

Issue 065

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The Fourth State

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

Workshop on Applications of Plasma in Textile Processing (APTP)

A workshop on “Applications of Plasma in Textile Processing (APTP)” was organized on 20th November 2018 at FCIPT. There were participants from Textile Research Associations from Ahmedabad, Surat and Mumbai, DRDO, NID, universities and textile industries. IPR also showcased various plasma systems for textile processing including plasma systems for inline textile treatment, denim fading, nano powder generation, physical vapour deposition and plasma nitriding. Speakers presented their work on plasma treatment of textile including their journey from research to product.



Panel discussion during the workshop : (L-R) Prof. P. B. Jhala, Dr. A. K. Mukhopaddhyay, Dr. Nirav Jamanapara and Dr. S. K. Nema



(L) Dr. Sudhir Nema (R) Dr. Alphonsa Joseph



(L) Shri Aslam Moolji (R) Shri M. G. Parikh



(L-R) Dr. G Ravi (Convener), Shri. Ujjwal Baruah (Dean, IPR), Shri R. S. Bachkaniwala (Chief Guest) and Prof. P. B. Jhala



(L-R) Dr. Vishal Jain, Dr. Lalita Ledwani, Dr. K. C. Gupta and Shri Sriram Soni delivering their talks.



Participants visiting the various facilities at FCIPT



Participants of the workshop on “Applications of Plasma in Textile Processing” held at FCIPT.

The Vigilance Awareness Week was observed from 30th October to 4th November, 2017. The theme of the week being “My Vision-Corruption Free India” (मेरा लक्ष्य - भ्रष्टाचार मुक्त भारत). Vigilance Awareness Week was observed at IPR with staff members collectively taking the “Integrity Pledge” on 29th October 2018 at 11.00 AM. Dr. Shashank Chaturvedi, Director, Shri Niranjana Vaishnav, CAO and Dr. Anita V.P. CVO led the pledge.

Shri Mervin Alexander, Joint Secretary to Government of India, DAE gave a talk on “Eradication of corruption in India” on 30th October, 2018 at IPR. Later he visited various labs in IPR.



Shri Mervin Alexander, JS-ER, DAE, delivering his lecture at IPR



Shri Mervin Alexander, during his visit to IPR extension labs, Gandhinagar



IPR staff members talking the integrity pledge near the Administration Block at 11.00 AM on 29th October 2018 . Dr. Shashank Chaturvedi, Director, Shri Niranjana Vaishnav, CAO and Dr. Anita V.P. , CVO led the pledge.

Workshop on Intellectual Property Rights @ IPR

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A one-day workshop on Intellectual Property Rights Sponsored by Administrative Training Institute (ATI), Dept. of Atomic Energy (DAE) was organized on 19th Nov., 2018 at Institute for Plasma Research, Gandhinagar. The aim of this workshop was to create awareness on Intellectual property rights and procedures for protecting these rights among the researchers.

The invited speaker, Ms Anuradha Maheshwari, Partner- Lexmantis, Mumbai, briefed the participants about the types of intellectual properties, procedures and limitations of protecting the same. Dr. Nutan Khalap from BARC gave a talk about the technology transfer procedures followed at BARC and Mr. Dani Rajiah from DAE discussed the procedures for filing patents for DAE Institutions. He also shared the statistics of patenting activities by DAE and those of Institute for Plasma Research in particular. Around 80 participants from IPR, CPP, FCIPT and ITER-India participated in this workshop. The workshop was appreciated by the participants. The speakers also addressed number of doubts regarding patenting amongst the participants.



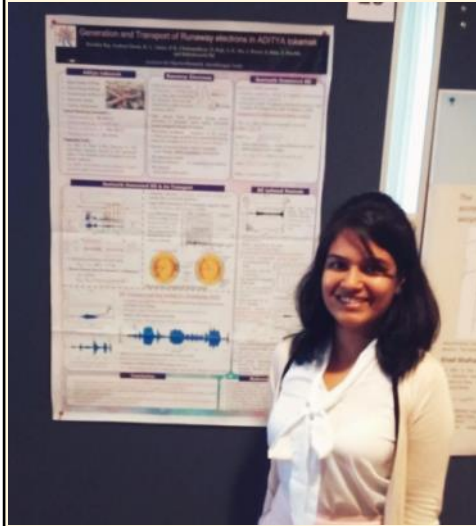
(L) Mr. A. Varadhranjulu, Chairman, TTIP Committee delivering the welcome address (R) Ms. Anuradha Maheshwari speaking about patent granting procedures and limitations.



(L) Dr. Nutan Khalap discussing procedures of technology transfer procedures followed by BARC. (R) Mr. Dani Rajiah discussing the procedures for filing patents for DAE Institutions.



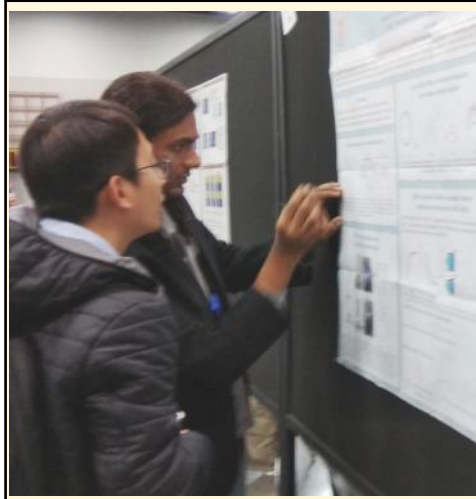
Dr. Mukesh Ranjan gave an invited talk entitled "*Magnetically constricted anode fireball for making super-hydrophobic nanodots surfaces and role of plasma flux*" at the 2nd Asia-Pacific Conference on Plasma Physics, held at Kanazawa, Japan, Japan during 12-17 Nov 2018.



Ms. Harshita Raj attended the "13th Carolus Magnus Summer School on Plasma and Fusion Energy Physics" held from 3 - 14 September 2018 in Weert, the Netherlands and presented a paper entitled "*Identification of different generation and loss mechanisms of runaway electrons in ADITYA and ADITYA-Upgrade tokamak*". She also attended the FEC 2018 and the 2nd Asia-Pacific Conference on Plasma Physics from 12-17 November 2018 , Kanazawa, Japan

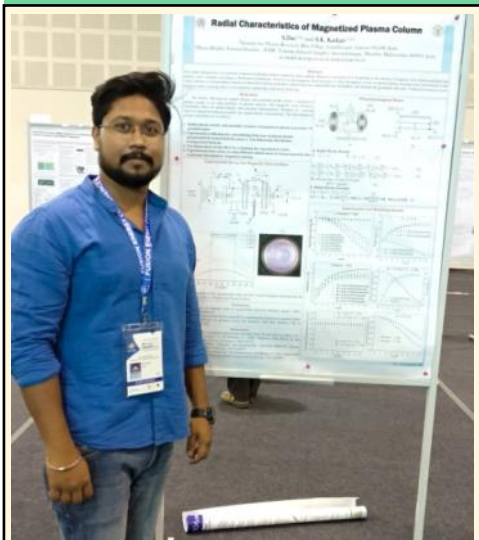


Mr. Neeraj Wakde, 4th Year PhD student attended the Joint ICTP-IAEA College on Plasma Physics, held at Abdus-Salam International Center for Theoretical Physics, Trieste, Italy, during 29 Oct-9 Nov 2018. He made a poster presentation entitled "*Study of Nonlinear interaction of drift instability and zonal flows in IMPED*"



Montu Prafulbhai Bhuvra, 4th year PhD Engineering Sciences student attended the 71st Gaseous Electronics Conference, at Portland Oregon, Nov 5-9, 2018, and presented a poster entitled "*Magnetization effect on secondary electron emission in a hollow cathode plasma source*". He also presented a poster entitled "*Effect of Cathode Geometry on Magnetically Coupled Hollow Cathode Plasma Source*" at the FEC 2018 held at Gandhinagar during October, 2018.





Mr. Satadal Das, 3rd year PhD student attended the FEC-2018 held at Gandhinagar in October 2018 and presented a poster entitled "Radial Characteristics of Magnetized Plasma Column"



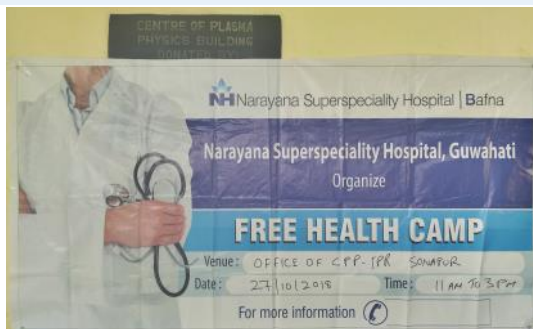
Ms. Devshree Mandal, 3rd year PhD student gave an oral presentation entitled "*A Particle-In-Cell simulation of finite electron beam plasma system*" at the 2nd Asia-Pacific conference on Plasma Physics, which was held at Kanazawa, Japan during 12-17 Nov 2018.



Ms. Ayushi Vashistha, 3rd year PhD student gave an oral presentation entitled "Novel technique of direct laser energy absorption by ions." at the 2nd Asia-Pacific conference on Plasma Physics, which was held at Kanazawa, Japan during 12-17 Nov 2018.

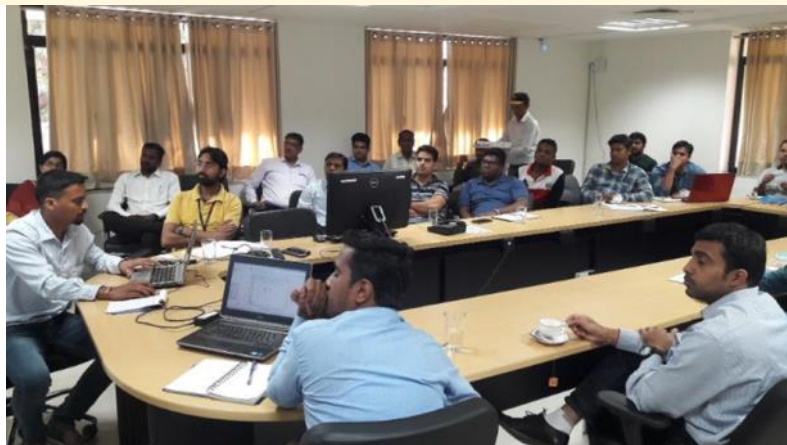
Free Health Camp @CPP-IPR

Narayana Superspeciality Hospital, Guwahati, organized a free health check up camp at CPP-IPR on 27 October 2018, for the benefit of its employees and their dependents under CHSS of the institute. More than 50 employees and their dependents took advantage of the camp to check their health and consult specialist for possible conditions of heart, hypertension, diabetes, etc. Five medical/technical personnel from the hospital, including one specialist, offered the free services.



ANSYS® Training @IPR

A two-day training on ANSYS software was organized at IPR on 1st and 2nd November, 2018. The training focused on "SpaceClaim" which is a solid modelling tool enabling rapid editing/repairing of the geometry and meshing techniques for variety of simulations. Around 25 people from various divisions of IPR participated in the training which was conducted by the experts from the industry. The ANSYS user group is active in IPR and regular meetings are held to discuss the common technical problems among the users and also share the software based knowledge. The group activities are coordinated by Hardik Mistry, Ritesh Srivastava, Vinay Menon and Bharat Doshi.



ANSYS training in progress at IPR

IPR Visits – October-November, 2018

Name Of the Institution	Date	Number of visitors
Samarpan Science and Commerce College, Gandhinagar	31st October 2018	24 B.Sc Physics Students
Department of Materials Science & Engineering, IIT Gandhinagar	2 nd November 2018	12 M.Tech and P.hd Students Visited FCIPT



Students from Samarpan Science and Commerce College, Gandhinagar during their visit to IPR



Students from IIT Gandhinagar, during their visit to FCIPT

- ◆ **Prof. Raghvendra Singh**, National Fusion Research Institute (NFRI), Daejeon, Republic of Korea, gave a talk on "Generation of the Micro-scale and Meso-scale Structures at the Marginally BM Stable Pedestal: A Scenario for ELM Crash and I-mode" on 30th October 2018 (Colloquium # 292)
- ◆ **Shri Mervin Alexander**, Joint Secretary (Admin) and CVO, DAE, Mumbai, gave a talk in connection with the Observance of Vigilance Awareness Week on 30th October 2018
- ◆ **Mr. Satyaprasad Akkireddy**, FCIPT, Gandhinagar, gave a talk on "Deposition of Tungsten Coating using Cylindrical Magnetron System and Characterization" on 31st October, 2018
- ◆ **Mr. Akshay Vaid**, FCIPT, Gandhinagar, gave a talk on "Simulation Studies on the Interaction of Different Gas Jets with Ambient Air" on 31 October, 2018
- ◆ **Prof. Ramaprasad Mukhopadhyay**, Raja Ramanna Fellow, DAE, Govt. of India, Ex-Head, Solid State Physics Division, BARC, gave a talk on "Structural and Dynamical Transition in Functional Materials" on 2nd November 2018 (Colloquium # 293)
- ◆ **Dr. Bhumika Thakur**, Institute for Plasma Research, Gandhinagar, gave a talk on "Collective dynamics of globally delay-coupled complex Ginzburg-Landau oscillators" on 2nd November 2018
- ◆ **Mr. Ramkrishna Rane**, Institute for Plasma Research, Gandhinagar, gave a talk on "Experimental Study of Near Anode Plasma in Hollow Cathode Cross Field Discharges" on 12th November 2018
- ◆ **Mr. Lavkesh T. Lachhvani**, Institute for Plasma Research, Gandhinagar, gave a talk on "Achievement of Long-time Confinement of Electron Plasmas through Investigation and Control of Instabilities in SMARTEX-C" on 16th November 2018
- ◆ **Dr. Shashi Kant Verma**, Malla Reddy Engineering College, Secunderabad, gave a talk on "Experimental and Numerical Investigation of Spacer Effect on Turbulent Mixing Phenomena of AHWR Rod Bundle" on 16th November 2018

Upcoming Events

- ◆ International Conference on Quantum & Atom Optics, Indian Institute of Technology, Patna, 16-18 December 2018 <https://www.icqao18.com/>
- ◆ 2018 8th IEEE International Conference on Power and Energy Systems, Colombo, Sri Lanka, 21-22 December 2018 <http://www.icpes.org/>
- ◆ 1st International Conference on Energy Systems, Drives and Automation (ESDA-2018), Kolkata, 29-30 December 2018 <https://ccsnmicro.wixsite.com/esda2018>
- ◆ National Symposium on Cryogenics and Superconductivity (NSCS27), IIT Bombay, India, 16-18 January 2019 <http://nscs27.com/>
- ◆ 10th ITER International School "The physics and technology of power flux handling in tokamaks", Daejeon, South Korea, 21-25 January 2019 <http://www.itorschool2019.kr/>

Know Our Colleagues



Mr. Arun Prakash joined IPR in 2001 in SST-1 Plasma Facing Components (PFC) Group. He has worked on several experimental setups which include the High Temperature Vacuum Furnace used for baking of Plasma facing graphite tiles, Residual Gas Analysis (RGA), testing, assembly and alignment of the limiter system of SST-1 Tokamak and vacuum brazing of dissimilar materials. In 2008, he was deputed to ITER Organization, France as Diagnostics Technical Officer in ITER Diagnostics division. At ITER, he worked on the interfaces of diagnostic systems with other ITER systems, design and integration of diagnostics systems with ITER buildings and its services. He was responsible for the diagnostics CAD model management, generation of 3D layout and interface management for ITER diagnostics systems. After returning to IPR, he has been working as a Scientific Officer in the Vacuum Engineering Services Division (VESD). He worked on the baking of 3800 graphite tiles of SST-1 PFC, assembly of the graphite tiles on 132 PFC copper modules, installation and commissioning of PFC, calorimetry and temperature measurements for PFC and the vacuum vessel. Currently he is contributing towards various activities of the VESD group and its related activities for SST-1 Plasma operation campaigns.

Mr. Ghansham Jhala joined IPR in 2001 as a scientific assistant at FCIPT. He was involved in processing various types of components received from different sectors of industries like, power sectors, automobiles, textiles, tool industries for plasma based nitriding process as well as in the development of plasma nitrocarburizing process for large industrial components for improvement of the corrosion resistance of the steel. Since 2014, he has been working with the Plasma Surface Engineer Division (PSED) as a Scientific Officer since 2014. Further, he also obtained his M.Sc (Physics) degree from Madurai Kamaraj University in the same year. He was also involved in the development of plasma carburizing process for low carbon steel and structure design and experiments for radical plasma nitriding for components having sharp edges. He is also co-author of an Indian patent "A Method for increasing the life of Cutting Tools". He has also worked on many projects as a team member for installation of plasma nitriding systems at Saha Institute of Nuclear Physics (SINP) Kolkata, Indo German Tool Room (IGTR) Ahmedabad, School of Technology & Applied Science (STAS) Kottayam, Kerala, Malaviya National Institute Of Technology (MNIT), Jaipur and ISRO Inertial System Unit (IISU) Thiruvananthapuram, Kerala. He has also received award poster presentation at Plasma 2015 for his paper "Influence Of The Distance Between Cathodic Cage And The Specimens During Plasma Nitriding Of Low Carbon Steel".



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