

Issue 139
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The 4th State

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



PLATINUM JUBILEE YEAR
70
Glorious Years
1954-2024



76th Republic Day Celebration @ IPR



Dr Subroto Mukherjee unfurls the National Flag

The 76th Republic Day was celebrated at the IPR main campus on 26 Jan 2025 with full enthusiasm and patriotism. On this occasion, Dean (Admin), Dr. Subroto Mukherjee received the Guard of Honour from the security staff and unfurled the national flag, followed by the National Anthem.

Dr. Mukherjee then addressed the gathering of staff members and their families present for the event. His speech was mainly focused on the scientific and technological achievements of the Institute in the previous year. During his speech, he mentioned about various scientific experiments and technological achievements, these included the recently achieved LHCD milestone, Raudra—Plasma Pyrolysis installation at Varanasi, updates from ITER-India, and the progress of LIGO India project.

This was followed by snacks and events for staff and families. Prizes were also distributed to the winners by the Dean (Admin) which was followed by lunch. The R-Day programs for the staff were coordinated by the IPR Staff Club.



Dr Subroto Mukherjee receiving the guard of honor from the security staff



Glimpses of the Republic Day Celebrations at IPR

76th Republic Day Celebration @ CPP-IPR



Dr. Dinesh Kumar Aswal, the new officiating Director joined IPR on 01 January 2025. Apart from the responsibility as Director, IPR, he is a senior member of Trombay Council (TC) - the APEX decision making body at Bhabha Atomic Research Center (BARC) - and holds several key positions of Director, Health Safety and Environment Group (HS&EG), Associate Director, Medical Group, and Director, National Radiation Emergency Response (Department of Atomic Energy, Government of India). He has vast experience in administration of several national institutes including, Director, National Physical Laboratory (CSIR-NPL), New Delhi; Director, Central Electronics Engineering Research Institute (CEERI, Pilani); Director, Science, Technology and Development Studies (CSIR-NISTADS, New Delhi), Chairman, National Accreditation Board for Testing and Calibration Laboratories (NABL); Secretary, Atomic Energy Education Society (AEES), Mumbai, etc.

He gave an introductory talk on **“Leadership for Institution Building: Story of National Physical Laboratory”** at IPR on 01 Jan 2025.



Dr. D K Aswal delivering his talk



IPR Staff attending the talk



Group Photo of IPR staff with the new Director

Initial Experimental Result of ADITYA-U LHCD discharge

Lower Hybrid Current Drive (LHCD) is an important high power heating & current drive (H&CD) which drives the plasma current system non-inductively. A standard LHCD system consists of high power microwave source (Klystron), rectangular (WR-284) transmission line and antenna (Grill/FAM/PAM). A 3.7 GHz-2MW LHCD system is being used in SST-1 and Aditya-U. An indigenously designed Passive-Active Multijunction (PAM) antenna has been developed for ADITYA-U which can deliver 250 kW of LHCD power at 3.7 GHz for a pulse length of 1 second. This antenna comprises two modules, each containing two active and two passive waveguides. The LH power is distributed across three rows in the poloidal direction using a TE₁₀-to-TE₃₀ mode converter. An E-plane bi-junction further divides the power in the toroidal direction. A passive waveguide is positioned between two active waveguides at a quarter guided wavelength. This distribution of LH power from the two input waveguides results in a compact PAM antenna with a matrix of three rows and nine columns of waveguides. Each row consists of five passive waveguides and four active waveguides. The PAM antenna has been installed at port #5 of ADITYA-U (Figure-1).

The initial LHCD experiments on ADITYA-U using the PAM antenna have sustained the plasma current for up to 320 ms. In a recent Aditya-U plasma discharge (figure 2), around 100kW power was launched at ~80ms and the duration of LH pulse was around 300ms. It can be observed that after the loop voltage dropped to zero at ~80 ms, and the plasma current was fully maintained by LH waves for about 210 ms. This demonstrate the capability of LHCD to extend the duration of the plasma current in ADITYA-U tokamak

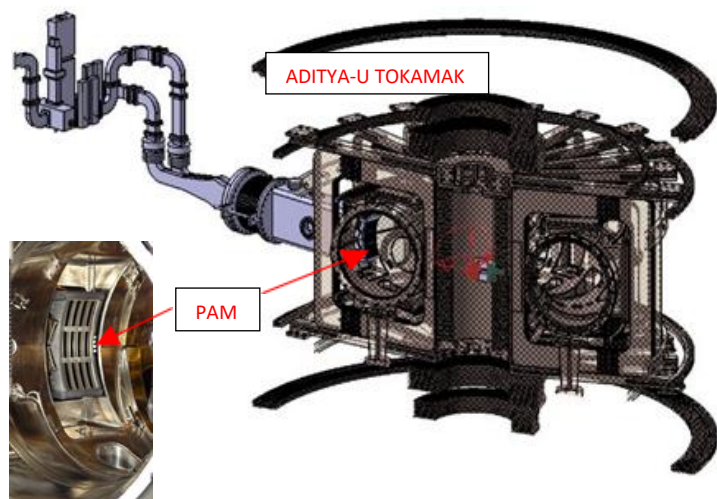


Figure-1: The PAM antenna installed in port #5 of ADITYA-U machine

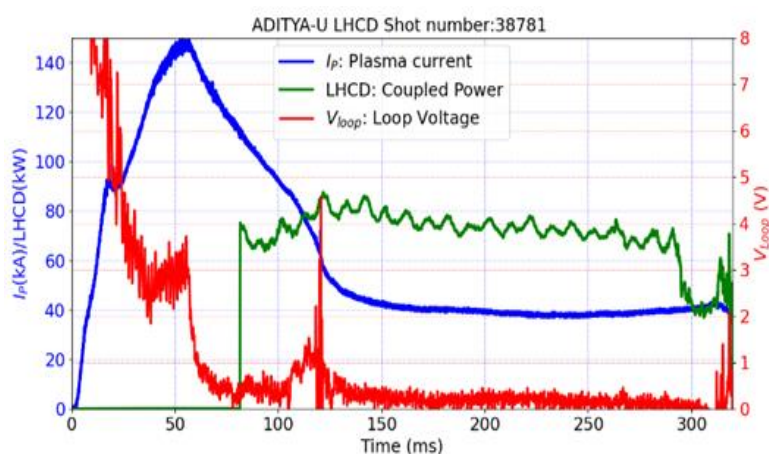


Figure-2: Result from recent Aditya-U shot showing the plasma current and LHCD coupled power on the left y-axis, and the loop voltage on the right y-axis

Superannuation on 31 January 2025



Dean (Admin), Dr Subroto Mukherjee felicitating Dr Vinay Kumar (L) and Dean (R&D), Dr Paritosh Chaudhuri felicitating Dr Surya Kumar Pathak (R) on their retirement

विश्व हिन्दी दिवस—2025

प्लाज़्मा अनुसंधान संस्थान में विश्व हिंदी दिवस के उपलक्ष में 10 जनवरी, 2025 को एक तकनीकी व्याख्यान का आयोजन किया गया। भाभा परमाणु अनुसंधान केन्द्र के डॉ. कुलवंत सिंह, वैज्ञानिक-एच ने इस अवसर पर “भारतीय परमाणु ऊर्जा कार्यक्रम में पदार्थ विज्ञान की योगदान” पर एक व्याख्यान दिया गया। अपने व्याख्यान में उन्होंने परमाणु ऊर्जा प्रणालियों में उन्नत सामग्रियों के एकीकरण, उनके विविध अनुप्रयोगों और राष्ट्रीय ऊर्जा लक्ष्यों को प्राप्त करने में उनके महत्वपूर्ण योगदान पर व्यापक रूप से प्रकाश डाला।

डॉ. कुलवंत सिंह ने अपने व्याख्यान में भारत की प्रति व्यक्ति बिजली खपत (1,395 kWh/वर्ष) की तुलना वैश्विक मानकों (3,200 kWh/वर्ष) और अमेरिका (12,500 kWh/वर्ष), चीन (6,600 kWh/वर्ष) और यूरोपीय संघ (5,960 kWh/वर्ष) जैसे देशों से की। उन्होंने भारत में बिजली उत्पादन बढ़ाने और वैश्विक स्तरों तक पहुँचने की आवश्यकता पर जोर दिया, साथ ही परमाणु ऊर्जा की भूमिका को इन चुनौतियों से निपटने में महत्वपूर्ण बताया। उन्होंने परमाणु ईंधनों जैसे यूरेनियम (U), थोरियम (Th) और यूरेनियम डाइऑक्साइड (UO_2) के निष्कर्षण और प्रसंस्करण की प्रक्रियाओं पर विस्तार से चर्चा की। उन्होंने “येलो केक” (मैग्नीशियम डाई-यूरेनेट) के महत्व और उसके संवर्धन प्रक्रियाओं को समझाया, जिसमें जादूगुड़ा और तुम्मलपल्ले जैसे खनिज स्थलों का विशेष रूप से उल्लेख किया गया।

डॉ. सिंह ने भारत में कार्यरत और निर्माणाधीन परमाणु रिएक्टरों पर प्रकाश डाला। उन्होंने भारत के तीन-चरणीय परमाणु कार्यक्रम पर भी चर्चा की, जिसमें पहले चरण में प्राकृतिक यूरेनियम का उपयोग करने वाले प्रेशराइज्ड हैवी वॉटर रिएक्टर (PHWR), दूसरे चरण में प्लूटोनियम का उपयोग करने वाले फास्ट ब्रीडर रिएक्टर (FBR), और तीसरे चरण में थोरियम और यूरेनियम-233 पर आधारित उन्नत रिएक्टर शामिल हैं। उन्होंने परमाणु प्रणालियों में उच्च तापमान और दबाव का सामना करने और विकिरण से सुरक्षा जैसी सामग्री संबंधी चुनौतियों पर चर्चा की और भारत की उन प्रगतियों पर प्रकाश डाला जो इन चुनौतियों का समाधान करती हैं।

डॉ. कुलवंत सिंह के व्याख्यान ने भारत के परमाणु ऊर्जा कार्यक्रम की रीढ़ के रूप में, भौतिक विज्ञान के महत्व को रेखांकित किया। उनकी अंतर्दृष्टि ऊर्जा आत्मनिर्भरता और स्थिरता प्राप्त करने के लिए स्वदेशी संसाधनों और प्रौद्योगिकियों का लाभ उठाने में भारत की प्रगति को दर्शाती है। डॉ. सिंह द्वारा सरल हिन्दी भाषा में दिए गए इस व्याख्यान से उपस्थित श्रोताओं को भारत की ऊर्जा मांगों को संबोधित करने में भौतिक विज्ञान और परमाणु ऊर्जा के बीच तालमेल प्राप्त करने की गहरी समझ प्राप्त हुई। व्याख्यान का समापन श्री राजसिंह, वैज्ञानिक अधिकारी-एच के धन्यवाद ज्ञापन से हुआ।



डॉ. कुलवंत सिंह का स्वागत करते हुए डॉ. सूर्यकान्त गुप्ता



डॉ. कुलवंत सिंह व्याख्यान देते हुए



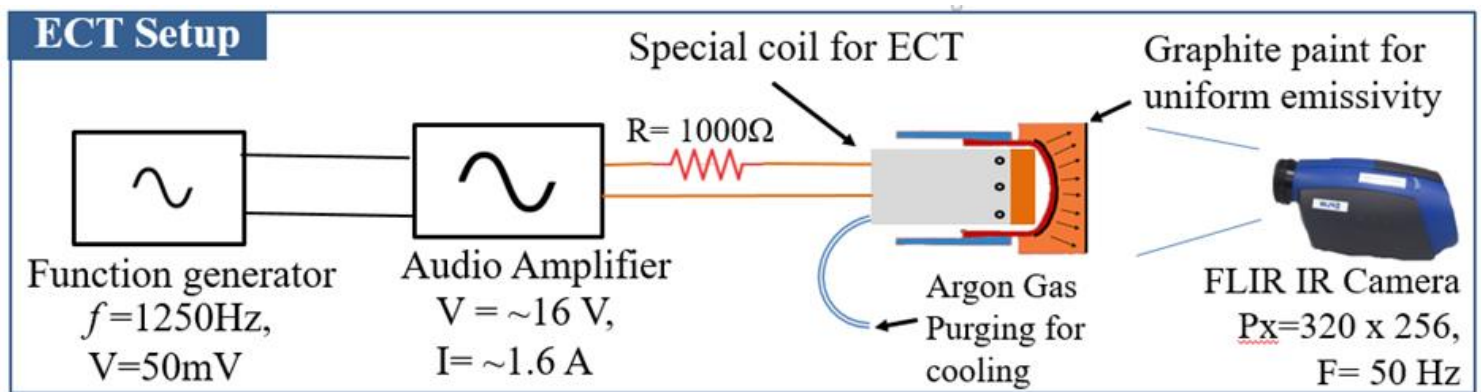
व्याख्यान में उपस्थित श्रोतागण

Eddy current Thermography Technique for He cooled Plasma Facing Components

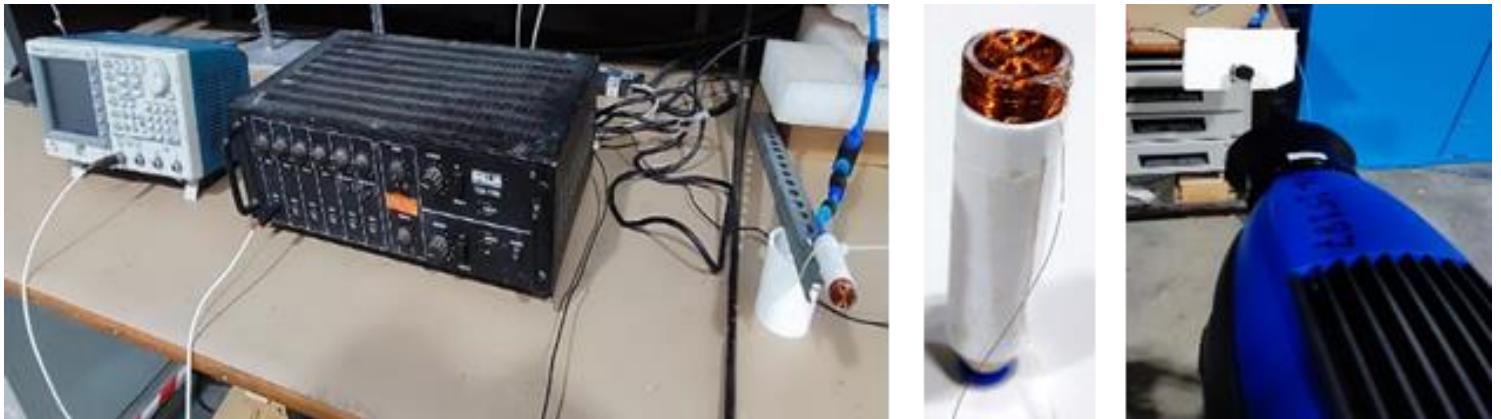
Helium (He) cooled plasma-facing components (PFCs) represent a novel cooling concept for divertor PFC that can be of interest for future fusion reactors. Divertor PFCs, exposed to intense heat fluxes, will be actively cooled using helium jet impingement. The He-cooled PFCs are being designed to withstand steady state heat loads ranging from 5 to 10 MW/m². These components are manufactured using brazing process, which may results in defects at the curved joint interface between the thimble and the tungsten tile.

Eddy Current Thermography (ECT) is employed as a quality control step to assess the integrity of similar metal joints during fabrication. At the Institute for Plasma Research (IPR), an ECT technique has been developed specifically for evaluating the integrity of curved tungsten-to-tungsten brazed joints. This method utilizes a custom-designed copper coil to induce eddy currents, generating heat within the components. An infrared camera captures the resulting surface temperature profiles. By analysing these thermal profiles, detailed information about the bonded area can be obtained.

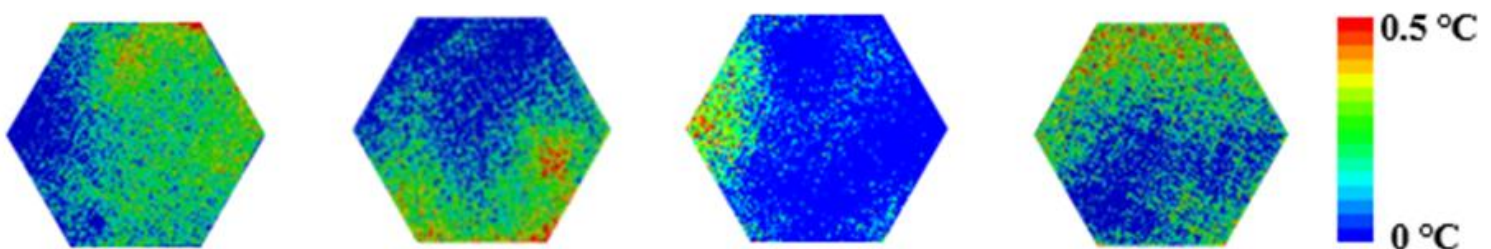
Successful investigations of curved tungsten-to-tungsten interface joints in divertor PFCs have been conducted using this ECT technique. The thermal profile images effectively reveal the location of any defects present at the joint interface and their impact on heat transfer, enabling a thorough assessment of the manufacturing quality of He-cooled divertor PFCs.



Schematic of Eddy Current Thermography setup for inspection



ECT imaging of He cooled PFCs are obtained by a dedicated electronics, specially designed coil and Infrared Camera Facility at IPR



Thermal Contrast profiles of W/ WL-10 joints of Thimble to HEX tile – Blue color represents the defected region

The 39th Symposium on Plasma Science and Technology was organized at Pandit Deendayal Energy University (PDEU), Gandhinagar jointly by Institute for Plasma Research (IPR), Gandhinagar and Plasma Science Society of India (PSSI) during 17th Dec to 20th Dec 2024. A pre-conference workshop was organized for the university students and early stage researchers/faculties working in the field of plasma science and technology on 16th Dec 2024. The inaugural session was attended by Sh. K N Vyas, Former Secretary & Chairman, Department of Atomic Energy, Dr. Shashank Chaturvedi, former Director, IPR, Dr. S. Sundar Manoharan, Director General, PDEU, Gandhinagar, Dr. R. K. Shrivastava, Registrar, PDEU, Dr. Dhaval Pujara, Director, SOT, PDEU, Dr. G P Pandey, HOD, ECE, PDEU, Dr. Pawaan Sharma, HOD, ICT, PDEU, Dr. Abhishek Kumar (Co-Convenor), Dr. Manish Kumar (Convenor) and Dr. Amulya Kumar Sanyasi, Secretary, PSSI.



Unveiling of the Conference Abstract Index book during the Inaugural session



(L-R) Shri K. N. Vyas, former Chairman AEC, Dr S Chaturvedi, former Director IPR, Dr S. Sundar Manoharan, DG, PDEU and Dr Dhaval Puraja, Director SOT, PDEU addressing the gathering during the inaugural session

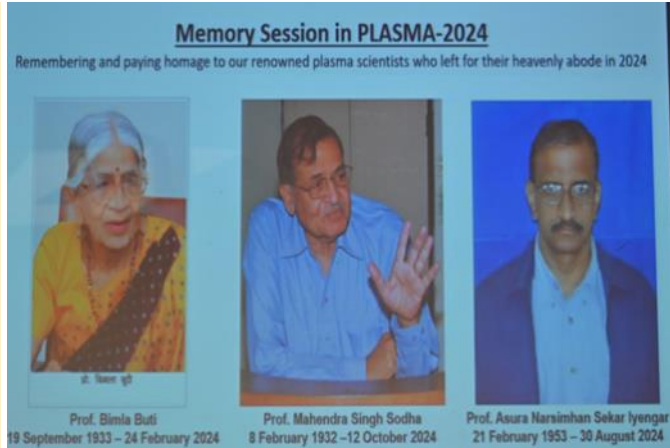


Shri Vyas and Dr Chaturvedi inaugurating the IPR Plasma Exhibition at the conference

PLASMA-2024 at PDEU

The Session – 1 (Astrophysical & Space Plasma) was dedicated to the memory of Prof. Bimla Buti and homage to distinguished plasma physicists Prof. A N Iyengar and Prof. M S Sodha who passed away in 2024.

There were nine (9) sessions covered during the symposium with a total number of 19 invited talks and 28 oral presentations. A total of 319 posters were also presented at the symposium. Apart from these topical sessions, 5 young prospective applicants for the BUTI Young Scientist Award presented their work on 17th Dec 2024. This was followed by Parvez Guzdar Award presentations in online mode.





Glances of PLASMA-2024

First 2-day Hands-on Basic Science Camp for School students from class 10th to 12th was conducted by Outreach Division on 7th and 8th Dec 2024 (Sat & Sun) at Outreach Hall, IPR. The theme for this hands-on camp is Electricity, Electromagnetism and Electromagnetic Induction. For the first camp, the children of IPR staff were invited. 22 students registered and 20 students participated on both the days.

The students were provided with practical booklet, writing materials, brief explanation about each experiment. The experiments were conducted in four half-day sessions supervised by scientists of IPR: Mr. Sunil Belsare, Mr. Prakash Parmar, Dr. Jyoti Sankar Mishra, Ms. Pramila, Ms. Praveena, Ms. Minsha Shah, Mr. Deepak Kumar, Mr. Abhishek, Mr. Rahul Kumar, Mr. Pritesh Kumar Ray, Mr. Saurav Kumar, Ms. Priyanka Patel and members from Outreach Division: Dr. Nirav Jamnapara, Mr. Manu Bajpai, Mr. Narendra Chauhan, Mr. Rahul Vishwkarma, Mr. Anand Kumar and Mr. Gattu Ramesh Babu. Special thanks to Mr. Dasharath Sonara and Ms. Aneesh for developing superconducting and temperature dependency experiment for this science camp.



Dr. Subroto Mukherjee, Dean (Admin) giving introductory speech to the participants



Students participating in the Hands-on experiments



Group photo of the participants with IPR supervisors and the ORD Team

To strengthen the understanding and implementation of Quality Assurance (QA) practices among IPR staff members, IPR and ITER-IN collaboratively organized a dedicated workshop. The initiative aimed to foster a deeper appreciation for QA principles, standards and practices, critical to achieving excellence in project execution and organizational operations.

A Pre-Workshop Session for Division Heads and Section Heads

As a precursor to the main event, a special session was organized on January 17, 2025, for Division Heads and Section Heads at IPR. This session provided a comprehensive briefing on the workshop's objectives, agenda, and the critical role QA plays across various projects and divisions.

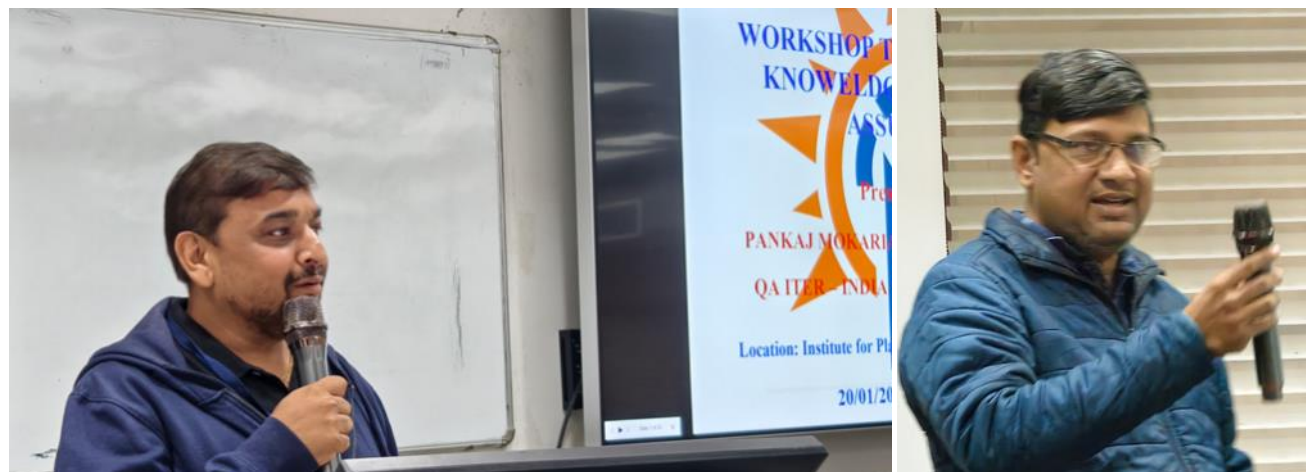
The workshop featured two expert speakers: Shri Pankaj Mokaria (QA, ITER-IN) and Shri Jigar Raval (IQS, MESD, IPR). They conducted engaging sessions, explaining key concepts such as Quality Control, Quality Assurance, and the application of QA through real-world case studies. These sessions highlighted the importance of QA in maintaining consistency, ensuring compliance, and achieving operational success.



Project Director, Shri Ujjwal Baruah (L) and Dean (R&D) giving introduction to the workshop



Division Heads and Section Heads attending the pre-workshop session



Expert speakers: (L) Shri Pankaj Mokaria (QA, ITER-IN) and (R) Shri Jigar Raval (IQS, MESD, IPR)

Two-Day Workshop Highlights

The main workshop, held at IPR during **20–21 January 2025**, was specifically designed for SO-C and TO-C staff members to deepen their knowledge of QA methodologies. The program began with opening remarks by Prof. Subroto Mukherjee (Dean – Administration), who emphasized the significance of QA in achieving organizational excellence. Shri Ujjwal Kumar Baruah (Director – ITER-IN) followed with an insightful address, outlining the workshop's goals and objectives while setting the tone for the sessions ahead.

Over the course of two days, a total of eight sessions were conducted, covering the following key topics:

Introduction to Quality Assurance and Quality Management Systems (QMS) – Fundamentals of QA and the role of QMS in maintaining standards.

Quality Perspectives for Specification Development – Best practices for defining quality-related specifications in projects.

Quality Audits – Strategies for planning and conducting audits to ensure compliance.

ISO 9001 and ASME NQA-1 Requirements – An overview of international QA standards and their implementation.

Documentation Management During Contract Execution – Best practices for maintaining documentation integrity throughout contract lifecycles.

Material Inspection and Acceptance Procedures – Methods to ensure material quality through systematic inspection processes.

General Safety Regulations as per IAEA GSR-2 – Understanding safety protocols and regulatory compliance in projects.

A total of 51 staff members attended the workshop, actively participating in discussions and practical exercises designed to build their QA competencies.

The workshop concluded with closing remarks by Dr. Paritosh Chaudhuri (Dean – R&D), who underscored the importance of embedding QA practices into the organization's culture and daily operations. He commended the participants for their enthusiasm and urged them to apply their learnings in their respective roles.

The successful execution of the workshop was made possible through the invaluable support of Dr. Rajesh Kumar (Associate Dean – R&D) and Dr. (Er.) Manoj Kumar Gupta (Head – MESD), who played a pivotal role in planning and organizing the event. Their efforts ensured that the workshop was not only informative but also impactful for all attendees.



Group photo of the participants with IPR supervisors and the ORD Team

Date	Institution	Visitors
23 Nov 2024	Bhavika-Gujcost, Ahmedabad, Gujarat	101 students (8th, 9th and 10th grade) and 6 teachers
26 Nov 2024	Jawahar Navodaya, Vadnagar	56 students (10th grade) and 3 teachers
26 Nov 2024	PM Shri School Jawahar Novodaya Vidyalaya, Kathlal, Kheda, Gujarat	38 students (10th and 12th grade) and 2 teachers
02 Jan 2025	The Maharaja Sayajirao University of Baroda	25 students (MSc Physics) and 4 faculty



Group photograph of students from Bhavika-GUJCOST, Ahmedabad, Gujarat



Students of Jawahar Navodaya, Vadnagar visiting the IPR ORD



Group photograph of students from The Maharaja Sayajirao University of Baroda

Plasma Exhibition @ Shri Sardar Patel and Swami Vivekananda High School, Maninagar, Ahmedabad

IPR Gandhinagar in association with Shri Sardar Patel and Swami Vivekananda High School, Maninagar, Ahmedabad (Gujarat) organized an exhibition on Plasma, "The Fourth State of Matter" during 28-29 November, 2024. This program is part of IPR's scientific outreach activity in various states of India under the auspices of "70 years of DAE" celebrations.

The programme consisted of an exhibition on plasma, its applications as well as introductory talks on plasma for visiting students and training program on plasma, its applications and nuclear fusion for science teachers.

Students of 9th and 10th standard from the host school were trained by IPR staff to explain the various exhibits to visiting public.

Over 2150 students and teachers from over 20 schools and 7 colleges visited the exhibition and highly appreciated.



IPR ORD Team at the Plasma Exhibition at Shri Sardar Patel and Swami Vivekananda High School, Maninagar, Ahmedabad

The outreach cell of CPP-IPR conducted basic training for students in plasma physics. The programme consist of lectures on plasma physics and python programming language, conducting experiments with various plasma devices and laboratory visits. The experiments include plotting of Paschen curve, experimental proof of deviations from Paschen law, plotting of I-V characteristics of a gas discharge, measurement of plasma resistance, nanoparticles synthesis using plasma and plasma treatment of dye solutions.

Duration	Institute	Number of Students
09 December 2024 to 20 December 2024	Jagannath Barooah University, Jorhat, Assam	02
09 December 2024 to 20 December 2024	St. Joseph University, Dimapur, Nagaland	02
06 January 2025 to 22 January 2025	St. Edmunds College, Shillong, Meghalaya	02



Participants from JB University, Jorhat, St. Joseph University, Nagaland, and St. Edmunds College, Shillong

Superannuation on 31 Dec 2024



Staff Club committee felicitating Dr S Chaturvedi on his retirement



Dean (R&D) felicitating Dr. P K. Sharma on his retirement



PD ITER-IN felicitating Shri A K Chakraborty on his retirement



Dean (Admin) felicitating Dr S Deshpande on his retirement



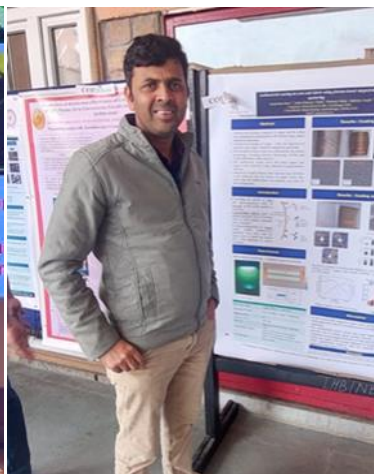
Group Photo of the Staff Club Committee with the retiring staff members

Conference Presentations

1st International Workshop on Cold Plasma and Pulse Power Technologies for Food, Health, and Agriculture (COFHA-2024), IIT Jodhpur, during 21-22 December 2024.



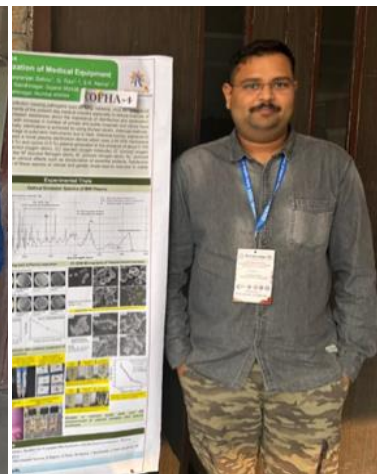
Dr Mukesh Ranjan gave an invited presentation on "**Ar plasma nanostructuring on PTFE surfaces for the wettability transition and sensing applications**"



Dr Ramakrishna Ranegave a poster presentation on "**Antibacterial Coatings on Yarn and Fabric using Plasma based magnetron sputtering**"



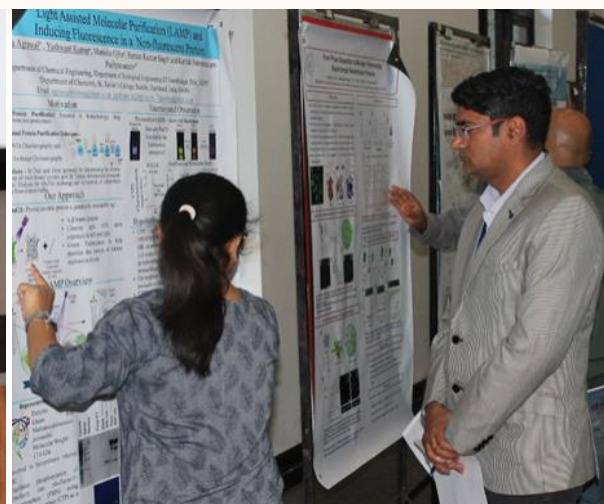
Mr Akshay Vaid gave a poster presentation on "**Correlation of Helium Mole Fraction for plasma jets at various angles**"



Mr Kushagra Nigam gave a poster presentation on "**Application of Cold Plasma for Sterilization of Medical Equipment**"

Photonics for Energy, Sensing, & Education, IIT Gandhinagar, 16-17 January 2025

Dr Mukesh Ranjan gave an invited talk about "**Detection of Hazardous Molecules with Dense nanoparticles arrays**" along with judging the poster presentation in the workshop about **Photonics for Energy, Sensing, and Education** conducted by IIT Gandhinagar from 16-17 January 2025. It is an Indo-UK Workshop sponsored by the Distinguished International Associate (DIA) programme of the Royal Academy of Engineering, UK, is being jointly organized by the Nanoplasmonics Research Lab and the Photonic Sensors Lab at IIT Gandhinagar.



Dr. Mukesh Ranjan giving his talk, judging poster presentation and receiving appreciation during the workshop

5th International Conference on Recent Advances in Mechanical Infrastructure (ICRAM 2025), IITRAM, 10-12 January 2025

Mr Rajiv Sharma gave an invited talk on the topic "**Glass Fiber Composites Material for Vacuum, Cryogenic, Space, and Fusion Applications**" at the **5th International Conference on Recent Advances in Mechanical Infrastructure (ICRAM 2025)**, organized by IITRAM Ahmedabad in association with IIT Roorkee and SVNIT Surat during 10-12 January 2025 at the Department of Mechanical and Aerospace Engineering of IITRAM, Ahmedabad. He also chaired a Session on "Material and Manufacturing" at the conference.



Conference Presentations

National Conference on Re-Imagining Libraries (ReIL-2025): Balancing Tradition and Innovation in a Digital Era, 10 January 2025, Tata Memorial Hospital, Mumbai

Mr Saroj Das gave an invited talk on “*Balancing the Shrink and Surge: Challenges for Libraries*” at the National Conference on Reimagining Libraries (ReIL-2025): Balancing Tradition and Innovation in a Digital Era, organized by the Tata Memorial Hospital in collaboration with Bombay Science Librarians’ Association (BOSLA) on 10 January 2025.



Mr Saroj Das giving his talk and receiving appreciation during the Conference

Books Exhibition at IPR Library

IPR Library organized a Books Exhibition on 28th and 29th January 2025. Books on the areas of interest of the Institute and a few Hindi books on general interest were exhibited.

The staff had an opportunity to explore the exhibition and recommend books for the library. They also had the opportunity to buy book personally. Many staff and research scholars visited the exhibition during the two-days and recommended books for the library.



Staff and Research Scholars visiting the Books Exhibition at IPR Library

Many Congratulations to all for their achievement!

Mr. Souvik Mondal, received the “**Best Poster Award**” for his poster presentation title “**The dynamics of blob merging in the tokamak scrape-off layer region**” at 8th Asia-Pacific Conference on Plasma Physics (AAPPS-DPP 2024), Malacca, Malaysia, 3-8 November 2024.



Mr. Souvik Mondal during the poster presentation

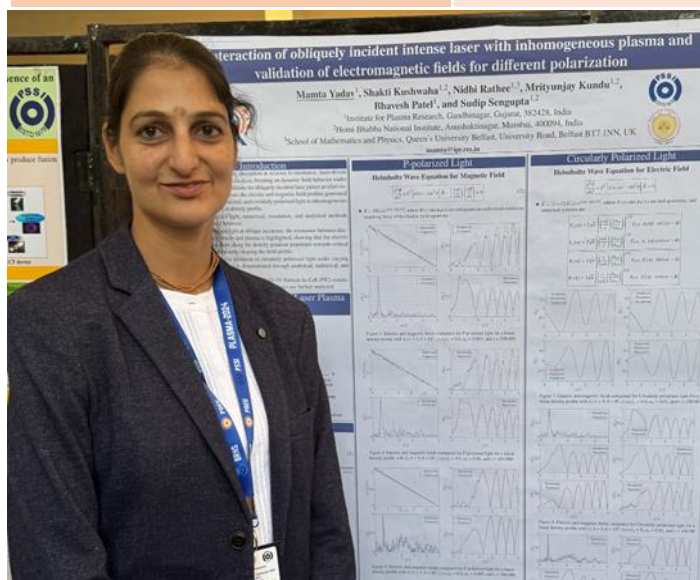
Dr. Sebine Augustine, IPR Post Doctoral Fellow, got the First prize in poster presentation title “**Self-organized ordered nanoparticles for SERS application**” in the workshop about Photonics for Energy, Sensing, and Education conducted by IIT Gandhinagar from 16-17 January 2025. Dr. Sebine earlier did his PhD from IPR as DGFS fellow



Dr. Sebine Augustine receiving the award

39th National Symposium on Plasma Science and Technology (PLASMA 2024) Award Winners

Award Name	Winner	Presentation Title
BUTI Young Scientist Award	Ankit Kumar	Effect Of Impurity Seeding On Edge Toroidal Rotation In Aditya-U Tokamak
Z H Sholapurwala Award	Bhavesh R Kadia	Development Of -5kV, 1A High Voltage Dual Mode Power Supply For 1kW, 2.45GHz Magnetron Source
Z H Sholapurwala Award	Jyoti Shankar Mishra	Design And Experimental Study Of A Differential Pumping System For Hydrogen Pellet Injector
PSSI Poster Award (Fundamental Plasma)	Mamta	Interaction Of Obliquely Incident Intense Laser With Inhomogeneous Plasma And Validation Of Electromagnetic Fields For Different Polarization
Poster Award (Plasma Application) (Joint)	Vrushank Mehta	Various NF_3 Gas Abatement Techniques For The NF_3 RF Glow Discharge Plasma Etching System
Poster Award (Simulation Plasma)	Someswar Dutta	Runaway Electron Dynamics in a Tokamak Under The Influence of Local Magnetic Field Perturbation



Dr. Mamta presenting her award winning poster



Mr. Ankit Kumar receiving the Buti Young Scientist Award

- ◆ **Ms. Y. Patil**, gave a talk on "Fluid simulation studies of low temperature plasmas using COMSOL Multiphysics Software" at 8th Asia-Pacific Conference on Plasma Physics (AAPPS-DPP 2024), Malacca, Malaysia, 03-08 November 2024
- ◆ **Talks presented at Conference on Plasma Simulation (CPS-2024), Indian Institute of Geomagnetism, Navi Mumbai. 11-13 November 2024**
 - **Ms. Ruchi Varshney**, gave a talk on "Neutral Gas Puff Transport Modeling using DEGAS-2 Code"
 - **Mr. Chingangbam Amudon**, gave a talk on "Unstable Ion Acoustic Modes: A 1D Vlasov Study"
- ◆ **Plenary talks presented at 9th International Symposium on Negative Ions, Beams and Sources (NIBS2024), ITER-India, Institute for Plasma Research, Gandhinagar, 19-22 November 2024**
 - **Mr. Himanshu Tyagi**, gave a plenary talk on "Assessment of signal reconstruction techniques for critical signals in high power negative ion based plasma sources"
 - **Mr. Himanshu Tyagi**, gave a plenary talk on "Plasma Density estimation using Machine Learning for High power Ion Source"
- ◆ **Mr. Nitin Shah**, gave an invited talk on "India's Contribution to the ITER Cryogenic System and Present Status" at 29th National Conference on Cryogenics and Superconductivity (NCCS-29), Inter-University Accelerator Centre, New Delhi, 26-29 November 2024
- ◆ **Ms. Minsha Shah**, gave a talk on "Design up-gradation of electronics for PMT sensor based systems in ADITYA-U Tokamak" at 3rd International Conference on Communication Control and Intelligent Systems (CCIS 2024), GLA University, Mathura, 6-7 December 2024
- ◆ **Talks presented at 13th ITER International School (IIS2024), Nagoya, Japan, 9-13 December 2024**
 - **Mr. Nikhil Mohurle**, gave a talk on "Toroidal Electron Plasma Temperature Diagnostics in SMARTEX-C Partial Torus"
 - **Ms. Ruchi Varshney**, gave a talk on "Design and development of gas puff imaging diagnostic for ADITYA-U Tokamak"
- ◆ **Talks presented at IEEE Microwave, Antennas and Propagation Conference (MAPCON 2024), Hyderabad International Convention Centre (HICC), Hyderabad, 09-13 December 2024**
 - **Mr. Abhishek Sinha**, gave a talk on "Design, Simulation and Testing of Wave Collection and Transport System for Michelson Interferometer Diagnostic"
 - **Mrs. A. Sarada Sree**, gave a talk on "Wide band reconfigurable salt water column antenna for RF communication"
- ◆ **Mr. Atul K Prajapati**, gave a talk on "Non-Destructive Examination & Testing of Integrated Vacuum Vessel Components" at 34th Annual Conference & Exhibition on Non Destructive Evaluation & Enabling Technologies, Chennai, 12-14 December 2024
- ◆ **Mr. Tulchhi Ram**, gave a talk on "Study of ECR-Produced Plasma Relevant to Fusion Devices" on 24th December 2024
- ◆ **Dr. Siba Prasad Acharya**, Saha Institute of Nuclear Physics, Kolkata, gave a talk on "Nonlinear waves and chaos in different plasma systems" on 03rd January 2025
- ◆ **Mr. Sagar Agrawal**, gave a talk on "Study of process parameters affecting secondary phase formation and grain size in Cu₂ZnSnS₄ thin film for solar cell application" on 06th January 2025
- ◆ **Mr. Ankit Dhaka**, gave a talk on "Experimental and Molecular Dynamics Studies of Transport Phenomena in a Complex Plasma" on 07th January 2025
- ◆ **Dr. Mahesh Choudhary**, Banaras Hindu University, Varanasi, gave a talk on "Study of uncertainty quantification and parameter estimation through nuclear reactions" on 10th January 2025
- ◆ **Dr. Harish Charan**, Durham University, United Kingdom, gave a talk on "What causes a transition from Static to Dynamic Friction?" on 13th January 2025

- ♦ **Mr. Patryk Nowak vel Nowakowski**, Department of Microelectronics and Computer Science (DMCS), Lodz University of Technology, Poland, gave a talk on "First testing results of the prototype ITER HXR-Monitor on Aditya-Upgrade tokamak" on 16th January 2025
- ♦ **Dr. Thangjam Rishikanta Singh**, Pondicherry University, Puducherry, gave a talk on "Interplay between Electron and Ion Plasma Waves" on 17th January 2025
- ♦ **Ms. Asha Adhiya**, gave a talk on "Study and Applications of Polarization Characteristics of Optical Media using Stokes/Mueller Matrix Polarimetry" on 23rd January 2025
- ♦ **Dr. Ram Swaroop**, gave a talk on "Understanding of power coupling in a fusion grade ICP device using COMSOL Multiphysics Simulations" on 30th January 2025

Upcoming Events

- ♦ 8th National Finite Element Developers' / FEAST Users' Meet (NAFED08), Indian Institute of Technology, Hyderabad, 01 February 2025; <https://nafed08.vssc.gov.in/>
- ♦ One Day Seminar on Surface Modification using Plasma Technologies (SMPT 2025), FCIPT-IPR, Gandhinagar, 4 February 2025; https://www.ipr.res.in/Brochure_SMPT_2025.pdf
- ♦ International Workshop on Cold Plasma Technology and Applications (CPTA-2025), Birla Institute of Technology Mesra, Jaipur, 6-8 February 2025; <https://conference.bitmesra.ac.in/cpta-2025/home>
- ♦ Workshop on Pulsed Power Technology and Applications, Max Planck Institute for Plasma Physics, Garching, Germany, 10-11 February 2025; <https://www.pulsed-power.org/events/isp-workshop-2025>
- ♦ India Energy Week (IEW2025), Yashobhoomi, Dwarka, New Delhi, 11-14 February 2025; <https://www.indiaenergyweek.com/event/2025/conference-overview>
- ♦ National Science Day (NSD2025) Celebrations at IPR, 15-16 February 2025; <https://www.ipr.res.in/outreach/documents/nsd25.html>
- ♦ International Conference on Nuclear Technologies (binding.energy the fusion/fission community event), Aachen, Germany, 19-20 February 2025; <https://binding.energy/>
- ♦ Fusion Industry Association Annual Policy Conference, Washington, USA, 25-26 February 2025; <https://www.fusionindustryassociation.org/fia-annual-conference-2025/>
- ♦ INDO-US Conference on Climate Change Impacts on Occupational and Environmental Health (CliCON OE2025), National Institute of Occupational Health (NIOH), Ahmedabad, 26th-28th February 2025; <https://cliconoeh.com/images/brochure/CliCON-OEH2025-Brochure.pdf>
- ♦ 3rd International Conference on Computer, Cybernetics and Education (ICCCE-2025), Jakarta, Indonesia, 27-28 February 2025; <https://iccce.co.in/>

In Memoriam

In Memoriam
Shri Jignesh Khimajibhai Bhagora



It is with profound sadness that we say the passing of Shri Jignesh Khimajibhai Bhagora, a dedicated and valued member of the ITER India team, who left us on January 17, 2025.

Shri Jignesh Khimajibhai Bhagora joined ITER India as a Scientific Assistant and made significant contributions to DNB project. He was a highly skilled and motivated individual with a strong work ethic and a positive attitude. His contributions to the project were immeasurable, always striving for excellence and inspiring others to do the same.

His journey with us has come to an end, but the path you forged remains a beacon for all of us who had the privilege of working with you. He will be deeply missed by colleagues and friends at ITER India and IPR. He will be remembered for kindness, his dedication, and work ethics.

Our thoughts and prayers are with Shri Jignesh Khimajibhai Bhagora's family during this difficult time.

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Know Your Colleague



Mr. Ankur Jaiswal joined IPR in July 2014 as Technical Assistant-B. He completed his diploma in mechanical engineering from Government Polytechnic Ambala in 2010. Prior to joining IPR, he was working with Larsen & Toubro Ltd., Hazira. After Joining IPR, his initial work was in Tritium Blanket Module (TBM) division where he assisted in fabrication and operations of various Liquid Metal (Pb-Li) Loops (Cold Trap Loop, Corrosion Loop, LL-MHD Loop etc.). In 2018, he completed his graduation in mechanical engineering from The Institution of Engineers, Kolkata. He has been working with Magnetics and Dynamics Section (Advanced Tokamak Division) since 2018 where he is assisting in the ongoing fabrication, testing and installation of various components of small scale electromagnetic launcher (Linear Induction Motor (LIM), support structures, payload, guide rails etc.). He is actively participating in the Staff Club activities. He took part in two inspirational plays (Nukkad Natak) one for the environment day and another one for vigilance awareness. He actively participates in the various online and offline competitions being arranged by IPR from time to time.

FCIPT Visit by IIT-D Students



Quote of the Month

"Unity is strength. . . when there is teamwork and collaboration, wonderful things can be achieved."

--Mattie Stepanek

The IPR Newsletter Team

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