

The 4th State

Newsletter of the Institute for Plasma Research, Gandhinagar, Gujarat (India)

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नराकास, गांधीनगर के तत्वावधान में प्लाज्मा अनुसंधान संस्थान के जनजागरूकता प्रभाग द्वारा शैक्षणिक कार्यक्रम का आयोजन

नगर राजभाषा कार्यान्वयन समिति, गांधीनगर के सौजन्य से प्लाज्मा अनुसंधान संस्थान के जनजागरूकता प्रभाग द्वारा दिनांक 17 मार्च एवं 20 मार्च 2025 को हिंदी में एक शैक्षणिक कार्यक्रम का आयोजन किया गया। छात्रों के बीच सरल हिंदी भाषा में प्लाज्मा विज्ञान का प्रचार-प्रसार करने के उद्देश्य से इस कार्यक्रम का आयोजन किया गया। इस शैक्षणिक कार्यक्रम में पंडित दीनदयाल एनर्जी यूनिवर्सिटी के इन्फॉर्मेशन एवं कम्प्यूनिकेशन टेक्नॉलॉजी (ICT) के 71 छात्रों और 2 संकाय सदस्यों ने भाग लिया। छात्रों को प्लाज्मा एवं इसके विभिन्न अनुप्रयोग संबंधी जानकारी देते हुए जनजागरूकता प्रभाग के सदस्य श्री गट्टू रमेश, वैज्ञानिक अधिकारी-जी ने व्याख्यान दिया। साथ ही छात्रों को प्लाज्मा प्रदर्शनी भी दिखाई गई। दिनांक 20 मार्च 2025 को पंडित दीनदयाल एनर्जी यूनिवर्सिटी के इलेक्ट्रॉनिक्स एवं कम्प्यूनिकेशन इंजीनियरिंग (ECE) के 68 छात्र ने प्लाज्मा प्रदर्शनी एवं व्याख्यान सत्र में भाग लिया। सभी छात्रों को सरल हिंदी भाषा में प्लाज्मा विज्ञान संबंधी जानकारी प्रदान की गई एवं विभिन्न मॉडल दिखाए गए।



पंडित दीनदयाल एनर्जी यूनिवर्सिटी के छात्रों को प्लाज्मा विज्ञान संबंधी जानकारी देते हुए श्री गट्टू रमेश

नराकास गांधीनगर के तत्वावधान में केंद्रीय जल आयोग, गांधीनगर में विश्व जल दिवस पर आयोजित विचार संगोष्ठी

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नराकास गांधीनगर के तत्वावधान में माही एवं तापी बेसिन संगठन, केंद्रीय जल आयोग, गांधीनगर द्वारा दिनांक 24 मार्च 2025 को विश्व जल दिवस पर आयोजित ग्लेशियर संरक्षण पर विचार संगोष्ठी में प्लाज्मा अनुसंधान संस्थान, गांधीनगर की ओर से डॉ. रितेश सुगंधी, वैज्ञानिक अधिकारी-जी और सुश्री प्रतिभा गुप्ता, वैज्ञानिक अधिकारी-एफ ने भाग लिया। इस अवसर पर नराकास गांधीनगर के विभिन्न कार्यालयों से कर्मचारी अपने विचार व्यक्त करने के लिए केंद्रीय जल आयोग के सभागार में उपस्थित थे। कार्यक्रम की शुरुआत में श्री सर्वेश कुमार तिवारी, वरिष्ठ प्रबंधक – राजभाषा, बड़ौदा एपेक्स अकादमी, गांधीनगर ने हर्षपूर्वक सूचित किया कि नराकास गांधीनगर का इस वर्ष का यह 47 वाँ कार्यक्रम है। ग्लेशियर संरक्षण पर विचार व्यक्त करने के लिए मंच पर वक्ताओं को आमंत्रित किया गया। सर्वप्रथम सुश्री प्रतिभा गुप्ता ने जल का मानव जीवन में क्या महत्व है, ग्लेशियर क्या होते हैं व उनके महत्व के बारे में बताया। साथ ही ग्लेशियर क्यों पिघल रहे हैं, उन्हें संरक्षित रखने के उपाय बताए और जल के अपव्यय को रोकने के कारगर उपाय उल्लेखित किए। डॉ. रितेश सुगंधी ने जल के महत्व के साथ आने वाले समय में जल का अपव्यय करने से जल संकट की भयावह स्थिति आने की संभावना बताई व दैनिक जीवन में जल का उपयोग विवेकपूर्ण तरीके से करने पर जोर दिया। अन्य प्रतिभागियों ने भी ग्लेशियर संरक्षण पर अपने महत्वपूर्ण विचार साझा किए। इस विचार संगोष्ठी में विशेषज्ञ के रूप में केंद्रीय जल आयोग के मुख्य अभियंता श्री एन.एन.राय द्वारा ग्लेशियर, ग्लेशियर संरक्षण, ग्लेशियर झील के फटने और ग्लेशियर के पीछे हटने के कारण बाढ़ की घटनाओं पर एक प्रस्तुति दी गई।



विचार संगोष्ठी में विचार व्यक्त करते हुए सुश्री प्रतिभा गुप्ता



विचार संगोष्ठी में विचार व्यक्त करते हुए डॉ. रितेश सुगंधी

A talk on Cyber Security Awareness

Shri Gigi Goseph, Head Security Electronics & Cyber Technology Division, CISO - BARC gave an awareness talk on cyber security. He gave an overview of the importance of cyber security at workplace, the tools which should be in place based on the need of the Institute and national security, and the role of every citizen in contributing to the safety of their beloved ones as well of self from cyber attacks. The insightful talk provided information on various types of cyber security frauds in general life. He emphasized on the importance of being vigilant while using internet services and digital media including digital arrest, share market fraud, fake id or duplicate id etc. He elaborated on the different types of cyber attacks and mentioned about preventive measures against different these attacks.



Shri Gigi Goseph giving the talk (Left Top).
Dr. Subroto Mukherjee and Ms. Kirti Mahajan felicitating the speaker (Left bottom)



Audience attending the talk (Right)

The first joint meeting between IPR and BARC was held at IPR to facilitate comprehensive technical and strategic discussions concerning the development, system integration, safety framework, budgeting, and scheduling of the Steady State Tokamak (SST) - Bharat project. The main aim of the joint meeting was to:

- Finalize project strategy, milestones, and technology scope;
- Deliberate on infrastructure, safety, and regulatory frameworks required from BARC;
- Identify joint R&D themes and formal collaboration mechanisms;
- Create a shared timeline for system integration and budgeting;
- Establish protocols for digital twins simulation and feedback from ongoing tokamak operations

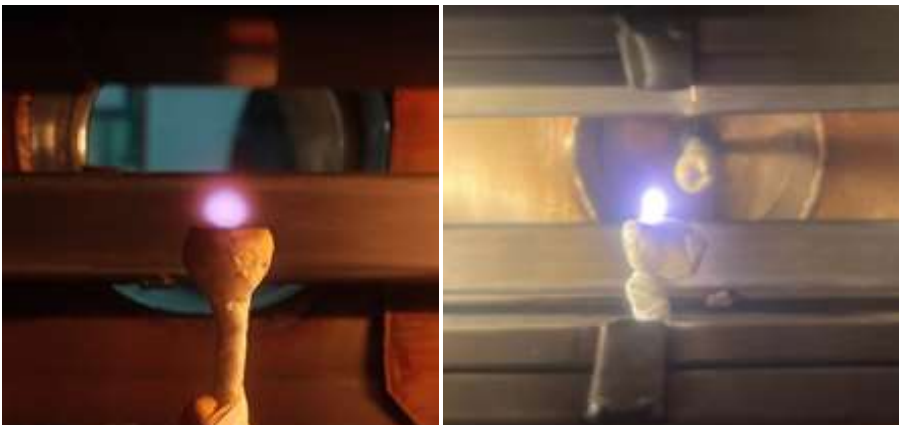
The meeting was attended by officials from BARC, including Dr. U. D. Malshe, Dr. M. L. Mascarenhas, Dr. Manoj Kumar Warriar, Dr. Rishi Verma, and Dr. P. K. Swain, and the representatives from IPR, including Director, Dr. D. K. Aswal, Dr. Prabal K. Chattopadhyay, Dr. D. Raju, Dr. Ranjana Gangradey, Dr. V. L. Tanna, Dr. Indranil Bandyopadhyay, Sh. Anil K. Bhardwaj, Sh. Ujjwal K. Baruah, Dr. Paritosh Chaudhuri, Dr. Shrichand Jakhar, Smt. Supriya Nair, Dr. Samir Khirwadkar, Dr. Joydeep Ghosh, Dr. Manoj Gupta, Dr. B. K. Shukla, Dr. Kishore Mishra, Sh. K. K. Gotewal, Sh. Upendra Prasad, Sh. A. K. Sahu, Sh. Vinay Menon, and Sh. Samiran Mukherjee. During the meeting, presentations were delivered on tokamaks ADITYA-U & SST-1, Fusion technologies capabilities at IPR and physics basis and goals of SST-Bharat. The meeting was convened by Dr. V. L. Tanna as a Member-Secretary of the Steering and Oversight Committee of SST-Bharat. The meeting was very fruitful as clear guidelines on project goals, plans and time schedule were provided by the participants.



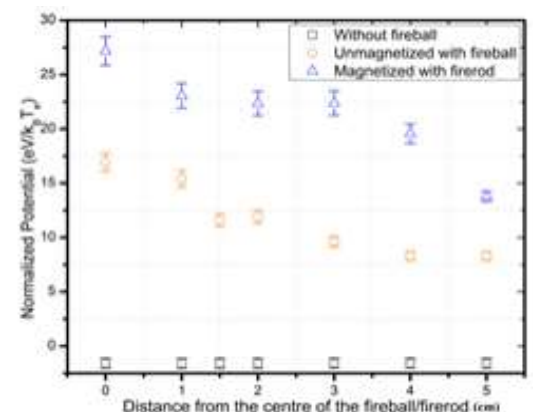
Photos of the meeting

Mimicking the Earth's Magnetospheric Plasma Environment

The scientific community remains keenly interested in the ongoing study of Earth's magnetospheric plasma. At the dusty plasma laboratory of CPP-IPR, researchers are actively recreating the effects observed in double layer structures within this plasma. A comparative analysis has been conducted, highlighting the differences between double layers forming in the ionosphere and those in the magnetosphere. A simple experimental setup is being utilized to produce firerods and fireballs, with and without a permanent bar magnet. The magnet's south pole is oriented upwards, effectively mimicking Earth's magnetic field. The stainless-steel plate's tip, where this fireball/firerod originates, is considered an analogue to Earth's north pole. Findings conclusively illustrate the alterations in the double layer caused by the magnetic field's influence. A team comprising of J. Goswami, D. Goswami, G.D. Sarma, B. Chutia, N. Das, S.S. Kausik, and B.K. Saikia is involved in this work. Currently, the team is focusing their efforts on investigating self-influenced wave generation by the fireball/firerod.



Digital Pictures of Fireball and Firerod



Effect of Magnetic field on Double layer formation

Successful development of Prototype Center Stack (PCS) for Spherical Tokamak Configuration

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The Prototype Center Stack (PCS) assembly, a critical and complex system in the Spherical Tokamak configuration, has been successfully developed. A key feature of this PCS is its compact and modular design, which allows the integrated Ohmic Heating (OH) coil and Toroidal Field (TF) coil assembly to be dismantled without removing the vessel or other associated subsystems. This tight-tolerance center stack technology has been demonstrated for the first time in India, and the PCS meets the required specifications. The Vacuum Pressure Impregnation (VPI) process for the integrated TF coil inner bundle and OH coil assembly has been successfully completed. Stage-by-Stage Insulation Resistance (IR) checks were performed throughout the assembly process to ensure quality and reliability.



PCS installed at IPR

The coils were also tested for High-Potential (Hi-Pot) and resistance, and inductance measurements have been conducted, which match the design values. The assembly has been erected at IPR and necessary tests have been conducted.



Colloquium @ IPR # 342

Title: **Effects of magnetic field gradient and sidewalls on liquid-metal magnetoconvection**

Speaker: **Dr. Shashwat Bhattacharya**, IIT Mandi

Date: **16th April 2025**

Abstract: The design of liquid metal cooling blankets in fusion reactors using magnetic confinement requires a thorough understanding of the flow inside the blankets. Such flows are magnetoconvective; they are impacted by strong temperature gradients along with magnetic fields. In this talk, I will present my recent research on the effects of magnetic field gradients and sidewalls on liquid-metal magnetoconvection. A spatially varying magnetic field is created in the gap between two semi-infinite planar magnetic poles, with the convection layer located near the edge of the gap. We employ direct numerical simulations in this setup for fixed Rayleigh and small Prandtl numbers but vary the fringe width by controlling the gap between the magnetic poles and the convection cell. It is observed that as the local vertical magnetic field strength increases, the large-scale structures become thinner and align themselves perpendicular to the longitudinal sidewalls. We determine the local Nusselt number as a function of the local Hartmann number (based on the vertical component of the magnetic field) and estimate the global heat transport. We show that the global heat transport decreases with increasing fringe width for strong magnetic fields. The convective motion becomes confined to the vicinity of the sidewalls in the regions of strong magnetic fields. These so-called wall modes align themselves along the direction of the resulting magnetic fields.



Dr. Shashwat Bhattacharya delivering his talk



Audience at the Colloquium Talk

Title: **Perspectives and challenges within the development of nuclear fusion energy**

Speaker: **Prof. Lee William Packer, United Kingdom Atomic Energy Authority, Oxfordshire, U.K**

Date: **23rd April 2025**

Abstract: Fusion energy has the potential to provide safe, low-carbon energy for future generations. At the same time, fusion is one of the greatest scientific and engineering challenges of our time. Progress made, with notable recent scientific achievements at JET and NIF among others have sparked a global surge in interest and commitment to advancing fusion technologies. Deuterium–tritium fueled fusion power-plant technologies must be designed with a highly neutron-rich environment in mind, necessitating deep understanding of the associated nuclear fields, with innovative solutions being required for the development of key technologies, such as the tritium breeding blanket. Applied nuclear science, neutronics & nuclear data, neutron source technologies and modern nuclear diagnostics, play an essential role in advancements. Inherent are the needs for the development of a highly skilled, multidisciplinary workforce to navigate the complex range of fusion R&D topics. This talk will delve into the role of nuclear science, particularly neutronics, applied to challenges in nuclear safety, tritium fuel cycle, waste management and proliferation topics, all of which require ongoing dedicated efforts by the international community. Beside some international perspectives, the speaker will provide an update on the fusion landscape and developments within the UK, including the recently updated UK government fusion strategy.



Prof. Lee William Packer



Prof. Packer delivering his talk



A section of the Audience



Audience at the Colloquium Talk

The Thermal Shield Cold Valve Box (TCVB), which is part of the ITER Thermal Shield Cooling System, has successfully passed its factory acceptance test. The TCVB is one of seven Cold Boxes forming part of the ITER cryo-distribution system, which will be supplied by India to the ITER Organization. TCVB plays a key role in managing helium flow at 80K, ensuring efficient cooling and thermal stability for the ITER Thermal Shield (TS) system, which consists of approximately 950 tons of thermal shield panels made of stainless steel.

The TCVB is a horizontal cylindrical unit, approximately 8 meters long, 2.5 meters in diameter, and gross weight of ~18.5 tons. It is equipped with 19 cryogenic control valves, 9 flow meters, pressure transmitters, temperature transmitters, and other instruments. The largest valve, DN 200, weighs around 450 kg and is designed to handle a high helium mass flow of 3.1 kg/s at 80 K. As a Quality Class-1 component, it meets stringent manufacturing standards in compliance with European Pressure Equipment Directives, including 100% radiographic testing (RT) of process weld joints and helium leak testing with an allowable leakage rate of 1×10^{-8} mbar l/s per weld, ensuring high performance and reliability.

The construction and testing of the TCVB involved precise engineering, advanced welding techniques, and rigorous quality control to withstand extreme cryogenic conditions. Its successful completion marks a major milestone in the development of the ITER cryo-distribution system.

Team members: Mr. Nitin Shah, Mr. Vinit Shukla, Mr. Uday Kumar, Mr. Jotirmoy Das, Mr. Anuj Garg, and Mr. Bikash Dash



Figure shows the Thermal Shield Cold Valve Box at the workshop during Factory Acceptance Test

Superannuation

Happy
Retirement



Shri. Surendrasinh J Jadeja superannuated from services on 30th April 2025. He has served the Institute for more than 36 years in IPR Workshop.

**IPR newsletter team wishes him a Happy and
Healthy retired life.**

Experimental and Simulation studies of effective Thermal conductivity of compressed and uncompressed pebble beds for fusion blankets by Harsh Patel

This work focuses on the thermal characterization of ceramic pebble beds used in the tritium breeder zones of fusion reactor blankets. Two setups based on the transient hot-wire method were developed – a preliminary setup for measuring effective thermal conductivity (k_{eff}) of uncompressed beds in helium environment at high temperatures, and a final advanced setup with compression capability.

The final setup integrates a modified Universal Testing Machine (UTM) with a split-tube radiation furnace, a vacuum chamber (a quartz tube with two water-cooled flanges), an insulator assembly, a chiller, a DC power supply, and a data logger. It enables precise k_{eff} measurements under different stress conditions (up to 16 MPa), helium pressure (up to 4 bar), and temperature (up to 1000 °C). A 4-wire assembly placed inside the test sample, electrically isolated within a vacuum-sealed environment, enables resistance-based temperature measurement. A 0.5 mm platinum hot-wire is used to minimize heat capacity and axial heat flow errors, and the design also eliminates the Seebeck effect. Measurement accuracy was validated within $\pm 1.5\%$ using ASTM D5334–08 standard.

Alongside experiments, Discrete Element Method (DEM) simulations were performed in STAR-CCM+ to study the packing of spherical and ellipsoidal pebbles under various vibration conditions. Python scripts were developed to compute local/area packing fractions and to eliminate point contacts between pebbles using two approaches, enabling successful meshing. The resulting geometries were used in ANSYS for thermal simulations to evaluate temperature distribution and k_{eff} .

This work enhances the understanding of breeder material behaviour under fusion blanket conditions.

Publications:

[1] **H. Patel**, M. Panchal, A. Saraswat, N. Patel, P. Chaudhuri, Simultaneous measurement of effective thermal conductivity and effective thermal diffusivity of Li_2TiO_3 pebble bed using transient hot-wire technique, *Fusion Eng. Des.* 171 (2021) 112564. <https://doi.org/10.1016/j.fusengdes.2021.112564>.

[2] **H. Patel**, M. Panchal, P. Chaudhuri, An apparatus to measure thermal conductivity of ceramic pebble beds under uniaxial compressive stress, *Measurement*. 230 (2024) 114484. <https://doi.org/10.1016/j.measurement.2024.114484>.

[3] **H. Patel**, M. Panchal, P. Chaudhuri, Estimation of Effective Thermal Conductivity of Spherical and Ellipsoidal Shaped Randomly Packed Mono-Sized, Binary-Sized, and Poly-Dispersed Ceramic Pebble Beds, *IEEE Trans. Plasma Sci.* 52 (2024) 4023–4029. <https://doi.org/10.1109/TPS.2024.3433449>.

Patent filed:

[1] **H. Patel**, M. Panchal, P. Chaudhuri, A modular apparatus to measure thermal conductivity of electrically non-conductive pebble beds under compressive stress, 202321042346, 2023.



Harsh Patel with his experimental set-up

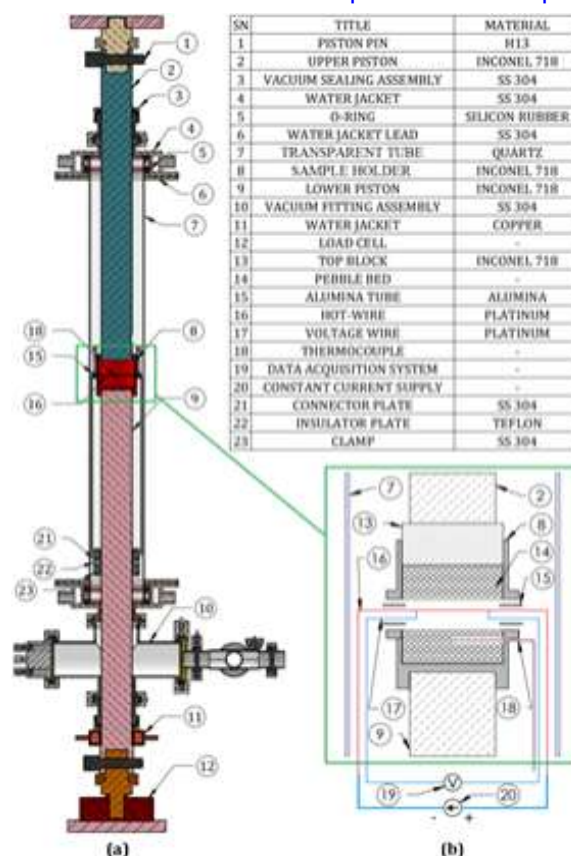


Fig.1 Schematic of the experimental set-up

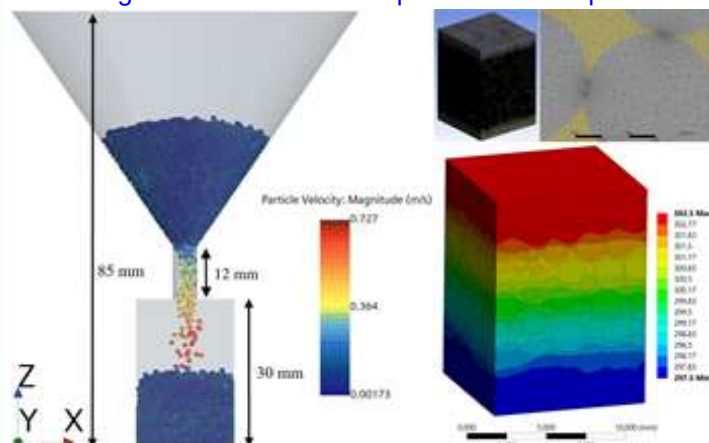


Fig.2 DEM and Thermal simulation of pebble beds

AIC-IPR Plasmatech Update: Signing of Incubation Agreements with Startups

AIC-IPR Plasmatech Innovation Foundation (AIC-PLASMATECH, IPR's technology incubator) is delighted to announce a significant step forward in our mission to nurture deep-tech innovation. This month, AIC-PLASMATECH have formally executed 2 nos of incubation agreements & 2 nos of technology transfer agreements with startups working in the field of plasma-based technologies. These startups were selected following a rigorous evaluation process and are now on boarded to receive comprehensive support through our incubation ecosystem — including technical mentoring, access to infrastructure, business development assistance, and networking opportunities.

Coldray Plasma Labs: Coldray Plasma Labs is a medtech startup focused on developing a compact, low-temperature plasma jet device aimed at promoting faster wound healing, with a special emphasis on chronic wounds and diabetic ulcers. This innovative technology leverages the unique properties of cold atmospheric plasma — including antimicrobial action, stimulation of cell regeneration, and improved blood microcirculation — to offer a non-invasive approach. With diabetic wounds being a major global healthcare concern, this plasma-based solution holds the potential to significantly reduce healing time, lower the risk of infections, and enhance the quality of life for patients.

The startup was incubated on 9th April 2025 (Wednesday) followed by execution of a technology knowhow and license agreement on 25th April, 2025 (Friday). With this knowhow transfer, the startup will now be able to make a prototype device for demonstration and further regulatory clearances.



Incubation agreement execution with Coldray Plasma Labs on 9th April 2025



Execution of technology knowhow and license agreement with Coldray Plasma Labs on 25th April 2025

Pedocrown Dental Private Limited: Pedocrown Dental Private Limited is a dentistry startup founded by dentists Dr. Yash Bafna and Dr. Madhulika Bafna. The startup (Pedocrown) is developing a cost-effective, plasma activated water based solution (PAW-G) for the preservation of natural teeth that are avulsed due to accidents or injuries. The solution aims to significantly enhance the viability of dental tissues, thereby increasing the chances of successful reimplantation. This innovation holds particular promise in emergency care and trauma scenarios, offering a practical and accessible alternative to existing preservation methods, especially in resource-constrained settings. By combining plasma science with dental health, the startup is paving the way for improved clinical outcomes and patient care.

AIC– IPR Plasmatech Update: Signing of Incubation Agreements with Startups



Incubation agreement execution with Pedocrown Dental Pvt. Ltd. on 9th April 2025

Ecoplaswa Technology Private Limited: Ecoplaswa Technology Private Limited, an agritech startup founded by Ms. Sowmya R. S. is incubated at AIC-IPR Plasmatech Innovation Foundation and into the development of Activated Plasma Water based products for Dairy and agricultural applications. Agreement for transfer of knowhow and license for Plasma Activated Water generation device has been executed between AIC-IPR Plasmatech Innovation Foundation and Ecoplaswa Technologies Private Limited on 25th April 2025 enabling the startup to now start manufacturing the prototype.



Execution of technology knowhow and license agreement with Ecoplaswa Tech Pvt. Ltd. on 25th April 2025

These collaborations underscore our commitment to fostering deep-tech entrepreneurship and supporting technologies that have a tangible societal impact. With plasma science at the core of their innovation, we are excited to see how these startups progress during their incubation journey.

Date	Institution	Visitors
05-March-2025	Bahauddin Science College, Junagadh, Gujarat	12 students of BSc. and 5 faculty
12 March 2025	BVM Computer Engineering College, Anand	66 students of CSE and 3 faculty
17 March 2025	Pandit Deendayal Energy University, Gandhinagar	71 students of ICT and 2 faculty (Batch 1)
17 March 2025	Pandit Deendayal Energy University, Gandhinagar	70 students of ICT and 2 faculty (Batch 2)
18-March-2025	Pandit Deendayal Energy University, Gandhinagar	70 students of ICT and 2 faculty (Batch 3)
18-March-2025	Pandit Deendayal Energy University, Gandhinagar	59 students of ICT and 2 faculty (Batch 4)
20-March-2025	Pandit Deendayal Energy University, Gandhinagar	68 students of ECT and 2 faculty (Batch 1)
20-March-2025	Pandit Deendayal Energy University, Gandhinagar	69 students of ECT and 2 faculty (Batch 2)
21-March-2025	Pandit Deendayal Energy University, Gandhinagar	59 students of ECT and 2 faculty (Batch 3)
28-March-2025	Pandit Deendayal Energy University, Gandhinagar	38 students of CSE and 2 faculty



Group Photos of the Students and Faculty from Bahauddin Science College, Junagadh, Gujarat



Group Photos of the Students and Faculty from BVM Computer Engineering College, Anand



Group Photos of the Students and Faculty from PDEU, Gandhinagar



Group Photos of the Students and Faculty from PDEU, Gandhinagar



Plasma Exhibition at IIT Jammu

IPR, Gandhinagar, in association with IIT-Jammu (J&K) organized an exhibition on Plasma, "The Fourth State of Matter" at IIT-Jammu during 17 -21 Mar, 2025. This program is a part of IPR's scientific outreach activity in various states of India under the auspices of "70 years of DAE" celebrations.

Over 1500 students and teachers from 19 schools and general public visited exhibition. 30 teachers were trained from host institute to explain the static and working models and resource materials during this exhibition.





Glimpses of the Plasma Exhibition held at IIT Jammu

Date	Institution	Visitors
09-April-2025	Department of Physics, Tezpur College, Assam	17 students of BSc and 2 faculty



Group Photos of the Students and Faculty from Tezpur College, Assam

- ◆ **P. A. Rayjada**, gave an invited talk on "Electron Spectroscopy and Electronic Structure of Materials" at National Symposium on Advanced Material Processing and Characterization (NSAMPC-2025), Sardar Patel University, Vallabh Vidyanagar, 4th March 2025
- ◆ **P. Chandrakanta Singh**, gave a talk on "Analysis of LIBS signals on laser induced textured surface" at 33rd DAE-BRNS National Laser Symposium (NLS-33), Medi-caps University, Indore, 6-9 March 2025
- ◆ **Dr. Jyoti Pandey**, Extreme Light Infrastructure - Nuclear Physics(ELI-NP), Romania, gave a talk on "Nuclear Data for fusion and astrophysical applications" on 28th March 2025
- ◆ **Mr. Vyom Desai**, gave a talk on "Synthesis and application studies of Ti₃AlC₂ MAX phase material" on 2nd April 2025
- ◆ **Dr. Mohan Subramaniam**, CSIR-National Chemical Laboratory, Pune, gave a talk on "The Perfect Blend: How Phase Connectivity Shapes Magnetoelectric Composites" on 4th April 2025
- ◆ **Mr. Ankit Dhaka**, gave a talk on "Experimental and Molecular Dynamics Studies of Transport Phenomena in a Complex Plasma" on 15th April 2025
- ◆ **Dr. Shashwat Bhattacharya**, Indian Institute of Technology, Mandi, gave a talk on "Effects of magnetic field gradient and sidewalls on liquid-metal magnetoconvection" on 16th April 2025 (**Colloquium #342**)
- ◆ **Mr. Debrup Mukhopadhyay**, gave a talk on "Comparative study of negative hydrogen ion density measurement through enhancing technical competency of various diagnostics in RF plasma" on 17th April 2025
- ◆ **Dr. Souryadipta Maiti**, Banaras Hindu University, Varanasi, gave a talk on "Design studies of apodized fiber Bragg grating for refractive index sensing applications" on 17th April 2025

Upcoming Events

- ◆ Nuclear and Emerging Technologies for Space (NETS 2025): Powering Today's Ambitions to Reach Tomorrow's Realities, Huntsville, 4-8 May 2025; <https://www.ans.org/meetings/nets2025/>
- ◆ Karlsruhe International School on Fusion Technologies, Karlsruhe, Germany, 7-15 May 2025; <https://summerschool.fusion.kit.edu/>
- ◆ Joint ICTP-IAEA Fusion Energy School, Trieste, Italy, 12-23 May 2025; <https://indico.ictp.it/event/10834>
- ◆ 2nd Global Forum and International Conference on Industrial Plasma Processes and Diagnostics (IPPD 2025), Indian Institute of Technology (IIT) Delhi, 18-20 May 2025; <https://ippd2025iitd.wixsite.com/my-site-1>
- ◆ 26th joint Cryogenic Engineering Conference and International Cryogenic Materials Conference (CEC/ICMC 2025), Reno, Nevada, 18-22 May 2025, <https://www.cec-icmc.org/2025/>
- ◆ 10th International Conference on the Physics of Dusty Plasmas (ICPDP 2025), Netherlands, 18-22 May 2025; <https://icpdp2025.dryfta.com/>
- ◆ 25th Topical Conference on Radio Frequency Power in Plasmas (RFPPC2025), Hohenkammer, Germany, 19-22 May 2025; <https://www.ipp.mpg.de/rfppc2025>
- ◆ 20th International Conference in Plasma-Facing Materials and Components for Fusion Applications (PFMC-20), Ljubljana, Slovenia, 19-23 May 2025; <https://pfmc20.com/>
- ◆ 2025 IEEE International Conference on Electrical Energy Conversion Systems and Control (IEEE IEECS 2025), Chongqing, China, 23-25 May 2025; <https://ieee-ieecsc.net/>
- ◆ 7th International Workshop on Models and Data for Plasma-Material Interaction in Fusion Devices (MoD-PMI 2025), IAEA, Vienna, 26-28 May 2025; <https://conferences.iaea.org/event/403/>

Outstanding Internal Reviewers

The publication committee would like to thank the reviewers for their invaluable contribution in maintaining the quality and integrity of our publications. A total of 91 reviewers were engaged in reviewing our publications for the year 2024-25. The following reviewers contributed to the most number of reviews:

1. **Mr Rajan Babu** - Reviewed 5 publications
2. **Dr C. Balasubramanian, Dr Nirmal Bisai and Mr H. L. Swami** – Reviewed 4 publications each

Congratulations to the outstanding reviewers!!



The IPR Staff Club organized the final match of the football tournament, which commenced on 20th February 2025. The tournament featured five teams from IPR competing in a round-robin format, with a total of 10 matches played during the league stage. Following a series of highly competitive games, two teams have successfully advanced to the finals, these are: Team 1: J.M.D and Team 2: Scholar FC



Group photo of both the teams with Dean (R&D), Dean (Admin), ACAO and the Secretary and President of the Staff Club



Dr. Subroto Mukherjee giving the winner trophy to Scholar FC (Left), and the runners-up Team J.M.D. (Right)



Dr. Raj Singh receiving the Most Senior Player award (left), Mr. Suman Dulai receiving the best player award (centre); Mr. Marshal Soren receiving the best scorer award (right) from Dr. Subroto Mukherjee

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नराकास, गांधीनगर के तत्वावधान में प्लाज्मा अनुसंधान संस्थान के जनजागरूकता प्रभाग द्वारा शैक्षणिक कार्यक्रम का आयोजन	01	Thermal Shield Cold Valve Box (TCVB) Development	06
नराकास गांधीनगर के तत्वावधान में केंद्रीय जल आयोग, गांधीनगर में विश्व जल दिवस पर आयोजित विचार संगोष्ठी	02	Superannuation	06
A talk on Cyber Security Awareness	02	Doctoral Research Spotlight	07
SST-Bharat - the 1st Joint Meeting between IPR and BARC	03	AIC-PLASMATECH Update: Signing of Incubation Agreements with Startups	08-09
Mimicking the Earth's Magnetospheric Plasma Environment	03	Academic Visits to IPR	10-12
Successful development of Prototype Center Stack (PCS) for Spherical Tokamak Configuration	04	Plasma Exhibition at IIT Jammu	12-13
Colloquium @ IPR (# 342 & #343)	04-05	Academic Visits to CPP-IPR	14
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Know Your Colleague



Mr. Shahrukh Barejia has been contributing to the advancement of fusion science since joining the Institute in 2016 as a Scientific Officer - C. He completed his Bachelor of Science (BSc.) in the year 2013 from St. Xaviers' College, Ahmedabad. He has done his Master's in Physics (2015) from IIT Delhi. Mr. Barejia began his journey in the Fusion Reactor Design Division (FRDD), where he worked until 2020. He is currently working as Scientific Officer-D at the Multidisciplinary Research Division (MRD). He delves into theoretical research on disruption prediction in Tokamak plasma and investigates the environmental transport of Tritium from nuclear facilities. Beyond his professional endeavours, Mr. Barejia actively bridges the gap between science and society by writing insightful Hindi articles for the "Plasma Jyoti" magazine, making complex concepts accessible to the general audience

Down the Memory Lane



(L-R) Dr. Chenna Reddy, Prof Y C Saxena and Padmashri Prof P I John in an engaging discussion

Quote of the Month

"None of us is as smart as all of us."

--Ken Blanchard

The IPR Newsletter Team

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