Narmann, Vice President (international). It was decided to review the current MOU between the two academies and draw up concrete plans to further activate the scientific collaboration.

As endorsed by INSA, India won the bid for organizing the INQUA Congress 2027 to be held at Birbal Sahni Institute of Palaeosciences (BSIP) Lucknow.

As endorsed by INSA, India won the bid for organizing IUBS General Assembly to be held in Bangalore in 2026. The INSA President congratulated the Indian team for their efforts.

Annual meeting of the National Committees for International Science Council (ISC) was held at INSA on 23

August 2023. (hybrid mode). The Meeting was chaired by the President, INSA. Professor Narinder K Mehra, Vice-President (International) was the Member Secretary. The chairpersons of all National Committees presented their activity reports and plans for the future.

The Academy supported the International Conference on Open and Fair Data Ecosystem Principles, Policies and Platforms held at the India International Centre (IIC), New Delhi during 11-13 September, 2023. Dr Brajesh Pandey, Executive Director, INSA attended the inauguration ceremony on 11th September.

Professor Narinder K Mehra, Vice President, INSA and Dr Brajesh Pandey, Executive Director, INSA attended the BRICS Academies Forum Planning Meeting on 5th and 12th September 2023. The BRICS Academies Forum is scheduled to be held in first week of December at Pretoria, South Africa.

Science20 India 2023

- The Science20, one of the Engagement group summits of G20 under India's presidency in the year 2023 is coordinated by the Indian National Science Academy (INSA) as the Knowledge partner. The Science-20 (S20) Engagement Group supports G20 by fostering an official dialogue with scientific community of member states. The overarching theme is "**Disruptive Science for Sustainable Development**". The Subthemes are: "Clean Energy for Greener Future", "Universal Holistic Health", and "Science for Society & Culture". The **Final Science20 Summit** was held in Coimbatore on 21-22 July, 2023.



Final Science20 Summit was held in Coimbatore on 21-22 July, 2023



Final Science20 Summit was held in Coimbatore on 21-22 July, 2023

Academy drafted the final Science20 Communiqué in the framework of its central Theme “Transformative science for sustainable Development” and three subthemes. The Academy also incorporated all the suggestions and feedbacks received from the G20 member academies and reached the consensus.

A Science20 Brochure containing a brief summary of all meetings held under the Science20 Engagement group and the major recommendations was compiled for presentation to the Heads of Government for Final G20 Summit held in New Delhi on 9-10 September 2023.

Outreach Activities

International Conference COM-IT-Con'23

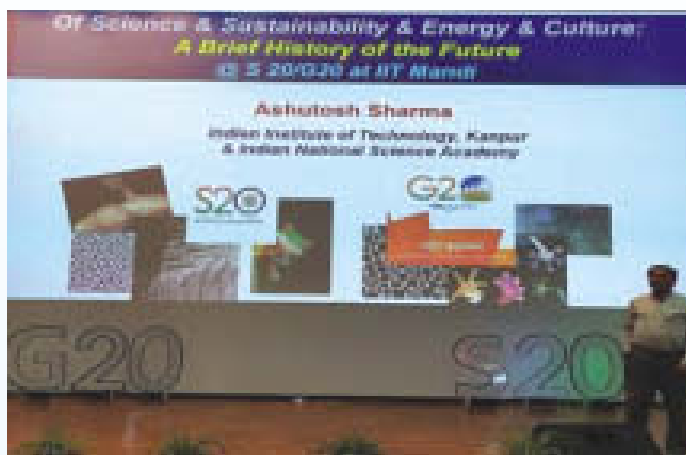
A S20 outreach event International Conference COM-IT-Con'23 was organized by the Department of Computer Science & Engineering Manav Rachna International Institute of Research and Studies in collaboration with publishing company Springer on July 14-15, 2023. The conference was aimed at providing an arena for brainstorming, discussing, and scientific sharing of the advances, trends, and recent innovations in the area of Computers and IT. Professor Ashutosh Sharma, President INSA and Co-Chair S20 delivered the keynote address.



Professor Ashutosh Sharma, President INSA and Co-Chair S20 delivering the keynote address

G20 and S20 (Science20) Meet

Under India's G20 Presidency, IIT Mandi hosted G20 and S20 (Science20) Meet from 21st to 30th June 2023 at its campus. The purpose of this meet was to bring together



Professor Ashutosh Sharma, President, INSA attending S 20/ G20 At IIT Mandi

various key stakeholders and experts together to engage on various themes to generate actionable insights that can drive progress towards achieving inclusive and sustainable development. Several dignitaries/ delegates from around the globe attended this mega event.

Science and Policy Webinar

Science and Policy Webinar on the theme Astro-informatics for Sustainable Development was organised by INSA, AAS, ASI (Astronomical Society of India), and the IAU as a part of Science20 Policy webinars on 6-7th July 2023.

S20 outreach event

Professor Ashutosh Sharma, President, INSA, New Delhi, gave a talk on the idea of the difference between Innovation & Invention during S20 outreach event at AMA, Ahmedabad, organized by National Innovation Foundation on 26 June 2023.

Embassy of India in Tokyo, Japan organized the monthly out-reach program (online) on July 27 to discuss about the S20 activities during India's G20 presidency. Professor Ashutosh Sharma, President and Professor Narinder Mehra, Vice President made presentations.

Vigyanam-An inquiry based G20/S20 Outreach event

Chitkara University organised the S-20/G-20 Outreach Event on July 31, 2023. The second day of the event was hosted at PEC, Chandigarh, on August 1, 2023. Over 800 science enthusiasts, influencers, and change makers participated in the event.

G20 Impact Summit: Unleashing the Potential

Think India along with IIT Roorkee organised 'G20 Impact Summit: Unleashing the Potentials' at IIT Roorkee campus on August 2-3, 2023. Professor Ashutosh Sharma, President, INSA gave a brief background of Science20

during the Summit.

Symposium for G20-S20 on into the Future with Quantum Technology: Scientific & Policy Implications

A virtual symposium for G20-S20 was organized by Center for Atomic, Molecular, and Optical Sciences and Technologies (CAMOST) on August 16-18, 2023 on the theme "Into the Future with Quantum Technology: Scientific & Policy Implications".

Science20 Symposium

One day Science20 symposium on "Nurturing Science, Technology and Innovation Ecosystem for Sustainable Development" was organised by KIIT University, Bhubaneswar on 24th August 2023 at its campus.

Science20 program at Amity University, Noida

A two-day Science20 (S20) Outreach event was organised by the Amity University Noida on the theme "Disruptive Science for Innovative and Sustainable Development" on 4-5 September 2023. Professor Ashutosh Sharma and Prof Narinder Mehra, President and Vice President (international affairs) respectively delivered lectures at this meeting.

DST-India Science and Research Fellowship (ISRF) Program

The ISRF Selection committee meeting for the Award of fellowship for the year 2022-2023 was held on 20 Feb. 2023. The result has been announced by the department (DST) and Fellowship has been offered to 50 candidates from different countries.

Financial Assistance by INSA for Participation in International Conferences Abroad

Thirty-three Indian scientists were supported by the Academy for attending the Non ISC (International Science Council) sponsored conferences abroad.

Ten Indian Scientists were supported by the academy for attending ISC sponsored conferences abroad.

Partial financial support

The Academy provides partial financial support to a maximum of Rs. one lakh for organizing national/international conferences/ symposia/ seminars/ summer/ winter schools. Proposals are received by the Academy throughout the year through a portal especially designed for the program and a maximum of 40 conferences are supported in a year. Out of 113 applications received, 27 have been approved for support in a meeting held in the month of July in the first cycle.

Leadership Development Programme in Science and Technology (LEADS)-2023

Indian National Science Academy (INSA) and National Centre for Good Governance (NCGG) jointly organized Leadership Development Program in Science & Technology (LEADS)-2023, from 12 to 18th July 2023 at INSA, New Delhi. The Leadership Development Programme in Science and Technology (LEADS)-2023 is a unique initiative targeting scientists immersed in the realms of science and technology within diverse laboratory settings. The primary objective of this program is to bolster

the leadership capabilities of participating scientists, equipping them for effective governance within scientific institutions and laboratories. Simultaneously, it aims to expose them to cutting-edge knowledge and skills that facilitate the optimal management of these institutions, aligning them with national priorities and objectives. Furthermore, the program seeks to nurture scientific minds, preparing them for leadership roles and the associated challenges within the dynamic Indian Science ecosystem.

The program also featured an illustrious line-up of speakers, comprising scientists, academic luminaries, and industry leaders from across the country, adding immense value to the learning experience. Total 44 Scientists from different prestigious institutes participated in this program.



LEADS-2023 The Inaugural Session



LEADS-2023 Organising Team



LEADS-2023 Participants



LEADS-2023 Valedictory session

INSA Distinguished Public Lecture Series

Indian National Science Academy (INSA) organised a Public Lecture on “Space Missions for Exploration & Scientific Goals” by Shri S Somanath, Secretary, DOS/Chairman, ISRO on 26th September, 2023 at INSA Auditorium, New Delhi.



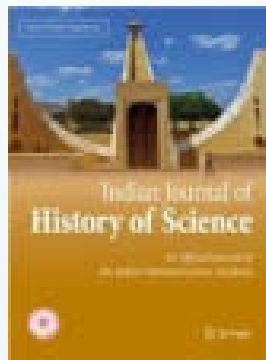
INSA Distinguished Public Lecture

Recent Publications of the Academy

Proceedings of the Indian National Science Academy: Vol 89 No. 2 (September 2023 issue): Published.

Indian Journal of Pure and Applied Mathematics, Vol 54 No. 2 (September 2023 issue): Published.

Indian Journal of History of Science, Vol 58 No. 2 (September 2023 issue): Published.



The Indian National Science Academy established Indian National Young Academy of Sciences (INyas) in December 2014. Following outreach activities have been carried out by INyas members

Event - 1: The STEAM Gap: Nurturing next generation women leaders

Date : 07th - 08th July 2023

Organisers : Dr Dhiraj Bhatia, Dr Neeldhara Mishra, Dr Pankaj Barah

No. of Participants: ~92

This was 1.5 days very focused workshop with approximately 90 participants from different parts of the country and women to men in 75:25 ratios to discuss various points about limited women visibility in Indian academia leadership roles. Multiple women leader icons gave the talks on their career journeys and many sessions involving gender gaps, women leadership, inputs from Govt of India were discussed. A full report in the form of white



paper will be published very soon. The event was attended by students, teachers, professors, scientists, doctors, industry people, healthcare attendees, funding agencies and the overall feedback was very positive. This was the even by the WiSDoM, the flagship initiative of INyas and the topic and time was very very apt for this meeting.

Event - 2: ICONIC Women scientist under the Wisdom flagship program

Date: 12th July 2023

Organizer : Dr Sugandha Maheswary, Dr Jiban Jyoti Panda, Dr Mayuri Chabukdhara, Dr Rishemjit Kaur, Dr Shobhna Kapoor, Dr Namisha Sharma

No. of Participants: 80

INyas conducted an event, "ICONIC WOMEN SCIENTISTS OF INDIA," on July 12, 2023, as part of its flagship program WiSDoM (Women in Scientific Domain). This event aimed to cultivate a scientific mind-set among school students and ignite their curiosity. The event served as a platform to honour and celebrate the exceptional achievements of women who have pushed boundaries leaving an important mark on the world of knowledge. These extraordinary individuals have not only excelled in their respective scientific fields but have also paved the way for future generations of women scientists. The event started with a message from Dr Rajendra Dhaka, Chair INyas, who briefed the audience about the diverse range of activities undertaken by INyas. Further, the invaluable motivational talks by the esteemed guest speaker, Professor Sudha Bhattacharya and Professor Gagandeep Kang (recorded), captivated the audience. It also featured two storytelling sessions, delivered by INyas members Dr Neha Sardana and Dr Nishad Fatima (alumni) which shed light on the extraordinary lives of iconic Indian women scientists, Kalpana Chawla and Anandibai Joshi. Through

these sessions, the attendees were immersed in the awe-inspiring journeys of these trailblazing women, learning about their determination, and ground-breaking contributions to the scientific community. As a part of the event, a quiz competition and a poster competition were also organized, themed on women scientists. The event was coordinated and organized by INYAS members Drs Sugandha Maheshwary, Jiban Jyoti Panda, Rishemjit Kaur, Shobhna Kapoor, Namisha Sharma and Mayuri Chabukdhara. The event was a great success and was well-received by students, as reflected by huge participation and feedback received. For the students, this event served as an invaluable opportunity to not only gain knowledge but also to be inspired by the remarkable stories of these pioneering women. WiSDom team would like to acknowledge support extended by INYAS alumni Dr Mahak Sharma for the prizes and evaluation support by INYAS member Dr Sonu Gandhi and alumni Dr V Ram.

Event 3 : Communicating science to students

Date: 28th July, 2023

Organizer: Dr Kiran Bala

No. of Participants: 50

This event was organized to provide the undergraduate students with a platform for a space to fathom career opportunities in science and academia in a comprehensive

manner, along with familiarizing promising and budding young minds to research progresses in scientific interface. The event was organized at IIT Indore with the support from INYAS. The event was coordinated by Dr Kiran Bala, Associate Professor, Department of BSBE, IIT Indore. 50 participants, pursuing their B.Tech. degrees

from Chameli Devi group of institutions, Indore visited IIT Indore along with their professors for an interactive session on the aforementioned program. The event started with talk by Dr Kiran Bala with useful insights from her outstanding career in academia, followed by a talk on “Career opportunities in STEM” by Dr Bikash Kumar. Along with that, Mr Dinesh Parida familiarized the participants with some of the instrumentation techniques that are used extensively in Biological Sciences, followed by a demonstration session in the lab. The lab visits and the sessions were coordinated by Mr Dinesh Parida and Ms Konica Katare.

Event 4 : Challenges and opportunity in science

Date : 8th August, 2023

Organizer : Dr Arun Jugran

No. of Participants : 200+

The aims of event to inspire and engage school students in the fascinating world of science by exploring and understanding the various challenges faced in the field and the exciting opportunities it offers. Also, empower students to consider careers in science, technology, engineering, and mathematics (STEM) fields by demonstrating the exciting prospects these fields offer. Keeping in view the above, Garhwal Regional Centre, G. B. Pant National Institute of Himalayan Environment, Srinagar, Uttarakhand, and Indian National Young Academy of Science (INYAS) jointly organized a science awareness event entitled “Challenges & Opportunity in Science at Shemford Futuristic School, Belkandi, Srinagar on 08 August 2023. The programme was conducted on offline as well as online mode. Over 200 students (from 9 to 12th) along with school



teachers and staff were participated in this programme. The workshop was started with the welcome address by Dr Arun K Jugran, Scientist 'D' & Member INYAS, and the coordinator of the programme. He welcomed all the participants, guests & experts of the event. He provided the overview of programme and highlighted the main objectives of the program and role of INYAS. This was followed by Technical session in which Dr K Chandra Sekar, Head GRC GBPNiHE encouraged the participants to opt natural science as carrier option and options in science stream. Dr Sugandha Maheshwary (connected online mode), created a wide awareness about future opportunities in science and road map to grab the opportunities in future. Dr Maheshwary suggested several schemes and scholarships to students in the field of science such as INSPiRE and others. Further, Dr Shri Ram Yadav informed the students toward opportunities after intermediate in the field of biological sciences and suggested schemes in higher studies for girl students. Principal Mrs Kalavati Negi also encouraged the students about the value of this type of training programmes and thanked the coordinator and team for choosing their school for this program. This was followed by a presentation by Dr Arun K Jugran on Challenges and Opportunities in Science. Dr Jugran provided a vast knowledge in background of science in India, importance of science education, challenges in science (lack of exposure, curriculum limitation, language barrier, gender disparity etc.) and informed about benefits of schemes & awards. He also

highlighted about several scholarships of government provided at national and state level. He focused on scholarships such as DST, CSIR, UGC, INSPiRE award-Manak, Pradhan Mantri Research Fellowship (PMRF) and scholarship schemes for OBC, SC and ST category students. The program was concluded by presenting vote of thanks by Dr Kusum Pandey, Scientist-C of GB Pant National Institute.

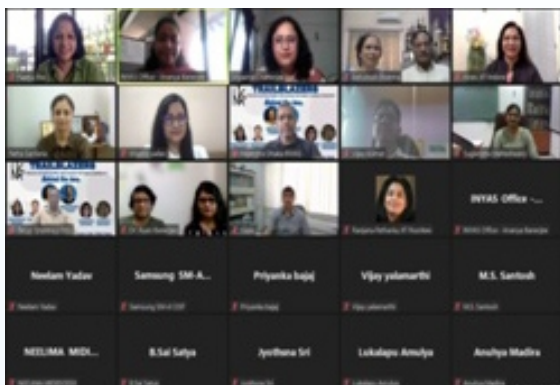
Event 5: Trailblazers (under WisDom)

Date: 18th August, 2023

Organizers: Dr Neha Sardana, Dr Neetu Jha, Dr Tarun, Dr Shweta, Dr Sriparna, Dr Pooja

No. of Participants: 50

The event started with an introduction to WisDom event by Dr Neha Sardana, followed by introduction of INYAS by Dr Rajendra Dhaka, and introduction to Trailblazer event by Dr Neetu Jha. The inauguration of Reels and Podcasts was done by Professor Ashutosh Sharma, INSA president. The first session was chaired by Dr Neha Sardana and discussions on the life and work life balance of Professor Ashutosh Sharma and Mrs Neeti Sharma went on with the take away message to Keep Humor alive throughout your life. The second session was chaired by Dr Sriparna Chatterjee and discussions were with Professor Bhadra (first INYAS chair) and her spouse Prof. Aryan Banerjee. The last final session was chaired by Dr Tarun Sharma and discussions were with Professor Ranjana Pathania and Professor Naveen Navani.



Event 6: RuSETUP-2023

Date: 19th 20th August, 2023

Organizers: Dr Rajendra Singh Dhaka, Dr Kalpana Nagpal, Dr Subhash Babu, Dr Veda Krishnan

No. of Participants: 41

The INYAS-NCR Chapter, in collaboration with the prestigious Indian Institute of Technology, Delhi, organized a two-day program during 19-20 August, 2023 aimed at empowering high school and intermediate science teachers. This enlightening event was focused on the theme: "Next Generation Science Standards: Learning by Performing," coupled with an enlightening exposure visit to an advanced laboratory. A total number of 27 school science teachers from different states were participated. There were various deliberations by the different experts of diverse field on the different topics linked with Next Generation Science Standards: Learning by Performing. Furthermore, hands-on training exercises were conducted. The event was coordinated by Dr Rajendra Singh Dhaka, Dr Kalpana Nagpal, Dr Subhash Babu and Veda Krishnan.



Event 7: Research and Career Opportunities in emerging science streams

Date: 22nd August, 2023

Organizer: Dr Vinayak Kamble

No. of Participants: 60

The event was conducted at the National College, Trivandrum on 22nd Aug 2023. It was organized with the help of INYAS and college science club. The event was inaugurated by the principle of National college, Trivandrum and joined by vice principal as well as faculty members. The event was attended by about 50-60 undergraduate (BSc), graduate (MSc) and research students of the college mainly working on Biotechnology, life science, industrial biology etc. The speaker, Dr Veda Krishnan, from Indian Agricultural research institute, New Delhi, gave an elaborate talk on the career options in science streams, planning career and making choices.



Event 8: Lecture series: Lecture 1 on Career avenues in agriculture sciences

Date: 24th August, 2023

Organizers: Dr Sharanjeet Dhawan

No. of Participants: 150

Under the umbrella of "Career avenues for agriculture sciences" coordinated by Dr Sharanjeet Dhawan at CCS Haryana Agricultural University COA, on September 21, 2023, Dr Santanu Mukherjee (member INYAS) delivered an expert talk. Dr Mukherjee from School of Agriculture, Shoolini University of Solan emphasised on Agricultural-Career Prospects and Research Opportunities and Biochar for Contaminants Remediation. He explained how agro-based and other industries play a pivotal role in the nation's sustainable economic growth. He further explained that following the concept of "Aatmanirbhar Bharat" & "Make in India" the scenario of agriculture education has shown a paradigm shift in the last decades.



He also focused on different career opportunities in the field of agriculture sciences highlighting sectors like agricultural engineering, farm management, plant breeding, food processing industry, dairy farming, forestry, and different private and government agencies/societies. Along with this, he discussed the possible work opportunities in abroad. In the second part of his talk he highlighted Biochar: A sustainable solution for environmental pollution. He discussed that the Chir pine forests are native ecosystems in the North-Western Himalayan (NWH) region that produce more than 6 Mg ha⁻¹ of pine needles annually, which increasingly act as a catalyst for forest fire releasing approximately 1.35 Tg C year⁻¹ into the atmosphere. The dry summer season from March to June usually coincides with the shedding of needles by Chir Pine trees. Therefore, regular removal of the needles from Chir forests will reduce the risk of wild fires, which may create an enormous amount of forest biomass that is wasted without any value addition. To convert the “waste” (fallen dry pine needles) into “wealth” (waste recycling) this ongoing project aims to develop affordable and effective biosorbents (biochar) for the removal of bioactive compounds from the pharmaceutical wastewater for the first time in Indian perspective. An improved understanding of the transport and retention of emerging pharma compounds in the environment will provide a critical knowledge base for producing safe drinking water. Around 100 participants were present in the lecture. His lecture was very fruitful for the students and young faculty members

Event 9: Intellectual Property Rights: Opportunities and Challenges

Date: 24th and 25th August, 2023

Organizers: Dr Kiran Bala

No. of Participants: 30

A webinar on Intellectual Property Rights: Opportunities

and Challenges delivered on 24th & 25th August, 2023. IIT Indore and INYAS jointly organized the event. The webinar was conducted from the 1D-105 (VCR), CHROMIUM BUILDING, IIT INDORE. Over 30 participants attended the live and interactive webinar which aims at providing valuable awareness and insights on the various aspects of IPR which could be further utilized in their research journey.



Event 10: Workshop on organic farming

Date: 2nd September, 2023

Organizers: Dr Subhash Babu; Dr Kalpana Nagpal, Dr Rajendra Singh Dhaka

No. of Participants: 47

The INYAS-NCR Chapter, in collaboration with the prestigious Division of Agronomy, ICAR-Indian Agricultural Research Institute, New Delhi organized a one-day workshop on organic farming on 2nd September, 2023. The workshop aimed for creating awareness about the principles and practical utility of organic farming among farmers for a better understanding of the importance of organic farming and its role in environmental protection. Furthermore, farmers were also sensitized about the quality of organic food and healthy soil and life. There were 47 participants in the event.



Obituary Notes

Fellows

VS ARUNACHALAM

VS Arunachalam (*b* 10 November, 1935; **d 16 August, 2023**) obtained PhD in Materials Science and Engineering from the University of Wales, UK. He worked as a scientist at the Bhabha Atomic Research Centre for more than a decade and National Aeronautical Laboratory at Bangalore. He served Prime Ministers and Defence ministers of India as their Defence Scientific Advisor and Secretary, Department of Defence Research and Development. Dr Arunachalam's contributions to science and engineering of materials, and his achievements in building Institutions and industries for harnessing technology remains unique and impressive.

Dr VS Arunachalam was elected as a Fellow of the Indian National Science Academy in 1984.



KR PARTHASARATHY

KR Parthasarathy (*b* 25 June, 1936; **d 14 June, 2023**) obtained PhD from the Indian Statistical Institute (ISI), Kolkata. He worked as Professor in University of Bombay, IIT Delhi and Indian Statistical Institute Delhi Centre where he was also CV Raman Professor of INSA. Professor Parthasarathy's notable finding relate to developing a theory of convolution semigroups of probability measures on topological groups.

Professor KR Parthasarathy was elected as a Fellow of the Indian National Science Academy in 1976 and served its Council as Member (1983-85).



GURUSWAMY RAJASEKARAN

G Rajasekaran (*b* 21 February, 1936; **d 29 May, 2023**) obtained PhD from University of Chicago for research and returned to TIFR where he worked until 1976. He was Professor and later Head of the Department of Theoretical Physics, University of Madras, and then Joint Director, Distinguished Professor and Raja Ramanna Fellow and Adjunct Professor at the Institute of Mathematical Sciences, Chennai. He had significant contributions in a wide range of areas hypernuclear physics, flavour physics, current algebra, neutral current weak interactions, integer quark model, string theory, new forms of quantum statistics, neutrino physics, dark matter, etc.

Professor G Rajasekaran was elected as a Fellow of the Indian National Science Academy in 1986.



CR RAO

CR Rao (*b* 10 September, 1920; **d 23 August, 2023**) obtained PhD from Cambridge University. He worked at the ISI in various capacities and retired as its Director. He had been in US, teaching and doing research at the universities of Pittsburgh and Penn State. Dr Rao was one of the pioneers who developed statistics from ad hoc origins into a firmly grounded mathematical science. He introduced numerous programs for the development of statistics.

Dr CR Rao was elected as a Fellow of the Indian National Science Academy in 1954 and served its Council as Member (1963-64) and Vice-President (1973-74).



MRS RAO

Manchanahalli Rangaswamy Satyanarayan Rao (*b* 21 January, 1948; **d 13 August, 2023**) obtained PhD from Indian Institute of Science (IISc), Bangalore. He joined Faculty of the Department of Biochemistry at IISc, and later worked as its Chairman also (1998-2003). He was President of Jawaharlal Nehru Centre for Advanced Scientific Research, a premier research institution under the Department of Science & Technology.

Professor Rao has made very original and insightful contributions on the role of histone and their variants in modulating chromatin structure to facilitate various important biological phenomena.

Professor MRS Rao was elected as a Fellow of the Indian National Science Academy in 1992 and served its Council as Member (1999-2001) and Additional Member (2011).



VINODINI REDDY

Vinodini Reddy (*b* 15 February, 1934; **d 19 July, 2023**) obtained DCH and MD (Pediatrics) from Osmania University, Hyderabad. She joined National Institute of Nutrition (NIN) in 1961 as Research officer. Dr Reddy worked at the Institute for nearly 30 years and later served as its Director. The main contributions of Vinodini Reddy had been in the areas: infant nutrition and growth, nutrition-immunity interactions, protein energy malnutrition and vitamin A deficiency.

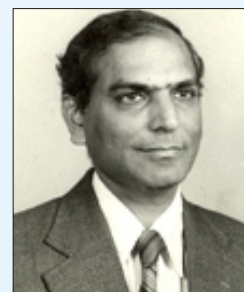
Dr Vinodini Reddy was elected as a Fellow of the Indian National Science Academy in 1994.



APB SINHA

APB Sinha (*b* 27 December, 1928; **d 04 July, 2021**) obtained PhD from University of London, UK specializing in solid-state chemistry. He was the Scientist (Director's grade) and Head, Physical Chemistry Division, National Chemical Laboratory, Pune. Dr Sinha's major contributions were in the field of Solid State Chemistry. He had made extensive studies on the synthesis of new manganites and their structural, electrical and magnetic properties.

Dr APB Sinha was elected as a Fellow of the Indian National Science Academy in 1978.



BIKASH CHANDRA SINHA

Bikash Chandra Sinha (*b* 16 June, 1945; **d 11 August, 2023**) obtained PhD and DSc from London University and PhD (*hc*) from National Academy of Sciences of Ukraine. He joined Bhabha Atomic Research Centre in 1976 and became Director, Variable Energy Cyclotron Centre (VECC), Kolkata in 1987. He was concurrently Director of Saha Institute of Nuclear Physics (SINP). Dr Sinha's early research field was in nuclear physics, specifically in the nuclear optical model and nuclear structure studies.

Dr Bikash Chandra Sinha was elected as a Fellow of the Indian National Science Academy in 1989 and served its Council as Member (2001-03) and Additional Member (2016).



COUNCIL 2024

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Professor Sriram R Ramaswamy, Bengaluru
Dr Srivari Chandrasekhar, Hyderabad
Professor Srubabati Goswami, Ahmedabad
Dr Navin Chandra Khanna, New Delhi
Professor Sudeshna Sinha, Mohali
Professor Sunil Kumar Singh, Goa
Professor Prabodh Kumar Trivedi, Lucknow
Professor Qudsia Tahseen, Aligarh
Professor Sanjay Mittal, Kanpur
Professor Vidita Ashok Vaidya, Mumbai

Representatives of Cooperating Academies and Govt. of India

The National Academy of Sciences (India)	Professor Anurag Sharma
The Indian Academy of Sciences, Bengaluru	Professor R Ramaswamy
The Indian National Academy of Engineering	Professor GD Yadav
National Academy of Agricultural Sciences	Dr Kamal Bujarbaruah
National Academy of Medical Sciences	Dr Deepak Tempe
The Govt. of India, Department of Science & Technology	Professor GU Kulkarni

Fellows Elected

(Effective from January 1, 2024)

1. Abraham, Priya (b 27.10.1963), PhD, Director and Scientist G, ICMR-National Institute of Virology, Pune.

Dr Abraham is one of India's leading virologists and has made significant contributions to HPV and other viral diseases in India. She has led the NIV team that standardized COVID real-time PCR, confirmed the very first virus cases; guided the nation-wide COVID laboratory network; isolated SARS-CoV-2 in cell-culture under Biosafety Level 4; visualized the coronavirus with electron microscopy; developed the first indigenous COVID KAWACH IgG ELISA; and continued whole genome sequencing and characterization of SARS-CoV-2 variants. Her contributions to the development of the whole virion inactivated vaccine Covaxin™, is of critical importance. She and her team provided virus cultures, conducted pre-clinical investigations in hamsters and macaques, and showed rapid virus clearance from respiratory samples following virus challenge in these animals, collaborating with the Bharat Biotech International Ltd. until the Phase III Clinical Trial was completed.

2. Anand, Ruchi (b 29.06.1975), PhD, Professor, Department of Chemistry, Structural Biochemistry Lab, Indian Institute of Technology Bombay, Mumbai.

Dr Ruchi Anand has made outstanding contributions in the area of Structural Biology by using a variety of techniques including X-ray crystallography and Cryo-EM. Her work focuses on understanding the mechanistic basis of antibiotic resistance in bacteria as well as enzymatic recognition of aromatic pollutants. Both these works have tremendous implications for combating widespread drug resistance and developing biosensors, respectively.

3. Ateeq, Bushra (b 26.07.1976), PhD, Associate Professor and Joy Gill Chair Professor, Molecular Oncology Lab, Department of Biological Sciences & Bioengineering, Indian Institute of Technology Kanpur, Kanpur.

Dr Bushra Ateeq is a Cancer molecular biologist who has made outstanding contributions in understanding the biology of prostate and other cancers. Her research contributions are in the genetic and epigenetic changes that are important that initiate cancer progression and the molecular events that drive resistance to chemotherapeutic drugs. Noteworthy contribution was on the role of a peptidase inhibitor, SPINK1 in the progression and drug resistance of Cancer"

4. Bal, Chandrasekhar (b 22.10.1960), MBBS, MD, DSc, Professor & Head, Department of Nuclear Medicine, All India Institute of Medical Sciences, New Delhi.

The pioneering research work led by Dr Bal at AIIMS, New Delhi in the field of thyroid cancer lead to the change in clinical practice all over the world. The research outcome saved patients from unnecessary high amount of whole-body radioiodine exposure, and prevented environmental hazard from excess radioactive iodine going to sewerage, and most importantly, patients did not require hospitalization. Dr Bal's research brought the optimal dose of radioiodine to just 30 mCi for remnant thyroid cancer ablation. This work is now accepted in 2015 ATA Guidelines for the management of DTC. Dr Bal's other research work is focused on the alternative to second surgery (completion thyroidectomy) and pediatric thyroid cancer where he has contributed significantly by translating his research to clinical practice. He has significant contribution in the field of neuroendocrine tumor imaging and therapy making India in the forefront of research in this domain.

5. Bandyopadhyay, Bijan (b 23.08.1956), PhD, Professor, Indian Institute of Technology Bombay, Mumbai.

For his significant and outstanding contributions to control systems theory and applications, specifically to discrete time sliding mode control, multi-rate output feedback approach, higher-order sliding mode control and event triggered sliding mode control, as well as significant applications of these advances in power electronics.

6. Barik, Saroj Kanta (b 12.04.1965), PhD, Professor, Department of Botany, North-Eastern Hill University, Shillong.

Has pioneering and trend setting work in disturbance ecology, climate change biology and biodiversity conservation.

7. Bhatia, Sabhyata (b 07.03.1964), PhD, Staff Scientist-VII, National Institute of Plant Genome Research, New Delhi.

Dr Sabhyata Bhatia has made extensive and novel contributions towards genomics analysis and development of molecular markers in legumes such as chickpea, lentil and minor pulses. She has performed quantitative trait analysis and genome wide association studies to identify genomic loci involved in controlling seed yield (seed size, weight and number) and seed quality (protein content) in chick pea and lentil. Based on these studies, allele specific molecular markers have been developed for application in marker assisted selection for trait improvement.

8. Bhowmik, Santanu Kumar (b 21.04.1966), PhD, Professor, Department of Geology & Geophysics, Indian Institute of Technology Kharagpur, Kharagpur.

Dr SK Bhowmik systematically developed thermo-tectonic modeling using metamorphic rocks of different ages in the Indian Shield as a natural laboratory and explained the evolution of plate tectonics from the Early Earth to the Present. His work demonstrates versatility in integrating mineral transformation processes at varied spatial scales (nano-scale to plate tectonics scale) through a new tool of sequential diffusion, developed in-house. His work now enables detailed elucidation of temporal evolution of complex high-temperature metamorphic systems. This was not possible before his contribution.

9. Biju, Sathyabhama Das (b 09.05.1962), PhD, Senior Professor, Department of Environmental Studies, Department of Environmental Studies, Delhi.

Made seminal contributions to taxonomy, systematics, evolution, biogeography and conservation of amphibians. He described 116 new amphibian taxa.

10. Bisht, Naveen Chandra (b 01.02.1978), PhD, Scientist V, National Institute of Plant Genome Research, New Delhi.

Dr Bisht has made outstanding contributions to our understanding of the biology of glucosinolates which function as important plant defense compounds and which also affect the quality of Indian mustard. In the process he has identified genes that are involved in the transport of these glucosinolates into seeds and in their regulation. He has used this knowledge to develop mustard lines that have reduced glucosinolate levels in the seed without affecting susceptibility of the rest of the plant to pests and pathogens.

11. David, Justin Raj (b 12.12.1969), PhD, Professor, Centre for High Energy Physics, Indian Institute of Science, Bengaluru.

Professor David has made significant contributions to the microscopic understanding of black holes in string theory and contributed extensively towards holography in two-dimensional conformal field theories. He has discovered universal corrections to entanglement entropy in these theories, used them to test holography and provided important insights towards understanding the space of three-dimensional conformal field theories.

12. Daya Sagar, Behara Seshadri (b 24.02.1967), PhD, Professor (HAG) and Former Head, System Science and Informatics Unit, Indian Statistical Institute-Bengaluru Centre, Bengaluru.

Professor Daya Sagar has made significant contributions by developing mathematical morphology-based spatial algorithms that address a range of questions of fundamental importance to geosciences, geospatial data sciences, and remote sensing. Integrating ideas from mathematical morphology with the concepts from fractals, geometry, and chaos, he developed path breaking approaches to analyze river basins, networks, terrestrial surfaces, and identifying spatial clusters. Professor Daya Sagar has also significantly contributed to simulating behavioral phases that various geomorphologic systems traverse via interplay between numerics and graphics. He is one of the best-known mathematical earth scientists.

13. De, Swades (b 20.01.1969), PhD, Professor, Department of Electrical Engineering, Indian Institute of Technology-Delhi, New Delhi.

For prolific contributions to cross-layer design, analysis, and resource optimization of wireless and sensor networks and radio frequency energy transfer that have had an impact on green, energy sustainable wireless communications.

14. Deshmukh, Mandar Madhukar (b 20.10.1974), PhD, Professor, Department of Condensed Matter Physics and Materials Science, Tata Institute of Fundamental Research, Mumbai.

Professor Deshmukh has established a vibrant experimental research group at TIFR to probe condensed matter physics of low-dimensional systems. He has made highly original and significant contributions to experimental physics of quantum Berry phases and Hall states, mesoscale electron transport, electron correlations and nanoscale mechanics of low-dimensional systems.

15. Dimri, Ashok Priyadarshan (b 14.11.1970), PhD, Director, Indian Institute of Geomagnetism, Navi Mumbai.

Dr AP Dimri has made important contributions towards understanding the dynamics of the Indian winter precipitation system and its linkages with the Himalayan Glaciers and associated water/hydrological budget. He used multi-scale models and observations to elucidate processes that lead to the Western Disturbances, their relationship with topography, along with a physical understanding of associated extreme weather events.

16. Ganguli, Ashok Kumar (b 25.01.1961), PhD, Professor & Deputy Director, Department of Chemistry, Indian Institute of Technology-Delhi, New Delhi.

Professor Ashok Kumar Ganguli has made seminal contributions to developing synthetic approaches to design functional nanostructures of specific size, shape and composition with multifarious applications in capacitors, photocatalysis, superconductors, electrocatalysis and efficient field emitters.

17. Ghose, Debasish (b 16.05.1960), PhD, Professor (HAG), Department of Aerospace Engineering, Indian Institute of Science, Bengaluru.

For his very significant contributions to guidance and control for aerospace applications which include autonomous systems and algorithms for obstacle/collision avoidance, swarm intelligence, multi-agent systems and load partitioning for distributed computing.

18. Ghosh, Probir Kumar (b 13.12.1962), PhD, Founder Director and Vice-Chancellor, ICAR-National Institute of Biotic Stress Management, Raipur, Chhattisgarh.

Dr PK Ghosh has contributed significantly to understanding carbon sequestration potential and sustainability in cereal based cropping systems. He developed a new methodology for soil quality index for maintaining sustainability in the rice-wheat cropping system. His work on improvement of rice system has had a significant impact in sustaining natural resources. Dr Ghosh has also played an important role in the development of improved agronomic practices in pulse based cropping system.

19. Guchhait, Prasenjit (b 21.10.1967), PhD, Professor, Regional Centre for Biotechnology, Faridabad.

Dr Prasenjit Guchhait did excellent work on the human vascular disease, with special focus on the mechanism of thrombosis. His work has identified several biomarkers to develop therapeutics. Many of his studies on synthetic peptides gave an understanding on how these can be used for prevention. His basic works covers crosstalk between platelet and immune cells in hemolytic microenvironment, activation of thrombosis/inflammation in lungs of SARS-CoV-2-infected animals. Based on his findings he has proposed a clinical trial to use dietary- α KG as therapeutics against COVID-19 patients.

20. Gupta, Neena (b 24.11.1984), PhD, Professor, Theoretical Statistics and Mathematics Unit, Indian Statistical Institute, Kolkata.

To paraphrase János Kollár regarding “On Zaviskis' Cancellation Problem....” these are elegant and powerful combination of previous methods with new insights that addresses a major open problem.

21. Krishna, Sandeep (b 01.09.1976), PhD, Professor, TIFR-National Centre for Biological Sciences, Bengaluru.

Professor Krishna has done pioneering work on the nonlinear dynamics of biological systems, encompassing feedback control in gene networks, synchronization and entrainment in cells, symmetry breaking in ecosystems, and the emergence of life on Earth. His work has enhanced the understanding of the complex behavior of such far-from equilibrium systems.

22. Kumar, Arvind (b 21.09.1966), PhD, Deputy Director General-Research, International Crops Research Institute for Semi-Arid Tropics (ICRISAT), Patancheru.

Dr Arvind Kumar carries with him more than 30 years' of experience in crop improvement and trait discovery for drought tolerance, disease insect resistance, etc. He has to his credit more than 65 varieties that have been released and are being cultivated in 10 different countries of Asia and Africa. Dr Arvind Kumar has identified 7 of the ten known genes for resistance against rice gall midge, QTLs for grain yield under drought, QTLs for grain yield related traits under dry direct seeded situation, QTLs for tolerance to rice root knot nematode and QTLs for high Fe, high Zn. His work has great practical value for Indian farmers.

23. Kumbhar, Pramod Shankar (b 02.06.1964), PhD, President and Chief Technology Officer, Praj Matrix - R&D Center, Praj Industries Ltd, Pune

Dr Kumbhar and his team at Praj, Pune are the architect of the first cellulose biomass to ethanol (2nd Generation Ethanol) plant in India process right from upstream fermentation to downstream separation and basic engineering of the manufacturing plant. Ethanol from biomass is a very strategic technology for India since the Government has already announced a policy of 25 % mix of ethanol in gasoline from 20a5 to reduce India's dependence on imports of oil. The 2G ethanol technology is critical to India's self-sufficiency in automotive fuels. In addition, Dr Kumbhar, has contributed to innovative concepts in industrial biorefinery and a host of catalytic processes in chemical industry, some of which are in commercial practice.

24. Kurpad, Anura Viswanath (b 08.05.1959), MBBS, MD, PhD, Professor, Department of Physiology, St John's Medical College, Bengaluru.

Dr Anura Kurpad has emerged as the leading nutritional scientist in India, investigating the contribution of dietary nutrients to human body composition, nutritional status, and physical performance. Towards this end he has perfected contemporary reference techniques for measurement of protein digestibility, measurement of human amino acid requirements, measurement of lean body mass and fat body mass, and measurement of vitamin B12 absorption. These techniques have optimized currently available techniques to non-invasively assess these variables. In the process, his work has defined protein requirements for Indians, and his laboratory has served as reference laboratory for assessment of several nutritional programs in the community.

25. Lakshminarayan, Arul (b 25.03.1967), PhD, Professor, Department of Physics, Indian Institute of Technology-Madras, Chennai.

Professor Lakshminarayan has done pioneering works on the interplay between quantum information, random matrix theory, and quantum chaos in few and many-body integrable and nonintegrable quantum systems which is recognized internationally. His research on extreme-value-theory, products of random matrices, elliptic functions, and constructions of absolutely maximally entangled states have had a lasting impact.

26. Luthra, Kalpana (b 27.07.1965), PhD, Professor, Department of Biochemistry, All India Institute of Medical Sciences, New Delhi.

Professor Kalpana Luthra has made seminal contributions in the field of HIV, particularly coevolution of HIV-1 Infection and

host immune responses. Her contributions include isolation of a human broadly neutralising antibody which has therapeutic potential and is being taken forward as a potential passive immunotherapeutic agent. She has had a consistently productive high impact work on HIV immune response,

27. Mahapatra, Nitish Ranjan (b 09.01.1971), PhD, Professor, Department of Biotechnology, Indian Institute of Technology Madras, Chennai.

Dr Mahapatra has studied several molecular pathways in cardiovascular pathological conditions that help in the diagnosis and clinical management. His major works is his significant contribution in the management of cardiometabolic disease states such as hypertension, type 2 diabetes and dyslipidemia. He has also discovered and characterized many functional genetic variations that enhance the risk for cardiometabolic diseases. His studies also provided novel therapeutic candidates for hypertension and atherosclerosis.

28. Mandal, Lolitika (b 15.01.1971), PhD, Professor, Indian Institute of Science Education and Research (IISER) Mohali, Mohali.

Dr Mandal has made seminal contributions which have been pivotal in understanding stem cell niche during development.

29. Mandal, Prantik (b 02.02.1965), PhD, Chief Scientist and Activity Incharge, Seismological Imaging Group, CSIR-National Geophysical Research Institute, Hyderabad.

Dr Prantik Mandal has made outstanding contributions towards understanding genesis of earthquakes in India and the structure of Indian lithosphere and stresses. He delineated the three dimensional seismic velocity structure of Kachchh, Gujarat, discovering mafic pluton-induced crustal seismicity. He elucidated salient causes of fluid-triggered seismicity on the Main Himalayan Thrust in Uttarakhand and carried out seismic risk estimation in the Himalayas by mapping out three NNE-SSW trending lithospheric transverse features in the Uttarakhand Himalaya. He also developed a nucleation model for moderate size reservoir triggered earthquakes at Koyna. His work has also shown that the Eastern Indian Cratonic crust primarily formed via vertical tectonics in the Archean.

30. Mandal, Swadhin K (b 15.08.1973), PhD, Professor, Department of Chemical Sciences, Indian Institute of Science Education and Research-Kolkata, Nadia.

Professor Swadhin Mandal has developed several remarkable strategies to accomplish C-C cross coupling reactions with metal-free catalysts enabling the development of key chemical transformations with low cost, non-toxic reagents having a low carbon footprint.

31. Mande, Sharmila Shekhar (b 05.07.1962), PhD, Distinguished Chief Scientist, TCS Research, Delhi.

Dr Sharmila Mande was of the early big data scientists in India and collaborative efforts are a hallmark of her work. She developed many algorithms and analysis tools, especially for microbiome and metagenomics, compression/archival of genomic data, RNA decoding, and community structure in environmental samples. She has been highly productive including over 60 patents, indicating the practical applicability of much of her work.

32. Mukhopadhyay, Nilay Krishna (b 05.08.1962), PhD, Professor in Physical Metallurgy, Department of Metallurgical Engineering, Indian Institute of Technology (BHU), Varanasi.

For his original scientific contributions to discover Quasicrystalline materials having quasiperiodic or aperiodic structures with lack of translational symmetry and with 5-fold rotational symmetry and to establish inverse Hall-Petch relationship, through his extensive Nanoindentation studies. His recent research on multicomponent high entropy alloys for hydrogen storage has been equally noteworthy.

33. Mukhopadhyay, Samrat (b 14.02.1975), PhD, Professor, Indian Institute of Science Education and Research (IISER) Mohali, Mohali.

Dr Samrat Chattopadhyay has made important contributions to understanding mechanisms of liquid-liquid phase separation amyloid formation, coacervation and co-aggregation of intrinsically disordered proteins, and its implications for understanding physiological function and disease.

34. Mylavarapu, Sivaram Venkata Satya (b 16.01.1974), PhD, Associate Professor, Laboratory of Cellular Dynamics, Regional Centre for Biotechnology, Faridabad.

Dr Mylavarapu has made important contributions that shed light on novel molecular mechanism involved in cell division.

35. Pandey, Ashok (b 01.01.1956), PhD, Distinguished Scientist, Centre for Innovation and Translational Research, CSIR-Indian Institute of Toxicology Research, Lucknow.

Contributed significantly to the growth of industrial and environmental biotechnology in India, which includes second generation biofuels and commercially important enzymes.

36. Raghavan, Sathees Chukkurumbal (b 10.05.1970), PhD, Professor, Department of Biochemistry, Indian Institute of Science, Bengaluru.

Dr Sathees Raghavan has made important contributions in the area of DNA repair, genomic instability, and cancer therapeutics.

37. Raychaudhuri, Pratap (b 13.12.1971), PhD, Senior Professor (I), Department of Condensed Matter Physics and Materials Science, Tata Institute of Fundamental Research, Mumbai.

Professor Pratap Raychaudhuri has made outstanding contribution in the area of low-dimensional and disordered superconductors. This work elucidated the pseudogap state in disordered conventional superconductors, thus unravelling the hexatic vortex state in very weakly pinned superconducting thin films and identifying the BKT transition in thin superconducting films.

38. Reddy, Dumbala Srinivasa (b 10.04.1971), PhD, Director, CSIR-Indian Institute of Chemical Technology, Hyderabad.

Dr Dumbala Srinivasa Reddy has used his unique skill for the total synthesis of biologically active molecules and their derivatives for the application to the discovery of several drug candidates for a number of diseases with an insight on their structure activity relationship.

39. Reddy, Maddika Subba (b 06.02.1978), PhD, Staff Scientist-VI & Group Leader, Centre for DNA Fingerprinting and Diagnostics, Hyderabad.

Dr Reddy has made original contributions by investigating multiple cellular processes involved in signaling.

40. Sarkar, Dibyendu (b 01.05.1968), PhD, Chief Scientist, CSIR-Institute of Microbial Technology, Chandigarh.

Dr Sarkar's laboratory has delineated mechanisms underlying the virulence of Mycobacterium tuberculosis (Mtb), especially the role of phoP-phoR two-protein regulatory system, which is required for multiplication of the bacilli in host cells. His work has uncovered mechanisms governing the functioning of these multicomponent higher-order complexes and identified novel signalling cascades that can be targeted for therapeutic purpose.

41. Saxena, Nitin (b 03.05.1981), PhD, Professor, Indian Institute of Technology-Kanpur, Kanpur.

Dr Saxena has developed novel techniques for understanding algebraic independence over fields of small characteristics; and consistently brought in techniques from several areas to attack the most important problems in algebraic complexity.

42. Shivaprasad, Padubidri V (b 11.07.1974), PhD, Associate Professor and Associate Dean of Faculty, National Centre for Biological Sciences, Tata Institute of Fundamental Research, Bengaluru.

Dr Shivaprasad has made original contributions towards microRNA biogenesis, the role of micro RNA in crop domestication and plant development and evolution.

43. Tyagi, Avesh Kumar (b 25.06.1964), PhD, Director, Chemistry Group, Bhabha Atomic Research Centre, Mumbai.

Dr Avesh Kumar Tyagi has developed many multifunctional materials and technologies like highly selective and stable inorganic ion-exchangers for the separation of useful radio-isotopes from nuclear waste contributing to structure-function evaluation of solid state materials with a clear understanding of the principles of structure determination, crystallography and functional aspects.

44. Varma, Manik (b 18.12.1976), DPhil, Partner Researcher, Microsoft Research India, Bengaluru.

For being the pioneer of extreme multi-label classification area in Machine Learning and Artificial Intelligence, where any data point must be assigned a label from amongst millions of labels. This has created significant academic interest and high industry impact, with some of his algorithms generating hundreds of millions of dollars in revenue for Microsoft.

45. Vasu, Sheeba (b 17.03.1973), PhD, Associate Professor, Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru.

Made important contributions on the evolution and the underlying circuitry of circadian clocks and shown the role of circadian neuropeptide signals to sleep centres through its cognate receptors.

Annexure-III

Foreign Fellows Elected

(Effective from January 1, 2024)

1. Ajayan, Pulickel Madhavapanicker (b 15.07.1962), **Benjamin M and Mary Greenwood Anderson Professor of Engineering**, Rice University, 6100 Main Street, Houston, Texas 77005, USA.

For his significant contributions to the understanding of electromechanical properties of such nanostructured materials and pioneering work in the template assisted synthesis of engineered hybrid nanostructures and interface engineered nanomaterials. Professor Ajayan also done pioneering work on nanocomposites, starting with carbon nanotube polymer composites, providing insights into multifunctional nanocomposite materials.

2. Bond, John Richard (b 15.05.1950), University Professor, CITA, McLennan Labs, 60 St. George St., University of Toronto, Toronto ON M5S 3H8, Canada.

For his pioneering work in the field of Cosmology. Professor Bond has demonstrated that slight variations in the cosmic microwave background radiation (CMB) contain precious information regarding the shape, size, age and composition of the Universe. In 1991, the COBE satellite did indeed reveal slight variations lending great support to Bond's early results. Professor Bond and his colleagues used the Boomerang results to demonstrate that the Universe has a planar geometry providing strong observational support to the Inflationary model of the early universe.

3. Malik, Harmit Singh (b 03.01.1973), Professor of Basic Sciences & HHMI Investigator, 1100 Fairview Avenue N., A2-025, Seattle WA 98109, USA.

Professor Malik studies the causes and consequences of genetic conflicts that take place between different genomes or between components of the same genome. He is interested in understanding these "molecular arms races" and how they drive recurrent genetic innovation, from the perspective of both evolutionary biology and human disease. He also showed that intense competition for meiotic success can result in 'centromere' drive' which can lead the rapid evolution of centromeric DNA and proteins, a process that ultimately leads to reproductive isolation between species.

4. Poor, Harold Vincent (b 02.10.1951), M.H. Strater University Professor of Electrical Engineering, Department of Electrical and Computer Engineering, Princeton University, Princeton N.J. 08544, USA.

Professor Poor is among the world's foremost researchers and educators in communications and information theory. His research has focused on wireless networks, energy systems and, more recently, social networks. He pioneered advanced methods for detecting data corruption, information privacy and distributed algorithms for state estimation and control of the grid. In the area of social networks, his work has focused on understanding and modelling the connectivity of small-world networks and on the role of social interaction on collaborative sensing and decision-making.

5. Venkat Narayan, KM (b 14.09.1956), Executive Director, Emory Global Diabetes Research Center, Rollins School of Public Health, 1518 Clifton Road NE, Atlanta, 30322, USA.

Professor KM Venkat Narayan's research has focused on the etiology, pathophysiology, and epidemiology of type 2 diabetes. He anchored large national and international observational and intervention studies to prevent and control diabetes, and has worked to translate science into practice and policy. Known for his interdisciplinary work, he is currently exploring intriguing differences in beta cell function in the pathophysiology of type 2 diabetes globally.

6. Venkatesan, Thirumalai Venky (b 19.06.1949), Director of CQRT and Professor of Physics and ECE, Center for Quantum Research and Technology, Lin Hall, University of Oklahoma, Norman OK 73019.

Professor TV Venkatesan is inventor of the pulsed laser deposition process and is a pioneer in its application to thin films of complex oxides and related multi component materials, which has transformed research on films/heterostructures globally. He was a pioneer in recognizing the possibility of oxide based superlattices, formation of hetero junctions of different functional materials and led the way in developing techniques for electric field modulation of electronic and magnetic properties of materials.

Annexure-IV

Recipients of INSA Distinguished Lecture Series

(for the year 2023)

Sectional Committee - I : Mathematical Sciences:

Applied Mathematics, Pure Mathematics, Theoretical Computer Science, Statistics and Operations Research

Dr Manjunath Krishnapur, Associate Professor, Department of Mathematics, Indian Institute of Science, Bengaluru.

Dr Manjunath Krishnapur is one of the leading probabilists in the country, who has been recognized world wide for his work on random analytic functions, arithmetic random waves, stochastic operators and other related areas. Manjunath Krishnapur's research contributions are deep and elegant, and those are published in topmost international journals in the field. He is also a good speaker capable of conveying technical ideas to a broad audience. His lectures will be of interest to a wide audience.

Sectional Committee - II : Physics:

Astronomy, Astrophysics, Nuclear and High Energy Physics, Atomic, Molecular and Optical Physics, Statistical Physics, Theoretical Physics, Mathematical and Computational Physics, Condensed Matter including Soft, Liquids and Nano Materials, Cosmic Radiation, Cosmology, Space Physics, Basic Planetary Sciences, Lasers and Optoelectronics, Plasma Physics, Solar Physics, Atmospheric Physics

Professor HR Krishnamurthy, FNA, Department of Physics, Indian Institute of Science, Bengaluru.

Professor HR Krishnamurthy (FNA, FASc, FNASc, FTWAS, FAPS) has made seminal contributions in theoretical condensed matter physics especially in the area of strongly correlated electron systems. His research contributions include the discovery and analysis of novel scaling phenomena in hysteresis in model spin systems, an analysis of the instabilities of the Nagaoka ferromagnetic state of the large-U Hubbard model, development of an elegant mean-field theory of phase-transitions in the Bose-Hubbard model, development of the dynamical cluster approximation for embedding a causal self-

consistent cluster in an effective medium, novel applications of dynamical mean-field theory, and a new theory for the colossal magneto-resistance and other hitherto poorly understood phenomena seen in doped manganites.

Sectional Committee - III : Chemistry:

Analytical Chemistry, Inorganic Chemistry, Organic Chemistry, Physical Chemistry, Theoretical and Computational Chemistry, Structural Chemistry, Chemistry of Materials, Medicinal and Pharmaceutical Chemistry, Bio-organic, Bio-inorganic and Bio-physical Chemistry

Professor Asit Kumar Chakraborti, FNA, Mahananda Apartment, Block A, Flat No. 4, 5A Green Row, Kolkata.

The committee recommends Professor Asit Kumar Chakraborti, FNA for his outstanding contributions to synthetic organic and medicinal chemistry and developing new concepts in drug discovery process. He has made original contributions to the understanding of the role of water in accelerating organic reactions as potential green chemistry approaches and applications of ionic liquids in chemical reactions. His work on C-H/Br/O activation by heterobimetallic nanoparticles led to the development of novel and selective COX-2 inhibitors.

Sectional Committee - IV : Earth & Environmental Sciences:

Surface and Solid Earth Science, Applied Atmospheric Chemistry and Physics, Climate Sciences, Meteorology, Geo Engineering, Ocean Sciences, Geo Sciences and Applied Planetary Sciences

Professor Anil Bhardwaj, FNA, Director, Physical Research Laboratory, Ahmedabad.

Professor Anil Bhardwaj is well-known for his contributions in Planetary Science. He was the Principal Investigator (PI) of SARA experiment on Chandrayaan-1, and MENCA experiment on the Indian Mars Mission, which have yielded significant new findings. He is the PI of currently running XSM and CHASE-2 experiments on Chandrayaan-2 orbiter, and CHASTE and APSX experiments on Chandrayaan-3 lunar Lander and Rover, respectively. His team PI-led experiment ASPEX would be flying on the upcoming solar mission Aditya-L1. He has provided exceptional scientific leadership for plans of future Indian planetary missions. During his tenure as the Director of SPL-VSSC, he nurtured the planetary research group. As Director of PRL, he has introduced other contemporary research areas, and innovative public outreach programs. For all his outstanding contributions to Science, he has been awarded with the Fellowship of the three Science Academies of India, the J. C. Bose fellowship, S. S. Bhatnagar, and Infosys prizes.

Sectional Committee - V : Engineering & Technology:

Electrical Engineering, Telecommunication Engineering, Electronics and Optoelectronics, Chemical Engineering, Civil Engineering, Environmental Engineering, Mechanical Engineering, Aeronautical Engineering, Metallurgical Engineering, Computer Science and Engineering including Software and Data science, Information Science and Technology, Advanced Materials (such as Bio-materials, Hybrid Materials and Nano Materials), Polymer Science & Engineering

Professor GD Yadav, FNA, Emeritus Professor of Eminence, Institute of Chemical Technology, Mumbai.

Professor GD Yadav, Emeritus Professor of Eminence, is a distinguished chemical engineer of national and international repute. Over the decades, he has made critical contributions in several areas of national interest such as, Green Chemistry and Technology, Catalytic Science and Engineering, Biotechnology, and in the 'Net Zero Goal' - encompassing - Hydrogen economy, Carbon dioxide refineries, Biomass and Plastics Valorization into Fuels, Chemicals and Materials.

Sectional Committee - VI : General Biology:

Taxonomy, Structure, Ecology, Environmental Biology, Evolution and Behaviour of Plants, Animals and Microbes including Unicellular Eukaryotes

Professor PP Majumder, FNA, Distinguished Professor and Founder, National Institute of Biomedical Genomics, Kalyani.

Professor Partha Majumder has made outstanding contributions to human genetics and evolution using statistics, molecular genetics and anthropological methods. He devised innovative paradigms and statistical methods for solving

biological problems related to modes of inheritance of complex human traits and mapping genes underlying such traits. His work on genetic diversity of ethnic Indian populations has resulted in a clear reconstruction of the processes of peopling of the Indian subcontinent, which had major impact on the design of studies for mapping disease genes.

Sectional Committee - VII : Molecular and Cellular Biology:

Cell Biology, Physiology, Development, Genetics, Genomics and other Omics of Plants, Animals and Microbes including Unicellular Eukaryotes

Professor Appa Rao Podile, FNA, Senior Professor, Department of Plant Sciences, School of Life Sciences, University of Hyderabad, Hyderabad.

For his pioneering work on the use of pathogen-derived molecules like harpin and chitoollig osaccarhides (COS) to induce plant immunity and to reduce the use of synthetic agrochemicals in agriculture. He worked extensively on chitinolytic plant growth promoting rhizo bacteria (PGPR) targeting cell wall of fungal pathogens, besides promoting the growth and yield as PGPR.

Sectional Committee - VIII : Biomolecular, Structural Biology and Drug Discovery:

Biochemistry, Biophysics, Molecular Biology, Pharmacology, Structural Biology, Bioinformatics, Computational Biology, System Biology

Professor P Balaram, FNA, Indian Institute of Science, Bengaluru.

Padma Bhushan Professor Padmanabhan Balaram is recommended for the INSA Distinguished Lecture Series. Professor Balaram has conducted unparalleled research on the structure, conformation, and biological activity of designed and natural peptides. Professor Balaram's efforts have significantly enhanced our understanding of how structural elements play a fundamental role in forming secondary structural motifs such as helices, beta turns, and sheets.

Sectional Committee - IX : Health Sciences:

Basic and Clinical Medical Sciences Communicable and Non-communicable Diseases, Epidemiology, Anthropology, Psychology, Cognitive and Neurosciences, Medical Genetics and Genomics, Public Health, Nutrition, Immunology

Professor Subrata Sinha, FNA, Professor and Head, Department of Biochemistry, All India Institute of Medical Sciences, New Delhi.

Professor (Dr) Subrat Sinha in his distinguished career has made significant contributions in precision medicine with his efforts directed towards identifying novel genetic alterations allowing for not only differentiating between apparently similar pathologies but also how these alterations affect tumor behaviour. His work has primarily focused on neuropathology, familial dyslexia, and recombinant human antibodies. He and his team have also contributed in identifying novel drug combinations to rescind hypoxia induced chemoresistance. His work has led to 4 patents being granted (4 India and 3 USA) in areas of transcriptional gene silencing and recombinant antibodies and novel tumour specific gene therapy.

Sectional Committee - X : Agricultural Sciences:

Agriculture, Horticulture, Forestry, Fisheries, Food Science, Veterinary Science, Pathogen Biology and Host Pathogen Interaction Both Plant and Veterinary Importance

Professor TK Adhya, FNA, School of Biotechnology, Kalinga Institute of Industrial Technology (Deemed University), Bhubaneswar.

Professor Adhya's research has been on paddy. He has done outstanding work on sustainable management of tropical soils through use of ecofriendly technologies for maintaining higher levels of productivity with minimal environmental impacts. His current research focus is on valorization of plant biomass and food waste and the circular bioeconomy for carbon and nitrogen.

RECIPIENTS OF INSA ASSOCIATE FELLOWS 2023

1. Dr Sandeep Anand (19.02.1985), PhD, Associate Professor, Department of Electrical Engineering, IIT Bombay, Mumbai.

For developing power electronics technologies for electric vehicles, wide bandgap Gallium-Nitride and Silicon-Carbide-based power converters, solar inverter topologies for interfacing alternate energy sources, and modeling and improving the reliability of power electronic circuits.

2. Dr Subhash Babu (01.04.1984), PhD, Senior Scientist, Division of Agronomy, ICAR-Indian Agricultural Research Institute, Pusa Campus, New Delhi.

Dr Subhash Babu has done pioneering research in the field of sustainable food production and natural resource management in the fragile Himalayan ecosystems. His work proved that the introduction of French bean in the maize fallow system significantly increased land productivity and reduced greenhouse gas intensity (GHGI) as compared to maize monoculture. He further established that the integration of crop+livestock+poultry led to substantial reduction in GHGI and significant increase in food production.

3. Dr Nishant Chandgotia (22.12.1987), PhD, Reader, TIFR-CAM, Sharadanagar, Bengaluru.

Dr Chandgotia is being nominated for his several contributions in the areas of Ergodic Theory and Dynamical Systems. In recent years, he has obtained results on a variety of problems related to embeddings, homomorphisms, and mixing properties of graphs. His works have consistently been of high quality and have appeared in well-regarded fora. A recent work on large deviations principle for dimer tilings in three dimensions constitutes a breakthrough on an important problem that has attracted much attention from both the mathematics and the statistical physics community; this work required the development of new tools to go beyond dimension two.

4. Dr Dhanya Chandrika Thulaseedharan (31.05.1983), PhD, Professor and Associate Dean Academics (PG Research), Department of Civil Engineering, IIT Delhi, New Delhi.

Dr Dhanya's research has contributed towards enhancing fundamental scientific understanding of the hydrological extremes alongside making improvements in hydrological models by incorporating the role and extent of heterogeneity in regional hydrological modeling. She has investigated the intricacies and feedback mechanisms involved in regional hydrologic systems and has developed early warning mechanisms for hydrological extremes through novel theoretical and statistical models, for hazard management and sustainable water resources planning and management.

5. Dr Kaustav Chatterjee (10.04.1988), PhD, Assistant Professor, Department of Civil Engineering, Indian Institute of Technology, Roorkee.

For notable contributions to the analytical prediction of the deformation behavior of different foundation systems under seismic motion, which are important for the earthquake-resistant design of geotechnical structures.

6. Dr Anindita Das (26.12.1985), PhD, Assistant Professor, School of Applied and Interdisciplinary Sciences, Indian Association for the Cultivation of Science (IACS), Kolkata.

Made key contributions to crystallization-driven polymer-assembly for the synthesis of interesting luminescent 2D architectures. Developed general strategies for the construction of stimuli-responsive supramolecular polymers and functional aliphatic polyesters.

7. Dr Ramendra Sundar Dey (14.03.1983), PhD, Scientist- D, Institute of Nano Science and Technology (INST), Mohali.

Synthesis of advanced functional nanomaterials scaffold and their applications to energy storage and conversion, biosensing and electrochemical sensing. He synthesized single atom catalysts, framework materials, electrochemically deposited nanostructured materials and 2D materials for a variety of applications such as electrocatalysis, generation of green ammonia/green urea from waste source, water splitting and metal air battery.

8. Dr Achintya Kumar Dutta (20.03.1987), PhD, Associate Professor, Department of Chemistry, Indian Institute of Technology Bombay, Mumbai.

Made significant contributions to theoretical chemistry, particularly the development of new methods to study small molecules and materials. The methods developed by the nominee allow the simulation of energy, properties, and spectra of large molecules using relativistic quantum chemistry methods. He also indigenously developed a new quantum chemical software package (Bagh) which can perform highly accurate wave-function based calculations using Schrödinger and DIRAC equations.

9. Dr Ved Prakash Dwivedi (15.07.1984), PhD, Group Leader, Immunobiology Group, International Centre for Genetic Engineering and Biotechnology, New Delhi.

Dr Dwivedi has demonstrated focussed and productive research experience on Tuberculosis dedicated to immunopathology (focused on cellular immune response and the associated interleukin and cytokine pathways), epigenomics, novel drug development (Th cell inhibitors and phytochemical-Bergenin), therapeutics (host inhibition of Sirtuin 2- a class III histone deacetylase enzyme), and vaccine design (identification of novel miRNA which identifies a unique host evasion response, identification of novel BCG vaccine adjuvants). His research attempts to curtail and eventually eliminate the high disease burden of Tuberculosis in this country. He has authored extensively on the subject along with the demonstration of exemplary leadership skills as highlighted by the setting up of his own training unit of Immunobiology at ICGEB and from the several national and international awards and research grants.

10. Dr Diptimoy Ghosh (01.05.1984), PhD, Assistant Professor, Department of Physics, Indian Institute of Science Education and Research, Pune.

Dr Diptimoy Ghosh is an outstanding young researcher who has carried out pioneering work on flavour physics and collider physics. He has also contributed significantly to the fields of astro-particle physics and cosmology, specifically related to axion-like particles and inflation correlation functions.

11. Dr Aditya Gopalan (19.06.1983), PhD, Associate Professor, Department of Electrical Communication Engineering, Indian Institute of Science, Bengaluru.

For outstanding contributions to the general area of sequential decision-making, involving development of online and reinforcement learning as well as sequential inferencing algorithms. He has pioneered the development of state-of-the-art black box optimization algorithms for tuning hyper parameters in large and complex systems.

12. Dr Mayanak Kumar Gupta (10.01.1985), PhD, Assistant Professor, Solid State Physics Division, Bhabha Atomic Research Centre, Mumbai.

Dr Mayanak Kumar Gupta has made outstanding contributions to the structure and dynamics of materials by integrating neutrons scattering experiments with quantum mechanical simulations and machine-learning methods. He extensively studied the thermodynamic and transport properties of solid-electrolytes and thermoelectric materials at the microscopic level to identify the critical descriptors for material design for energy applications.

13. Dr Shubhasis Haldar (18.06.1984), PhD, Associate Professor, SN Bose National Centre for Basic Sciences, Salt Lake City, Kolkata.

The focus of Dr Haldar's lab is to understand chaperone biology using single molecule tools. Using covalent magnetic tweezers Dr Haldar's group has examined how chaperones mechanically influence the cellular energetics and respond to mechanical force.

14. Dr Ankit Jain (21.09.1989), PhD, Associate Professor, Mechanical Engineering Department, IIT Bombay, Mumbai.

For proposing the theory for explaining thermal transport in low and high thermal conductivity solids. Major contribution is in the form of development of a computational tool capable of accounting for the higher-order thermal transport physics to predict the thermal transport properties of technologically relevant low and high conductivity solids. This tool has been made available to all researchers. He has also significantly contributed to the understanding of thermal transport in graphene and strongly an harmonic semiconductors.

15. Dr Bhaskar Kanseri (02.01.1984), PhD, Associate Professor, Department of Physics, Indian Institute of Technology Delhi, New Delhi.

Dr Kanseri has made outstanding contributions in photonic quantum communication and statistical optics. Through his research, he recently made the first indigenous demonstration of intercity quantum secure communication using more than 100 km underground telecom grade optical fiber. This has placed India in the elite group of nations having quantum communication capabilities. Over the years, he developed several experimental methods using partial coherence and polarization, provided applications in imaging, and in free space quantum communication.

16. Dr Shyamprasad Karagadde (24.01.1985), PhD, Associate Professor, Department of Mechanical Engineering, IIT Bombay, Mumbai.

For notable contributions to the understanding and prediction of micro- and mesoscale defect formations in materials through novel physics and data-driven computational frameworks as well as experimental techniques. His reduced-order models make it possible the solution of various material process phenomena at engineering scales, which are otherwise computationally prohibitive.

17. Dr Mudrika Khandelwal (26.03.1987), PhD, Associate Professor, Department of Materials Science and Metallurgical Engineering, IIT Hyderabad, Sangareddy.

For her outstanding contribution in the area of sustainable products development for female hygiene and food packaging, based on the antimicrobial properties of essential oils for hygiene, and cellulose based composites for Food packaging. The sustained drug delivery using encapsulated materials is also noteworthy.

18. Dr Subrata Kundu (28.09.1986), PhD, Associate Professor, School of Chemistry, IISER Thiruvananthapuram, Thiruvananthapuram.

Made outstanding contributions to the chemistry of small gaseous molecules such as NO and H₂S in biological systems. He described the molecular mechanisms of their biological processes through suitable model systems. He showed a new possible H₂S generating route from CS₂/COS metabolism mediated by dinuclear hydrolase enzymes.

19. Dr Rahul Mangal (02.10.1985), PhD, Associate Professor, Department of Chemical Engineering, IIT Kanpur, Kanpur.

For his outstanding contribution in the area of soft Matter and their applications, such as bio inspired adhesives and Janus Colloids with Unique properties.

20. Dr Mayukh Mukherjee (22.08.1985), PhD, Associate Professor, Department of Mathematics, IIT Bombay, Mumbai.

Mayukh Mukherjee has made significant contributions in the area of spectral and geometric analysis on manifolds. His work involves techniques from geometry topology and PDE. A major theme of his research concerns spectra eigen functions of the Laplacians in various contexts, such as Euclidean polyhedra, compact and non-compact Riemannian manifolds, homogeneous Hadamard manifolds, etc. His major contributions involve mass concentration properties of eigenfunctions, nodal sets, and complete description of the spectrum of homogeneous Hadamard and asymptotically harmonic manifolds.

21. Dr M Muthamilarasan (02.12.1986), PhD, Assistant Professor, Department of Plant Sciences, School of Life Sciences, University of Hyderabad, Hyderabad.

Dr Muthamilarasan has contributed extensively to studies on millet genomics with a major focus on foxtail millet. For this crop, he has developed genomic resources such as microsatellite markers, single nucleotide polymorphism (SNP) markers, etc as well as open access databases for use of these markers by the wider scientific community. Furthermore, he has conducted functional genomics analyses to delineate the role of various stress responsive gene families in adaptation of foxtail millet to abiotic stress.

22. Dr Pavan Kumar N (31.08.1984), PhD, Scientist C, ICMR-National Institute for Research in Tuberculosis, Chennai.

Dr Kumar possess over 15 years of research experience primarily in the domain on immunology of tuberculosis such as establishing a major role for cytokines, chemokines, MMPs, eicosanoids, and angiogenic factors in tuberculosis progression and stratification of tuberculosis disease sites based on these factors. He has contributed in the literature extensively (with over 100 peer reviewed publications) on HIV associated inflammation during pregnancy, intestinal dysbiosis and its association on birth outcomes, kinetics and durability of humoral and T cell immunity in Covaxin recipients, immunological profiles of children with multisystem inflammatory syndrome. He has provided a rational basis for testing combined antimicrobial and anti-inflammatory therapies in diabetic patients with TB. He has several international travel and national research awards.

23. Dr Ashutosh Pandey (25.12.1983), PhD, Scientist, National Institute of Plant Genome Research (NIPGR), Aruna Asaf Ali Marg, New Delhi.

Dr Pandey has made important contributions on understanding the molecular mechanism of the regulation of flavonoid biosynthesis in plants. The transgenic and genome edited plant lines developed by him are providing insights into transcriptional regulation of the biosynthesis of two classes of compounds, flavonoids and carotenoids, that are produced by plants and are important for human health.

24. Dr Sajeev Philip (02.10.1984), PhD, Assistant Professor, Centre for Atmospheric Sciences, IIT Delhi, New Delhi.

Dr Sajeev Philip has done extensive work towards understanding the chemical and physical processes involved in the variability and composition of the lower atmosphere related to air quality and climate. He has used in situ observations and satellite data as well as global chemical transport models for these studies. He has made significant contributions in estimating global biospheric CO₂ fluxes, which is relevant for climate studies.

25. Dr Rakesh Kumar Pilia (24.11.1986), DM, Assistant Professor, Department of Pediatrics, Advanced Pediatrics Centre, Postgraduate, Institute of Medical Education and Research Centre, Chandigarh.

Dr Pilia has received super-specialty training in pediatric immunology and rheumatology. He has worked and published extensively on Kawasaki disease (where has developed novel CT algorithms and investigated genetic pathways and immunomodulatory mechanisms), pediatric lupus and inborn errors of immunity. He was also part of the Covid-19 vaccination in autoimmune disease (COVAD) study group which aimed to provide evidence-based guidelines for Covid-19 vaccination for patients with autoimmune disorders. Dr Pilia has been the awardee of several national and international research fellowship and travel awards. He has guided several MD and DM student's research and has been the principal and co-investigator in many national and internationally funded research projects.

26. Dr Amit Kumar Rai (20.07.1984), PhD, Scientist-D, National Agri-Food Biotechnology Institute, SAS Nagar, Mohali.

Dr Rai has contributed extensively to the characterization and further development of fermented foods of the North East that are rich in bioactive peptides and isoflavones. He has isolated a number of bacterial and yeast strains that are associated with fermented foods and identified those that have potential for development of functional foods. He has isolated microbes from unique ecological niches in the Himalayas and characterized enzymes with important characteristics that can be utilized in bioprocessing.

27. Dr Sayan Ranu (31.12.1984), PhD, Associate Professor, Department of Computer Science & Engineering, IIT Delhi, New Delhi.

For outstanding contributions to the general area of graph analytics, and specifically to graph approximation algorithms as well as problems of route optimization and graph generative modelling. He has been successful in devising algorithms that explain the predictions of Graph Neural Networks better.

28. Dr Kasturi Saha (19.09.1984), PhD, Associate Professor, Department of Electrical Engineering, Indian Institute of Technology Bombay, Mumbai.

Kasturi Saha has made outstanding contributions to the emerging area of quantum technologies using Nitrogen-vacancy (NV) centres in diamond. She developed a quantum diamond microscope (QDM) demonstrating real time-varying magnetic fields with micro-meter spatial resolution for the first time, and an image reconstruction algorithm for NV centre-based magnetic resonance imaging. These techniques lay the foundations for exciting future experiments in quantum sensing.

29. Dr Haripada Sau (27.04.1989), PhD, Assistant Professor, Department of Mathematics, IISER, Pune.

Dr Haripada Sau has made very significant contributions to the area of interplay between complex geometry and multi-variable operator theory. In particular his work characterizes an algebraic sub-variety of the bi-disk in terms of a tuple of operators and their joint spectrum, and also gives, for the first time, the construction of a class of Toeplitz operators on the symmetrized bi-disk.

30. Dr Mahak Sharma (23.04.1983), PhD, Associate Professor & Wellcome Trust-India Alliance Senior Fellow, Department of Biological Sciences, IISER Mohali, Mohali, Punjab.

For her significant contributions to the understanding of the mechanisms by which cellular cargo is delivered to lysosomes for degradation. Mahak's research group has characterized the role of a small GTP-binding protein Arl8b, in regulating the function of a multi-subunit protein complex known as the HOPS (HO motypic fusion and Protein Sorting) complex. As a member of the Indian National Young Academy of Science (INYNAS), she used her research and teaching skills to work towards building a generation of Indians, practicing sciences a way of life.

31. Dr Tarun Kumar Sharma (08.09.1985), PhD, Associate Professor, Department of Medical Biotechnology, Gujarat Biotechnology University, Gandhinagar.

Dr Sharma has a long experience in the field of diagnostics, aptamer technology and biosensing. He has developed aptamers that can accurately detect the pulmonary and extra pulmonary tuberculosis and aptamer-based inhibitors to block Mycobacterium tuberculosis entry in host cells. His work revealed the usefulness of an aptamer and paper-based microfluidic assay for the point-of-care detection of bites caused by poisonous and non-poisonous snakes. Most of his works were conducted in India. His leadership ability is marked with several public health-related projects supported by the national and international funding agencies.

32. Dr Amarjeet Singh (24.11.1984), PhD, Scientist IV, National Institute of Plant Genome Research (NIPGR), Aruna Asaf Ali Marg, New Delhi.

He pioneered the work involving global expression analyses of genes related to abiotic stress, hormone signalling and development in crop plants. His pathway analysis of differentially expressed genes provided a crucial insight into the mechanism of K⁺ deficiency tolerance in chickpea.

33. Dr Aparna Singh (04.11.1984), PhD, Associate Professor, Metallurgical Engineering and Materials Science, IIT Bombay, Mumbai.

For developing copper interconnects layers that are just above the transistors for 14 nm technology. Made seminal contributions in development of tough and strong nanostructured steels and graphene epoxy fibre composites. Significantly successful in developing understanding and in house fabrication of materials with composition-processing-microstructure-properties relationship for diverse and important applications, like in manufacturing of rails.

34. Dr Arvind Singh (30.06.1983), PhD, Associate Professor, Geosciences Division, Physical Research Laboratory, Ahmedabad.

Dr Arvind Singh contributed significantly towards understanding the biogeochemical cycling in oceans. He has made quantitative estimates of carbon and nitrogen fluxes and the global carbon budget in the oceans. He demonstrated the

influence of climate on the ocean biogeochemistry and enhancement of biological pump by eddies.

35. Dr Prabhat Kumar Singh (15.07.1983), PhD, Scientific Officer (G), Radiation and Photochemistry Division, Bhabha Atomic Research Centre, Mumbai.

Made outstanding contributions to the field of ultrafast chemical reaction dynamics, biophysical chemistry, and spectroscopy of self-assembled materials for sensing applications. His research is not only extensive but also exhibits a high degree of originality and innovation. His work on ultrafast time-resolved fluorescence study offers the first detailed account of the fluorescence sensing activity mechanism of the widely used amyloid fibril sensor, Thioflavin-T (ThT). His recent work on the aggregation of molecular rotor probes may help in devising sensing devices for a variety of clinically important analytes.

36. Dr Arjun Srivathsa (27.09.1988), PhD, DST INSPIRE Fellow, National Centre for Biological Science, TIFR, Bengaluru.

Dr Srivathsa made outstanding contribution in the field of carnivore ecology and conservation biology with a focus on endangered Asiatic wild dogs. He developed strategies to safeguard their population in the Western Ghats, and has substantially contributed to the understanding of inter-species interactions and human-carnivore relationships in shared landscapes.

37. Dr M Tanveer (18.04.1983), PhD, Associate Professor, OPTimization for MACHine Learning (OPTIMAL) Research Lab, Indian Institute of Technology Indore, Indore.

For significant contributions in developing novel shallow and deep learning algorithms for the classification, regression, and clustering problems, along with their implementation for the diagnosis of Alzheimer's disease, Brain Age Estimation, Schizophrenia, Epilepsy etc. The algorithms will be helpful for doctors to take early decisions in the diagnosis of the above-mentioned diseases and could be helpful to healthcare industries. Most of the developed software/codes are publicly available.

38. Dr Shashank Tripathi (10.04.1983), PhD, Assistant Professor, Emerging Viral Pathogens Lab, Centre for Infectious Disease Research, Indian Institute of Science, Bengaluru.

Dr Tripathi's group studies virus-host interactions of human RNA viruses including Influenza, SARS-CoV-2, and Flaviviruses. His group identified prognostic markers and FDA-approved antivirals against COVID-19. Recently, his group has discovered the broad-spectrum antiviral activity of Picolinic Acid, against Influenza and SARS-CoV-2. His lab has also developed a novel Influenza reporter virus that allows live imaging of structural protein formation and trafficking in infected cells.

39. Dr Santosh Kumar Upadhyay (05.02.1984), PhD, Assistant Professor (Stage II), Department of Botany, Panjab University, Chandigarh.

Dr Upadhyay has been involved in the purification and characterization of an interesting insecticidal protein from ferns and cloning of the encoding gene. This information has been used for the development of whitefly-resistant transgenic cotton. He has reported siRNA machinery in whitefly and demonstrated RNAi-mediated control of whiteflies using numerous gene targets. He has identified and characterized various defense and development-related genes in bread wheat. Further, he established CRISPR-Cas mediated genome editing in wheat and developed a freeware for target prediction.

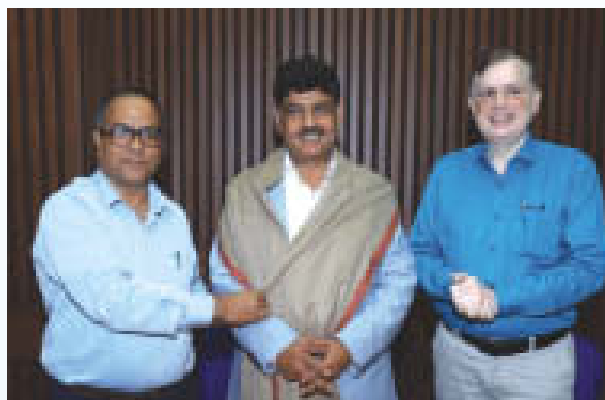
40. Dr Vikram Vishal (12.07.1985), PhD, Associate Professor, Department of Earth Sciences, IIT Bombay, Powai, Mumbai.

Dr Vishal has developed a geologic CO₂ storage potential map of India based on updated methodologies, basin specific know-hows, and experimentally determined inputs. Using coal deformation experiments with flow of liquid/supercritical CO₂, he has led efforts in resolving issues related to CO₂-enhanced coalbed methane recovery (ECBMR) in India. He has developed a new Gas shale assessment method and proposed stitching of pores for total pore assessment in shale. He has developed a State-of-the-art Computational and Experimental Geomechanics Laboratory for resolving issues surrounding geomechanics of oil and gas development. He has been instrumental in providing a scientific basis for the formulation and implementation of the national policy on incentivizing unconventional hydrocarbon recovery in India.

HR ACTIVITY

Retirement of INSA Staff Member

Shri Chandra Kant Sharma, Programme Officer Superannuated from the Services of the Academy on 31.07.23 after serving more than 33 Years in the Academy.



Swachhta Pakhwada (Swachhta Hi Seva) Pledge Ceremony

The Staff of INSA took Pledge on Swachhta Pakhwada (Swachhta Hi Seva) on 29th September, 2023 in the Multipurpose hall. Along with the Swachhta Pledge ceremony, a mass cleaning drive was also conducted with active involvement of INSA employees to ensure cleanliness within the campus of the Academy.

