

Dr. Mahesh V. P., Indian Institute of Technology, Gandhinagar, gave a talk on “Mechanical and Electrochemical Performance of Aluminium Matrix Friction Stir Surface Composites” on 22nd January 2021

Dr. Sandeep Rimza, CIPET, Ahmedabad, gave a talk on “Design and Development of Helium Cooled Heat Sink Mock-up for Tokamak based Fusion Reactor Applications” on 29th January 2021

Dr. Rajashree Sahoo, Kalinga Institute of Industrial Technology, Bhubaneswar, gave a talk on “Heterogeneous Photocatalytic dye degradation using Zinc Oxide (ZnO) Semiconductor nanoparticles prepared from its Laboratory grade powder” on 5th February 2021

Dr. Sheetal Punia, Indian Institute of Technology, Delhi, gave a talk on “Tunable THz Radiation and Positron Generation by Dark Hollow Laser Beams” on 12th February 2021.

Dr. Vaishnvi Tiwari, University of Paris-Saclay, France, gave a talk on “A consistent approach for coupling lumped-parameter and phase-field models for in-vessel corium to thermodynamic databases” on 19th February 2021

Dr. Vishakha Baghel, Amity University, UP, gave a talk on “Moist Air Condensation in Drop Mode” on 26th February 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. 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

Dr. Rohit Mathur, Indian Institute of Technology, Dhanbad, gave a talk on “Design and Implementation of Printed Ultra-Wide Band MIMO Antenna for Wireless Communication Application” on 26th March 2021

Dr. Pravin Dwivedi, Indian Institute of Technology, Delhi, gave a talk on “Development of Nanostructured Metal Oxides-Carbon Composites for Rechargeable Ion Battery” on 31st March 2021

## E 6. SCIENTIFIC MEETINGS HOSTED BY IPR

### IPR Outreach Webinar/Events

Webinars were conducted for the science students of 10th, 11th and 12th classes of the Delhi Public School, Bopal, Ahmedabad on 9th and 10th of July, 2020. Over 175 participants from 10-12th standards as well as teachers participated in the interactive webinar.

Apart from webinars for students of educational institutions, due to popular demand, IPR Outreach conducted the first webinar for teachers, students and general public, and due to the overwhelming response, it is decided that such a webinar programme for general public will be organized once a month.

From 30-31 July 2020 at Ganpat University, Mehsana a two Days webinar on plasma & its applications was conducted. Similarly from 6-7th August 2020 and 13-14th August 2020 two Days webinar on plasma & its applications was conducted at MG Science Institute and St. Xavier’s College, Ahmedabad respectively. For general participants a one day webinar was conducted on 19th August 2020 on the topic plasma & its applications where 31 school / college teachers, students and general public participated.

On 26th August 2020 and 16th September 2020 a two hour webinar on Plasma & its Applications was conducted at Bhavan's Adarsha Vidyalaya, Cochin, Kerala (Batch 1: 56 students of class 12 and 4 teachers; and Batch 2: 61 students of class 12 and 6 teachers). Similarly one day webinar was conducted on 9th September 2020 for General Participants (31 Participants consisting of students, teachers and public) and on 10-11th September 2020 two days webinar on “Plasma and its Applications” at H&HB Kotak Institute of Science, Rajkot was attended by 36 BSc Physics students and 1 teacher

On 24-25th Sept, 2020 a 2-day, 4 hour webinar on Plasma & its Applications was attended by 59 science teachers of Bhavan's Vidyalaya group and other schools in Cochin. 2-Day, 4 hour webinar on 8-9-Oct, 2020 was attended by 60 BSc Physics students and 2 teachers of Mar Thoma College for Women, Perumbavoor, Kerala. Webinar on 14-Oct, 2020 was attended by 46 students (XII, BSc, MSc, MPhil) and 7

teachers. On 21st Oct, 2020 a special programme on Plasma with emphasis on experiments was attended by 40 children of 8-12 years age group.

### **Vigilance Awareness Week 2020**

As part of the activities of the Vigilance Awareness Week being observed at IPR from 27-Oct-2020 to 2nd Nov-2020, an "Integrity Pledge" was undertaken by the employees on 27th Nov, 2020, with Dr. Shashank Chaturvedi, Director and Dr. Anitha V P (CVO, IPR) leading the pledge. In view of COVID-19 pandemic related restrictions, the ceremony was conducted via video streaming, while only few officials were physically present. On 28th Nov, 2020, a webinar on "Synergy between Vigilance and Technology" by Shri Rajnish Kumar, Director (Digital Education), Ministry of Education, New Delhi, was organized. Participants from IPR joined the webinar through video conferencing as well as live video streaming.

Banners /posters based on the subject, "Satark Bharat, Samridh Bharat" ("Vigilant India, Prosperous India") were displayed at various locations at the main campus of IPR. An on-line quiz related to vigilance was also organized for IPR/FCIPT and ITER-India staff on 2nd Nov, 2020.

### **IPR Outreach Activities (November 2020 to January 2021)**

On 4th Nov. 2020 a two hour webinar on Plasma and its Application was conducted at Shakti Higher Secondary School, Rajkot. Where 37 Students from class twelve and one Teacher participated.

A two day long four hour webinar on Plasma & its applications for BTech/MTech/MSc Students was conducted on 5-6th Nov. 2020 at L. D. College of Engineering, Ahmedabad and 73 Students & 1 Faculty participated the webinar.

In Sir P. T. Science College, Modasa & Trainers of Gujcost Recognized District Community Science Centre, Aravall a two day long four hour webinar on Plasma & its applications for BSc/MSc students & Science trainers carried out on 9-10th Nov. 2020 and 54 Students & 2 Faculty members attended the webinar.

On 11th Nov. 2020 a four hour long webinar on Plasma & its Applications for BSc / MSc Students was carried out at P. D. Patel Inst. of App. Sci., CHARUSAT, Anand. Where 70 Students and one Faculty participated the webinar.

A Two day long four hour webinar on "Plasma & its Applications for PGT Physics teachers" for PGT Physics Teachers from various schools of Bhavans Education Trust across Kerala was carried out on 19-20th Nov. 2020 and Thirty-three +2 science/physics teachers attended it.

On 3-4th Dec. 2020, a Two day long four hour webinar on "Plasma & its Applications" was conducted in Providence Women's College, Calicut, Kerala about 64 BSc/MSc Physics Students and 4 Teachers participated in the webinar.

In Unmesh Secondary & Higher Secondary School, Jabalpur a two hour webinar on "Plasma & its applications" was carried out on 14th Dec. 2020 and 28 students and 3 teachers attended.

On 15th Dec.2020 a four hour long webinar on "Plasma & its applications" was carried out at Government Science College, Jabalpur and 36 BSc/MSc Students and 2 Teachers attended the webinar.

A four hour long webinar on "Plasma & its applications for PG Students and science teachers" was carried out at Sir Syed College, Taliparamba, Kannur, Kerala for two days from 21st to 22nd Dec. 2020 and 64 BSc/MSc Students & 2 Teachers attended the webinar.

On 6th Jan 2021, a 2 hour webinar on Plasma & its applications was attended by 60 students from Adani Vidya Mandir, Ahmedabad. On 7-8th Jan, 2021 a 2 day, 4 hour webinar for 35 BSc physics (3rd year) students of M A M O College, Manassery, Calicut, Kerala was organized. On 11-12th Jan-2021, 66 BSc physics students from KKTM. Govt.College, Pullut, Kerala attended the webinar. On 13th Jan-2021 20 students of 12th standard from Amrita Vidyalayam, Ahmedabad attended the webinar on Plasma & its applications.

### **National Science Day-2021 @ IPR**

The National Science Day (NSD) was celebrated at IPR during 8-12 February, 2021. Due to the Covid-19 pandemic,

all the programmes of NSD-2021 were conducted either as offline or online events. Competitions like essay and poster were conducted offline while those like eloquence, quiz and science models (for both teachers and students) were conducted online. The webinar facility of Outreach Division was used to conduct the online events. No. of participating schools were 51, No. of registered participants were 100, No. of events organized were 12, No. of prizes won were 52. In spite of the Covid-19 pandemic, there was good participation in the online events organized as part of the NSD-2021. Students who, by now, have had ample experience in on-line learning activities were found to be very comfortable participating in the online quiz, eloquence and science model competitions.

Teachers also took active part in the competition for educational models in science. The concluding ceremony was conducted online on 19-Feb-2021. Over 70 participants and teachers from various schools attended the event. Dr. P. K. Atrey, Dean R&D, IPR spoke to the participants and teachers. The prizes for the various competitions were also announced by him. The certificates were also distributed online to the winners of the various competitions. Following this, the participants shared their experiences and also gave their feedback on the NSD-2021.

#### **National Science Day-2021 @ CPP-IPR**

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.

#### **Swachhata Pakhwada 2021**

“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:
    - o Clean and Healthy India: A collective responsibility for all Indians
    - o Role of Public sectors and Industries in clean India drive
    - o 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.

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.

#### 50th National Safety Week-2021 @ IPR

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 minimize 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.

#### 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.

#### IPR Outreach Activities

On 10th March 2021, Sophia College, Mumbai, 110 students of BSc (Physics/Chemistry) and 4 teachers attended a webinar on Plasma & its applications and on 15-16 March 2021, Smt. Shantaben Haribhai Gajera Engineering College, Amreli, 32 B. Tech (ECE) students and 5 faculty members attended the webinar on Plasma & its applications.

#### Felicitation to Professor P. I. John

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. 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.

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## F. OTHER ACTIVITIES

### F.1 Outreach

Due to covid related restrictions, there were neither educational visits to IPR nor did IPR participate in any outstation outreach activities. However, the webinar programmes for school/college students as well as for science teachers were continued.

The National Science Day (NSD) was celebrated at IPR during 8-12 February, 2021. Due to the Covid-19 pandemic, all the programmes of NSD-2021 were conducted either as offline or online events. Competitions like essay and poster were conducted offline while those like eloquence, quiz and science models (for both teachers and students) were conducted online. The webinar facility of Outreach Division was

used to conduct the online events. Over 50 schools with over 100 students and teachers participated in the various online events.

During the period April 2020 to March 2021, a total of 27 webinar events were conducted for various levels of students as well as for science teachers across India. The total number of participants for these events was 1475.

Several working models of plasma such as (a) Demonstration of hot & cold plasma (b) Plasma jets (c) Tesla coil and gas filled tubes (d) Model of generic tokamak were added to the outreach exhibition.

### F.2 Official Language Implementation

According to the instructions of the Government of India, continuous efforts are being made for the smooth



Figure F.1 Events from National Science Day 2021 conducted online (top) quiz competition (bottom) event for teachers