

IPPD2026 Report

IIT Delhi Successfully Hosts IPPD 2026: International Conference Showcases Plasma Technologies for Sustainable Development (towards *Plasma Pravah* (प्रवाह): Legacy and Society Initiative)



New Delhi, July 15, 2026: The Indian Institute of Technology (IIT) Delhi successfully organized the **3rd Global Forum and International Conference on Industrial Plasma Processes and Diagnostics (IPPD 2026)** from 1–3 July 2026. Jointly organized by the **Department of Energy Science and Engineering (DESE)** and the **Department of Physics**, the three-day international conference concluded with overwhelming success, bringing together renowned scientists, academicians, industry leaders, research scholars, and students from India and across the globe. The conference served as a vibrant platform for exchanging ideas, presenting cutting-edge research, and strengthening collaborations in plasma science and technology for societal applications.

The conference was **conceived and successfully convened by Prof. Bibhuti Bhusan Sahu**, Department of Energy Science and Engineering, IIT Delhi. Building on the remarkable success of IPPD 2024 and IPPD 2025, the third edition further strengthened India's growing global presence in plasma science and technology and reaffirmed IIT Delhi's commitment to advancing interdisciplinary research with societal relevance.

The conference was inaugurated by **Prof. Rangan Banerjee, Director, IIT Delhi**, who highlighted the importance of interdisciplinary research and technological innovation in addressing global challenges related to clean energy, environmental sustainability, advanced manufacturing, and healthcare. During the inaugural session, **Prof. Bibhuti Bhusan Sahu**, Convener of IPPD 2026, welcomed the delegates and emphasized the conference's vision of inspiring young researchers, promoting academia–industry collaboration, and creating a global platform for advancing plasma science and

engineering. **Prof. Ramesh Narayanan**, Chairperson of IPPD 2026 and Head of the Department of Energy Science and Engineering, reiterated the Institute's commitment to developing technologies that directly benefit society through research excellence and innovation.

Plasma: The Technology Powering Modern Society

One of the major themes of IPPD 2026 was the growing importance of **plasma**, often referred to as the **fourth state of matter**, in shaping modern technologies and improving the quality of life. Although plasma naturally exists in the Sun, stars, lightning, and the Earth's ionosphere, engineered plasmas have become indispensable in numerous industrial and societal applications.

Today, plasma technologies play a vital role in the fabrication of semiconductor chips used in smartphones, computers, and communication devices, manufacturing of solar cells and LED displays, sterilization of medical instruments, wound healing, plasma medicine, cancer therapy research, water purification, wastewater treatment, food preservation, agriculture, hydrogen production, carbon dioxide conversion, pollution control, textile processing, advanced coatings, aerospace technologies, and nuclear fusion research. Plasma is increasingly recognized as one of the key enabling technologies for achieving clean energy, sustainable manufacturing, environmental protection, and improved public health.

Scientific Programme Featuring Global Leaders

IPPD 2026 featured an outstanding scientific programme comprising **four plenary lectures, ten keynote lectures, invited talks, industry sessions, student oral presentations, poster presentations, and panel discussions** covering laboratory plasmas, plasma diagnostics, fusion science, semiconductor processing, plasma medicine, agriculture, advanced materials, environmental technologies, and industrial plasma applications.

The conference commenced with the inaugural **Plenary Lecture** by **Prof. Anthony Bruce (Tony) Murphy** of **CSIRO, Australia**, titled:

"Plasma Applications Using Hydrogen for CO₂ Emission Reduction."

His lecture highlighted innovative plasma-assisted hydrogen technologies that have immense potential for reducing industrial carbon emissions and supporting the global transition toward sustainable energy systems.

One of the most inspiring and widely appreciated sessions of the conference was the keynote lecture delivered by **Prof. Ram Prakash**, Indian Institute of Technology Jodhpur, entitled:

"Plasma Science and Technology for Transitioning the World from a State of FEAR to FAIR."

Prof. Ram Prakash presented a visionary perspective on how plasma science can transform humanity's pressing challenges into opportunities for equitable and sustainable development. Through compelling examples, he demonstrated the role of plasma technologies in improving healthcare, enabling clean energy production, advancing sustainable agriculture, developing environmentally friendly manufacturing processes, and protecting the environment. His powerful message of transforming society "**From FEAR to FAIR**" received widespread appreciation from delegates and emerged as one of the defining highlights of IPPD 2026, emphasizing that scientific innovation should ultimately serve humanity by promoting fairness, inclusiveness, sustainability, and shared prosperity.



The conference also featured distinguished plenary lectures by internationally acclaimed scientists:

- **Prof. Eun Ha Choi (Kwangju University, South Korea):** *"Non-thermal Atmospheric Pressure Plasma Sources and Their Long-lived Nitric Oxide Water for Quantum Agriculture and Environmental Sciences."*
- **Prof. Tapobrata Som (Institute of Physics, Bhubaneswar):** *"Applications of Plasma in Various Domains of Science."*
- **Prof. Gerard Oscar Rodrigues (Inter-University Accelerator Centre, New Delhi):** *"Plasmas Worldwide: Breakthroughs and Fusion's Path to Power."*

The keynote programme featured eminent experts from India and abroad discussing frontier research on fusion plasma, semiconductor technologies, plasma medicine, advanced coatings, plasma-assisted nanomaterials, atmospheric plasmas, hydrogen technologies, and industrial plasma processing. These lectures reflected the rapidly

expanding impact of plasma science in addressing future technological and societal challenges.

Industry Participation and Young Researchers

IPPD 2026 witnessed enthusiastic participation from leading industries working in plasma processing, semiconductor manufacturing, vacuum technologies, and advanced materials. Dedicated industry sessions facilitated meaningful interactions between researchers and industrial experts, promoting technology transfer and strengthening academia–industry partnerships.

The conference also provided an excellent platform for young scientists and students through competitive oral and poster presentations. Researchers from premier institutions across the country showcased innovative work on plasma diagnostics, plasma medicine, semiconductor fabrication, fusion science, agriculture, environmental engineering, and advanced materials. Outstanding oral and poster presentations were recognized during the valedictory ceremony, encouraging the next generation of plasma scientists.

Special Felicitation Ceremony

A memorable highlight of IPPD 2026 was the **special felicitation ceremony honouring Prof. A. Ganguli** for his **exceptional and pioneering contributions to plasma science and technology**. Widely respected for his decades-long contributions to plasma research, scientific leadership, and mentorship, Prof. Ganguli has played a transformative role in advancing plasma science at both the national and international levels. The conference participants paid tribute to his distinguished career and enduring legacy, recognizing his invaluable contribution to the global plasma science community.



Successful Conclusion

The conference concluded with a grand valedictory ceremony, during which outstanding oral and poster presentation awards were presented to young researchers. The organizers expressed their gratitude to all invited speakers, delegates, industry partners, sponsors, organizing committee members, volunteers, and participants for making IPPD 2026 a grand success.

Speaking on the occasion, **Prof. Bibhuti Bhusan Sahu**, Convener of IPPD 2026, thanked the national and international delegates for their enthusiastic participation and emphasized that the conference had successfully created a vibrant ecosystem for scientific exchange, international collaboration, and technology development. He remarked that the overwhelming response from researchers, industries, and students demonstrates the rapidly growing importance of plasma science in addressing challenges related to clean energy, environmental sustainability, healthcare, agriculture, semiconductor technologies, and advanced manufacturing.

With the successful completion of IPPD 2026, IIT Delhi has once again strengthened its position as one of India's leading centres for plasma science and engineering research. The conference not only showcased world-class scientific advancements but also reinforced the transformative role of plasma technologies in building a cleaner, healthier, more sustainable, and technologically advanced future for society.

