

Issue 093

April 2021

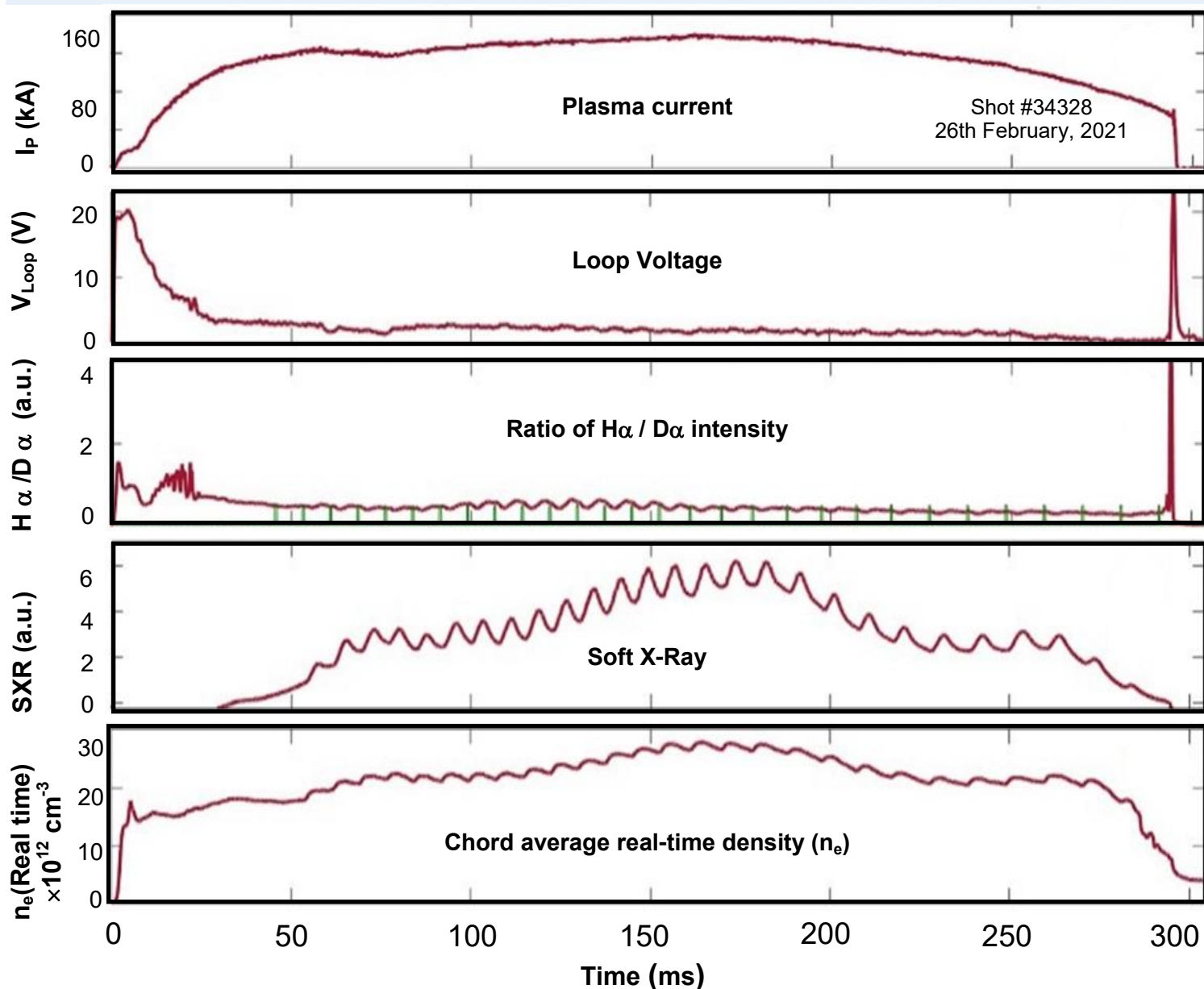
The 4th State

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

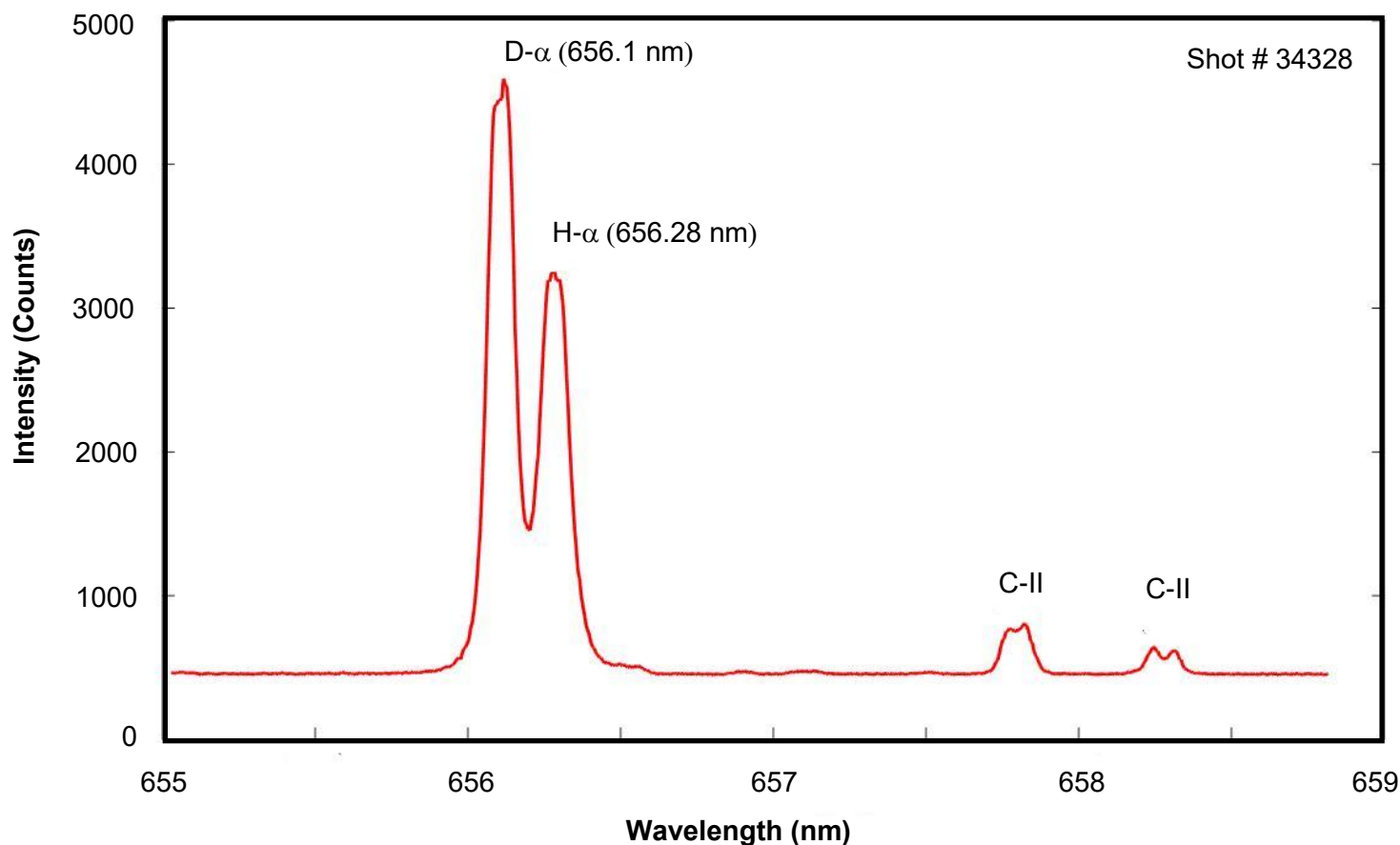


Aditya - U : Deuterium Plasma Operation

ADITYA-U tokamak has successfully demonstrated full Deuterium plasma operation for the first time in India. The long discharges (~ 300 ms) having ~ 140 kA of plasma current with deuterium as fuel gas (pre-fill as well as the gas-puffs: all deuterium) in ADITYA-U have been obtained at a main (toroidal) magnetic field of ~ 1.3 Tesla. This operation also demonstrating an electron density of $3 \times 10^{19} \text{ m}^{-3}$. Spectroscopic measurements of the intensities of both D- α and H- α lines (due to wall recycling as wall is loaded with hydrogen from previous discharges and also from discharge cleaning in hydrogen) was also recorded.



The time evolution of fully Deuterium assisted ADITYA-U plasma discharge (Shot #34328) represents the plasma parameters such as Plasma current (kA), Loop voltage (V), H α / D α intensity (a.u.), D2 gas pulses, Soft X-rays intensity (a.u.) and chord average real-time density (n_e).



The plasma spectrum showing the H- α and D- α lines during the Aditya-U shot #34238

International Women's Day

Nehru Science Centre, Mumbai organized an online lecture series by women scientist working in 7 Mega projects of India. The general topic of the series was "*Future Opportunities in the Frontiers of Science*". **Dr. Sejal Shah** from ITER-India delivered the talk on ITER and India's participation in ITER which was followed by interaction with girl students from various schools/colleges across the country and responded to questions on ITER from them and also discussed opportunities in the field of nuclear fusion science and technology.



Future Opportunities for Indian Girl students in Mega Science Projects

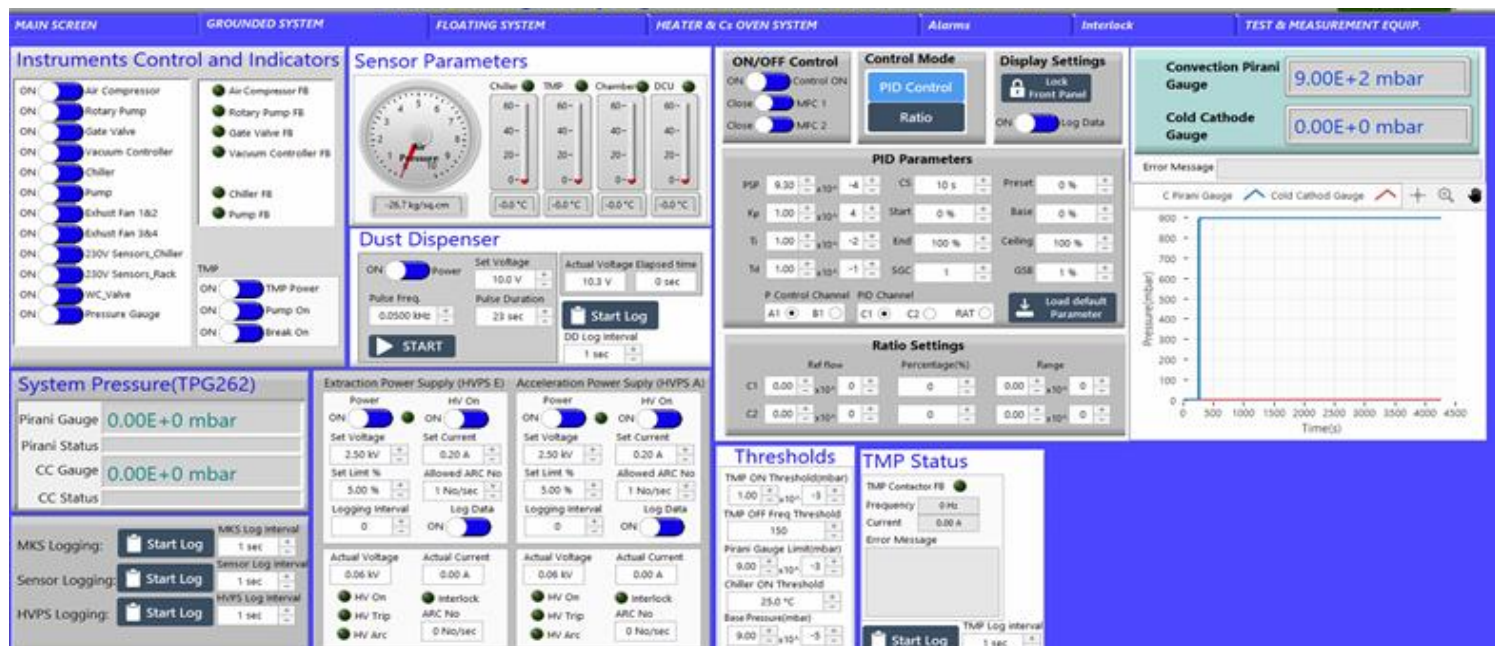
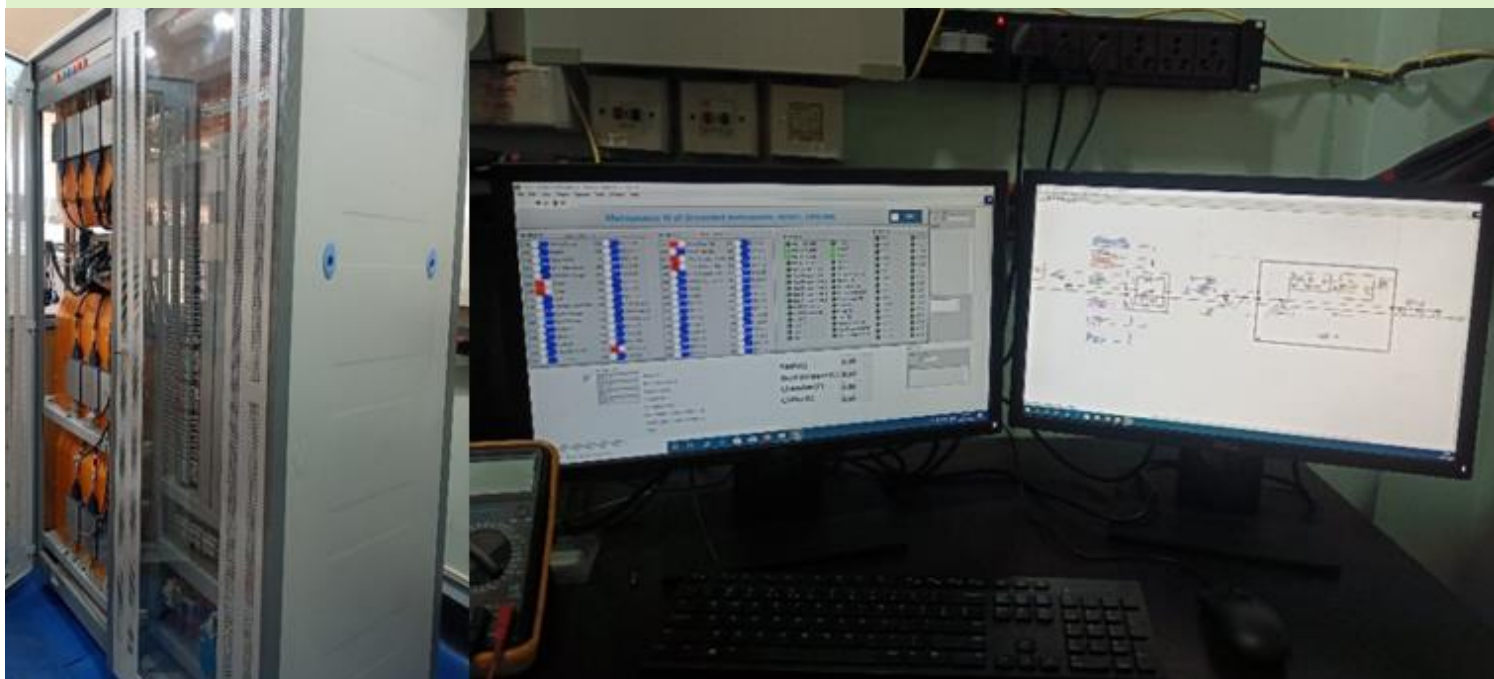


Design, Installation And Commissioning Of PXI Based Data Acquisition And Control System With Fiber Optic Link

A PXI based real-time data acquisition and control (DAQ&C) system has been designed, installed and commissioned successfully in the Negative Hydrogen Ion Extraction Laboratory of CPP-IPR to ensure proper monitoring and control including remote operation and diagnosis. This is the first DAQ&C system in CPP-IPR of its kind.

Different PXI modules with different interfaces and various speeds along with a real-time controller module have been integrated to have a perfectly working system as per the requirement. Besides different instruments, the PXI system also monitors and controls various subsystems, such as vacuum control system, cooling system, dust coating unit temperature controller system, etc. To interface, all such instruments, sensors with signal conditioning and subsystems, a total of ~200 channels of the PXI system is used.

In the experimental device, negative hydrogen ions produced from cesium coated tungsten particles in the plasma will be extracted by using a 15kV, 2A DC power supply and accelerated by using another 15kV, 2A DC power supply. This arrangement leads to a potential difference of 30kV in the floating plasma chamber along with the instruments used in that side *w.r.t.* the grounded extraction and acceleration chamber and connected instruments. Therefore, an 80 channels fibre optic link system has been incorporated for electrical isolation between the grounded PXI system and floating instruments including associated subsystems. Various slow and fast safety interlocks have been implemented in the system. The developed Graphical User Interface (GUI) in LabVIEW 2016 gives a detailed and easy excess to different instruments and subsystems. Graphic display and data logging enables the user to monitor and analyze/diagnose various experimental facts. A team comprising of S.S. Kausik, Nipan Das, B.K. Saikia, N.B. Sarma, D. Kalita and G.D. Sarma from CPP-IPR were associated with this work. The help and valuable advice were received from A. Gahlaut, R. Yadav, H. Tyagi, M. Bandyopadhyay, P.K. Srivastava, Kumar Rajnish and Amit K. Srivastava of IPR.



(Top) PXI based Data Acquisition and Control System (Bottom) The GUI of the DAQ and Control system

The 50th National Safety Week was celebrated at IPR from 4-10 March 2021. This year's theme was "Learn from Disaster and Prepare for a Safer Future." Due to COVID-19 situation, the institute organized various competitions online during this week to create safety awareness among its employees. Competitions were organized on *Slogan in Gujarati, Hindi & English, Online Quiz and Essay Writing in Gujarati, Hindi & English* based on decided topics for the employees of IPR, FCIPT & ITER-India. Overwhelming response was received from the employees for various competitions. Safety Training cum Awareness Program was also conducted by Shri D. Modi for the Safety co-ordinators during the week. The Concluding Session was conducted online on 10th March, with the following activities,

- A welcome address delivered by Shri Devendra Modi.
- A presentation on "*Safety Measures at High Heat Flux Test Facility at IPR*" by Shri Sunil Belsare.
- Safety Pledge read out by the Dr. P.K.Atrey, Dean (R&D).
- The Director delivered a Message on Safety. He emphasised that our preparedness towards any disaster may minimise its adverse effects. He informed that *Preparation through education is less costly than learning through tragedy. Don't learn safety by accident.* He congratulates all the winners of various competitions.
- Announcement of the winners of various competitions.
- Shri D Modi gave the vote of thanks on behalf of Shri Sunil Kumar, Chairman-Safety Committee.

Competition	First Prize	Second Prize	Third Prize
Gujarati Slogan	Dikens Christian	Rajnikant Bhatasana	Miteshkumar Patel
Hindi Slogan	Nisha Panghal	Sandhya Dave	Amit Ojha & Manoj Kumar Gupta (Er)
English Slogan	Alphonsa Joseph	Miteshkumar Patel	Shirin Bhesania
Quiz	Pratibha Gupta	Sukriti Hans	Ankit Gandhi
Gujarati Essay Writing	Anand Visani	Nikunj Patel	Unnati Patel
Hindi Essay Writing	Tushar Patel	Pratibha Gupta / N.C.Patel	-
English Essay Writing	Rohit Agrawal	Pramila Gautam	Rajamnna Swamy



(L) Dr. P. K. Atrey reading out the safety pledge (R) Director, IPR delivering his message on safety.

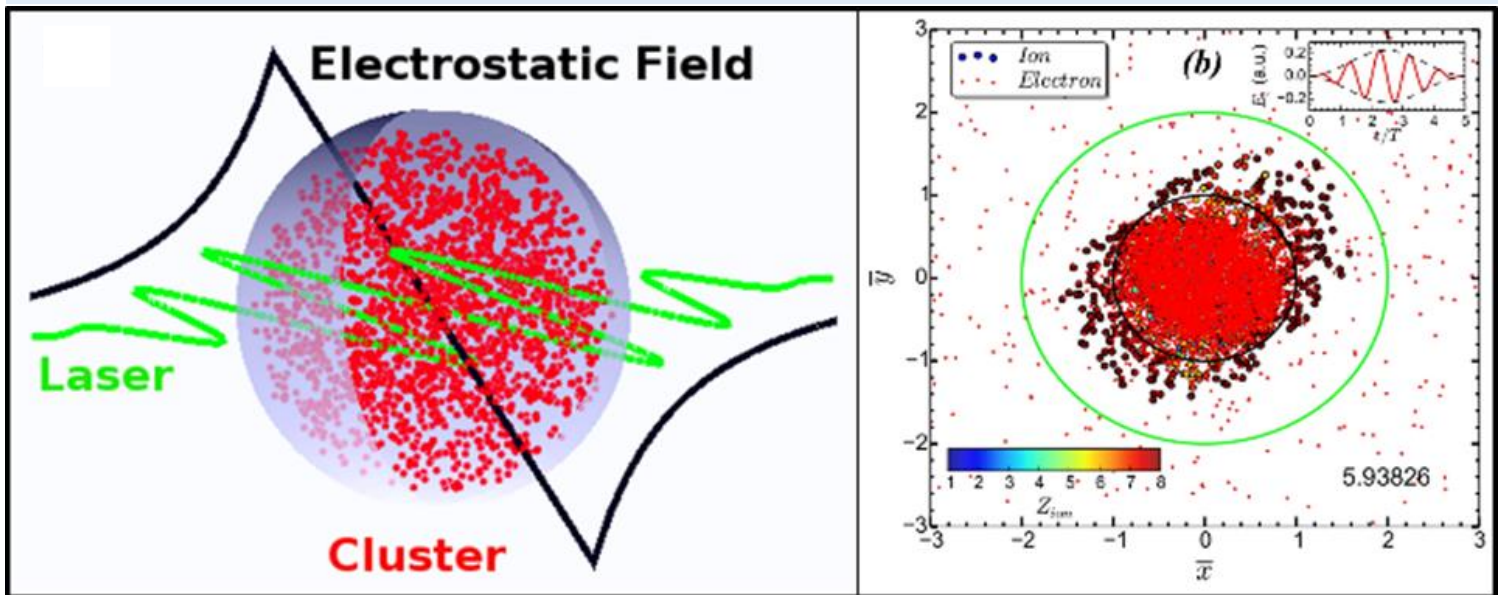
50th National Safety Week – 2021 @ CPP-IPR

CPP-IPR observed the 50th National Safety Week campaign with a 2-day programme on 4th & 10th March, 2021. Various competitions, like poster and slogan writing on safety issues, and a quiz competition were conducted among the employees. The quiz was conducted on-line on 4th March, 2021 and a total of 12 participants took part in the event. 4 nos. of slogan each in Assamese and Hindi and 5 nos. in English were received. The concluding function was held on 10th March, 2021. The program started with the welcome address by the Acting Centre Director. A brief talk on 'Electrical Safety' was delivered by Mr. Pallab Das, Electrical Engineer (Project). After this, the winners of various competitions were announced and rewarded.

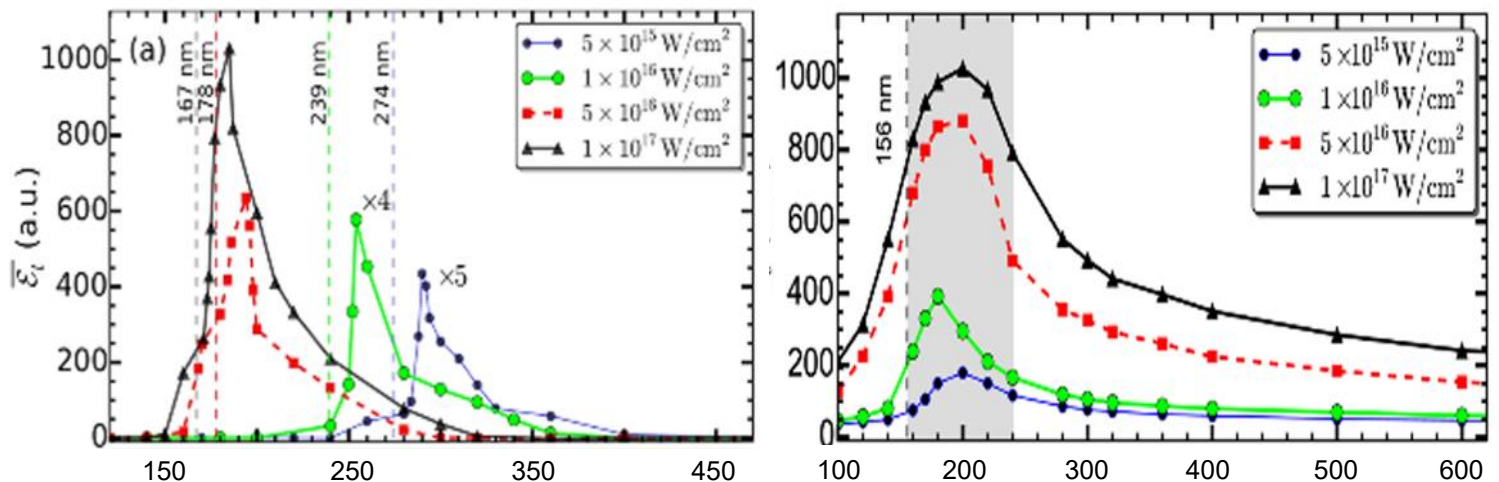


Clusters are finite aggregates of atoms/molecules (few to several thousands) bound together via Van der Waals forces. An atomic cluster combining the advantage of both solid and gaseous properties acts as a unique target for high-energy particle generation. Laser-driven clusters are shown to be very efficient absorbers of laser light (almost 90% absorption has been reported in the experiment) as compared to isolated atoms, gas-phase atoms and traditional solid targets. Clusters irradiated with strong laser pulses can serve as efficient table-top radiation sources of x-rays, energetic KeV electrons, MeV ions, and MeV neutrals. High neutron yield also has been found from fusion reaction in deuterium clusters. The energetic electrons and ions from laser irradiated clusters can be used in biological imaging as well as proton beam radiation therapy for cancer treatment. Therefore, the interaction of laser with atomic cluster has been the topic of considerable interest since the early nineties.

For the detailed understanding of different absorption mechanisms by electrons in a laser-driven atomic cluster, a three-dimensional molecular dynamics (3D-MD) code with soft-core Coulomb interaction among the charged particles has been developed from scratch. Using this newly developed 3D-MD simulation code in HPC clusters of IPR (UDAY and ANTYA) we study the dynamical behavior of deuterium and argon clusters irradiated by different peak intensities at different laser wavelengths. We identify anharmonic resonance absorption (AHR) mechanism as a universal dominant collisionless mechanism of absorption in the short pulse regime or in the early time of longer pulses in an over-dense pre-ionized deuterium cluster using MD simulations and rigid sphere model (RSM). By analyzing trajectories of individuals and extracting their time-dependent frequencies in the self-generated time-varying nonlinear plasma potential, we find that electrons become free from the cluster potential when the AHR condition is met i.e., when the dynamical frequency of an electron matches with the driving laser frequency. Again by performing RSM and MD simulations of an argon cluster, irradiated by short laser pulses we find out the optimal regime of laser wavelengths for an argon cluster to attain maximum absorption of laser energy at a given intensity and pulse energy. Our results reveal that, for a given peak intensity and a plasma density, the efficient coupling of laser energy does not happen at the well-known linear resonance (LR) wavelength instead it happens at a red-shifted wavelength in the marginally over-dense regime of wavelength. This new finding in laser atomic cluster study may be useful to guide an optimum control experiment in the short-pulse regime where maximum energy is required to transfer from laser-fields to charge particles and/or radiations.



(Left) Schematic of laser interaction with a spherical argon cluster, (Right) Dynamics of a laser-driven argon cluster shows inner ionization, outer ionization, and Coulomb explosion all happening simultaneously. Color bar shows the different charge states of the argon and inset plot shows the electric field profile of the laser pulse.



(Left) RSM results for average total absorbed energy (Right) MD results for average total absorbed energy. The shaded bar highlights that absorption maxima are red-shifted in the marginally over-dense regime of $\lambda/\lambda_M \approx 1-1.5$.

The National Science Day - 2021 was celebrated at CPP-IPR during the last week of February and first week of March, 2021. It was a week-long program where both online and offline competitions were held among the students of various schools of Sonapur and Guwahati. Due to Covid-19 pandemic, this year the competitions were held online which included essay, drawing, extempore speech and poster. The competitions were conducted in three groups - Group A (classes 2-5), Group B (classes 6-8) and Group C (classes 9-11). However, drawing and extempore speech competitions were held among the students of Nazirakhat Primary School at their school premises offline (which is few blocks away from CPP-IPR), with the help of the teachers and following covid-19 protocol. These were conducted among the students in two groups of class 1-2 and class 3-5.

An online concluding session was organized on 1st March, 2021. Prof. Jiban Jyoti Das of Cotton University, Guwahati, delivered a popular science talk. The names of the winners of various competitions were announced in the concluding session. The prizes were later distributed to the respective schools that participated in the events.



Images from the National Science Day events conducted by CPP-IPR

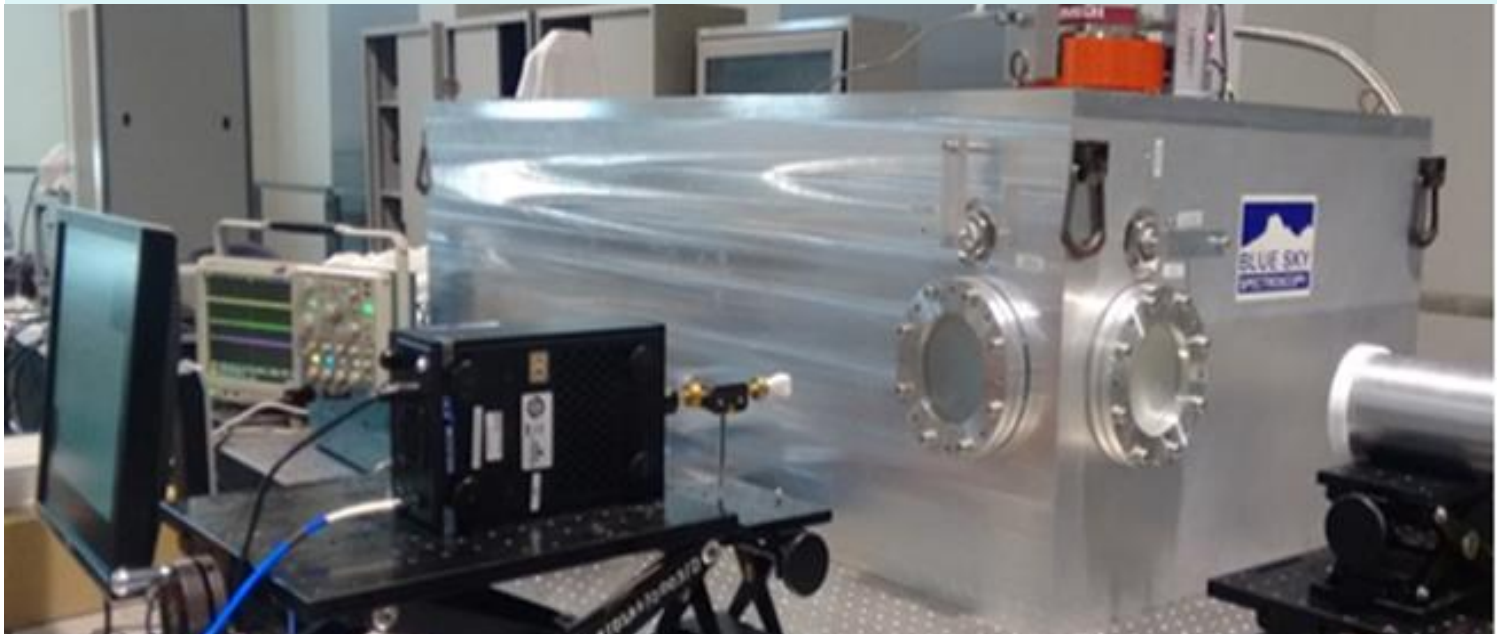
Preliminary Results of Prototype Martin-Puplett Interferometer and Transmission Line Developed for ITER ECE Diagnostic

The Electron Cyclotron Emission (ECE) Diagnostic system in ITER will be used to determine the electron temperature profile evolution, the high frequency fluctuation of the plasma electron temperature, the characterization of runaway electrons and the radiated power in the electron cyclotron frequency range (70-1000 GHz). These measurements will be used for advanced real time plasma control (e.g. steering the electron cyclotron heating beams) and the ITER plasma physics studies.

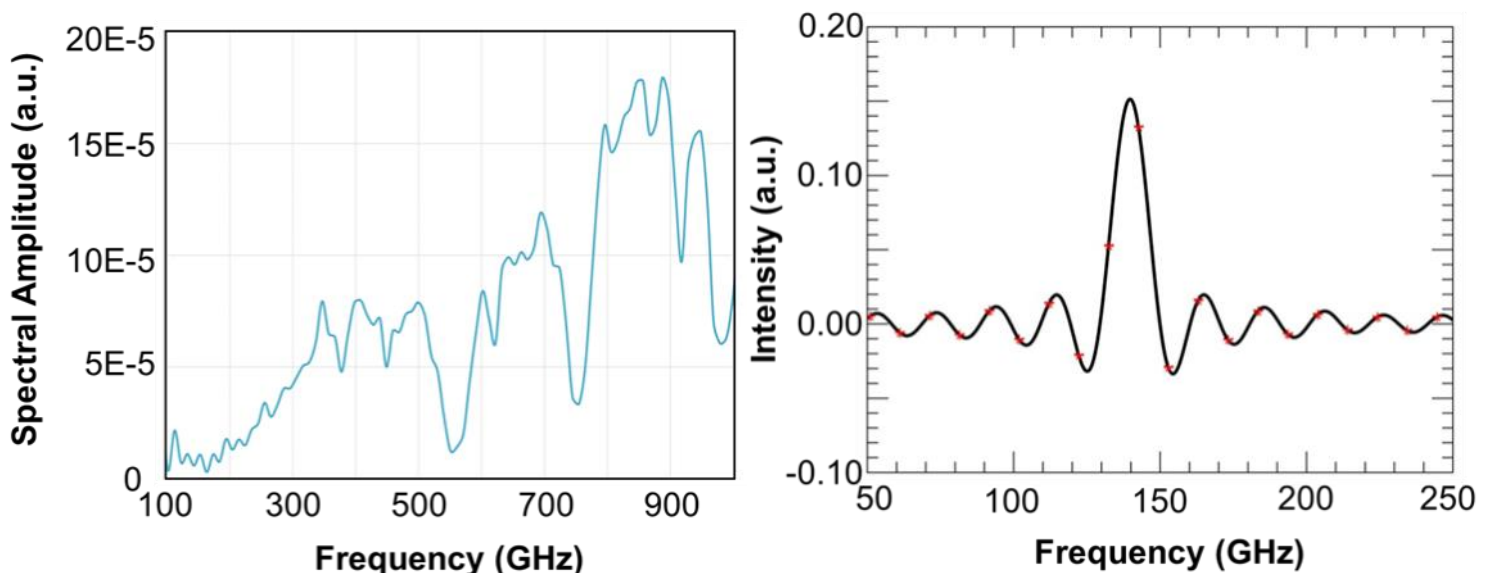
In view of the ITER requirements, an ultra-wide band (70 – 1000 GHz) transmission line coupled to a fast scanning and Broadband spectrometer are required to estimate the ECE radiated power loss and to study the behavior of runaway electrons. Typically, the transmission lines and spectrometers are not operated in vacuum and there are consequently significant losses at certain frequencies due to water vapor line absorption over this large frequency range. To avoid these losses, both the transmission line and the spectrometer must be operated in vacuum. Further, producing an efficient high etendue long wavelength spectrometer with extremely high scan speeds in vacuum is a major challenge. In addition, long distance (~ 43 meters) transmission of very low in-situ calibration source power (~ nW level) with an ultra-wide frequency range is another challenge for the transmission line development. Therefore, a prototype polarizing Martin–Puplett interferometer (i.e. polarizing Fourier Transform Spectrometer) has been developed to operate in low vacuum with high throughput and excellent time resolution of 10 ms with scanning length of 15 mm. Also a prototype transmission line to be used in vacuum is developed.

An experimental set up has been established at ITER-India lab to test the performance of various prototype subsystems of the ECE diagnostic. The experimental set up consists of the high temperature black body source in the frequency range 70-1000 GHz, transmission line and the Fourier Transform Spectrometer (FTS) with data acquisition system.

The FTS parameters like spectral range, stability and frequency resolution are measured during installation of the interferometer at ITER-India lab. The stability of the interferometer measurement was measured to be approximately 1% as per requirement .



The FTS parameter measurement set up



(L) The output spectrum of the interferometer for the black body radiation source (R) Phase corrected (red symbols) and padded spectrum (black) of the 140 GHz line source

नगर राजभाषा कार्यान्वयन समिति, गांधीनगर के स्तर पर यूनिन बैक, क्षेत्रीय कार्यालय, गांधीनगर द्वारा नराकास, गांधीनगर के सदस्य कार्यालयों के कर्मचारियों के बीच 10 मार्च, 2021 को "शीर्षक बताओ" प्रतियोगिता का ऑनलाइन माध्यम से आयोजन किया गया, जिसमें तकरीबन 40 प्रतिभागियों ने भाग लिया।

इस प्रतियोगिता में प्लाज़्मा अनुसंधान संस्थान के श्री लक्ष्मी नारायण गुप्ता, वैज्ञानिक अधिकारी-डी ने द्वितीय पुरस्कार प्राप्त किया है। "शीर्षक बताओ" प्रतियोगिता में दिये गये चित्र के लिए श्री लक्ष्मी नारायण गुप्ता द्वारा लिखा गया शीर्षक - "विपत्ति में युक्ति, आशा और भरोसा"।



"शीर्षक बताओ" प्रतियोगिता में दिया गया चित्र

नराकास, गांधीनगर स्तर पर हिंदी निबंध प्रतियोगिता का आयोजन

नगर राजभाषा कार्यान्वयन समिति, गांधीनगर की 15वीं छमाही बैठक में लिये गये निर्णय अनुसार नराकास, गांधीनगर के सौजन्य से प्लाज़्मा अनुसंधान संस्थान (आईपीआर), गांधीनगर द्वारा दिसंबर 2020 में ऑनलाइन निबंध प्रतियोगिता का आयोजन किया गया। इस प्रतियोगिता में प्रतिभागियों ने दिये गये निम्नलिखित चार विषयों में से किसी एक विषय पर निबंध लिखकर 24 दिसंबर 2020 तक ईमेल द्वारा भेजे।

- देश की वर्तमान ज़रूरतों के संदर्भ में नई शिक्षा नीति की सार्थकता
- महामारी: नई पीढ़ी हेतु सीख एवं संदेश
- आत्मनिर्भर भारत अभियान एवं आम नागरिक की भूमिका
- क्या ऑनलाइन कक्षाएं शिक्षा का भविष्य हो सकती हैं?

निबंध प्रतियोगिता में नराकास सदस्य कार्यालयों के विभिन्न 9 कार्यालयों/संगठनों के कुल 14 प्रतिभागियों ने भाग लिया। प्रतियोगिता के परिणाम निम्नानुसार है:

क्रम सं.	पुरस्कार	विजेताओं के नाम एवं पदनाम	विषय
1	प्रथम पुरस्कार	श्री राहुल देव शर्मा, क्षेत्रीय वायु तकनीकी अधिकारी, मुख्यालय तटरक्षक क्षेत्र (उत्तर-पूर्व)	आत्मनिर्भर भारत अभियान एवं आम नागरिक की भूमिका
2	द्वितीय पुरस्कार	श्री मोहम्मद इकबाल, सहायक अनुभाग अधिकारी, केन्द्रीय विद्यालय संगठन	आत्मनिर्भर भारत अभियान एवं आम नागरिक की भूमिका
3	तृतीय पुरस्कार	श्री नरेश कुमार, वैज्ञानिक-बी, राष्ट्रीय सूचना विज्ञान केन्द्र	देश की वर्तमान ज़रूरतों के संदर्भ में नई शिक्षा नीति की सार्थकता
4	प्रोत्साहन पुरस्कार	श्री विनय नामजोशी, व्याख्याता, होटल प्रबंधन संस्थान	देश की वर्तमान ज़रूरतों के संदर्भ में नई शिक्षा नीति की सार्थकता
5	प्रोत्साहन पुरस्कार	श्री फूलचंद नागर, वरिष्ठ प्रबंधक, बड़ौदा एपेक्स अकादमी	महामारी: नई पीढ़ी हेतु सीख एवं संदेश

ऊपर उल्लिखित विजेताओं को नराकास, गांधीनगर की आगामी छमाही बैठक में पुरस्कृत किया जाएगा।

President	General Secretary	Cultural Secretary	Sports Secretary	Treasurer
				
Chhaya K. Chavda	Saroj Das	Hiral B. Joshi	Hiren D Nimavat	Vipul D. Datania

The newly elected executive members of the IPR Staff Club for the term 2021-2022

Congratulations !



Mr. Mitul R. Patel of ITER India was awarded the “ESAB India Award 2020” for the best poster (across all categories) for his poster presentation entitled “Manufacturing and Assembly of ITER Cryostat Welding Challenges and Experiences” presented at the International Congress 2020 held at Mumbai during 6-8th Feb, 2020.

This award, which is instituted by the Indian Institute of Welding, will be presented to him at the National Welding Seminar 2020-21 to be held at Vadodra, on 8th of April 2021. The award consists of a cash prize of Rs.30,000 and a citation. On behalf of IPR, we congratulate him on this achievement.

IPR Outreach

Outreach webinar programmes conducted during the month of March 2021

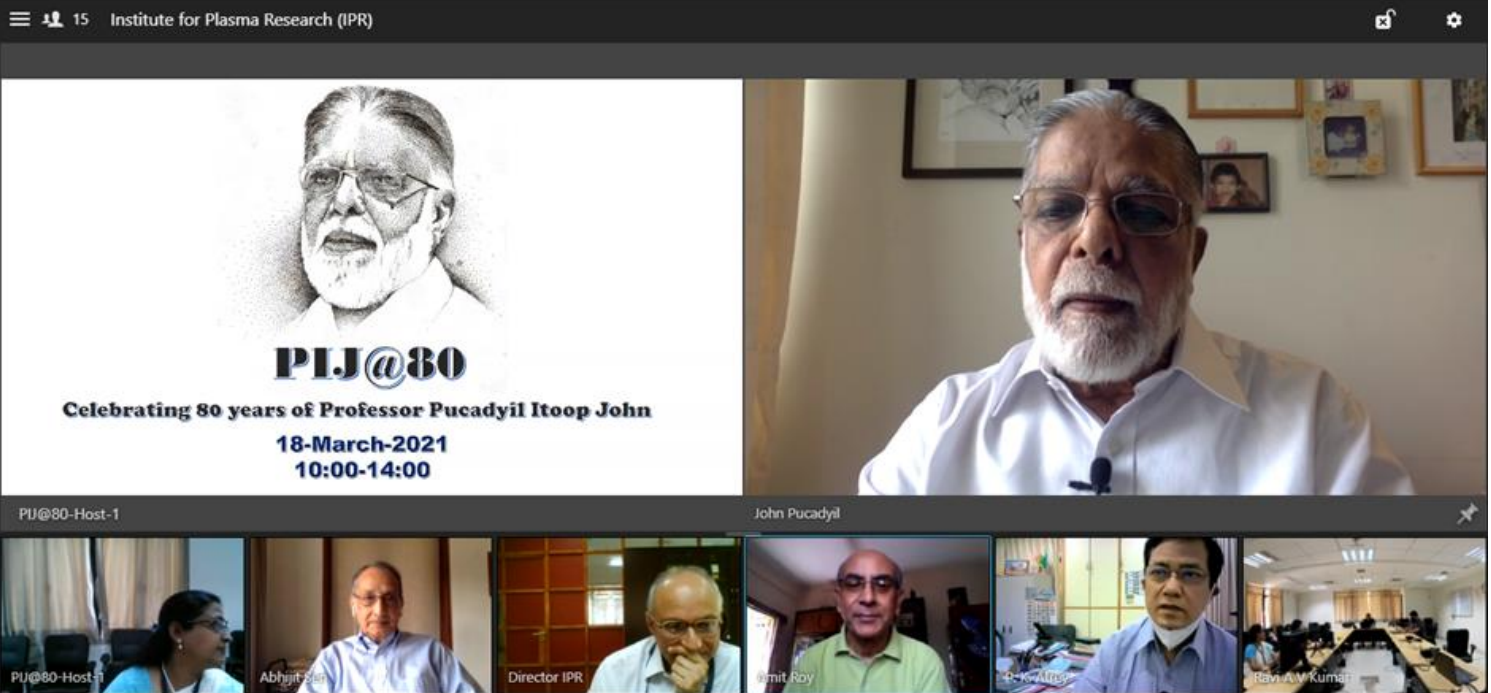
Date	Institution	Programme	Participants
10-Mar-2021	Sophia College, Mumbai	1-day, 4 hour webinar Plasma & its applications for BSc students	110 students of BSc (Physics/Chemistry) and 4 teachers.
15-16 Mar-2021	Smt. Shantaben Haribhai Gajera Engineering College, Amreli	2-day, 4 hour webinar Plasma & its applications for BTech students	32 BTech (ECE) students and 5 teachers



Students and teachers from Sophia College, Mumbai attending the webinar

An on-line function was organized on 18th March, 2021 to mark the 80th birthday of Padmashree Prof.P.I.John. This event had felicitations and talks on his contributions to various areas of plasma science & technology.

Dr. Shishir Deshpande	Prof John's contribution to Indian Tokamak and Fusion program
Dr. S. K. Nema	Prof John's contribution to Plasma Technologies Developed at FCIPT
Dr. Sambaran Pahari	Prof. John's contributions to Basic Science in the Context of Electron Plasma Research
Dr. A. V. Ravi Kumar	Prof John's contributions to NFP / BRFSST / PFRC programs
Prof P. Thomas	Prof John and his inspiration towards Scientific Research



Over 25 of Prof. John's colleagues and PhD students participated in the online meeting to felicitate him. Director IPR, Dr. Shashank Chaturvedi gave the welcome address and also revealed the book of felicitations as well as the Plasma physical vapour deposition TiN coated brass plaque with a stippling style sketch of Prof. John created by Shri. Narendra Chauhan of Outreach Division. Prof. S Mukherjee gave the vote of thanks. Professor John also gave his views on future of plasma based applications and encouraged scientists at FCIPT to think ahead and work towards developing more societal applications of plasma.



Clockwise (From Top) Dr. Shashank Chaturvedi, Dr. Shishir Deshpande, Dr. S. K. Nema, Dr. Sambaran Pahari, Dr. A. V. Ravi Kumar and Dr. P. Thomas delivering their talks

“Swachhata-Pakhwada” was observed at IPR and its campuses during 16-28 February, 2021 as a part of the “Swachh Bharat Mission” to promote cleanliness. As part of this drive, IPR staffs were motivated to clean their offices and laboratory spaces and clear away unwanted materials. All employees of IPR were effectively involved in mass cleaning activities during this fortnight. The activities carried out during of Swachhata Pakhwada -2021 were as follows:

- Ensuring general cleanliness of all the campuses of IPR
- Removal of all unwanted waste items collected from offices, laboratories and various open spaces of the institute campus. These items were segregated at one place for sorting and disposed them accordingly.
- Survey of several location of IPR campus waste collection disposal.
- Online Quiz (on ‘Swachhata’) and Eloquence (on the topic on ‘Cleanliness is our responsibility’ in Hindi/English/Gujarati) competition were organized for the Schools students in Ahmedabad-Gandhinagar districts.
- Poster, Slogan (Hindi/English/Gujarati) and Essay (Hindi/English/Gujarati) competition (for IPR staff and family) were organized for IPR staff and their families on the following topics:
 - Clean and Healthy India: A collective responsibility for all Indians
 - Role of Public sectors and Industries in clean India drive
 - How to inculcate cleanliness awareness among school children

A webinar on “Plasma Technologies for Waste Management” was organized in which Dr. S. K. Nema, Senior Scientist in IPR discussed about the plasma based technologies is used for the treatment and management of waste developed at IPR.

Apart from the above activities, the Swachhata Pakhwada committee, based on the nominations received from IPR staff, selected four ‘Swachhata Senani’ taking into consideration their contribution and involvement in various Swachhata activities since several years and felicitated them during the concluding session program. Prizes were also given out by Dr. P. K. Atrey, Dean R&D to the winners of various competitions conducted under the auspices of Swachhata Pakhwada 2021.



Collection and disposal of waste from the various campuses of IPR as part of Swachhata Pakhwada

Extensive collection of waste and garbage from office rooms, laboratories and other areas in all the campuses was undertaken over the week. These waste were then segregated and disposed off appropriately. As part of campus beautification, tree trunks were painted with terracotta to enhance their look as well as protect them from termites.

Quiz and Eloquence competitions for schools in Ahmedabad /Gandhinagar cities were conducted on-line in association with Outreach Division. Awards were also given to the "Swachhata Senani" who, on their own, have contributed to keeping their surroundings clean and green and also for spreading the concept of "Swachhata hi seva hai" in the society. They were Mr. Raj Singh, Mr. Gautam Vadolia, Ms Deepa Singh (wife of Dr. Rajesh Singh) and Mr & Mrs D. K. Gupta. Our hearty congratulations to them, and we hope that they will continue their good work.



Before Cleaning



After Cleaning



Before Cleaning



After Cleaning

Before & After cleaning images of (Top) parking lot (Below) Scrap Yard



Posters displayed at IPR campus during the Swachhata Pakhwada

Event	Name of the Participant	Name of the School	Prize
Quiz	Samarth Mundra	Delhi Public School, Gandhinagar	First
	Prajapati K. Gauthambhai	Shree Narayana Higher Secondary School, Naroda	Second
	Rishit Jha	Podar International School, Ahmedabad	Third

Event	Name of the Participant	Name of the School	Prize
English Eloquence	Helly Govani	Maharaja Agrasen Vidyalaya, Ahmedabad	First
	Joelliane Robinson	Podar International School, Ahmedabad	Second
	Aniket Kaushesh	Delhi Public School, Gandhinagar	Third
Hindi Eloquence	Palak Sharma	Maharaja Agrasen Vidyalaya, Ahmedabad	First
	Videka Sharma	Delhi Public School, Gandhinagar	Second
	Narang M. Anitbhai	Shree Narayana Higher Secondary School, Naroda	Third
Gujarati Eloquence	Rahi Patel	Podar International School, Ahmedabad	First
	Kairavi Bharad	Maharaja Agrasen Vidyalaya, Ahmedabad	Second
	Jay Pranav Joshi	Delhi Public School, Gandhinagar	Third



(Top) Results of the Quiz and Eloquence competitions held as part of Swachhata Pakhwada (Bottom) The online competitions being conducted





Images from the concluding session of the Swachhata Pakhwada-2021

- ♦ **Dr. N. I. Jamnapara**, gave an invited talk on "Overview of plasma technology applications in metallurgy & materials science" at a Webinar "Metallurgy for All" organized by Govt. Engg. College, Gandhinagar, on 3rd February 2021 and another invited talk on "Introduction to plasma processed composites" at a Webinar "Advances in Materials & Design (AMD-2021)" organized by SVNIT, Surat, on 12th February 2021
- ♦ **Mr. Santosh P. Pandya**, gave a talk on "Initial lab test results of Magneto-Optic Current Sensor diagnostic developed for plasma current measurement in tokamaks" at DAE-BRNS National Laser Symposium (NLS-29), Indore, 12-15 February 2021
- ♦ **Mr. Nitin Bairagi**, gave an invited talk on "High Temperature Superconductors (HTS) for Sustainable Technology" at International E-conference on "Synthesis, Characterization & Applications of Emerging Materials with Special Reference to Sustainable Technologies" organized by Jabalpur Engineering College, Jabalpur, under Technical Education Quality Improvement Program (TEQIP-III) during 22nd to 24th February 2021
- ♦ **Dr. Vishakha Baghel**, Amity University, UP, gave a talk on "Moist Air Condensation in Drop Mode" on 26th February 2021
- ♦ **Dr. Mukti Ranjan Jana**, gave an invited talk on "Ion Extraction and Acceleration from Plasma and its Applications" at National Science Day 2021 Webinar, Assam Donbosco University, Assam on 28th February 2021
- ♦ **Talks presented at Trends in Modern Physics-2021, Assam Don Bosco University, Tepesia, Assam, 26-27 February 2021**
 - "Programmable Electro-Mechanical Dust Dispenser for Dusty Plasma Experimental Device" by Nipan Das, S.S Kausik, and B.K Saikia
 - "Study of damping of ion-acoustic waves in two-electron temperature plasma" by G. Sharma, K. Deka, R. Paul, S. Adhikari, R. Moulick, S.S. Kausik, and B.K. Saikia
 - "Study of a dusty plasma sheath in presence of a non-uniform magnetic field" by K. Deka, R. Paul, G. Sharma, S. Adhikari, R. Moulick, S.S. Kausik, and B.K. Saikia
 - "Charging of dust grains in presence of two electron groups" by R. Paul, G. Sharma, K. Deka, S. Adhikari, R. Moulick, S.S. Kausik, and B.K. Saikia
- ♦ **Dr. Srinivasarao Bukkuru**, Institute for Plasma Research, Gandhinagar, gave a talk on "Geometric effects in Thin-film Deposition & DC Glow Discharge Sheath Code development" on 04th March 2021
- ♦ **Mr. Vikas Rathore**, Institute for Plasma Research, Gandhinagar, gave a talk on "Study of Plasma Activated Water and its Potential Applications" on 04th March 2021
- ♦ **Dr. Pravesh Dyani**, Czech Technical University in Prague, gave a talk on "Study of Compound Sawtooth Oscillations, Observation of EGAM in KSTAR and Development of Probe for the Measurements of Runaway Electrons Inside the Golem Tokamak Plasma Edge" on 05th March 2021
- ♦ **Dr. Paramita Patra**, ITER-India, Institute for Plasma Research, Gandhinagar, gave a talk on "Investigation of swift heavy ion irradiation impact on alumina" on 10th March 2021
- ♦ **Dr. Shashi Kant Verma**, Institute for Plasma Research, Gandhinagar, gave a talk on "CFD analysis of Cryogenic Twin- Screw Hydrogen Extruder System" on 11th March 2021
- ♦ **Ms. Meenakshee Sharma**, Institute for Plasma Research, Gandhinagar, gave a talk on "Perturbation Studies in a Plasma Confined by Multi-Pole Line-cusp Magnetic Field" on 12th March 2021
- ♦ **Dr. Sudheer**, Institute of Physics (IOP), Bhubaneswar, gave a talk on "Fabrication and characterization of nanostructured metallic thin films and periodic nanostructures for plasmonic applications" on 16th March 2021

Upcoming Events

- ♦ 28th Fusion Energy Conference (FEC-2020), Nice, France, (Virtual), 10-15 May 2021 <https://fec2020.fr/>
- ♦ 18th International Conference on Plasma-Facing Materials and Components for Fusion Applications, 17-21 May 2021 https://www.fz-juelich.de/conferences/PFMC-18/EN/Home/home_node.html
- ♦ 2nd International conference on advances in plasma science and technology (ICAPST-2021), Coimbatore, 27-29 May 2021 <http://icapst.in/>

नराकास, गांधीनगर स्तर पर हिंदी निबंध प्रतियोगिता का आयोजन

उपरोक्त विषयों पर संस्थान के कर्मचारियों के लिए आयोजित निबंध प्रतियोगिता के विजेता इस प्रकार हैं:

भाषा वर्ग	विजेताओं के नाम	पुरस्कार
'क' वर्ग	विनीत शुक्ल	प्रथम पुरस्कार
	प्रतिभा गुप्ता	द्वितीय पुरस्कार
'ख' वर्ग	रजनीकांत भटासणा	प्रथम पुरस्कार
	चिराग डोडिया	द्वितीय पुरस्कार
'ग' वर्ग	ज्योतिशंकर मिश्रा	प्रथम पुरस्कार

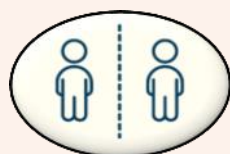
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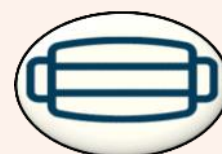
Help Fight The Covid-19 Pandemic



Wash Your Hands With Soap



Ensure Social Distancing



Always Wear Mask

- ◆ Avoid touching your eyes, nose and mouth
- ◆ If you have fever, cough and difficulty in breathing, seek medical care early
- ◆ Stay informed and follow advice given by your healthcare provider

- ◆ Inform Office immediately if you or any family member tests positive
- ◆ Follow SMS - **S**ocial Distancing : **M**ask : **S**oap/Sanitizer
- ◆ Strictly follow social distancing while outdoors, especially at work.

For your safety and for the safety of your co-workers, ensure that you always use Arogya Setu App

Know Your Colleagues



Mr. Hitensinh Vaghela joined IPR as a Scientific Officer-C in August 2005 in the SST-1 cryogenics division and contributed to the test of 10 kA class current leads and installation of the current feeder system to charge the TF magnets. From 2006 he started to work for the ITER cryo-distribution and cryolines (CDCL) project and worked on the task agreement for the conceptual design of the cryolines for ITER Torus and Cryostat cryopumps. He contributed in the design of testing scheme of the ITER supercritical helium cold circulator which was tested at full scale in ITER relevant operating conditions at JAEA (Now QST) cryogenic test facility. He has also contributed in the pre-qualification and procurement process of the ITER warm-lines, cryolines and cryo-distribution system components. He is now leading a CDCL team as a Project Manager of the ITER cryolines and cryo-distribution system which is now in advanced stage of design, manufacturing and installation at ITER site.

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