



The 4th State

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

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Highlights of the Issue

Plasma Nitriding in GOCO mode



Prof. Kaw Commemoration Day



WED-2026

IDY-2026



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Commencement of operations of Plasma Nitriding Facility in GOCO mode



Plasma Nitriding System installed at FCIPT, IPR

A major milestone was achieved towards technology commercialization with the launch of the IPR's Plasma Nitriding facility in Government Owned, Corporate Operated (GOCO) mode. As part of the first-of-its-kind GOCO initiative, a private industry partner was selected through a transparent and competitive bidding process to undertake the operation and maintenance of the facility while ownership remains with the Institute. After successful training and capacity building of the industry's operating personnel, the system was handed over to M/s N K Vacuum Heat Treatments, Ahmedabad on 4th May, 2026, marking the commencement of operations and a significant milestone in the commercialization of the technology. The initiative is aimed at demonstrating the industrial viability, reliability, and commercial potential of the technology under real-world operating conditions. The GOCO framework is expected to enhance industry confidence, accelerate technology adoption, facilitate market development, and create a sustainable pathway for large-scale deployment of indigenous technology developed by the Institute.



Handing over of the facility to M/s N K Vacuum Heat Treatments, Ahmedabad



Prof. P. K. Kaw Commemoration Day

Prof. Predhiman Krishan Kaw commemoration program was organized at IPR on 18 Jun 2026 on the occasion of his 9th Death Anniversary.

In the day long program special talks by senior professors and poster presentation by current research scholars were organized.

The commemoration program started with paying floral tribute to Prof. Kaw. The floral tribute was arranged in the Library. Staff members and visitors paid their respectful homage.

Prof. Abhijit Sen started the technical session by his opening remarks, followed by screening of a short video created by IPR Library in remembrance of Prof. Kaw. Prof. Amita Das, IIT-Delhi delivered her talk *"Magnetized Laser-Plasma Interactions: From Fundamental Electrodynamics to Advanced Laser and Particle Applications"*, Prof. Shishir Deshpande, former senior professor IPR delivered his talk *"Analytic Models for Tokamak Edge Thermal Equilibrium and Stability: MARFE and Deviations from Corona Equilibrium"*.



In the second session, a total of 18 posters were presented by the current research scholars. After the poster session, Prof. Sudip Sengupta, Senior Professor, IPR delivered his talk *"Breaking of Plasma Waves: Experimental Demonstration and Theoretical Modelling"*. Finally, Dean (R&D), Dr. Paritosh Chaudhuri gave the closing remark where he read the message from IPR Director.

For Photos, Videos and the Book of Abstracts visit the [Kaw Memorial page](#).



Prof. Abhijit Sen giving opening remarks (L). Audience during the first session (C). Prof. Amita Das delivering her talk (R)



Prof. Shishir Deshpande

Research Scholars presenting their posters during the poster session



Prof. Sudip Sengupta (L). Research Scholars attending the special talks (C). Dean (R&D) Dr. Paritosh Chaudhuri giving the closing remark (R)



International Day of Yoga (IDY) 2026 at IPR

The **Institute for Plasma Research (IPR)** enthusiastically celebrated **International Day of Yoga** on **21st June 2026** with a rejuvenating yoga session held from **8:00 a.m. onwards**. The event was organized with the objective of promoting physical fitness, mental well-being, and a healthy lifestyle among the IPR fraternity.

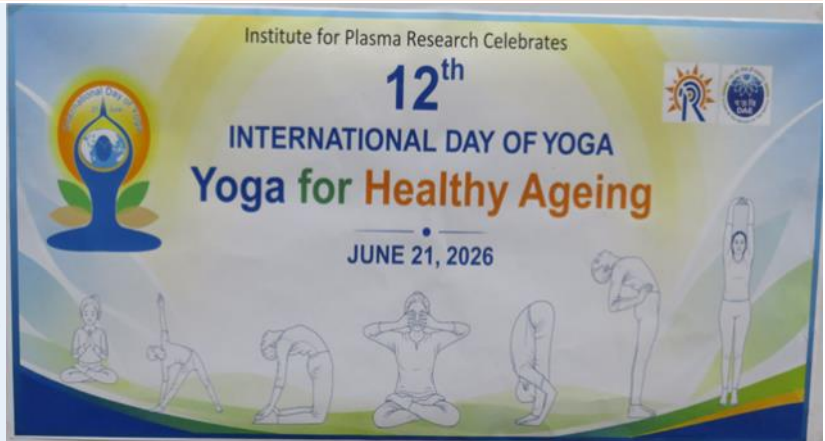
The session was conducted by **Vivekananda Kendra, Kanyakumari – Gandhinagar Branch** and was led by **Mr. Rajesh Trivedi**, an esteemed former employee of IPR and an experienced yoga instructor. His expert guidance and inspiring approach made the session engaging and beneficial for all participants.

The yoga programme followed a well-structured sequence, beginning with instructions to the participants, followed by **Omkar and Prayer, Tense-Relax Exercises, Warm-up Exercises, Refining Exercises, Surya Namaskar**, various **Yogasanas, Shavasana, Pranayama, Seven Chakra Bija Mantras, Patanjali Vandana**, and concluded with the **Samapan Mantra**. The comprehensive session emphasized flexibility, breathing techniques, mindfulness, and inner harmony.

A large number of employees and their family members participated enthusiastically, reflecting the growing awareness of the importance of yoga in maintaining a healthy body and a peaceful mind.

The event concluded on a delightful note with a **healthy breakfast** served to all participants, providing an opportunity for informal interaction and reinforcing the message of holistic well-being.

The celebration served as a reminder that yoga is not merely a form of exercise but a way of life that fosters physical vitality, mental clarity, and emotional balance. IPR remains committed to encouraging such wellness initiatives for the benefit of its employees and their families.



Glimpses of the IDY-2026 at IPR



A Celebration of Sustainability in Action

To celebrate the World Environment Day 2026, IPR hosted a vibrant series of three interconnected activities—an expert talk, a poster-making competition, and a tree plantation drive—uniting faculty, staff, and students in a shared commitment to environmental stewardship.

Expert Talk on Sustainable Water Resources

The expert talk was organized in collaboration with नगर राजभाषा कार्यान्वयन समिति, गाँधीनगर (NARAKAS, Gandhinagar) and IPR Hindi cell on Thursday, 4th June 2026, at IPR (more on page 6 in Hindi).

Poster-Making Competition: “Beating Plastic Pollution”

On 5th June, the IPR staff members participated in our inaugural Poster-Making Competition. Centred on the theme “Beating Plastic Pollution,” participants used watercolours, acrylics, crayons, and decorative materials to visualize their visions for environmental sustainability. The quality of entries was impressive, making evaluation highly competitive.

Competition Results:

First Prize: **Ms. Priyanka Verma** Second Prize: **Mr. Smit Tabiyad** Third Prize: **Ms. Pramila**

Heartiest congratulations to the winners for their outstanding contributions. The Staff Club extends sincere appreciation to all participants for their creativity, enthusiasm, and commitment to environmental conservation.

All completed posters were proudly displayed across IPR premises, inspiring colleagues and visitors with vivid messages against plastic waste and promoting eco-conscious lifestyles.

Tree Plantation Drive: Nurturing a Greener Campus

Simultaneously on 5th June, at 10:30 AM, a Tree Plantation Drive was carried out in IPR campus to foster environmental awareness and enhance campus greenery. Employees enthusiastically joined hands to plant trees, contributing directly to a healthier, more resilient ecosystem. Several saplings of different varieties e.g. Gulmohar, Sindoor, Indian coral, etc. were planted in IPR campus. A plantation drive was also held at FCIPT campus on the same day. The event concluded with a refreshing drink served to all participants, celebrating collective effort and shared responsibility for future generations.

These three activities exemplified IPR’s holistic approach to environmental education: from knowledge dissemination to creative expression and hands-on action. Together, they reinforced our institutional commitment to sustainability—and reminded us that even small acts, when done collectively, can shape a greener planet.



विश्व पर्यावरण दिवस

नगर राजभाषा कार्यान्वयन समिति, गाँधीनगर के सौजन्य से प्लाज़्मा अनुसंधान संस्थान के स्टाफ क्लब द्वारा विश्व पर्यावरण दिवस के उपलक्ष्य में 4 जून 2026 को हिंदी में एक व्याख्यान का आयोजन किया गया। इस अवसर पर माही तापी बेसिन संगठन, केंद्रीय जल आयोग, गांधीनगर के प्रबोधन निदेशालय के निदेशक श्री अभिजीत काशलीवाल को व्याख्यान हेतु आमंत्रित किया गया।

श्री काशलीवाल ने विश्व पर्यावरण दिवस के उपलक्ष्य में संस्थान में **"पर्यावरण संरक्षण के साथ सतत जल संसाधन का विकास"** विषय पर विस्तृत चर्चा की। इस कार्यक्रम का उद्देश्य पर्यावरण संरक्षण के प्रति जागरूकता बढ़ाने के साथ-साथ जल संसाधनों के विवेकपूर्ण एवं सतत उपयोग के महत्व को रेखांकित करना था। व्याख्यान के दौरान वक्ता ने वर्तमान समय में जल संकट, भूजल स्तर में निरंतर गिरावट तथा जलवायु परिवर्तन के कारण उत्पन्न चुनौतियों पर प्रकाश डाला। उन्होंने बताया कि पर्यावरण संरक्षण और जल संसाधनों का सतत विकास एक-दूसरे के पूरक हैं तथा दीर्घकालिक विकास के लिए दोनों के मध्य संतुलन बनाए रखना आवश्यक है।

व्याख्यान में वर्षा जल संचयन, जल संरक्षण की आधुनिक तकनीकों, अपशिष्ट जल के पुनर्चक्रण एवं पुनः उपयोग, वृक्षारोपण तथा जनसहभागिता की भूमिका जैसे महत्वपूर्ण विषयों पर चर्चा की गई। उन्होंने दैनिक जीवन में जल के विवेकपूर्ण उपयोग तथा प्राकृतिक संसाधनों के संरक्षण के प्रति सामूहिक उत्तरदायित्व निभाने का आह्वान किया। उन्होंने श्रोताओं की जिज्ञासाओं एवं शंकाओं का समाधान करते हुए उनके प्रश्नों के उत्तर भी दिए।

यह कार्यक्रम प्रतिभागियों के लिए अत्यंत ज्ञानवर्धक एवं प्रेरणादायी रहा। नराकास, गांधीनगर के सदस्य कार्यालयों के अधिकारियों एवं कर्मचारियों ने इसमें ऑनलाइन माध्यम से भाग लिया।



वक्ता का परिचय देते हुए
डॉ. हीरल जोशी



श्री अभिजीत काशलीवाल को पुष्प गुच्छ भेंट करते हुए डीन,
प्रशासन



व्याख्यान देते हुए श्री अभिजीत काशलीवाल



सभागार में उपस्थित श्रोतागण



Plasma X AI - Artificial Intelligence for Fusion & Plasma Technologies

Dr. Nirav Jamnapara gave a talk on the topic “**Plasma X AI**” – Artificial intelligence for fusion and plasma technologies at IIM Ahmedabad on 2nd June 2026 at a AI Summer Residency 2026 programme organized by IIMA Ventures. The talk was attended by more than 50 participants, largely including the AI internship students (46 nos.) from different parts of India and a few IIMA Ventures team members. The talk addressed need of AI for fusion and plasma technologies and presented a few use cases of AI in plasma and fusion technology. Subsequently, the students prepared a ‘pitch’ on business ideas involving AI for plasma technologies.



Subsequently, on 5th June 2026, the students along with IIMA Ventures team comprising of total 46 participants visited IPR, Gandhinagar where they were given a live demonstration of different plasma systems by the Outreach Division team and a glimpse of the Tokamaks installed in IPR and the Atal Incubation Centre of IPR. The visit concluded with several students interested in taking up deeptech innovation challenges in the field of Fusion & Plasma Technology.



Dr. Nirav Jamnapara in conversation with the AI Summer Residency 2026 students



Students attending the talk on Plasma X AI at IIM Ahmedabad



The group photo of IIMA AI Summer residency 2026 students along with IIMA Ventures team visit at IPR, Gandhinagar



Plasma Exhibition at Gurunanak University, Ibrahimpatnam, Hyderabad

The Institute for Plasma Research (IPR), Gandhinagar, Gujarat, participated in the two-day International Research Conclave 2026 organized by Gurunanak University, Ibrahimpatnam, Hyderabad, Telangana, on 24–25 April 2026.

The exhibition was conducted as part of IPR's scientific outreach activities across India. The IPR stall featured a variety of static displays, interactive working models, and educational resource materials highlighting the science and applications of plasma.

The exhibition attracted more than 600 students, teachers, researchers, and members of the general public, providing them with an opportunity to learn about plasma science, fusion energy, and related technologies.



IPR ORD Head, Dr. N. Ramasubramanian addressing the gathering (L), explaining the exhibits to the visiting students (R)



Student volunteer explaining IPR models



ORD Team member, Mr. Gattu Ramesh Babu explaining IPR Exhibit

Plasma Exhibition at Lords Institute of Engineering and Technology, Hyderabad

The Institute for Plasma Research (IPR), Gandhinagar, Gujarat, in association with Lords Institute of Engineering and Technology, Hyderabad, Telangana, organized a three-day exhibition on plasma science titled **"Plasma: The Fourth State of Matter"** from 28–30 April 2026.

The exhibition showcased a range of static exhibits, live working models, and informative resource materials designed to promote awareness of plasma science and its applications.

More than 900 students and teachers visited the exhibition and actively engaged with the demonstrations and exhibits, making the event a significant platform for science communication and public outreach.



Plasma Exhibition at Lords Institute of Engineering and Technology, Hyderabad

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IPR ORD team with former IPR colleague Dr. P. Vasu (2nd from Right)



Students visiting the IPR Exhibits



Group photo of the students, organizers and IPR ORD team

Academic Visits at IPR

Date	Institution	Visitors
29 Apr 2026	IndoScience Education Trust, Pune	71 Students of Std. 8-10
18 May 2026	Adv. B.Sc. St. Xavier's College, Ahmedabad	24 Students, BSc. (Physics)
20 May 2026	Yuva Vigyani Karyakram (Yuvika) -2026	57 Students of Std. 9
27 May 2026	Training Program 26-27, GTU, Ahmedabad	40 Faculty



Past Events @ IPR

- ♦ **Mr. Uday Kumar**, gave a talk on "Quality Assurance and Regulatory Compliance Strategies in the Manufacturing of the ITER Cryodistribution System" on 19th May 2026
- ♦ **Dr. Shivam Kumar Mishra**, Anubal Fusion Private Limited, Gurugram, Haryana; Tata Institute of Fundamental Research, Hyderabad, gave a talk on "Adaptive Plasma Optics for High-Power Short Laser Pulses" on 20th May 2026
- ♦ **Mr. Aman Gauttam**, gave a talk on "Study of Intrinsic Toroidal Rotation Measurements with tokamak plasma parameters in ADITYA-U Tokamak" at Joint ICTP-IAEA Fusion Energy School, ICTP, Trieste, Italy, 12-23 May 2026
- ♦ **Talks presented at 23rd Joint Workshop on Electron Cyclotron Emission (ECE) and Electron Cyclotron Resonance Heating (ECRH), Barcelona, Spain, 18-22 May 2026**
 - **Mr. Abhishek Sinha**, gave a talk on "Absolute Calibration of Michelson Interferometer Diagnostic with an Upgraded Dry Cryogenic Detection System for Broadband ECE Measurements"
 - **Dr. Varsha Siju**, gave a talk on "Runaway Electron behaviour during ECRH Termination as observed by ECE in the ADITYA-U Tokamak"
- ♦ **Mr. Samiran Mukherjee**, gave a talk on "Overview of vacuum pumping related technology development and capacity building for Indian Fusion Program" on 22nd May 2026
- ♦ **Mr. Srikanta Sahu**, gave an invited talk on "Application of FEM based software in studying liquid metal MHD phenomenon" at 9th National Finite Element Developers' & FEAST Users' Meet (NAFED 09), SAC, ISRO, Ahmedabad, 25-26th May, 2026
- ♦ **Dr. Braj Kishore Shukla**, gave a talk on "Recent Updates on ECRH (An Overview of EC23 workshop and plan of ECRH for our tokamaks)" on 02nd June 2026
- ♦ **Mr. Hitesh Kumar Gulati** and **Mr. Atul Kumar**, gave a talk on "LIGO India project status update" on 15th June 2026
- ♦ **Dr. Daniel Raju**, gave a talk on "Should the requirements of Plasma Control System be integrated with the tokamak conceptual design?" on 16th June 2026
- ♦ **Dr. Bhargav Soni**, gave a talk on "Activation Analysis of ITER Diagnostic Components and Design Optimization of a Runaway Electron Flux Probe" on 19th June 2026
- ♦ **Mr. Kunal Trivedi**, gave a talk on "Deposition and characterization of titanium nitride (TiN) coating on stainless steel and zircaloy-4 deposited by cylindrical magnetron sputtering for improved oxidation resistance" on 22nd June 2026
- ♦ **Dr. Ekta Joshi**, gave a talk on "Plasma Surface Modification for Anti-Biofilm Urinary Catheters: Insights from Bacterial Gene Expression Studies" on 25th June 2026

Upcoming Events

- ♦ 14th PAMIR International Conference on Fundamental and Applied Magnetohydrodynamics, Leoben, Austria, 6-9 July 2026; <https://pamir2026.eumhd.com/?nocache=1>
- ♦ Europhysics Conference on the Atomic and Molecular Physics of Ionized Gases (ESCAPIG 2026), Portugal, 7-11 July 2026; <https://escapig2026.sciencesconf.org/>
- ♦ 2026 IEEE International Power Modulator and High Voltage Conference (IPMHVC) Co-located with 44th Electrical Insulation Conference (EIC), Las Vegas, USA, 12-16 July 2026; <https://ieee-eic.org/>

Upcoming Events

- ◆ Plasmasurf 2026, Lisbon, Portugal, 12-18 July 2026; <https://plasmasurf.tecnico.ulisboa.pt/>
- ◆ Culham Plasma Physics Summer School, Culham, Oxfordshire, United Kingdom, 13-23 July 2026; <https://www.ukaea.org/service/culham-plasma-physics-summer-school/>
- ◆ 30th Workshop on MHD Stability Control, San Diego, California, USA, 13 -15 July 2026; <https://fusion.gat.com/conference/event/138/>
- ◆ Nuclear and Space Radiation Effects Conference (NSREC), San Juan, Puerto Rico, USA, 20-24 July 2026; <https://www.nsrec.com/>
- ◆ 4th International Symposium on Proton-Boron Fusion Sciences and Applications (ISPBF), Beijing, China, 20-24 July 2026; <https://conf.koushare.com/conf/p11Bfusion2026/>
- ◆ 15th ITER International School: Physics and engineering of heating and current drive systems for magnetic fusion plasmas, Chengdu, China, 20-24 July 2026; https://www.iter.org/sites/default/files/media/2026-03/iter_internationalschool_2026_v4-copy.pdf

हिंदी प्रशिक्षण

बैंक ऑफ बड़ौदा, एपेक्स अकादमी, गांधीनगर द्वारा देश भर में नवनियुक्त राजभाषा अधिकारियों के लिए विभिन्न प्रशिक्षण कार्यक्रमों का आयोजन किया गया। इसी कड़ी में, 15 मई 2026 को इन नये-भर्ती हिंदी विशेषज्ञ अधिकारियों को "हिंदी तिमाही प्रगति रिपोर्ट (भाग-1 एवं 2)" भरने का प्रशिक्षण देने के लिए संस्थान की हिंदी अधिकारी डॉ. संध्या दवे को मुख्य वक्ता के रूप में आमंत्रित किया गया था।

डॉ. दवे ने कार्यालयों और बैंकों में तिमाही प्रगति रिपोर्ट भरने के महत्व पर प्रकाश डाला। उन्होंने इसके लिए आवश्यक डेटा एकत्रित करने तथा रिपोर्ट को सही और सुगम तरीके से भरने की प्रक्रिया पर विस्तार से चर्चा की। इसके साथ ही, उन्होंने गृह मंत्रालय के राजभाषा पोर्टल पर उपलब्ध विभिन्न टूल्स (Tools) और रिपोर्ट को ऑनलाइन अपलोड करने के संबंध में भी व्यावहारिक जानकारी प्रदान की।



बैंक ऑफ बड़ौदा के नये-भर्ती हिंदी विशेषज्ञ अधिकारी प्रशिक्षण सत्र के दौरान

An artistic tribute to Prof. Kaw



IPR employee and artist Mr. Narendra L. Chauhan from Outreach Division paid tribute to Prof. P. K. Kaw on his 9th Death anniversary by presenting a stippling art portrait of Prof. Kaw made by him.

Mr. Narendra L. Chauhan with his stippling art portrait of Prof. Kaw



Library Orientation to SSP-2026

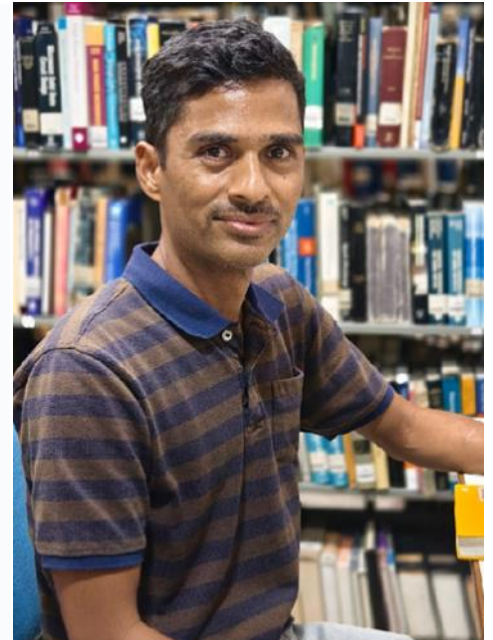
Library Orientation was given to the SSP Students on 25 May 2026. The students were introduced to the library facilities and services, they were then given a tour of the library.



SSP-2026 students during the orientation session at IPR Library

Know Your Colleague

Dr. Shekar Goud Thatipamula joined IPR in Oct 2021 as Scientific Officer-D. He is currently working in the Small Scale-Spherical Tokamak Division. Prior to joining IPR, Shekar completed his Master's degree in Physics from University of Hyderabad. Later he joined IPR as a Research Scholar and pursued research on fluctuations and intrinsic flow generation in BETA, a toroidal device at IPR. After he was awarded Ph.D from HBNI, he worked in South Korea as a Postdoc and then as a Research Assistant Professor for about 7 years, at the institutions like Pohang University of Science and Technology (POSTECH) and the National Fusion Research Institute (now Korea Institute of Fusion Energy, KFE). His research work abroad is primarily on KSTAR tokamak, on topics such as tokamak diagnostics, H-mode physics and plasma surface interaction. He was also affiliated to Max Planck Center for Attosecond Science at POSTECH, where he gained experience in building and operation of femtosecond lasers. He also serves as an Assistant Professor at HBNI. At present Shekar's research interests are tokamak operation, plasma turbulence and transport studies.



Shekar Goud Thatipamula

IPR Newsletter Team

Dharmesh Purohit	Harsha Machchhar	Ngangom Aomoa	Pratibha Gupta	Priyanka Patel	Ramasubramanian N.	
Rohit Anand	Sandhya Dave	Saroj Das	Shravan Kumar	Supriya A Nair	Suryakant Gupta	Tejas Parekh

Institute for Plasma Research
Bhat, Near Indira Bridge
Gandhinagar 382 428,
Gujarat (India)



Web : www.ipr.res.in
E-mail : newsletter@ipr.res.in
Tel : 91-79-2396 2000
Fax : 91-79-2396 2277