Issue 055
February 2018

The Fourth State

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

69th Republic Day Celebrations @ IPR

The 69th Republic Day of the nation was celebrated with gaiety and enthusiasm with large number of IPR staff and their family attending the program. The Chief Guest for the day, Director IPR, Dr. Shashank Chaturvedi hoisted the national flag. Around 200 staff and their family members were present on this occasion. After the flag hosting ceremony the sports trophy distribution was done. The Guest of Honour for this event were the Chief Manager of SBI Gandhinagar and Branch Manager of SBI IPR branch. Director IPR and the Guests of Honour gave away the trophies to winners and runners-up of various sports competitions organized by IPR staff club. The SBI IPR had sponsored the sport events organized by IPR Staff Club. Various games were also organized for the staff and family members on the day.

National Science Day 2018

The National Science day was celebrated at IPR with a lot of fun and enthusiasm on 20-21 January, 2018. The event was inaugurated by IPR Director, Dr. Shashank Chaturvedi. Over 600 students from schools all over Gujarat participated in this event. The NSD also had competitive live events like Quiz, Eloquence, Skit as well as science exhibits by schools and by IPR staff, in collaboration with the BSc Physics students of St. Xavier's College, Ahmedabad. Offline competitions like poster and essay writing were conducted for the school students in the month of December. A new event was organized during this NSD, specially for school teachers on "Innovative teaching aids". This event had over 3000 visitors visiting IPR during the two days to see the exhibition and open house. The concluding session was held on 21st January and prizes for the various competitions were given out by Shri. P K Atrey (ACAO).

Director, IPR inaugurating the NSD-2018

(L) Video of the inauguration function. (R) IPR Director interacting with the young participants and teachers

The science exhibition for schools underway in the auxiliary building of IPR

Images from the NSD-2018

IPR @ AIA Industrial Expo 2018

IPR participated in the National level Vendor Development Programme-cum-Industrial Exhibition ("AIA Industrial Expo 2018) jointly organized by the Ankleshwar Industrial Association (AIA) and the MSME-Development Institute, Ahmedabad during 9 -11 January 2018 at the D.A. Anandpara Sports Complex, GIDC, Ankleshwar. The exhibition had posters depicting the industrial applications of plasma and the areas where IPR has been actively pursuing with respect to societal applications of plasma. Mr. Anand Visani of FCIPT gave a talk on "Plasma: The Pandora Box - Benefits to Indian Industries" at the seminar on Vendor Development.

(L) IPR's stall (R) Mr. Anand Vasani of FCIPT delivering his talk at the vendor's meeting at the AIA Industrial Expo 2018.

A Talk on Intellectual Property Rights & Patents @ IPR

An interactive talk on "Protecting your intellectual property rights & patents" was organized on 18th January 2018 at IPR, Bhat, Gandhinagar. The speaker of the talk was Ms. Gopi Trivedi, a techno-legal expert from the legal fraternity, having a combined background of technical knowledge with expertise in intellectual property. The talk was aimed to educate scientists & researchers of IPR to get acquainted with the intellectual property matters and issues related to patenting. Ms. Trivedi explained the participants about intellectual property and its scenario in India and listed out the do's and don'ts before patenting and emphasized with real life case studies. The process of patenting was also explained in detail.

(L) Ms. Gopi Trivedi delivering her talk. (R) View of the audience

(L) View of the audience (R) Dr. Nirav Jamnapara introducing the speaker

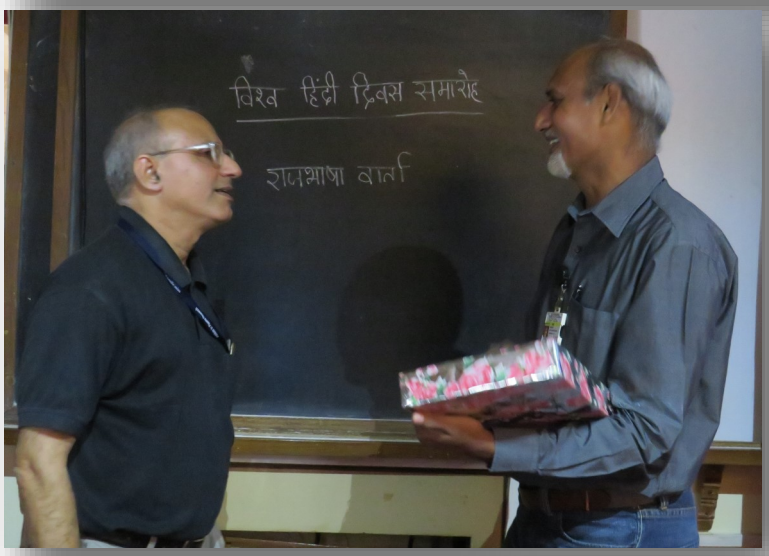
Staff Club - Cricket Tournament

The Plasma Trophy 2017, organized by the IPR Staff Club was completed, with the final match between “ITER-India Fighters” and “NBI Group” held on 6-Jan-2018. A total of 20 matches were organized during the course of this cricket tournament. Shri. P K Atrey, gave away the trophies to the winning and runner up teams as well as to the Players of the tournament. On behalf of IPR, the newsletter congratulates team “ITER-India Fighters” for winning the “Plasma Trophy 2017”.

Winners	Team	Staff Member
Winners	ITER-India Fighters	Mr. Gaurav Jogi (Captain)
Runner up	NBI Group	Mr. Nilesh Contractor (Captain)
Best Player of the tournament	ITER-India Fighters	Mr. Mohit Jadon
Best Batsman of the tournament	ITER-India Fighters	Mr. Mohit Jadon
Best Bowler of the tournament	ITER-India Fighters	Mr. Kartik Mohan

आई पीआर में विश्व हिन्दी दिवस समारोह 2018

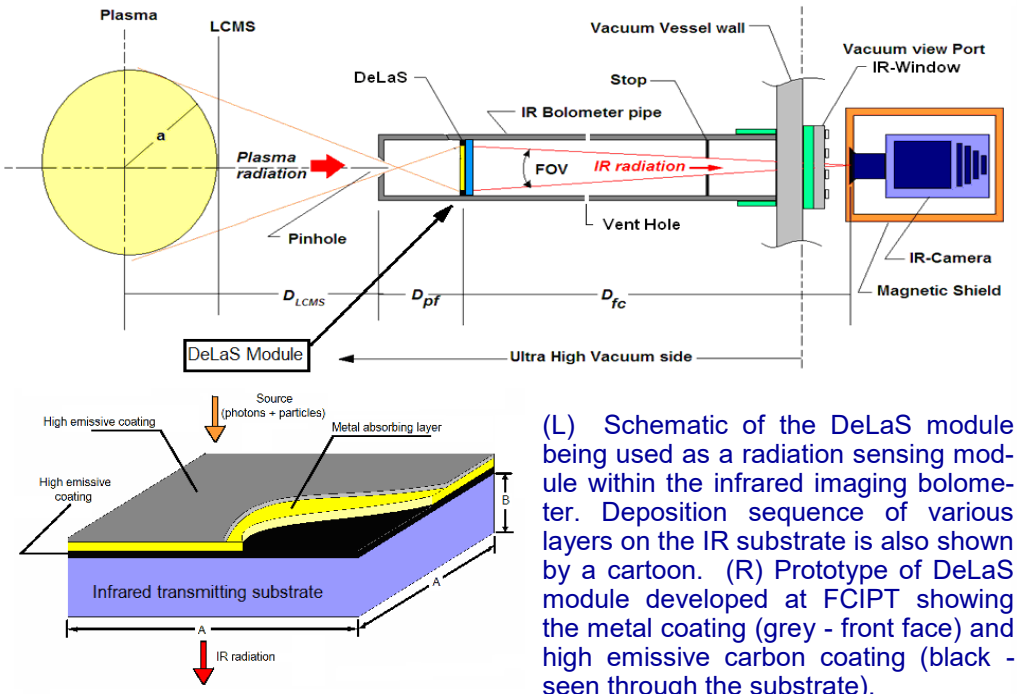
विश्व भर में हिंदी के महत्व को प्रतिपादित करने हेतु विश्व हिंदी दिवस का आयोजन हिंदी भाषा के प्रति निष्ठा को उजागर करता है। आईपीआर में विश्व हिंदी दिवस का आयोजन इस वर्ष 17 जनवरी, 2018 को किया गया। इस अवसर पर संस्थान के राजभाषा कार्यान्वयन का निरीक्षण करने हेतु पधारे श्री अचलेश्वर सिंह, संयुक्त निदेशक (राजभाषा), परमाणु ऊर्जा विभाग, मुंबई द्वारा वक्तव्य दिया गया। इस राजभाषा वार्ता का विषय था - "संसदीय राजभाषा समिति निरीक्षण"। संस्थान में राजभाषा नीति के सुचारू रूप से कार्यान्वयन हेतु इस महत्वपूर्ण विषय पर वक्तव्य का आयोजन किया गया, जिसमें निदेशक महोदय एवं संस्थान के वरिष्ठ अधिकारियों ने भाग लिया। श्री अचलेश्वर सिंह जी ने अपने वक्तव्य में संसदीय समिति द्वारा किसी भी संगठन/कार्यालय में राजभाषा निरीक्षण के दौरान अनुपालन हेतु, जिन महत्वपूर्ण मुद्दों पर ध्यान दिया जाता है, उन पर विस्तार से चर्चा की। उन्होंने आईपीआर में राजभाषा के सुचारू रूप से कार्यान्वयन हेतु निदेशक महोदय को बधाई दी, साथ ही उन मुद्दों पर भी प्रकाश डाला जिसमें राजभाषा की प्रगति अपेक्षित है। संयुक्त निदेशक, पऊवि द्वारा दिये गये इस सूचनात्मक एवं ज्ञानवर्धक व्याख्यान हेतु राजभाषा कार्यान्वयन समिति के अध्यक्ष श्री राजसिंह ने उनका आभार व्यक्त किया एवं अंत में निदेशक महोदय, श्री शशांक चतुर्वेदी ने उन्हें स्मृति चिन्ह प्रदान दिया।

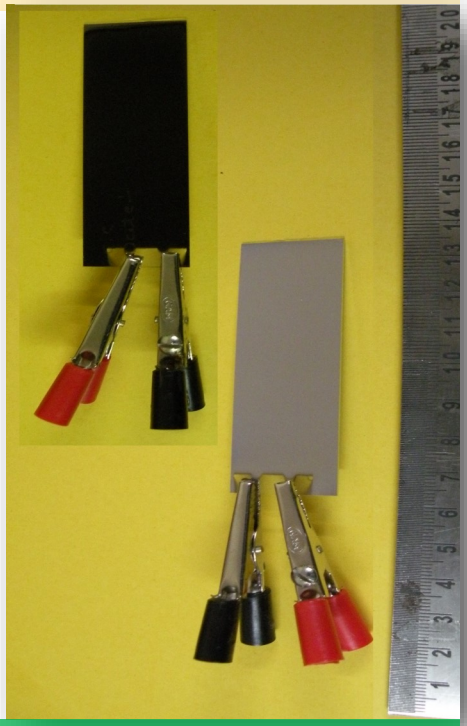


आई पीआर में विश्व हिन्दी दिवस समारोह के कुछ तस्वीरें

Patent Awarded

An Indian Patent (Patent No. 290634) has recently been granted to IPR for a diagnostic module proposed by Mr. Santosh P. Pandya, Dr. Shwetang N. Pandya and Dr. J. Govindarajan. The diagnostic module is called “DeLaS-IRIB” which stands for **De**posited **La**yer **S**ubstrate - Infrared (**IR**) **I**maging **B**olometer. This basically is a radiation sensing module grown by deposition of multiple layers (thickness: few microns) on a substrate which is transparent to IR radiation. A metal layer is used as an absorber for the photons and particles emitted from the plasma in a broad wavelength and energy ranges. The heat produced by the metal layer due to the absorption of photons and particles is transmitted through the substrate as IR photons. These IR photons (thermal radiation) are detected by an IR detectors / camera. The metal layer is often deposited on a high emissive carbon layer that enhances the thermal emission. This diagnostic module has several advantages over the conventional module which uses an ultra-thin (thickness: few microns) free-standing metal foil. The substrate helps by imparting strength to otherwise fragile metal foil, while the deposition method promises uniformity, precise thickness control and growth of absorbing layers without wrinkles, cracks and pinholes. This diagnostic module can be tailored to several convenient designs. DeLaS-IRIB module is being proposed as a prominent candidate for the lost alpha particle diagnostic for ITER. The high emissive carbon coating and the metal layer deposition was developed, perfected and carried out at FCIPT by Mr. P. A. Rayjada and Dr. P. M. Raole. Congratulations to the inventors from IPR and the prototype development team from FCIPT for the patent.





(L) Schematic of the DeLaS module being used as a radiation sensing module within the infrared imaging bolometer. Deposition sequence of various layers on the IR substrate is also shown by a cartoon. (R) Prototype of DeLaS module developed at FCIPT showing the metal coating (grey - front face) and high emissive carbon coating (black - seen through the substrate).

Talk on LIGO

Prof. David Reitz, Laser Physicist, Professor Department of Physics, University of Florida who is currently the Executive Director of the LIGO Project California Institute of Technology, USA, visited IPR on 10th and 11th January 2018. He delivered a talk entitled "*LIGO, Virgo, and Gravitational Waves: A Revolution in Physics and Astronomy*" on 11th January 2018.

Prof. David Reitz delivering his talk at IPR. Inset : Prof. David Reitz

Dusty Plasma and Negative Hydrogen Ions Extraction Laboratories @ CPP-IPR

Areas of Work include charging of dust grains and its related experiments in low pressure filament discharge plasma. Plasma oscillations in presence of magnetic field., production of negative hydrogen ions using cesium coated tungsten dust grains in a floating ion source and its extraction through multi-aperture, multi-grid system. (In collaboration with IPR.).

Group Members (L to R) : Dr. B.K. Saikia (Professor-G), Dr. S.S. Kausik (Scientific Officer-D), Md. Rejaul Karim (JRF), Mr. Gobinda Dev Sarma (Tradesman), Mr. Nipan Das (Project Engineer). Inset: Negative Hydrogen Ions Extraction Laboratory.

Progress in ITER Cryolines Manufacturing, Delivery & Installation

In December 2017, two spools of Y group Cryoline have been installed in Cryoplant at ITER site, France. These are the Cry-olines which will carry helium at 18 bar pressure, 4 kg/s. Elements of Group X3 Cryolines (Torus and Cryostat Cryolines) were delivered at ITER site and incoming inspection was performed in December 2017. The Cryolines and Cryo-distribution packages are part of ITER-India's contribution to the ITER project.

(L-R) Delivery and incoming inspection of Group X3 Cryolines and Installation of two spools of Y-group Cryolines at ITER site at ITER France

Outreach - Visits to IPR

As part of IPR Outreach Programme, IPR encourages visits by educational institutions to see the facilities at IPR. The following were the recent scientific visits to IPR.

Name of the Institution	Date of visit	Number of visitors
Participants of the National Children Science Congress	30-Dec-2017	750 students from class 4-11 from all over India
Bahauddin Science College, Junagadh	02-Jan-2018	35 students of B.Sc. Physics
K.J. Somaiya College Of Engineering, Mumbai	23-Jan-2018	53 students of Electronics Engineering
Tolani Arts & Science College, Adipur, Kutch	24-Jan-2018	19 students of B.Sc. Physics

Visitors from (L) Tolani Arts & Science College, Adipur and (R) Bahauddin Science College, Junagadh

IPR Divisions & Groups : The IPR Stores Office

The IPR Stores Office is mainly involved in receipt, inspection, custody and issue processes of materials which, for any item, typically starts once the purchase order is placed by the Purchase Office. Stores follows up for the execution of the order, receipt of despatch documents, provide road permit and clearance of consignments which also include custom clearance at ports for imported items and transit insurance. Once the items are inspected and verified the bill payment is passed and the received equipment are given individual identification numbers. Stores also indent procure and keep stock of items commonly used at IPR and so remains resource centre for the staff. Repair and maintenance of equipment, arranging different services and service contracts are another important service the Stores undertakes. Stores also keeps track of items going out of the Institute for various purpose through returnable gate passes and non-returnable gate passes are issued for items permanently moved out. Stores now is in the process of making many of these procedures online for the staff.

The IPR Stores Division (L to R) Mr. Gaurav G Bhatt, Mr. Sanjay J Pandya, Mr. A . Mohammad Parvez, Mr. R. M. Rathod, and Mr. Yogesh Dadheech (Stores Officer)

Past Events @ IPR

- ***Dr. Debjyoti Basu,*** Saha Institute of Nuclear Physics, Kolkata, gave a talk on "Experimental studies on Geodesic Acoustic Mode (GAM) and RMP effect in the STOR-M Tokamak" on 18th December 2017
- ***Prof. Frederick Raab,*** LIGO Hanford Observatory, USA, gave a talk on "Exploring the Vast New Frontier of Gravitational-Wave Astronomy" on 19th December 2017 (Colloquium # 280)
- ***Mr. Roopendra Singh Rajawat,*** Institute for Plasma Research, Gandhinagar, gave a talk on "Study of electrostatic instabilities in current carrying cold plasmas" on 20th December 2017
- ***Dr. Rameswar Singh,*** Institute for Plasma Research, Gandhinagar, gave a talk on "Why GAMs disappear in H mode?" on 21st December 2017
- ***Prof. Amit Agrawal,*** IIT-Bombay, Mumbai, gave a talk on "Search for Higher Order Continuum Transport Equations" on 26th December 2017
- ***Mr. Modhuchandra Laishram,*** Institute for Plasma Research, Gandhinagar, gave a talk on "Studies on driven dust vortex flow dynamics in dusty plasma" on 26th December 2017
- ***Mr. Moniruzzaman Shaikh,*** Tata Institute of Fundamental Research, Mumbai, gave a talk on "Watching relativistic electrons transit through glass" on 8th January 2018
- ***Dr. Amol Deshpande,*** Sardar Patel Institute of Technology, Mumbai, gave talks on "High Voltage" and "NDT; Alphonso Mango; Image Processing" on 8th January 2018
- ***Mr. Debraj Mandal,*** Institute for Plasma Research, Gandhinagar, gave a talk on "Collective plasma structures with kinetic nonlinearity: their coherence, interaction and stability" on 9th January 2018
- ***Mr. Narayan Behera,*** Institute for Plasma Research, Gandhinagar, gave a talk on "Investigation of diamagnetism in laser-produced plasma" on 10th January 2018
- ***Prof. David Reitze,*** Executive Director, LIGO Laboratory, California Institute of Technology, USA, gave a talk on "LIGO, Virgo, and Gravitational Waves: A Revolution in Physics and Astronomy" on 11th January 2018 (Colloquium 281)
- A short awareness session on "Road Safety-An Emerging Challenge" by Safety Division on 12th January 2018
- IPR-National Science Day (NSD-2018), Institute for Plasma Research, Gandhinagar, 20-21 January 2018

Upcoming Events

- 2nd Meghnad Saha Memorial International Symposium-cum-Workshop on Laser Induced Breakdown Spectroscopy, University of Allahabad, 19-21 February 2018 http://allduniv.ac.in/home/page/475
- Conference on Frontiers of Statistical Physics, Indian Statistical Institute (ISI), Kolkata, 26-28 February 2018 https://www.isical.ac.in/~statphys18/
- 10th Anniversary International Symposium on Advanced Plasma Science and its Applications for Nitrides and Nanomaterials / 11th International Conference on Plasma-Nano Technology & Science (ISPlasma2018 / IC-PLANTS2018), Nagoya, Japan, 4-8 March 2018 http://www.isplasma.jp/index.html
- 21st National Symposium on Radiation Physics (NSRP-21), Raja Ramanna Centre for Advanced Technology, Indore, 5-7 March 2018 http://www.nsrp21.in/
- 5th International Workshop on Plasma for Cancer Treatment (IWPCT 2018), Greifswald, Germany, 20-21 March 2018 http://www.iwpct2018.org/

Know Our Colleagues

Mr. Karmesh D. Mehta joined IPR in 1999 as an Engineer. Prior to that he was working at the Institute as a project engineer for two years from 1997. He has expertise in building construction, construction management and contracts. He has successfully executed major Infrastructure projects at IPR which include ITER-India Laboratory, Additional Offices, Hostels, Guest House, Married Student Accommodation & Student Facility building, Buildings at FCIPT Campus and many other civil construction works at IPR. His involvement in the projects is right from the conceptualization to its completion. He is currently involved in construction of upcoming major Laboratory & Auxiliary Building and the Neutronics laboratory Building at IPR campus. He has also guided undergraduate Students for their academic projects. He at present is the Division Head of Infrastructure (New Buildings) division at IPR. He is a member of Gujarat Institute of Civil Engineers and Architects (GICEA).

Mr. Ritesh Sugandhi , joined the institute in 2000 after successfully completing the Technical Training Program of 1999 - 2000. He received Bachelors and Master's degrees in Computer Science and Electronics from Devi Ahilya university, Indore. Later on he received Diploma in Nuclear Engineering (Computer Science) from the BARC training school held in 2011-12. At IPR, he started his work with the RF Group, CoDAC and Divertor Divisions of the Institute and has been with the Large Volume Plasma Device Experiment since 2012 for machine control system development. His fields of specialization are software engineering, process automation and development of high speed data acquisition and control software on industrial buses (such as PXI, VXI, VME etc) for large physics experiments and computational optimization. He has obtained certification in LabVIEW from National Instruments, PLCs from SIEMENS and Rhapsody from IBM. He was deputed to ITER as Visiting researcher to execute task agreement "Modeling of data exchanges between CODAC and Plant system I&C" and "Development of Plant System Host" during 2007-2008 and 2009-11 respectively. He worked with Tore supra team for development of data acquisition unit for ICRH system during 2015-16.

The IPR Newsletter Team

Ritesh Srivastava	Tejas Parekh	Ravi A. V. Kumar	Priyanka Patel	Dharmesh P	Mohandas K.K.
Suryakant Gupta	Ramasubramanian N.	Chhaya Chavda	Shravan Kumar	Supriya Nair	Harsha Machchhar

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

प्लाज़्मा अनुसंधान संस्थान
Institute for Plasma Research

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