



Indian National Academy of Engineering





Late Mr. Rajiv Gandhi, the then Hon'ble Prime Minister of India at the Foundation Function of INAE on 11th April, 1988



Dr. P Rama Rao, the then President, INAE felicitating Late Dr. APJ Abdul Kalam, former President of INAE at Rashtrapathi Bhavan on his assuming the Office of President of India.

INTRODUCTION

The Indian National Academy of Engineering (INAE), founded in 1987 is an autonomous professional body partly supported by grant-in-aid from the Department of Science & Technology, Government of India. It comprises India's most distinguished engineers, engineer-scientists and technologists covering the entire spectrum of engineering disciplines. INAE functions as an apex body and promotes the practice of engineering & technology and the related sciences for their application to solving problems of national importance. The Academy provides a forum for futuristic planning for country's development requiring engineering and technological inputs and brings together specialists from such fields as may be necessary for comprehensive solutions to the needs of the country. As the only engineering Academy of the country, INAE represents India at the International Council of Academies of Engineering and Technological Sciences (CAETS); which is a premier non-governmental international organization comprising of Member Academies from 31 countries across the world, with the objective of contributing to the advancement of science and technology and promoting sustainable economic growth of all nations. The election to Fellowship of the Academy is by invitation only. At present, INAE has 890 Fellows from India and 94 Foreign Fellows on its rolls identified in ten Engineering Sections.

There are ten Sectional Committees of the Academy representing ten different Engineering Sections, viz., SC-I (Civil Engineering); SC-II (Computer Engineering and Information Technology); SC-III (Mechanical Engineering); SC-IV (Chemical Engineering); SC-V (Electrical Engineering); SC-VI (Electronics & Communication Engineering); SC-VII (Aerospace Engineering); SC- VIII (Mining, Metallurgical and Materials Engineering); SC-IX (Energy Engineering); and SC - X (Interdisciplinary and Special Engineering Fields and Leadership in Academia, R&D and Industry).

Activities of the Academy

Symposia/Seminars/Workshops/Conferences/Webinars: The Academy organizes Symposia/ Seminars/Workshop/ Conferences/Webinars at national/international levels on topics of national importance and based on the deliberations, brings out policy recommendations for follow-up action by the concerned Ministry/Department/agency(ies).

Promoting Engineering Education: Distinguished Panel Discussion on "Opportunities and Challenges of Implementation of National Education Policy (NEP) 2020 for Engineering Disciplines and Profession" chaired by Dr K Kasturirangan, Former Secretary, Department of Space; Former President of INAE & Chairman NEP 2020 Drafting Committee was held on April 20, 2022. The objective of this exercise was to formulate actionable recommendations on the theme for the successful implementation of NEP 2020 in realistic stages and timeline through the concerned stakeholders in the Government Agencies, Academic Institutions, Industry and R&D Organizations.

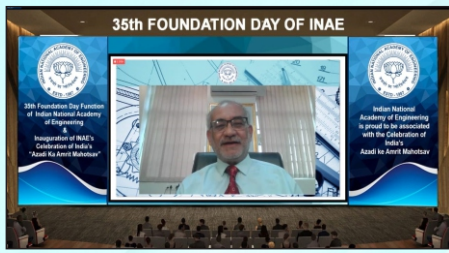


Distinguished Panel Discussion on "Opportunities and Challenges of Implementation of National Education Policy (NEP) 2020 for Engineering Disciplines and Profession"



Left to right: Dr K Kasturirangan, Former president, INAE and Chair; Distinguished Panel Discussion and Prof Indranil Manna, President, INAE

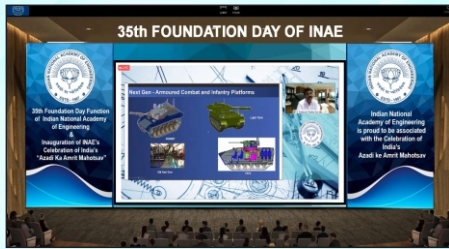
Special lectures on the 35th Foundation Day of INAE by INAE held online on 20th April 2021: INAE organized Special lectures by four eminent speakers from DAE, DRDO, ISRO and CSIR on their biggest technological achievements that have made India proud; to commemorate 35th Foundation Day of INAE and inauguration of the India's "Azadi Ka Amrit Mahotsav" celebrations by INAE, on 20th April 2021.



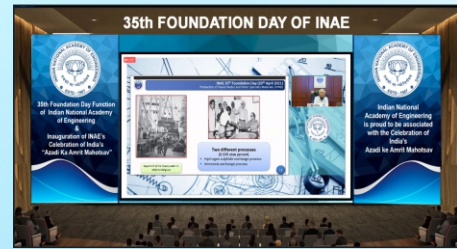
Welcome Address by Prof Indranil Manna, President, INAE



Lecture by Shri S Somanath, FNAE, the then Director, VSSC, Thiruvananthapuram



Presentation by Dr G Satheesh Reddy, FNAE, the then Secretary, (DAE) & Department of Defence R&D and Chairman, DRDO



Lecture by Shri KN Vyas, FNAE, Secretary, Department of Atomic Energy Chairman, Atomic Energy Commission (AEC), Mumbai

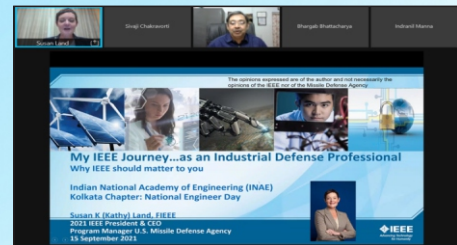
INAE Webinar by Dr Sethuraman Panchanathan, Director, National Science Foundation, USA

Dr Sethuraman Panchanathan, Director, National Science Foundation, USA delivered a special lecture on "Creating Foundational Partnerships: Building on the strength of US-India collaboration towards a roadmap for the future" online on 31- July 2021.



Dr Sethuraman Panchanathan, Director, NSF, USA delivering the Special Lecture

INAE Kolkata Chapter hosted the Engineer's Day Lecture on September 15, 2021 in virtual mode as a part of ongoing *Azadi Ka Amrit Mahotsav* celebrations wherein IEEE President and CEO, Ms Susan Kathy Land delivered the Engineer's Day Lecture on "My Personal Journey with IEEE".

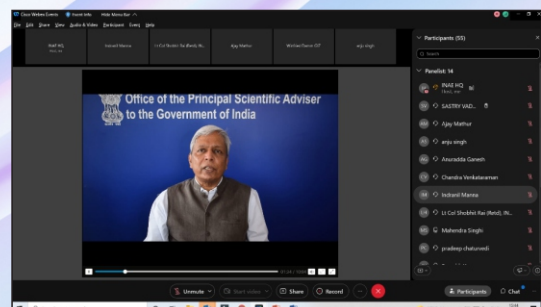


Lecture by Ms Susan Kathy Land on Engineers Day 2021

Engineers Conclave: INAE organizes an annual mega event of engineers as "Engineers Conclave" jointly with major engineering organizations/strategic departments of the Govt. of India on rotation basis since 2013. The objective of the Engineers Conclave is to provide a platform for engineers from allied fields to meet, deliberate and recommend right engineering solutions to some pertinent issues of national importance. The 8th Engineers Conclave 2021 was held jointly with International Solar Alliance (ISA) from October 26-27, 2021 as a virtual event and the themes were "Engineering challenges for de-carbonizing the Indian Economy" and "Achievements of Indian Engineering – Azadi ka Amrit Mahotsav".



Shri TV Narendran, CEO & MD, Tata Steel delivering the Keynote Lecture during Engineers Conclave 2021



Distinguished Address by Prof K Vijay Raghavan, the then Principal Scientific Adviser to the Government of India during online Engineers Conclave 2021



Erstwhile Hon'ble Raksha Mantri Shri Rajnath Singh delivering Inaugural Address during EC-2019.



Erstwhile Hon'ble President of India, Shri Pranab Mukherjee, at the Inaugural function of 1st Engineers Conclave 2013 at New Delhi

National Frontiers of Engineering (NatFoE) Symposium launched by the INAE in 2006 brings together outstanding engineers between 30 and 45 years of age, from industry, Academia and R&D Labs to discuss leading-edge research and technical work across engineering fields. The 16th NatFoE Symposium was organized jointly with Jadavpur University and IIT Kharagpur on June 18-19, 2022 at Jadavpur University, Kolkata. The four themes were “Field-Deployable Miniaturized Sensors”; “Waste Valorization and Circular Economy”; “Resource-Constrained Translational Technology” and “Nanostructured Surfaces for Functional Materials and Systems”. A National Competition on Innovation in Manufacturing Practices (IMP 2022) was organized at Jadavpur University, Kolkata on 20th June 2022 to showcase innovations in manufacturing sector.



Inaugural program of NatFoE 2022



Winners of Poster Session in IMP 2022

Initiatives to encourage Frugal Innovation in the Country: A Frugal Innovation Nurturing Programme (FINP) is ongoing with the objective to nurture prospective frugal innovations which have reached prototype stage to scale up and commercialize them for greater exploitation. An MOU has been renewed with National Innovation Foundation Ahmedabad to progress this initiative.

Engagement of Engineering Students in INAE Activities- INAE Youth Forum and INAE Youth Conclave: An INAE Youth Forum for engineering students was established in the year 2017 launched by Dr. K Kasturirangan, FNAE, former President, INAE at the first Youth Conclave held at Birla Institute for Scientific Research, Jaipur, wherein 250 engineering students participated.

INAE-SERB Youth Conclave on Technology Self-Reliance was planned as a part of “SERB-INAE Conclaves on *Atmanirbhar* Technologies-Engineering Secured Future” and jointly organized with IIT Jodhpur on Sept 15-18, 2022 at IIT Jodhpur. The themes of the Conclave were ‘Smart Infrastructure’; ‘Experiential Interface’; ‘Experiential learning’; ‘Digital Healthcare’; ‘Quantum Technology’; ‘Materials for Sustainability’; ‘Food-An emerging vista of Engineering’ and ‘Sustainability of Drinking Water’.



Dr R Chidambaram, Chairman, BoG, IIT Jodhpur and Former PSA to GoI delivering his Address during INAE-SERB Youth Conclave 2022.



Engineers Day celebrations during INAE-SERB Youth Conclave 2022

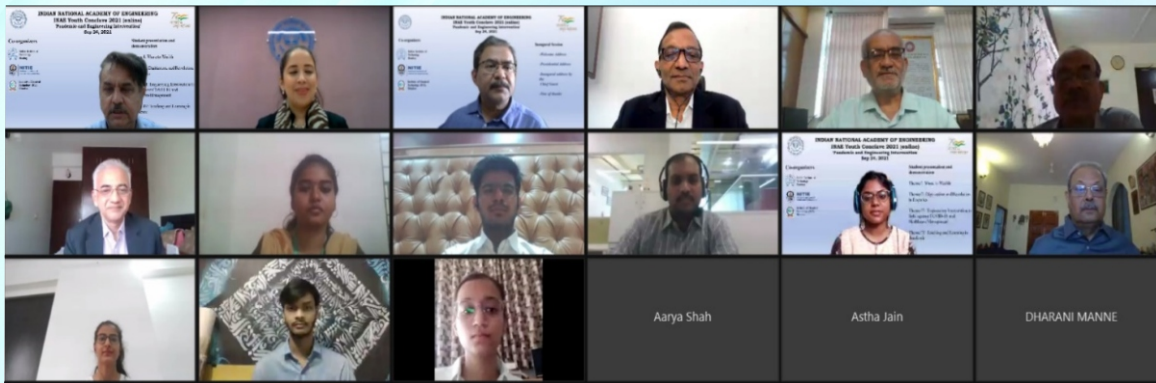


Student competitions during Youth Conclave 2022



Presentation by Students during Youth Conclave 2022

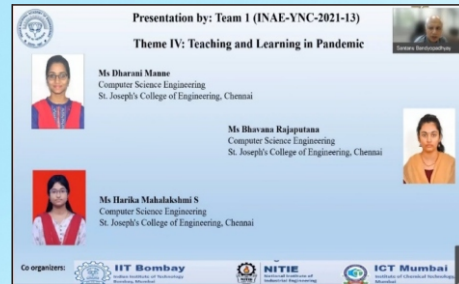
The 4th INAE Youth Conclave 2021 was organized by INAE jointly with IIT Bombay; NITIE, Mumbai and ICT, Mumbai online for the first time on September 24, 2021, which was attended by 190 delegates including INAE Fellows, Young Associates and Engineering Students from across the country.



Group Photograph of Delegates in Inaugural Session of INAE Youth Conclave 2021



Dr Pawan Goenka, former Executive Director & Group President, Mahindra & Mahindra Ltd., Delivering Address



Student Presentation during INAE Youth Conclave 2021

Abdul Kalam Technology Innovation National Fellowship: INAE and Science and Engineering Research Board (SERB), DST instituted the Abdul Kalam Technology Innovation National Fellowship in the year 2017, with the view to recognize, encourage and support translational research in public funded institutions in the country. The Fellowship can be held for a maximum period of 5 years. The outcome of the research work carried out is to develop commercialized or deployable technology; pilot scale or field trial worthy technology; patent, working model or prototype for demonstration and trial. Forty-six nominees have been conferred this prestigious fellowship so far.



Erstwhile Hon'ble President of India Shri Ram Nath Kovind; Dr Harsh Vardhan, erstwhile Minister of Science and Technology and Prof Ashutosh Sharma, FNAE, the then Secretary, DST at Vigyan Bhawan, New Delhi with Abdul Kalam Fellowship Awardees & Other Awardees

(i) Joint Activities with SERB:

(a) **SERB- INAE Digital Gaming Research Initiative:** The SERB-INAE Gaming Conclave was held on July 20, 2022, in physical mode at New Delhi as part of the SERB Digital Gaming Research Initiative launched in three broad directions viz. R&D in Learning & Leisure Gaming Platforms; Immersive Game Prototypes with a focus on Indian Culture & Values; and a Collaborative Technical Design Process. This initiative is in consonance with digital gaming research initiative launched by the government.

(b) INAE-SERB Collaborative Initiative in Engineering: The following four initiatives are ongoing jointly with SERB: SERB-INAE Conclaves on *Atmanirbhar* Technologies - Engineering Secured Future; SERB-INAE Woman Engineers Program; SERB-INAE Outreach Programs for NE, J&K and Ladakh and SERB-INAE Innovation Hackathon.

SERB-INAE Hackathon 2022: SERB and INAE jointly organized SERB-INAE Hackathon 2022 in association with Jadavpur University, Kolkata on September 3-4, 2022 in Kolkata in physical mode. The event served as an opportunity for innovative science and engineering students in the country at UG and PG level to participate and win Awards in four thematic areas: Artificial Intelligence and Machine Learning; Big Data Computation; Cyber Security and Data Driven Finance.



Address by Prof Sandeep Verma, Secretary, SERB



Group Photograph of Participants in SERB-INAE Hackathon 2022

Joint Activities with AICTE:

(a) AICTE-INAE Distinguished Visiting professorship scheme: Launched in 1999 together with All India Council for Technical Education, Industry experts are encouraged to give series of lectures at an educational institution under the scheme.

(b) AICTE-INAE Travel Grant Scheme for Engineering Students: Launched in 2013 to provide financial support for engineering students to present papers abroad.

Mentoring of Engineering Teachers/Students by Fellows of INAE/INAE Young Associates: INAE undertakes mentoring of Engineering Teachers and 3rd/4th year B.E./B.Tech students with a view to provide them guidance and promote excellence.

Interaction with Government Agencies: INAE acts as an advisory body to the Government Departments/Agencies for providing inputs for engineering interventions to help in framing of national policies on identified areas. To facilitate this, INAE has joint Consultative Committees with DST, Office of Principal Scientific Adviser (PSA), CSIR, ISRO; DRDO; AICTE; DAE and SERB.

White Paper on “Technological Preparedness for dealing with National Disruptions”: INAE is preparing a report on study of disruptions by domain specialists to identify the gaps and recommend areas for scientific research and technology solutions.

INAE Expert Groups to Prepare Technology Roadmaps with Actionable Recommendations: Launched in 2020 to develop comprehensive engineering/technology road maps with actionable recommendations on selected engineering themes/ domains.

Safe Laboratory Practices and Laboratory Waste Disposal: This project was undertaken at the behest of DST with the objective of creating a plan of action to enhance the awareness of health and safety issues in chemical laboratories and establish best practices for disposal of chemical & hazardous wastes in the laboratories of universities, colleges and R&D Labs in India.

INAE Forums: To assist in formulating policies on critical technical issues, Forums have been constituted in areas of Energy, Technology Foresight and Management, Engineering Interventions for Disaster Mitigation, Indian Landscape of Advanced Structural Materials and Civil Infrastructure.

Engineering Excellence Awards: To promote Engineering Excellence, INAE has instituted the following awards.

Life Time Contribution Award in Engineering – the highest recognition from INAE – is given every year to two eminent Indian citizens who have made most distinguished contribution in the field of engineering/engineering research/engineering education/technology/engineering management which has brought prestige to the nation.

Prof. Jai Krishna and Prof. SN Mitra Memorial Awards are given to an eminent engineer, engineer-scientist or a technologist for Academic and scholarly achievements in any discipline of technology/outstanding research in engineering and technology and application, engineering services or engineering projects.

INAE Outstanding Teachers Award - instituted in the year 2013 to honour INAE Fellows who have excelled in the field of teaching. There is a maximum of two such awards per year.

INAE Woman Engineer of the Year Award instituted in the year 2020 to recognize deserving women engineers, every year, who have made outstanding contributions to any field of engineering and technology in India.

INAE Young Engineer Awards, instituted in 1996, are given for engineering research, excellence in engineering design, technology development and technology transfer.

INAE Young Innovator & Entrepreneur Award – instituted in the year 2017, with a view to encourage and recognize innovation and entrepreneurship among Young Engineers, below 45 years of age.

Innovative Student Projects Awards, instituted in 1998, are given to identify innovative and creative projects/theses undertaken by engineering students at Doctoral, Master’s and Bachelor levels.

Transactions of Indian National Academy of Engineering – An International Journal of Engineering and Technology” earlier known as “INAE Letters” Journal was launched in the year 2020 and is a full-fledged journal to include full Research Papers and Review Articles besides short communications. A special issue on “Technologies for Fighting COVID-19” was published in June 2020 as initiative for mitigating the COVID-19 Pandemic.

INAE on Social Media: INAE has a Facebook and twitter Account to post the news of recent INAE activities in the Social Media.

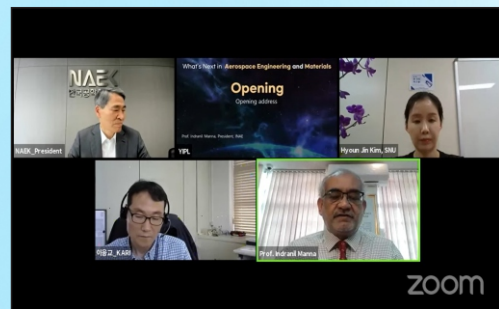
INAE Digital Platform was created to facilitate INAE Fellows submitting nominations online for Fellowship, schemes and awards and for digitizing of operations of INAE Office. A Webinar Series was launched in the year 2020.

CAETS and International Affairs: INAE is a member-Academy of CAETS and participates in its programmes/convocations held annually. INAE has initiated specific collaborative projects/programmes with several CAETS member academies.

Joint Activities with Member Academies of CAETS: The 5th INAE-NAEK Workshop on “Advanced Materials for Sustainable Development” was held on August 25-26, 2022 at Kolkata. The Workshop had two sub-themes conducted in a span of two days – “Materials for Quantum Computing” and “Machine Learning for development of Advanced Materials”. The fourth INAE-NAEK, Korea Workshop on “What’s next in Aerospace Engineering and Materials” was held virtually on June 14-15, 2021 to commemorate celebration of India’s 75th Year of Independence (*Azadi ka Amrit Mahotsav*).



5th INAE-NAEK Workshop



4th NAE-NAEK, Korea Workshop

INAE Annual Convention 2021 was held online on December 16-18, 2021 due to unprecedented circumstances on account of COVID pandemic all over the world, attended by Fellows, Foreign Fellows, Young Associates, Awardees and Invitees.



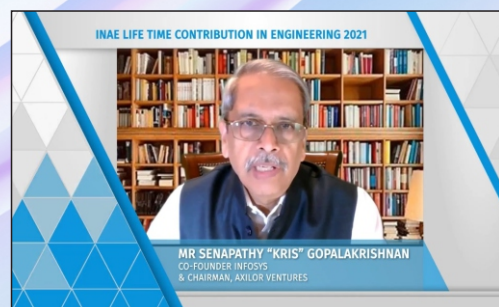
Release of the Book “Making of a Satellite Centre: The Genesis of ISRO’s URSC” during INAE Annual Convention 2021



Mr NR Narayana Murthy, Formerly Chairman Emeritus, Infosys Ltd., delivering Inaugural Lecture During Annual Convention 2021



INAE Women of the Year Awardee 2021 Ms Vartika Shukla, CMD, Engineers India Limited, Delhi



Mr Senapathy 'Kris' Gopalakrishnan, Co-founder Infosys & Chairman Axilor Ventures, Life Time Contribution Awardee in Engineering 2021

INAE GOVERNING COUNCIL - 2022

S.No.	Title	Affiliation
1	President	: Prof. Indranil Manna, Vice Chancellor, Birla Institute of Technology (BIT), Mesra, Ranchi, Jharkhand [On lien from I.I.T. Kharagpur, W.B.] and Former Director, Indian Institute of Technology Kanpur, U.P.; Former Director, CSIR-Central Glass & Ceramic Research Institute (CGCRI), Kolkata.
2	Immediate Past President	: Dr. Sanak Mishra, Member of the Governing Board of the Steel Research & Technology Mission of India. Formerly Managing Director, Rourkela Steel Plant and Director, Steel Authority of India Ltd. (SAIL); Vice-President, ArcelorMittal and CEO India Projects; Secretary General, Indian Steel Association; President, Indian Institute of Metals.
3	Vice-President (Finance & Establishment)	: Prof. Purnendu Ghosh, Executive Director, Birla Institute of Scientific Research, Jaipur.
4	Vice-President (Academic, Professional & International Affairs)	: Prof. AB Pandit, J.C. Bose National Fellow, UGC Research Scientist, Professor and Vice Chancellor, Institute of Chemical Technology, Mumbai.
5	Vice-President (Fellowship, Awards & Corporate Communication)	: Prof. Sivaji Chakravorti, Professor, Electrical Engineering Department, Jadavpur University, Kolkata and former Director, NIT Calicut.
6	Chief Editor of Publications and GC Member affiliated to Engg Section-III	: Prof. Amit Agrawal, Professor, Department of Mechanical Engineering, Indian Institute of Technology Bombay, Mumbai.
Members		
7	Engg Section-I	: Ms Alpa Sheth, Managing Director, VMS Consultants Pvt Ltd, Mumbai.
8	Engg Section-II	: Prof. Subhasis Chaudhuri, Director, Indian Institute of Technology Bombay, Mumbai.
9	Engg Section-IV	: Mr. DP Misra, Director, Development Consultants Pvt Ltd & Adviser, Jindal Steel and Power Ltd., Mumbai.
10	Engg Section-V	: Dr. Archana Sharma, Outstanding Scientist, Director, Beam Technology Development Group, BARC, Mumbai.
11	Engg Section-VI	: Prof. Anurag Kumar, Former Director, Indian Institute of Science, Bangalore.
12	Engg Section-VII	: Dr. Tessa Thomas, Distinguished Scientist & Director-General, Aeronautical Systems, Defence Research and Development Organisation (DRDO), Bengaluru.
13	Engg Section-VIII	: Dr. Debashish Bhattacharjee, Vice President, Technology & New Materials Business, Tata Steel, Kolkata.
14	Engg Section-IX	: Prof. Rangan Banerjee, Director, IIT Delhi and formerly Forbes Marshall Chair Professor, Department of Energy Science and Engineering, Indian Institute of Technology Bombay, Mumbai.
15	Engg Section-X	: Prof. Kripa Shanker, Visiting Professor, Mechanical Engineering Department, Indian Institute of Technology (BHU) Varanasi.

REPRESENTATIVES OF VARIOUS ORGANISATIONS

16	Department of Science & Technology (DST), Ministry of Science & Technology	: Prof. Sushmita Mitra, Professor HAG, Machine Intelligence Unit, Indian Statistical Institute, Kolkata.
17	Ministry of Education (Erstwhile MHRD)	: Prof. Bhaskar Ramamurthi, Former Director, IIT Madras and Professor, Dept of Electrical Engg, IIT Madras
18	Department of Space (DOS)	: Dr. VR Lalithambika, Former Distinguished Scientist and Director, Directorate of Human Space Programme, ISRO, Bengaluru.
19	All India Council for Technical Education (AICTE)	: Dr. Rajeev Shorey, Chief Executive Officer (CEO), University of Queensland – IIT Delhi Academy of Research (UQIDAR), IIT Delhi.
20	Indian National Science Academy (INSA)	: Prof. V Ramgopal Rao, Former Director, Indian Institute of Technology Delhi, New Delhi.
21	Defence Research & Development Organisation (DRDO)	: Dr. BHVS Narayana Murthy, Distinguished Scientist and Director General Missiles & Strategic Systems, Office of the DGMSS, Hyderabad.
22	Department of Atomic Energy (DAE)	: Mr. RN Jayaraj, Formerly Chairman & Chief Executive, Nuclear Fuel Complex, Department of Atomic Energy, Hyderabad.
23	Confederation of Indian Industry (CII)	: Dr. Ashish Mohan, Head-Technology, Innovation, IPR, and Design, Gurgaon.
24	Federation of Indian Chambers of Commerce & Industry (FICCI)	: Mr. Shyam Bang, Chairman, FICCI Taskforce on Manufacturing Excellence, FICCI, New Delhi.

FORMER PRESIDENTS OF INAE

- Prof. Jai Krishna**, Former Vice-Chancellor, University of Roorkee, Roorkee and Founder President, INAE (1987-1991)
Dr. VS Arunachalam, Chairman, Centre for Study of Science, Technology and Policy (CSTEP), Bengaluru (1991-1992)
Dr. S Varadarajan, Former Secretary, Dept. of Science & Technology and Dept. of Scientific & Industrial Research; Director-General, Council of Scientific & Industrial Research and Chief Consultant, Planning Commission. (1992-1995)
Dr. APJ Abdul Kalam, Former President of India (1995-1996)
Prof. PV Indiresan, Former Director, Indian Institute of Technology, Madras (1997-1998)
Dr. Anil Kakodkar, Former Chairman, Atomic Energy Commission and Secretary, Dept of Atomic Energy, Mumbai (1999-2000)
Dr. P Rama Rao, Chairman, Governing Council, International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad (2001-2002)
Dr. A Ramakrishna, Former President & Deputy Managing Director, Larsen & Toubro Limited (2003-2004)
Dr. K Kasturirangan, Chairman, Karnataka Knowledge Commission, Distinguished Professor Emeritus, National Institute of Advanced Studies (NIAS), Bengaluru (2005-2006)
Dr. PS Goel, Prof. M.G.K Menon DRDO Chair, Honorary Distinguished Professor, ISRO, Research Centre Imarat (RCI), Hyderabad; Former Secretary, Ministry of Earth Sciences & formerly Chairman, Recruitment & Assessment Centre, DRDO, Ministry of Defence, New Delhi (2007-2010)
Dr. Baldev Raj, Director, National Institute of Advanced Studies (NIAS), Bengaluru (2011-2014)
Dr. BN Suresh, Chancellor, Indian Institute of Space Science & Technology (IIST) and Honorary Distinguished Professor, ISRO hqrs., Bengaluru; Former Member, Space Commission, Former Director, Vikram Sarabhai Space Centre, ISRO and Founder Director, Indian Institute of Space Science and Technology, Thiruvananthapuram (2015-2018)
Dr. Sanak Mishra, Member of the Governing Board of the Steel Research & Technology Mission of India. Formerly Managing Director, Rourkela Steel Plant and Director, Steel Authority of India Ltd. (SAIL); Vice-President, ArcelorMittal and CEO India Projects; Secretary General, Indian Steel Association; President, Indian Institute of Metals. (2019-2020)

CURRENT PRESIDENT OF INAE

Prof. Indranil Manna, Vice Chancellor, Birla Institute of Technology (BIT), Mesra, Ranchi, Jharkhand [On lien from I.I.T. Kharagpur, W.B.] and Former Director, Indian Institute of Technology Kanpur, U.P.; Former Director, CSIR-Central Glass & Ceramic Research Institute (CGCRI), Kolkata. (2021 till date)

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