

Issue 130
May 2024

The 4th State

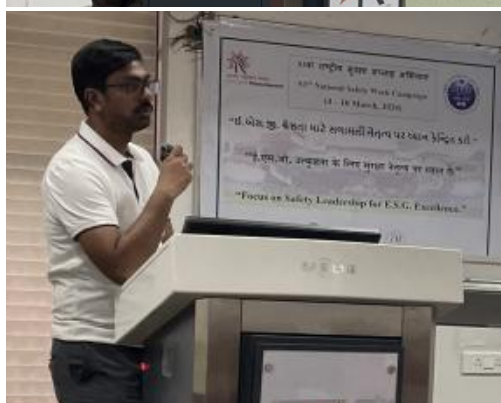
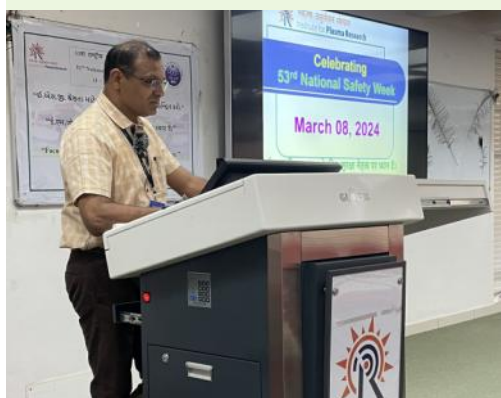
Newsletter of the Institute For Plasma Research, Gandhinagar, Gujarat (India)



53rd National Safety Week – 2024 @ IPR

The 53rd National Safety Week was celebrated at IPR from 4-10 March 2024. This year's theme was "*Focus on Safety Leadership for Environmental Social and Governance (E.S.G.) Excellence*". IPR organized various competitions to create safety awareness amongst its employees. Competitions were organized for the employees of IPR, FCIPT & ITER-India on Slogan writing in Gujarati, Hindi & English, Quiz and Essay Writing in Gujarati, Hindi & English based on the decided theme. Overwhelming response was received from the employees for these competitions.

In addition to this, safety division also conducted demonstration of firefighting equipment for the employees during this week. A talk on "*Periodic Hydrostatic Testing, Inspection, Safety and Certification of High Pressure Helium Gas Cylinders of IPR*" was delivered by Shri Rajiv Sharma.

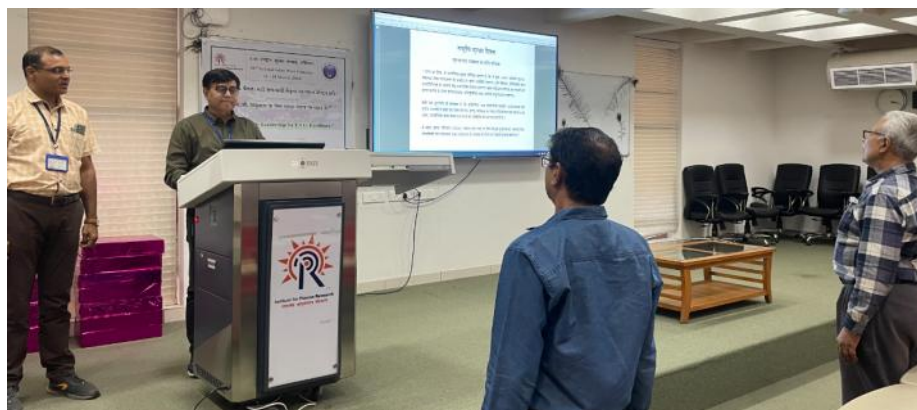


Images from the 53rd National Safety Week activities held at IPR

The Concluding Session was conducted on 8th March 2024 at IPR, during which, a welcome address delivered by Shri Devendra Modi. This was followed by a talk on “*Safety Measures and Precautions-CWS Project Execution*” delivered by Shri Rakesh Ranjan & Shri Rohit Agrawal. Some thoughts on safety were delivered by Dr. Paritosh Chaudhuri, Dean (R&D). He emphasized that safety should be an integral part of the future vision and technology and that one must create a culture of safety where safety is not just a matter of compliance, but a way of life. He congratulated the winners of various competitions and safety committee for organizing this event. This was then followed by a Safety Pledge administered by Dr. Rajesh Kumar, Member – Safety Committee.

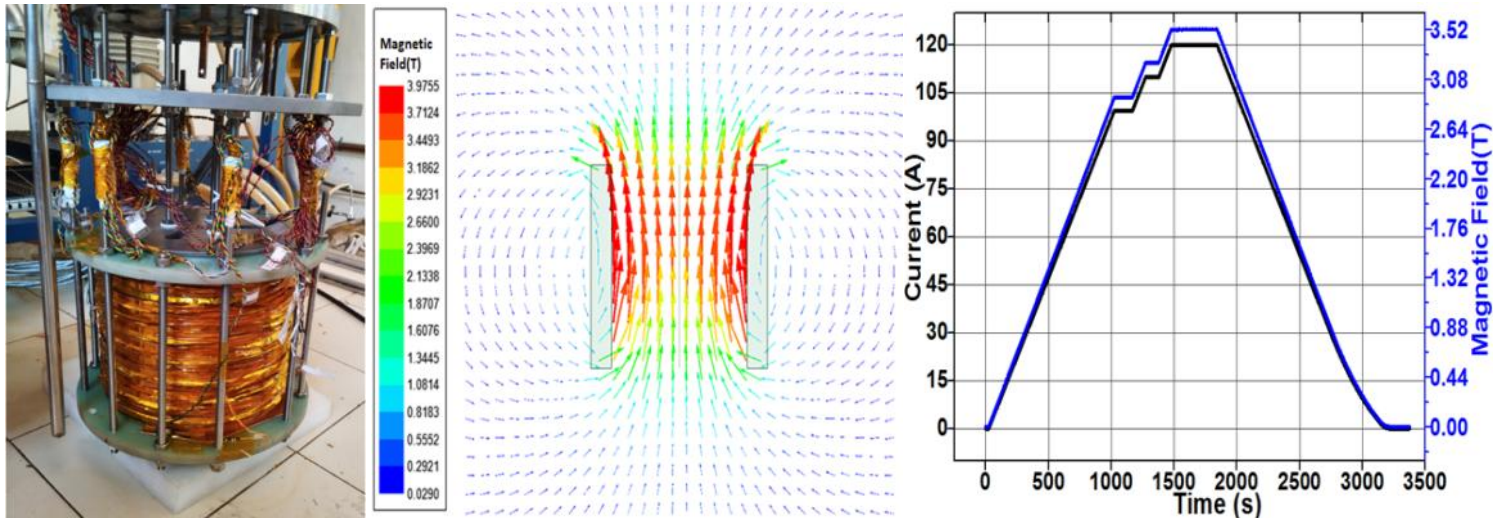
Prizes were then distributed to the winners of the various competitions. Shri Dinesh K. Gupta, Member – Safety Committee, delivered the vote of thanks to mark the end of the event.

Competition	First Prize	Second prize	Third prize
Gujarati Slogan	Rajnikant Amaliar	Chirag Bhavsar	-
Hindi Slogan	Brijeshkumar Panchal	Dikens Christian	Omkar Chandzatre
English Slogan	Akashkumar Rathod	Alok Balajee Nachiketa	Pratibha Gupta
Gujarati Essay Writing	Chirag Bhavsar	Dikens Christian	-
Hindi Essay Writing	Gaurav Purwar	Mohit Kumar	Aroh Srivastava
English Essay Writing	Ambati Siva Reddy	Amit Yadav	Krishna Mohan Kumar
Quiz	Pratibha Gupta	Anand Visani Rohitkumar Panchal	Himanshu Pandey Akshay Vaid



Images from the 53rd National Safety Week activities held at IPR

Compact and high field electromagnets made out of High Temperature Superconductors (HTS) are needed for a variety of applications. These include MRI machines, magnetic fusion, particle accelerators, quantum computing, superconducting magnetic energy storage, transformers, industrial motors & generators. The use of HTS tapes (currently imported) for the fabrication and testing of an HTS magnet involves challenging technologies like double pancake (DP) winding, stacking of DPs, in-situ nano-Ohm joint fabrication, fabrication and integration of current leads, and testing & protection during quench. IPR had earlier realized (a) A Bismuth Strontium Calcium Copper Oxide (BSCCO) HTS magnet with a warm bore diameter of 50 mm, capable of producing 0.2 Tesla field at 64 K, and (b) A 180 mm long HTS solenoid magnet of inner and outer diameters 110 mm & 132 mm using Rare-Earth Barium Copper Oxide (REBCO) tapes, capable of producing 1.14 T at 52 K. In a major step forward, for the first time in India, IPR has fabricated a 232 mm long HTS solenoid magnet with inner & outer diameters 200 mm and 260 mm using REBCO tapes. This has produced a central magnetic field of 3.52 T at 4.2 K for over 360 sec, maintaining excellent cryo-stability.



(L) The HTS magnet (M) The magnetic field profile (R) The measured current & magnetic field

Design, Development & Testing of Fast Response Bi-polar Power Supply

The Aditya-U Tokamak at IPR has recently been reconfigured for Divertor Operation. This requires rapid bipolar variations in the "Divertor Coil", which must be driven by a specialized power supply. For this application, IPR has developed a fast response bi-polar power supply (FRBPS) of rating 500 V/ \pm 5 kA and successfully tested on a dummy load. The power supply has been indigenously designed, developed and fabricated, including the DSP and analog controller and its protection circuit. The total cost of the supply is 75% lower than a similar type of commercially-available power supply.

The maximum ramp rate of 2 MA/s has been achieved with a hysteresis band controller. The power supply includes Fiber Optic (FO) gate pulse firing, which makes it immune to environments with high electromagnetic noise (EMI) levels, such as near a Tokamak. The reference output current profile can be set using the digital interface of remote control. The power supply is modular, configurable and redundant, and these features reduce the downtime of the power supply. The duty cycle of the power supply is 2 second ON/60 second Off. If required, the operational time of the power supply can be increased as it incorporates water-cooling. Since it has been integrated in-house, the maintainability is easier as fault diagnosis and repair can be done at IPR itself. Protections have been incorporated for Tokamak operation-related issues like induced voltage and plasma disruptions.



(L) Power Supply with the Inverter Panel, Rectifier Panel and Transformer (R) The Power supply connected to dummy load

Plasma Exhibition @ Bhimtal (Uttarakhand)

4

Institute for Plasma Research (IPR), Gandhinagar (Gujarat), in association with the Birla Institute of Applied Sciences (BIAS), Bhimtal, Uttarakhand organized an exhibition on Plasma, the fourth state of matter during 27 Nov to 1 Dec, 2023. This program is part of IPR's rural scientific outreach activity in various states of India. This is the first outreach activity of IPR to be held in the state of Uttarakhand. The programme consisted of an exhibition on plasma, its applications, training programme for student volunteers, introductory talks on plasma for visiting students as well as competition on tokamak toy assembly for the students of BIAS.

The event was inaugurated by Dr. B.K. Singh, Director of Birla Institute of Applied Sciences (BIAS). For this exhibition, 55 students of BTech electronics and computer science from BIAS were trained by IPR team to explain the exhibits to visiting students. A fun filled competition for the student volunteers in assembling the TokoToy model was also organized as part of the event. Over 1000 students from schools in and around Bhimtal and Nainital as well as students from BIAS and general public visited the exhibition at BIAS. Click [HERE](#) to read more.



The plasma exhibition at Birla Institute of Applied Sciences, Bhimtal



Inauguration of the event (M) Dr. B.K. Singh, Director BIAS (R) DR. A V Ravi Kumar, IPR



Dr. B.K. Singh, Director of Birla Institute of Applied Sciences visiting the exhibition



Introducing plasma to visiting students and teachers

Plasma Exhibition @ Bhimtal (Uttarakhand)

5



Student volunteers explaining the exhibits to visitors



Tokamak assembly competition and winners of the competition



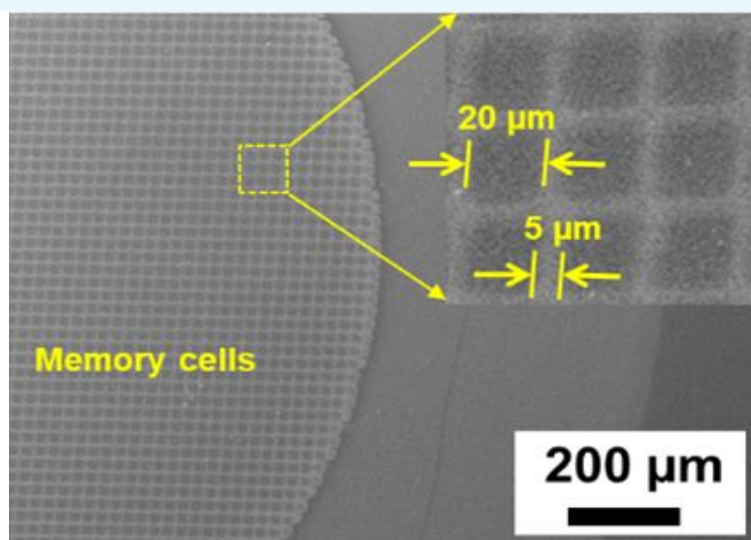
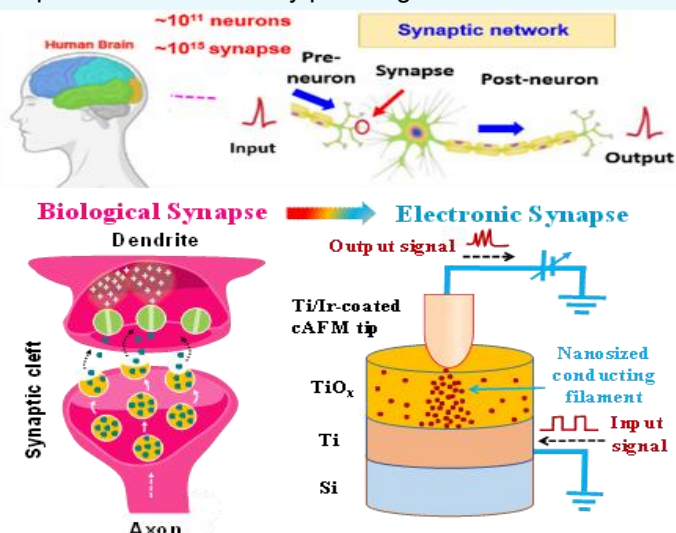
IPR team with the scientific volunteers from BIAS, Bhimtal during the plasma exhibition

Plasma Fireball-Mediated Ion Implantation for Nanosized Synaptic Emulator

The human brain can perform extraordinary tasks like object identification, sound recognition, and tactile perception due to the amazing computation ability of the synaptic network. In a neural network, neurons are connected via synapses delivers fast data processing ability to the bio-brain. So, inspired by the dual functions of bio-brain (processing and memory), future electronics are expected to be developed using a similar analogy in which both data storage and computation can be performed using a single device called neuromorphic computing. Hence an artificial synapse, needs to be explored to mimic the various functionalities of the bio-brain to realize a neuromorphic computing platform.

Traditionally (Sputtering + lithographic) as well as (Sputtering + Ion implantation) based process are used for making artificial synapse. However, lithographic method fails to control precise oxygen vacancies along the material films, time consuming, reproducibility issue and expensive method. Implantation works over smaller area limited by beam spot and big implanter facilities is needed.

IPR has developed a Plasma fireball (IPR patent) based process for developing nanosized electronic synapses over wafer scale with a precise and reproducible oxygen vacancies control. This process is highly economical, fast and does not require sophisticated facilities. We have successfully developed 1×10^6 number of synapses arrays of $(20 \mu\text{m} \times 20 \mu\text{m})$ size and 5×10^{11} synapses arrays of $(6 \mu\text{m} \times 6 \mu\text{m})$ size over a 3" wafer in which oxygen vacancies work as a charge carrier leading to conductance modulation of the TiO_x functional layer by forming conductive filament throughout the cross-section. The bottom titanium layer and cAFM tip work as pre and post-synaptic terminals of artificial synapses. Scientist from the SSMAS/PSED groups of IPR are currently pursuing this research.



Schematic illustration of biological and artificial synapse showing similar analogy of signal transmission and data storage.

CPP-IPR celebrated the 53rd National Safety Week Campaign to promote safety awareness among its staff members. The celebration included Safety Awareness Slogan, Essay, and Quiz competitions. The Slogan & Essay competitions were conducted in three languages (Assamese, Hindi, and English) based on this year's theme, "Focus on Safety Leadership for E.S.G. Excellence (Environmental Social Governance)," as decided by the National Safety Council of India. The competitions received a positive response from the staff members. The Slogan and Essay competition was held on 29th February 2024. The Quiz competition was held on 4th March 2024. The concluding session took place on 11th March 2024. Mr. A. Baishya delivered a General Safety Awareness talk, followed by award distribution ceremony.



Buyer-Vendor Meet @ IPR

A "Buyer-Vendor meet" was jointly organized by Indore Regional Purchase & Stores Unit (IRPSU) & Institute for Plasma Research (IPR) Gandhinagar on December 04, 2023 at IPR. It was organized with an intention to educate the vendor community to address various issues being faces by Vendors and sellers and also to get their feedback on the new GeM Portal & CPP Portal. About 43 Bidders/vendors participated from across the country in person and 34 participated in online mode.



(L) Inauguration of the event (R) Panel discussion

Shri Devendra Modi, Head-PMMD, IPR welcomed all the vendors who participated in this meeting in person and online. The meet was inaugurated by Dr. Shashank Chaturvedi, Director, IPR, Dr. Padmakumar G, Director, DPS, Shri Avinash Puntambekar, Regional Director, IRPSU, Prof. S. Mukharjee, Dean, Administration IPR, Dr. Paritosh Chaudhuri, Dean (R&D), IPR, Shri Amit Kumar Srivastava, Chairperson, Senior Purchase Committee, IPR and Dr. V. Prahlad, Chairperson, Stores Committee, IPR.



Clockwise (from top) Smt. Seema Dinu (IPR), Devendra Modi (IPR), Shri Avinash Puntambekar (IRPSU), Dr. Padmakumar G (DPS), Shri Sagar Soni (GeM), Prof. S. Mukherjee (IPR), Dr. Shashank Chaturvedi (IPR), Shri Nipen Nath (IPR), and Shri Krishnaji G. Bilaskar (IRPSU), delivering their addresses during the meeting.

1. CPP-IPR's participation at North East Startup and Entrepreneur Conclave, 2024.

The outreach cell of CPP-IPR participated in the "North East Startup and Entrepreneur Conclave, 2024" held at Srimanta Sankaradeva Kalakshetra, Guwahati from 27th to 28th March, 2024. The conclave was organized by North East Centre for Technology Application and Reach (NECTAR) with the aim to display the vibrancy of the Northeast startup ecosystem, bringing together stakeholders to unite, investments, innovation and connectivity. In the CPP-IPR stall, few working models of plasma as well as posters on various applications of plasma were displayed. The various applications of plasma and the potential of creating startups based on plasma technologies were also explained to the visitors.

2. Seminar cum Workshop on Plasma Physics and its Applications

CPP-IPR's Outreach Cell conducted a "Seminar cum Workshop on Plasma Physics and its Applications" on 5th April, 2024 at Madhabdev University, Narayanpur, Assam. The programme was attended by around 10 teachers and 90 students of the university, including few students from Kaziranga University, Jorhat, Assam and North Eastern Regional Institute of Science and Technology (NERIST), Itanagar, Arunachal Pradesh. During the technical session I, Dr. Rakesh Moulick gave a talk on introduction to plasma physics, followed by a talk by Dr. S. S. Kausik on negative ion production in dusty plasma. Technical session I concluded with a talk on basics of experimental plasma physics by Dr. Ngangom Aomoa. During technical session II, the participants were shown glow discharge plasma, arc plasma, DBD plasma, Jacob's ladder and a plasma globe. The working principle of these plasmas and their applications were explained to the participants.



CPP-IPR participation at the North East Startup and Entrepreneur Conclave, 2024



Images from the outreach event conducted by CPP-IPR at Madhabdev University, Narayanpur, Assam

IPR won the Dr. Vikram Sarabhai Space Cup Cricket Tournament-2024 (Leather ball cricket tournament) organized in T20 format. In total, 8 teams i.e., Bank of Baroda, IIT Gandhinagar, ONGC, Pandit Deendayal Energy University (PDEU), Physical Research Laboratory (PRL) Space application Centre-A, Space Application Centre-B and Institute for Plasma Research (IPR) participated in this tournament. After the preliminary rounds, teams from IPR and ONGC qualified for the final. In the final played on 7-April-2024 at the ISRO-SAC cricket ground, IPR defeated ONGC by 23 runs to win the trophy after the gap of 17 years. Vipul More, captain of IPR team won the man-of-the-match on two occasions and also the title of Best Bowler of tournament. Mr. Pratik Nayak was awarded best all rounder of the tournament. Mr. Saurabh Dwivedi of team IPR was also the highest run scorer in final match. He scored 32 runs. Other team members who won man-of-the-match awards were Pratik Nayak, Saurabh Dwivedi, and Vishal Verma.

The IPR team consisted of Abhijeet Kumar, Abhinav Desai, Bikash Ranjan Dash, Deepak Yadav, Devesh Kumar Saini, Hardik Mistry (VC/WK), Harish Masand, Jignesh Patel, Nilesh Contractor, Pratik Nayak, Pratipsinh Rayjada, Saurabh Dwivedi, Sudhir Rai, Tapan Patel, Utkarsh Singh, Vipul More (C), Vishal Verma and Vishwarishi Maurya.



Date	Institution	Visitors
5-Apr-2024	Shri Guru Govind University, Godhara, Gujarat	21 students of BSc/MSc and 3 faculty
8/9 Apr -2024	L.D. College of Engineering, Ahmedabad	67 students of BE (Electrical) and 6 faculty
23-Apr-2024	Government Engineering College, Gandhinagar	17 students of BE (Metallurgy) and 2 faculty



Students and teachers from Shri Guru Govind University, Godhara, during their visit to IPR



Students and teachers from LD College of Engineering, Ahmedabad during their visit to IPR

Institute for Plasma Research (IPR), Gandhinagar (Gujarat), in association with Sankardev College, Shillong (Meghalaya), organized an exhibition on Plasma, the fourth state of matter during 11-15 March, 2024. This program is part of IPR's rural scientific outreach activity in various states of India. This is the second outreach activity of IPR to be held in the state of Meghalaya. The programme consisted of an exhibition on plasma, its applications as well as introductory talks on plasma for visiting students. The event was inaugurated by Dr. Eureka F. P. Lyngdoh, Principal, Sankardev College. For this exhibition, 50 students of various BSC courses of Sankardev College were trained by IPR team to explain the exhibits to visiting students in their local language. The concluding session on 15-Mar-2024 was graced by the Chief Secretary to the Govt. of Meghalaya and State Vigilance Commissioner, Shri Donald Phillips Wahlang, IAS, who also spent time visiting the exhibits and interacting with the student volunteers.

Over 1500 students and general public visited the exhibition at the Sankardev College. IPR's Outreach event at Shillong was coordinated by Mr. J. Choudhury and Dr. Sylvia Badwar of the Department of Physics, Sankardev College. Staff and research scholars from CPP-IPR also participated in this event. Click [HERE](#) for more details.



The plasma exhibition held at Sankardev College, Shillong



Inauguration of the event by Dr. Eureka F. P. Lyngdoh, Principal, Sankardev College



Student volunteers of Sankardev College explaining the exhibits to visitors



Visitors experiencing VR at the exhibition



Concluding session of the plasma exhibition (M) Shri Donald Phillips Wahlang, IAS, (R) Dr. Ravi Kumar, IPR



Shri Donald Phillips Wahlang, IAS, visiting the exhibition



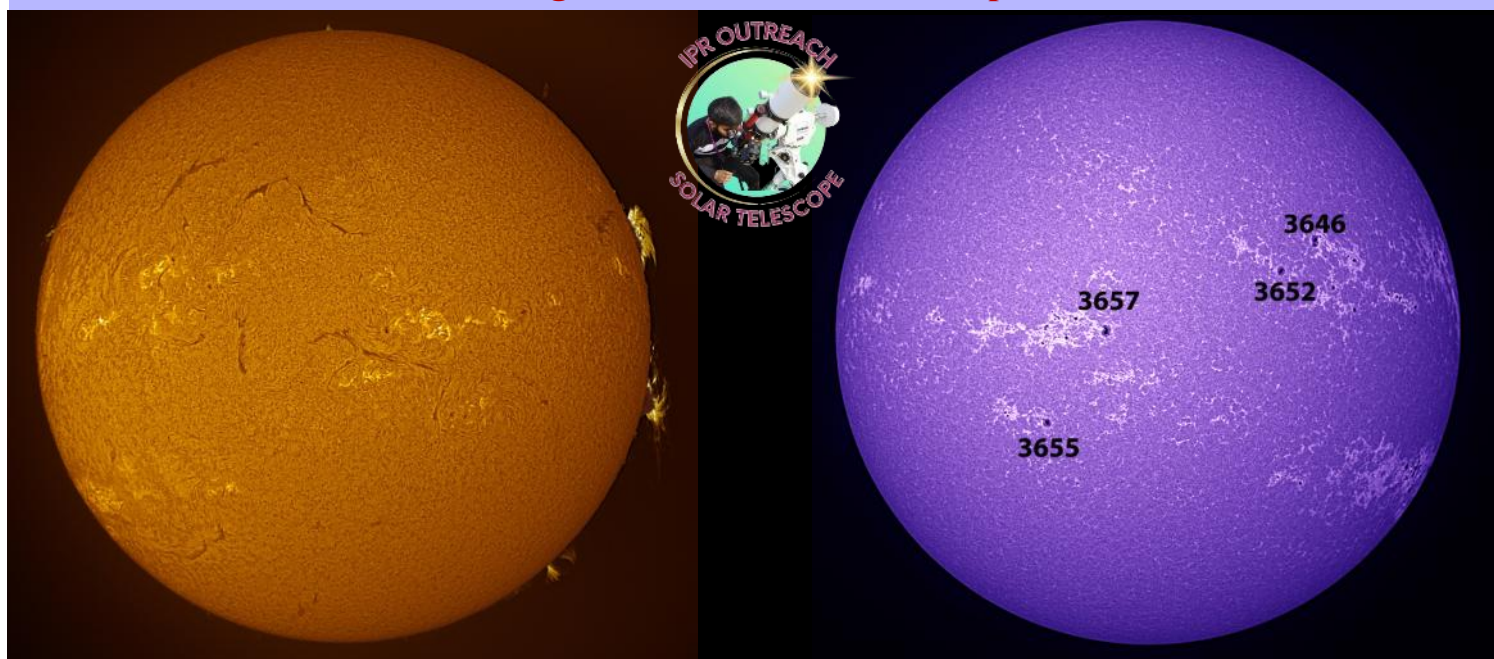
Student volunteers of Sankardev College with IPR team

- ♦ **Mr. Hemant Joshi**, gave a talk on "Advancements in High Performance Computing Cluster Resource Utilization through a Comprehensive Monitoring Dashboard" at 11th International Conference on Computing for Sustainable Global Development (INDIACom-2024), Bharati Vidyapeeth's Institute of Computer Applications and Management (BVICAM), New Delhi, 28 February -01 March 2024
- ♦ **Mr. Deepak Mandge**, gave a talk on "Development of Wireless Serial Server Module for the Remote operation of various Serial Field Device in ITER-India" at 3rd IEEE International Conference in Innovation in Technology (INOCON), Sai Vidya Institute of Technology, Bengaluru, 01-03 March 2024
- ♦ **Ms. Anshika Chugh**, gave a talk on "Aggregate Morphing of Self-Aligned Active Particles in a Confined Geometry" at APS March Meeting 2024, Minneapolis, Minnesota, USA, 3-8 March 2024
- ♦ **Dr. Zara Aftab**, Jamia Millia Islamia University, New Delhi, gave a talk on "Radiation processing of metal films: structural and morphological transformations on the nanoscale" on 22nd March 2024
- ♦ **Mr. Shrish Raj**, gave a talk on "Effect of impurity gas seeding on the boundary region of a tokamak" on 27-3-2024
- ♦ **Ms. Kalyani Swain**, gave a talk on "Laser-cluster interaction in strong external magnetic field" on 01 April, 2024
- ♦ **Dr. Prashant Barnwal**, gave a talk on "Study of transition behaviour of plasma fireball in various magnetically constricted anode" on 02nd April 2024
- ♦ **Mr Gaurav Garg**, gave a talk on "Comparative Analysis of Attention Mechanisms for Improved Hindi Speech Recognition" on 12th April 2024
- ♦ **Dr. Rohit Kumar Srivastav**, Jaypee Institute of Information Technology (JIIT), Noida, gave a talk on "Excitation of terahertz surface plasmons by lasers and electron beam" on 12th April 2024
- ♦ **Dr. Prabhakar Tripathi**, gave a talk on "Simulation and Experimental Study of a View Dump for Vertical Electron Cyclotron Emission (VECE) Diagnostic System" on 16th April 2024
- ♦ **Mr. Shishir Biswas**, gave a talk on "Turbulent dynamo action in a 3-dimensional magnetohydrodynamic plasma" on 17th April 2024
- ♦ **Dr. Deb Kumar Chakraborty**, University of Calcutta, Kolkata, gave a talk on "Analytical and computational studies of some nonlinear wave processes in plasmas" on 19th April 2024
- ♦ **Dr. Abin Rejeesh AD**, gave a talk on "Numerical modelling of an arc plasma and its interaction with the anode" on 24th April 2024

Upcoming Events

- ♦ Joint ICTP-IAEA Fusion Energy School, Trieste, Italy, 6-17 May 2024; <https://indico.ictp.it/event/10474>
- ♦ 1st Global Forum and International Workshop in Hybrid mode on Industrial Plasma Processes and Diagnostics (IPPD 2024), Indian Institute of Technology (IIT) Delhi, 09-10 May 2024; <https://ippd2024iitd.wixsite.com/event>
- ♦ 26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices (PSI-26), Marseille, France, 12-17 May 2024; <https://www.psi26.com/home>
- ♦ 15th International Particle Accelerator Conference (IPAC24), Nashville, USA, 19-24 May 2024; <https://ipac24.org/>
- ♦ 14th International Conference on High Energy Density Laboratory Astrophysics (HEDLA2024), Tallahassee, Florida, 20-24 May 2024; <https://hedla2024.sc.fsu.edu/>
- ♦ Summer School Programme of the Institute for Plasma Research (IPR), Gandhinagar, 27 May 2024 - 5 July 2024; https://www.ipr.res.in/documents/Advt_03_SSP_2024.pdf
- ♦ International Power Modulator and High Voltage Conference (IPMHVC), Indianapolis, USA, 28 May – 1 June 2024; <https://www.ipmhvc.com/2024-home/>

Images From IPR Solar Telescope



Images of the sun taken on 25-Apr-2024 captured in (L) H- α filter (656.28nm, low bandpass of <0.05 nm) showing dark filaments and flares (R) Ca-K (393.40nm) filter, showing the chromospheric network and prominent sunspots. Multiple images were stacked and post processed by Outreach Division to generate these images. [See FULL image](#)

FCIPT campus in Gandhinagar was established under IPR to develop plasma processing technology for the applications in industries. Since the campus's establishment, the FCIPT campus and its different experimental loads have been supplied with a single 11kV feeder. As the experimental load in FCIPT is increasing and the existing panel was very old. To meet the aforesaid requirements, a new 11kV panel with one incoming and three outgoing feeders, with improved protective schemes, have been installed at the FCIPT campus, replacing the previous arrangement containing single 11kV feeder. This new set-up is now capable of meeting FCIPT's current demand and future expansion.



The new 11kV HT Panel installed at FCIPT

Conference Presentations



IGCAR, कल्याकम में 10-11 जनवरी 2024 को "नया भारत: हरित ऊर्जा स्रोत" विषय पर आयोजित अखिल भारतीय हिंदी वैज्ञानिक संगोष्ठी - 2024 में IPR के श्री रविंदर कुमार ने 'ईंटर-भारत डायग्नोस्टिक सिस्टम्स की नवीनतम प्रगति का अवलोकन' विषय पर मौखिक प्रस्तुति दी एवं इसके लिए उन्हें द्वितीय पुरस्कार प्रदान किया गया।

Mr. Vinod Saini, Research Scholar, at IPR received the Best Paper Award at the International Conference on Advances in Aerospace and Energy Systems (IAES-2024), held during 04-06 April 2024 at the Liquid Propulsion Systems Centre (LPSC), Thiruvananthapuram, Kerala, for his paper entitled "Numerical Simulation of an Expanding Magnetic Field Plasma Thruster Using Iodine Fuel".

Dr. Mukesh Ranjan delivered a talk entitled "Low energy beam produced nano-particles arrays for sensing applications" at the International Conference on Sustainable Nanomaterials Integration and Organization for Energy and Environment (iSNIOE²), held during March 20-23, 2024, at the Shiv Nadar University, New Delhi.

Mr. Renjith Kumar R made a presentation entitled "Studying the melt dynamics of a thin-film using a probe laser" at International Conference on Light Matter Interaction & Ultrafast Processes, Mahatma Gandhi University (MGU), Kottayam, Kerala, during 1-4 March 2024. He received the best poster award for his presentation.

Title	Page No
53rd National Safety Week – 2024 @ IPR	01-02
3.5 Tesla HTS Magnet	03
Fast Response Bi-polar Power Supply	03
Plasma Exhibition @ Bhimtal (Uttarakhand)	04-05,06
Plasma-based Nanosized Synaptic Emulator	06
53rd National Safety Week 2024 at CPP-IPR	07
Buyer-Vendor Meet @ IPR	07
Outreach Activities @ CPP-IPR	08

Title	Page No
IPR Wins Vikram Sarabhai Space Cup 2024	09
Academic Visits to IPR	10
Plasma Exhibition @ Shillong (Meghalaya)	11-12
Past & upcoming Events @ IPR	13
Images From IPR Solar Telescope	13
Installation of New 11kV HT Panel @ FCIPT	14
Conference Presentations	14
KYC / Adieu!	15

Know Your Colleague



Mr.Suman Aich

Mr. Suman Aich did his MSc in Physics from IIT Kharagpur. He joined IPR in Technical Training Program batch of 2015. From 2016 onwards, he has been working in Aditya-U Operations Division. He obtained his M.Tech. in Fusion Science & Technology in 2019 from HBNI. He has working experience in plasma operation as well as analysis and, handling several diagnostics that include magnetic and radiation diagnostics etc. Suman is also involved in numerical analysis as well as handling required software. He has developed several numerical routines for analyzing experimental measurements. The results have been published in technical reports/scientific reports and in various journals. Currently, he is involved in the development of few diagnostic systems for tokamak as well as development of numerical routines for further data analysis. Suman demonstrates Aditya-U tokamak to the students and visitors during various outreach program and on science day. He has also guided graduate students in their projects. He has participated in outdoor team games like football, badminton and indoor games like caroms etc. in sports activities organized by IPR staff club. His other interests include drawing cartoons, singing and practicing in yoga. He has also won prizes in cartoon competitions organized at IPR.

Adieu!



As I sit down to complete the editing of the May 2024 issue of the IPR newsletter, a flood of emotions engulfs me. It's surreal to contemplate that this will be the last issue of IPR newsletter that I will be putting together - a remarkable 11-year journey that began with the humble task of chronicling the activities of IPR for posterity. Throughout these years, I've had the profound privilege of witnessing the IPR community evolve and flourish, both personally and professionally. Yet, amidst the triumphs, there have been moments of heartache as well. I've stood witness to the passing of dear colleagues, their obituaries a poignant reminder of the fragility of life and the depth of our bonds. Together, we've navigated the highs and lows, celebrating achievements, confronting challenges, and honoring the memories of those we've lost. In every article, in every photo, lies a testament to the resilience and spirit of the IPR family—a family that extends far beyond the confines of these pages.

To you, our cherished readers, I owe an immeasurable debt of gratitude. Your unwavering support, insightful feedback, and enthusiastic engagement have breathed life into each issue, propelling the newsletter to new heights with every passing month. And to the dedicated newsletter team—my comrades in ink and pixels—I extend my deepest thanks. Your tireless efforts and unwavering commitment have been the cornerstone of our success. Together, we've crafted 130 issues of the newsletter, each one a labor of love and a testament to our collective dedication, faithfully published on the first day of every month since August 2013!

As I bid farewell to IPR and my role in the IPR newsletter, I take solace in knowing that the legacy of the IPR newsletter will endure, offering future generations, a window into our shared history and a chance to relive the moments that have shaped us. To the newsletter team, I offer my heartfelt wishes for continued success and fulfillment. May the IPR Newsletter continue to thrive, serving as a beacon of inspiration and connection for years to come - Dr. A. V. Ravi Kumar

The IPR Newsletter Team

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