



The 4th State

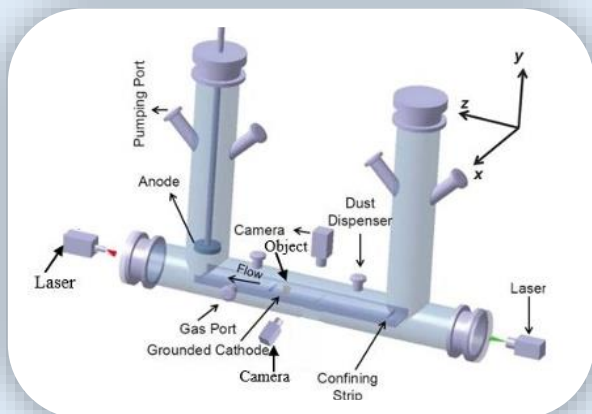
Newsletter of the Institute for Plasma Research, Gandhinagar, Gujarat (India)

Issue 157

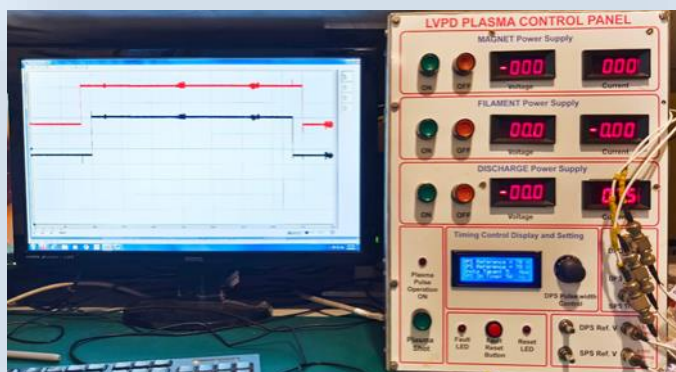
August 2026

Highlights of the Issue

DPEX Device



EMCS for LVPD



SSP2026

ग्रीष्मकालीन स्कूल कार्यक्रम 2026
SUMMER SCHOOL PROGRAM 2026

25 मई - 3 जुलाई 2026
 25th May - 3rd July 2026

प्लाज्मा अनुसंधान संस्थान
 Institute for Plasma Research

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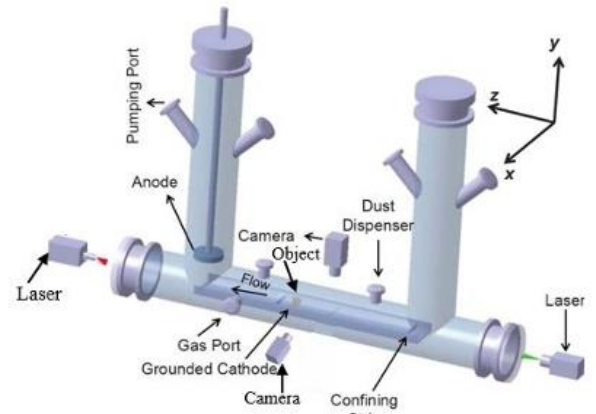
Unveiling Multidimensional Pinned Solitons in a Dusty Plasma

Researchers at the Institute for Plasma Research have made the first experimental observation of a new type of nonlinear wave, known as multidimensional pinned solitons, in a laboratory dusty plasma. The findings provide insights into the fascinating behaviour of waves in plasmas and may contribute to future space science and plasma technologies. A soliton is a special kind of wave that can travel over long distances without losing its identity. Unlike ordinary waves that gradually spread out and weaken, solitons maintain their identity because two opposing effects—nonlinearity and wave dispersion—remain in perfect balance. Such waves are found in many areas of physics, including fluids, optical fibers, and plasmas.

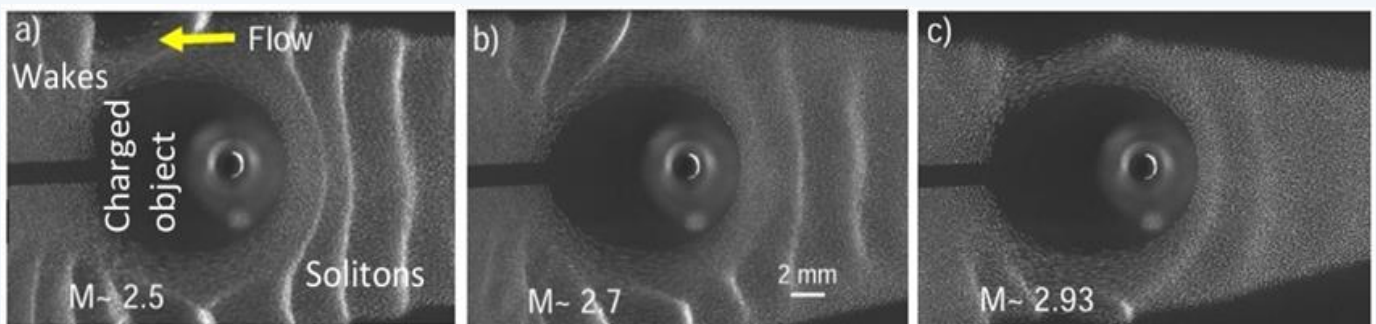
When an object moves through a medium faster than the speed at which waves normally travel, it can generate unusual wave patterns. One such pattern is a precursor soliton, which forms ahead of the moving object. At even higher speeds, another remarkable phenomenon can occur: instead of moving away, the wave remains attached to the object, forming a stationary structure known as a pinned soliton. These structures have attracted significant scientific interest because they may help improve techniques for detecting fast-moving objects, such as orbital debris in Earth's ionosphere.

In this study, researchers recreated these conditions in a controlled laboratory using a dusty plasma—a plasma containing tiny charged dust particles that make plasma behaviour directly visible. By allowing the dust cloud to flow at supersonic speeds around specially designed cylindrical and spherical charged obstacles, the team observed stationary wave structures forming in front of the objects. These pinned solitons consisted of multiple peaks, and interestingly, the number of peaks decreased as the flow speed increased, revealing how the wave structure evolves with changing conditions. To confirm the experimental observations, the team performed detailed molecular dynamics simulations and solved numerically the forced Kadomtsev–Petviashvili (f-KP) equation for experimental conditions. Both approaches successfully reproduced the experimentally observed stationary, multi-peaked wave structures. The excellent agreement between experiments, simulations, and theory provides compelling evidence for the existence of multidimensional pinned solitons.

This work represents an important advance in the study of nonlinear wave phenomena in complex plasmas. Beyond improving our understanding of fundamental plasma physics, the results may inspire future research on wave dynamics in laboratory and space plasmas and could ultimately contribute to technologies for monitoring and detecting space debris in Earth's near-space environment.



Schematic diagram of the dusty plasma experimental (DPEx) device



Typical experimental images showing cylindrical pinned solitons with (a) three, (b) two, and (c) one hump, observed at Mach numbers $M \approx 2.5$, 2.7 , and 2.93 , respectively. As the flow velocity increases, the stationary pinned soliton evolves from a multi-humped to a single-humped structure.

This work is featured in the list of selected papers by the Editorial Board for recognition and inclusion in the annual [Physics of Plasmas Early Career Collection 2025](#).

The published work titled “**Experimental, simulation, and theoretical studies of nonplanar pinned solitons in a dusty plasma**” is authored by Prasanta Amat, Pintu Bandyopadhyay, Krishan Kumar, Ajaz Mir, and Abhijit Sen, published in Phys. Plasmas 32, 073701 (2025). <https://doi.org/10.1063/5.0272749>



Embedded Master Control System (EMCS) for LVPD

Large Volume Plasma Device – Upgrade (LVPD-U) is a fundamental Plasma Physics device dedicated to mimicking waves of ionosphere in a laboratory device attaining near boundaryless plasma wave studies apart from some specific fusion relevant studies due to a simpler geometry with greater accessibility and range of available invasive and non-invasive probing diagnostics.

Recently Embedded Master Control System (EMCS) for synchronized operation of multiple power supplies in LVPD has been designed, implemented and installed inside EMI/RFI shielded control room for an enhanced pulsed plasma operation timing having plasma period stretchable between 10ms to 50ms as per the experimental needs.

EMCS offers a Unified monitoring and control panel for operation of 8 different CW and pulse power supplies ranging from 70V up to 25 kV and current ranging from ~ 100's A to 10kA having specific functionalities that are essentially needed to be operated together in a predefined and precisely timed manner considering every failure condition for safer operation. EMCS facilitates user to manually operate and command CW power supplies through manual operations while it takes vital control of the pulsed power supplies through Microcontroller based control while ensuring sequential operation along with current amplitude controls and also ensuring any transient fault that needs to be handled in real time.

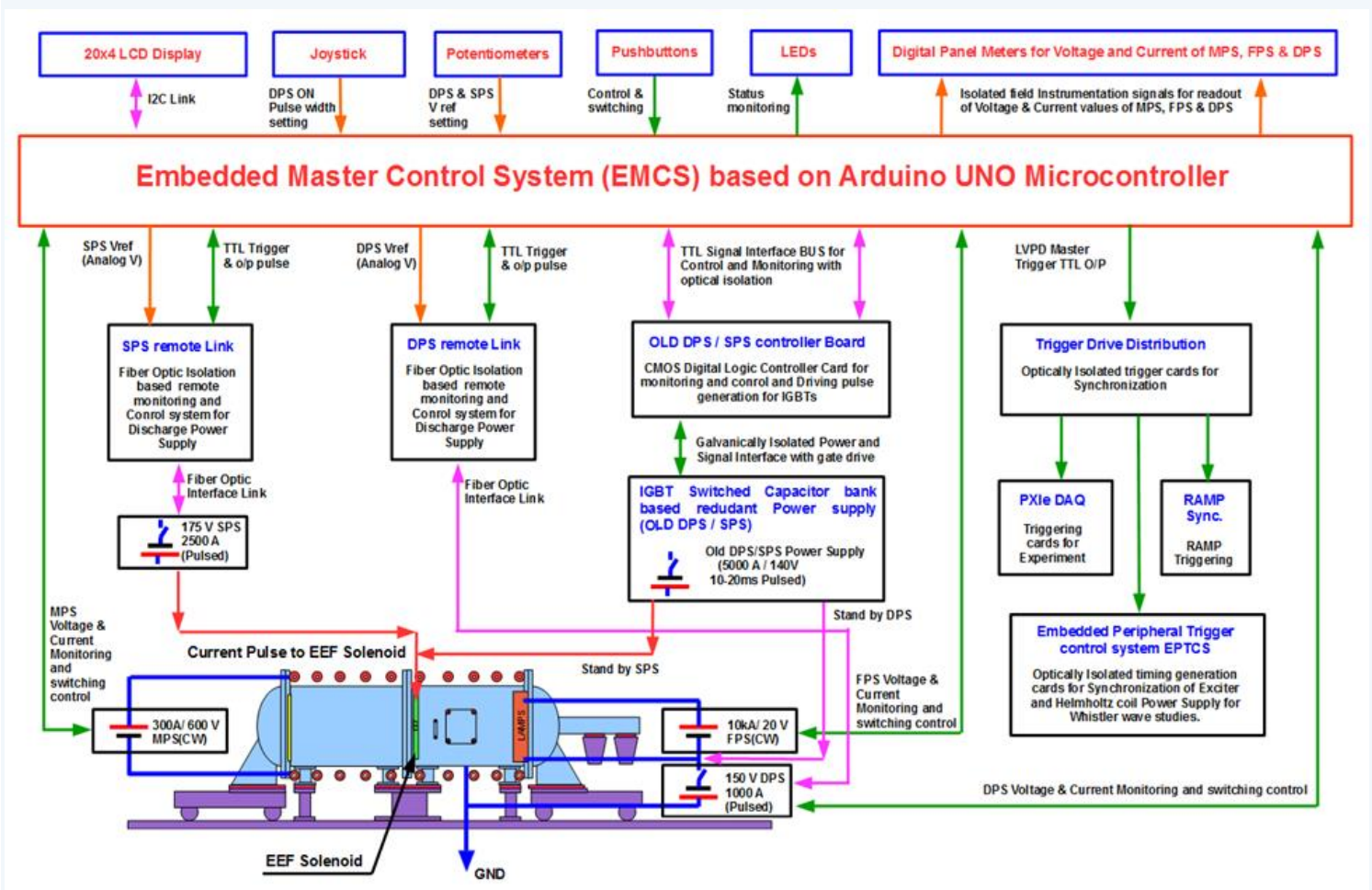


Figure: Schematic of LVPD with Embedded Master Control System (EMCS) functionalities

An Arduino-UNO based microcontroller board is used for precise timing of 3 heterogeneous power supplies that are directly operated in pulsed mode apart from generating Master trigger for Data Acquisition, Signal Conditioning rack and Peripheral Trigger Control systems which also further operates Helmholtz Power Supply (120V-1000A) and Exciter Power Supply Thyatron switched PFN (25kV-200A on 50Ω Loop Antenna).



Embedded Master Control System (EMCS) for LVPD

EMCS microcontroller board controls Discharge Power supply (DPS), Solenoid Power Supply (SPS) by generating unique TTL timing pulses for their Turn ON and Turn OFF along with their capacitor banks charging voltage monitoring & controls along with a handling a complex TTL handshaking of an old DPS/SPS which is a redundant facility that is kept working alongside for managing immediate replacement to either DPS or SPS failure situations.

Photo: SPS and DPS



Following picture shows unified EMCS control panel installed and functioning in LVPD-U. This system has been designed for a rugged operation by incorporating Optical and Galvanic isolations in place utilized in every control and monitoring interface and has till now produced more than 5000 plasma shots that are acquired for different experimental campaigns without any failure.

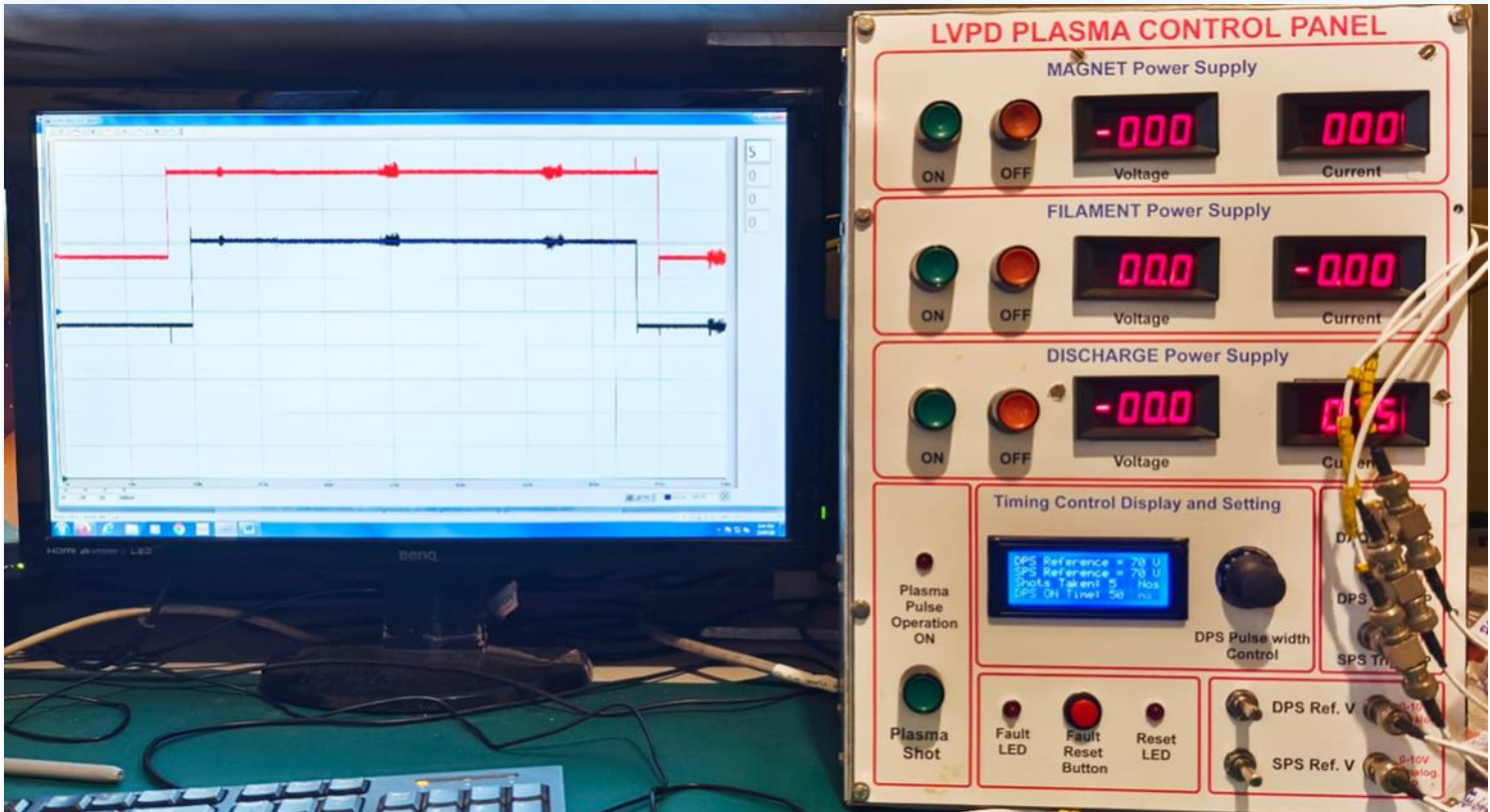


Photo: EMCS controlled plasma operation in LVPD

The biggest merit of adopting this system using the most widely available and with basic microcontroller board *v.i.z.*, Arduino-UNO with Microchip ATmega328P running at 16MHz. It is affordable and better digital timing accuracies are now achievable in comparison to the previous timing generator ICs like 74LS121. Previously the multi-turn potentiometers for RC control were only able to reach just around 1% while EMCS is able to achieve better than 0.01% for plasma duration. Pulse width jitters of 0.012% is now achievable instead of about 1% that could be attained at the best in past. Timing pulse width generation with Arduino-UNO board for 50ms (50000 μ s) pulsing deviates for just < 20 μ s while it's jitter is less than 6 μ s even for 50ms plasma operation which is an excellent scenario for controlled plasma production. EMCS is a standalone system that allows user to change Plasma Pulse width in steps of 1ms with a joystick without the need of any PC control. It is instantly ready for single shot and multiple burst operations with complete safety.



Indian Patent Granted for invention on an apparatus to measure thermal conductivity

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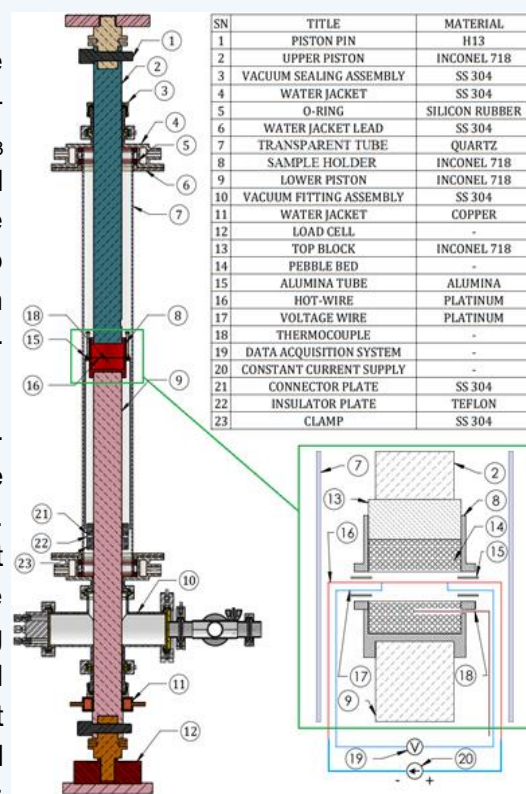
Indian Patent no. 585688 titled “A modular apparatus to measure thermal conductivity of electrically non-conductive pebble beds under compressive stress” by Harsh Patel, Maulik Panchal, Paritosh Chaudhuri was granted on 30 March 2026.

About the Invention: Understanding heat transfer in granular materials (pebble beds) is critical for the design of tritium breeder units of fusion reactor blankets. The present invention relates to the measurement of the effective thermal conductivity (k_{eff}) of ceramic pebble beds. The apparatus comprises a sample holder carrying pebbles with a hot-wire assembly (acting as a thermal conductivity measurement sensor) embedded inside it. This sample holder, with a top block (securing the pebbles), is placed between two pistons for mechanical compression of the pebble bed. The four wires extending out of the sample holder are attached to an insulation assembly connected to the bottom of the lower piston, ensuring electrical isolation and leak-tight sealing of these wires. This entire assembly is enclosed by a quartz tube, which forms a leak-proof gas environment with two water-cooled flanges at its ends. The entire assembly is surrounded by a radiation furnace, which provides the necessary heat for high-temperature measurements.

Capabilities: The apparatus is capable of measuring k_{eff} of pebble beds under fusion blanket operating conditions, i.e., cyclic thermo-mechanical loading in a helium gas environment. The k_{eff} of Li_2TiO_3 pebble beds has been measured under constant and cyclic mechanical stress up to 6 MPa (16.4 kN) in helium and air environments over the temperature range from room temperature to 800°C. However, the setup is capable of independent control of the operating parameters: maximum temperature up to 1000°C, maximum load of 50 kN, and maximum helium pressure of 4 bar.

Key Innovation: The patented apparatus introduces a novel implementation of the 4-wire resistance temperature detection technique within a transient hot-wire system operating under compressive loading. A specially designed modular insulation and sealing arrangement enables complete electrical isolation of the sensing wires while maintaining a leak-proof vacuum or controlled gas environment during mechanical compression at high temperatures. Unlike conventional systems that employ thermocouples attached to the hot wire, the present apparatus directly determines the hot-wire temperature from its electrical resistance. This approach provides several important advantages: (1) direct and instantaneous temperature measurement of the heating wire; (2) average temperature measurement over the active hot-wire length; (3) elimination of thermocouple-related measurement errors; (4) ability to use a fine bare hot wire, improving the approximation to an ideal line heat source; and (5) improved measurement accuracy ($\pm 1\%$), repeatability (standard deviation $< 1\%$), and reduced experimental uncertainty ($< 3\%$).

Industrial applicability: Originally developed for the characterization of ceramic breeder pebble beds for fusion reactor blankets, the apparatus serves as a versatile thermo-mechanical characterization platform for ceramic and refractory materials, packed-bed thermal energy storage systems, packed-bed heat exchangers, hydrogen storage and gas separation materials, powder metallurgy, thermal insulation materials, porous ceramics, granular catalyst beds, and advanced composite and porous materials.



Schematic of the system



Summer School Program 2026 (SSP2026) at IPR

The Summer School Program (SSP) provides a motivating opportunity for young students (B.E./ B.Tech./ M.Sc.) with diverse technical backgrounds by introducing them to the Institute for Plasma Research (IPR's) innovative R&D activities. This year the six weeks SSP2026 was conducted from 25th May, 2026 to 03rd July, 2026. A Total of 41 students from various universities across the country participated in this programme.

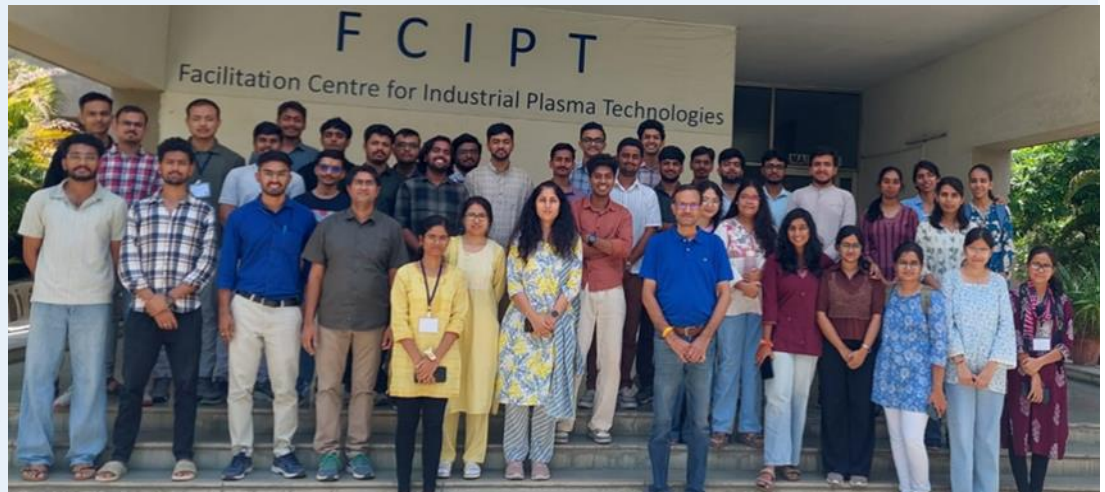
The SSP-2026 started with a welcome note by Dr. Devendra Sharma (Chairperson, SSP2026) and an introductory session by Dr. Daniel Raju (Dean Academic) on R&D activities at IPR, followed by the library orientation to the student and the physical tour of the library. Students were provided an insight into the plasma physics and associated technologies through various lectures on theoretical & experimental plasma physics,



Dr. Devendra Sharma (SSP2026, Chairperson) welcoming and giving introduction

plasma diagnostics, heating and current drives, plasma simulations, numerical methods for Tokamak, fusion technologies (such as superconducting magnets and cryogenics, fuelling, automation & remote handling, AI-ML applications & digital twin, data acquisition and signal conditioning, etc.) along with the visits to various laboratories (BETA, ITER-IN, New R&D, etc.) and Aditya-U & SST-1 Tokamaks.

A visit to IPR's Facilitation Centre for Industrial Plasma Technologies (FCIPT) was organized to familiarize the students with industrial applications of plasma technologies. To provide research exposure, the program also included a visit to the Space Applications Centre (SAC), Ahmedabad, where students were introduced to various activities related to space science and technology.



SSP2026 students' visit to FCIPT, Gandhinagar



A study tour to the Physical Research Laboratory (PRL) Solar Observatory Mount Abu, provided the students an exposure to the solar observations and the astronomical research.

SSP2026 students with IPR staff at Mount Abu Lunar Observatory



Summer School Program 2026

On 15 Jun 2026, SSP2026 students had an interactive session with Director IPR, Dr. Tapas Ganguli. He briefed the students about the scientific activities at IPR. In the lively discussion he motivated the students to take up scientific challenges and answered many curious queries of the students.



Group Photo of the students with IPR Director, Dr. Tapas Ganguli and the IPR SSP2026 Organizing team

Students undertook short term projects of 03 weeks duration under the guidance of IPR scientists and engineers and presented their work on 01st & 02nd July, 2026. The program concluded with the award distribution ceremony on 03rd July 2026 for top-performing SSP students.



SSP2026 students poster presentation outside IPR Seminar Hall



Farewell photo of SSP2026 students with IPR SSP2026 Organizing Committee



Colloquium at IPR

Colloquium #353 was organized on 09 July 2026 at IPR. The colloquium talk was delivered by **Prof. B S Murty**, Director, IIT Hyderabad. The title of the talk was **"High Entropy Alloy"**

Read the abstract: <https://www.ipr.res.in/documents/colloquium353.html>



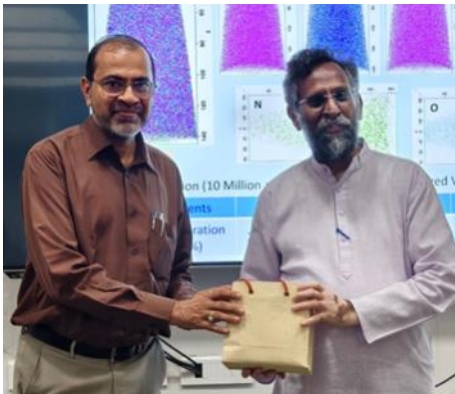
Dean (R&D), Dr. Paritosh Chaudhuri
introducing the guest speaker



Director IPR, Dr. Tapas Ganguli
felicitating Prof. Murty



Prof. B. S. Murty delivering his talk



Director IPR giving a token of
appreciation to Prof. Murty



Audience attending the colloquium talk at IPR Seminar Hall

Colloquium #354 was organized on 17 July 2026 at IPR. The colloquium talk was delivered by Dr. Manoj Warriar, Head, Computational Analysis Division, Visakhapatnam, BARC. The title of the talk was **"Simulating Reactor Material Degradation: From Multi-Scale Physics to the "Pathli Gali" Approach"**

Abstract and About the speaker: <https://www.ipr.res.in/documents/colloquium354.html>

Dr. Manoj Warriar delivering his talk



Dr. Rajaraman Ganesh introducing the speaker (L). Audience attending the talk (R)



IYNS Internship at IPR

Indian Youth Nuclear Society (IYNS) Research Foundation internship was carried out at IPR for six numbers students of class 10th to 12th selected from all over India.

IYNS internship student visit program was coordinated by Outreach Division of IPR from 1-5 June 2026 followed by their two-week visit to the ITER Organization in France.

On their first day at IPR, three lectures were delivered to them on basics of plasma, fusion science and technology and career opportunities at IPR followed by demonstration of outreach plasma exhibits.

During their IPR visit, they have visited almost all labs of IPR including Aditya-U & SST-1 Tokamak, SSST system, Beta Lab, Cryo Lab, Remote Handling & Robotics Lab, Plasma Thruster, Neutronics and Ceramic Labs. The interns also visited the IPR scientific library.

They have also visit Facilitation Centre for Industrial Plasma Technologies (FCIPT) campus.



Dean (R&D) Dr. Paritosh Chaudhuri interacting with the IYNS interns



ORD team member Ms. Harsha Machchhar introducing the interns to the world of Plasma



IPR ORD Team with the IYNS Interns

IIMA Ventures Students Explore DeepTech at IPR

On 2nd June 2026, the Institute for Plasma Research (IPR) welcomed 50 students and their mentors from the IIM Ahmedabad (IIMA) Ventures cohort for an immersive academic visit. The half-day program, held from 10:00 a.m. to 1:00 p.m., was designed to introduce the visitors to the forefront of deeptech research and its real-world applications.

The session began with two engaging lectures from the subject experts at IPR. Ms. Manika Sharma presented an overview of ongoing DeepTech activities, highlighting artificial intelligence and image processing algorithms. She demonstrated applications such as AI-driven 3D visualization for Tokamak systems, surrogate modeling for fusion technology, and innovative tools like DeepCXR and Library Chatbot. Following this, Dr. Ramesh Joshi delivered a technical talk on plasma disruption prediction using deep learning. He explained how the solution, integrated into the ADITYA-U system, enables real-time disruption prediction and mitigation, with predictions generated at a frequency of 1 kHz to trigger the Disruption Mitigation System.

IIMA Ventures Students Explore DeepTech at IPR



Ms. Manika Sharma (L) and Dr. Ramesh Joshi (R) presenting IPR DeepTech activities

After the lectures, students experienced live plasma exhibits in the IPR Outreach Hall. This interactive session helped them grasp the underlying science and engineering aspects of plasma research, bridging theory with tangible demonstrations. The visit concluded with guided tours of advanced laboratories, including SST, RF, SSST, Remote Handling & Robotics, and Plasma Thruster labs, offering a comprehensive view of IPR's pioneering research ecosystem.



Students experiencing live plasma exhibits at IPR ORD Hall

The visit not only enriched the students' understanding of plasma science and deep learning applications but also inspired them to explore the vast potential of deeptech innovations in shaping the future.

Conference Presentations

Dr. Mukesh Ranjan gave the Keynote lecture title "**Plasma Surface Engineering for Sensing and Wettability application**" at the 3rd Global Forum and International Conference on Industrial Plasma Processes and Diagnostics 2025 (IPPD 2025), held during July 01-03, 2026 at IIT Delhi.

Dr. Mukesh Ranjan giving the keynote lecture (L).
Receiving the appreciation (R)



IPR PhD Students attended a two-week specialised school on fusion energy at the **Joint ICTP-IAEA Fusion Energy School 2026**, Trieste, Italy during 11-22 May 2026. The aim of the school was to broaden the knowledge of postgraduate and postdoctoral researchers in fusion science and technology, while providing valuable networking opportunities with world-class researchers. The school covered wide range of topics in plasma and fusion physics from fundamentals like Introduction to Fusion and Confinement, Magneto Hydrodynamics (MHD), Introduction to Gyrokinetics, fusion and climate change, innovations in materials, highlighting the role of different materials and at various location of fusion devices, How to operate a tokamak with Tritium Breeding, Plasma heating systems through Neutral Beam Heating, understanding and vision of international fusion collaboration, introduced to Stellarators and recent innovations in Superconducting coils.

(<https://indico.ictp.it/event/11142/overview>)



Conference Presentations



IPR Research Scholars presenting their posters at the Joint ICTP-IAEA Fusion Energy School 2026 (L-R) Mr. Soumitra Banerjee, Mr. Aman Gautam, Ms. Sheetal Singh, Mr. Souvik Mondal

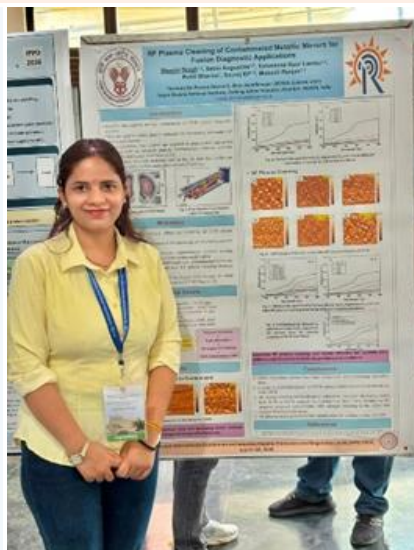


Group photo of the Joint ICTP-IAEA Fusion Energy School 2026
Photo Source: <https://indico.ictp.it/event/11142/material/3/1.jpg>

Conference Awards

Ms. Sheetal Singh (Research Scholar) received the **Best Poster Presentation Award** for her poster title “**Plasma Cleaning of Contaminated Metallic Mirrors for Fusion Diagnostic Applications**” at the 3rd Global Forum and International Conference on Industrial Plasma Processes and Diagnostics 2025 (IPPD 2025), held during July 01-03, 2026 at IIT Delhi.

Congratulations, Sheetal Singh!!



Ms. Sheetal Singh with her poster (L). The Best Poster Presentation Award (R)



Conference Awards

Mr. Soumitra Banerjee (Research Scholar), received the **Best Poster Award** for his poster presentation on "**Development and Application of a Runaway Electron Flux Probe for Energy-Resolved Measurements in the ADITYA-U Tokamak**" at Joint ICTP-IAEA Fusion Energy School 2026 (ICTP-IAEA), Trieste, Italy, 11-22 May 2026.

Congratulations, Soumitra Banerjee!!

Mr. Soumitra Banerjee (L) receiving the Best Poster Award from Prof. Swadesh Mahajan (R)



IPR at Samridh Gujarat 2026

Department of Atomic Energy (DAE) actively participated in the three-day mega exhibition "Samridh Gujarat 2026" held during 7th to 9th July 2026 at L.G. Ground, Maninagar, Ahmedabad. On behalf of DAE, the Institute for Plasma Research (IPR), Gandhinagar, and the Board of Radiation & Isotope Technology (BRIT), Vashi, Navi Mumbai, set up an expansive modular octanorm booth.

The DAE stall emerged as one of the most informative, engaging, and vibrant pavilions at the exhibition, attracting a large number of students, dignitaries, and the general public.

The DAE stall showcased peaceful applications of atomic energy across multiple sectors such as Nuclear Power and Fusion Energy, Basic Plasma Physics, Healthcare and Medical Applications and Agriculture and Food Security, through a rich blend of interactive models, working prototypes, and detailed scientific posters.

The event saw widespread participation from premier national institutes and ministries, including: ISRO (Space Applications Centre - SAC), CSIR (Council of Scientific and Industrial Research), ICMR (Indian Council of Medical Research), NIC (National Informatics Centre), GSI (Geological Survey of India), CCRAS (Central Council for Research in Ayurvedic Sciences), CCRS (Central Council for Research in Siddha), CIFNET (Central Institute of Fisheries Nautical and Engineering Training), BHASHINI (National Language Translation Mission).



Shri Dinesh Makwana, Hon'ble MP, Lok Sabha, Ahmedabad (West) visiting the DAE stall

IPR at Samriddh Gujarat 2026



Participants on behalf of DAE with the shield: (From left) Shri Prashant Dewan, Shri Manu Bajpai, Ms. Pratibha Gupta, Smt. Prasanna Rao, Shri Chetan Jariwala and Shri Samir Phulpagar



Visitors at the DAE stall

Past Events @ IPR

- ◆ **Talks presented at Joint ICTP-IAEA Fusion Energy School 2026 (ICTP-IAEA), Trieste, Italy, 11-22 May 2026**
 - **Ms. Sheetal Singh**, gave a poster presentation on "Effect of Plasma-Wall Interaction Generated Contamination on First Mirrors: Degradation and Cleaning"
 - **Mr. Souvik Mondal**, gave a poster presentation on "Shear Flow Regulation of Current-Driven Filament Merging in Tokamak Edge Plasma"
 - **Mr. Sk Injamul Hoque**, gave a poster presentation on "Effect of Pulsed Neutral Gas Injection on Heat Flux Scrape Off Layer (SOL) Width in ADITYA U Tokamak"
 - **Mr. Siddesh M**, gave a poster presentation on "Experimental Characterization of Heavy Ion Beams from a Ring-Cusp Ion Source and Simulation Studies"
- ◆ **Dr. Hiteshkumar B. Pandya**, gave an invited talk on "Fusion & Beyond: India's Role in ITER and Private Fusion Startups" at 7th India Nuclear Business Platform (INBP): India's Nuclear 100: The Road to 2047, CIDCO Exhibition & Convention Centre, Mumbai, 16-17 June 2026
- ◆ **Dr. Varsha Siju**, gave a talk on "Outcomes and Learnings from the EC-23 Workshop" on 29th June 2026
- ◆ **Dr. Mukesh Ranjan**, gave a keynote address on "Plasma Surface Engineering for Sensing and Wettability Applications" at 3rd Global Forum and International Conference on Industrial Plasma Processes and Diagnostics 2026 (IPPD 2026), Indian Institute of Technology, Delhi, 1-3 July 2026
- ◆ **Mr. Piyush Prajapati**, gave a talk on "Heat extraction analysis of HCSB blanket module and conceptual design of the poloidal sector for fusion pilot plants" on 06th July 2026
- ◆ **Prof. B S Murty**, Director, IIT Hyderabad, gave a talk on "High Entropy Alloy" on 9th July 2026 (*Colloquium #353*)
- ◆ **Dr. Amba Sankar**, gave a talk on "Nitrogen Plasma-Induced Surface Modification of Fe-NiCo₂O₄ Spinel Oxides as Efficient Bifunctional Electrocatalyst" on 15th July 2026

Past Events @ IPR

- ♦ **Dr. Manoj Warriar**, Head, Computational Analysis Division, Visakhapatnam, BARC, gave a talk on "Simulating Reactor Material Degradation: From Multi-Scale Physics to the "Pathli Gali" Approach" on 17th July 2026 (**Colloquium #354**)
- ♦ **Dr. Vineet Kumar Shukla**, gave a talk on "Laser-induced breakdown spectroscopy for multi-elemental surface and volumetric mapping of materials" on 28th July 2026

Upcoming Events

- ♦ 7th International Conference on Data-Driven Plasma Science (ICDDPS-7), Kiel, Germany, 3-7 August 2026; <https://www.icddps.org/>
- ♦ 7th Computational Physics School for Fusion Research (CPS-FR 2026), Cambridge, Massachusetts, USA, 3-8 August 2026; <https://sites.google.com/psfc.mit.edu/cpsfr2026/home>
- ♦ 22nd Summer Training Course in Prague - SUMTRAIC 2026, Prague, Czech Republic, 24 August 2026 - 4 September 2026; <https://indico.ipp.cas.cz/event/43/>
- ♦ 12th International Conference on Mathematical Modelling, Computational Techniques and Simulation for Engineering, Istanbul, Turkey, August 30 - September 1, 2026; www.mmctse.org
- ♦ Conference on Additive Manufacturing and Advanced Materials in Fusion (AM2F), Cambridge, Massachusetts, USA, 31 August 2026 - 2 September 2026; <https://am2f2026.psfc.mit.edu/>
- ♦ SAXFUSION Summer School on Fusion Energy 2026, Dresden, Germany, 31 August 2026 - 4 September 2026; <https://events.hifis.net/event/4100/>
- ♦ 4th JT-60SA International Fusion School: From JT-60SA to future reactor concepts, Naka, Japan, 31 August 2026 - 11 September 2026; <https://indico.euro-fusion.org/event/3953/>

हिंदी कार्यशाला

भारतीय खान ब्यूरो, गांधीनगर द्वारा दिनांक 24 जून, 2026 को हिंदी कार्यशाला का आयोजन किया गया। इस अवसर पर संस्थान की हिंदी अधिकारी, डॉ. संध्या दवे को "गृह मंत्रालय द्वारा संचालित विभिन्न हिंदी शिक्षण योजनाएँ एवं उनका महत्त्व" विषय पर व्याख्यान देने हेतु आमंत्रित किया गया।

डॉ. दवे ने राजभाषा हिंदी के संवैधानिक एवं प्रशासनिक महत्त्व पर प्रकाश डालते हुए गृह मंत्रालय के राजभाषा विभाग की स्थापना, उद्देश्यों तथा उसके प्रमुख कार्यों का परिचय कराया और हिंदी शिक्षण योजना के उद्देश्यों, विभिन्न प्रशिक्षण पाठ्यक्रमों तथा उनके कार्यालयीन उपयोग की विस्तार से जानकारी दी। साथ ही, राजभाषा विभाग के पोर्टल पर उपलब्ध विविध डिजिटल साधनों (टूल्स) एवं हिंदी शिक्षण योजना के ऑनलाइन पोर्टल के प्रभावी उपयोग की जानकारी भी प्रतिभागियों को प्रदान की। उन्होंने बताया कि वर्तमान डिजिटल युग में ऑनलाइन हिंदी शिक्षण संसाधनों की उपलब्धता से कर्मचारियों के लिए हिंदी सीखना और उसका व्यावहारिक प्रयोग पहले की अपेक्षा अधिक सरल एवं सुलभ हो गया है। साथ ही, कार्यालयीन कार्यों में हिंदी के प्रभावी प्रयोग से कार्यकुशलता तथा राजभाषा नीति के क्रियान्वयन को भी बल मिलता है।



वक्ता का स्वागत पौधे से करते हुए डॉ. नरेश कुमार कटारिया, क्षेत्रीय खान नियंत्रक



डॉ. संध्या दवे व्याख्यान देते हुए



Under Graduate Internship programme at CPP-IPR

CPP-IPR conducted Under Graduate Internship Program 2026 from 22nd June to 15th July, 2026. This was organised in response to the request from various colleges and universities of Assam to conduct such a program for their undergraduate students as required under the National Education Policy (NEP) 2020. The program was designed to give an exposure to theoretical and experiments works relevant to the field of plasma science and technology. It consisted of lectures, laboratory visits and minor projects. The program was attended by 40 participants from different colleges and universities such as Morigaon College, Tihu College, Moran College, Majuli College, CNB College, Dudhnoi College, Barak Valley Engineering College, Dibrugarh University, Bhattadev University, St. Joseph University, Royal Global University, University of Science and Technology Meghalaya, Assam Don Bosco University and IIIT Bangalore.



Dr. Rakesh Maullik, CPP-IPR (L) and Dr. Shantanu Karkari, IPR (R) delivering lecture to the UG students



Students visiting the CPP-IPR Lab



Student receiving award



Group Photo of the UG interns with CPP-IPR Staff

तकनीक के साथ, विज्ञान की बात – व्याख्यान श्रृंखला

संस्थान की राजभाषा कार्यान्वयन समिति द्वारा तकनीकी विषय को सरल हिंदी भाषा में प्रस्तुत करने के उद्देश्य से संचालित हिंदी तकनीकी व्याख्यान श्रृंखला "तकनीक के साथ, विज्ञान की बात" के अंतर्गत दिनांक 30 जून 2026 को 15वें हिन्दी व्याख्यान का सफलतापूर्वक आयोजन किया गया।

इस अवसर पर मुख्य वक्ता के रूप में औद्योगिक प्लाज्मा प्रौद्योगिकी सुविधा केन्द्र (FCIPT) के वरिष्ठ वैज्ञानिक अधिकारी-एच, डॉ. सुधीर कुमार नेमा को आमंत्रित किया गया था। उन्होंने "थर्मल प्लाज्मा के अनुप्रयोग एवं पदार्थ प्रसंस्करण में चुनौतियाँ" विषय पर अत्यंत ज्ञानवर्धक और विस्तृत व्याख्यान प्रस्तुत किया। डॉ. नेमा ने अपनी प्रस्तुति के माध्यम से थर्मल प्लाज्मा प्रौद्योगिकी के मूलभूत सिद्धांतों और उद्योग जगत में इसके विविध वैज्ञानिक अनुप्रयोगों पर प्रकाश डाला। व्याख्यान के दौरान मुख्य रूप से पदार्थ प्रसंस्करण जिसके अंतर्गत प्लाज्मा जेट की उच्च तापीय ऊर्जा द्वारा उन्नत सामग्रियों के प्रसंस्करण और उनके रूपांतरण की नवीन तकनीकों को रेखांकित किया गया। तथा औद्योगिक उपकरणों की सतह को मजबूत, संक्षारण-रोधी और उच्च ताप-सह बनाने के लिए प्लाज्मा स्प्रे कोटिंग के अनुप्रयोगों को सचित्र समझाया गया। डॉ. नेमा जी ने थर्मल प्लाज्मा के संचालन के दौरान आने वाली व्यावहारिक और तकनीकी चुनौतियों, जैसे उच्च तापमान नियंत्रण तथा पदार्थ की संरचनात्मक स्थिरता को बनाए रखने के विषय में विस्तार से बताया गया।

डॉ. सुधीर कुमार नेमा ने इस जटिल तकनीकी विषय को अत्यंत सरल, सुबोध और व्यावहारिक हिंदी में प्रस्तुत किया। उन्होंने अपने व्याख्यान में तकनीकी अंग्रेजी शब्दों के स्थान पर सरल एवं सहज हिन्दी शब्दावली का प्रयोग किया, जिससे उपस्थित श्रोतागण विषय-वस्तु को आसानी से समझ सके।

इस तकनीकी व्याख्यान में संस्थान के मुख्य परिसर, एफ.सी.आई.पी.टी., ईटर-इंडिया तथा सीपीपी-आईपीआर (गुवाहाटी) के वैज्ञानिकों और शोधकर्ताओं ने ऑनलाइन माध्यम से जुड़कर इस सत्र में सक्रिय सहभागिता की। व्याख्यान के अंत में एक संवादात्मक प्रश्नोत्तर सत्र भी आयोजित किया गया, जहाँ उपस्थित प्रतिभागियों की जिज्ञासाओं का वक्ता द्वारा संतोषजनक निवारण किया गया। यह कार्यक्रम विज्ञान और तकनीक के क्षेत्र में राजभाषा हिंदी के प्रयोग को बढ़ावा देने की दिशा में सराहनीय प्रयास रहा।



डॉ. सुधीर नेमा का परिचय देते हुए
डॉ. सूर्यकान्त गुप्ता



डॉ. सुधीर कुमार नेमा स्वागत करते हुए डॉ.
अल्फोंज़ा जोसेफ



डॉ. सुधीर कुमार नेमा व्याख्यान देते हुए



डॉ. सुधीर कुमार नेमा को स्मृतिचिन्ह देते हुए
डीन प्रशासन श्री ई.रोजन्द्र कुमार



व्यख्यान के दौरान उपस्थित श्रोतागण

IPR Staff Club Activities

Special Talk on IT Return

Income Tax Return filing is an annual responsibility for every salaried employee. While the online filing process has become increasingly simple, many first-time taxpayers are often uncertain about the documents required, the appropriate return form to choose, the meaning of commonly used tax terminology, and how financial decisions made throughout the year influence their tax liability.

IPR Staff Club organized a special talk on "**Preparing and Filing an Income Tax Return**" on 22 Jul 2026. The special talk was delivered by our colleague Mr. Gattu Ramesh Babu. The informative talk was attended by many staff members.



Mr. Gattu Ramesh Babu giving the talk (L). Audience attending the talk (R)

Swimming Competition

As part of sports activities, IPR Staff Club organized a Swimming Competition for employees across different age groups. It was the first ever Swimming Competition held by the IPR Staff Club. The competition was arranged in a local swimming pool on 04 Jul 2026.

Congratulations to all the participants!!

Here are the result of the Swimming Competition and the Overall Best Swimmers of IPR

Prize	Name of the
First (Gold)	Dr. Premjit Singh Kongkham
Second (Silver)	Dr. Roshin Raj Sheeba
Third (Bronze)	Mr. Gattu Ramesh Babu



Participants at the swimming competition

IYNS Interns visit to IPR Library

Indian Youth Nuclear Society (IYNS) Interns visited IPR Library on 01 Jun 2026. The students were introduced to the activities carried out by the library. They were given an orientation to the library facilities and services. The students then took a guided tour of the library. The students were excited to explore the library



IYNS Interns visiting and exploring IPR Library

Know Your Colleague

Mrs. Samna S joined IPR as a Trainee Scientific Officer on 2022 after qualifying through the Orientation Course for Engineering Graduates and Science Postgraduates (OCES) examination. After successfully completing 1 year training she joined as Scientific Officer C. She is currently working at IPR in Data Center Infrastructure Section (DCIS) in Computer Division. Prior to joining IPR, Samna completed her Bachelor's degree in Computer Science and Engineering from the College of Engineering Karyavattom, Thiruvananthapuram, Kerala in the year 2018. Following her graduation, she worked at Tata Consultancy Services (TCS) for three years, where she gained experience in software development and information technology. Currently she is working as Scientific Officer-D. Her areas of interest include cybersecurity, software development, and the application of artificial intelligence and machine learning to cybersecurity. One of the major hobbies is personal journaling, where she enjoys documenting her observations about her surroundings and reflecting on people's characteristics and behaviors. She also enjoys reading books and playing badminton.



Mrs. Samna S

IPR Newsletter Team

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