Facilitation Centre for Industrial Plasma Technologies

Institute for Plasma Research

Gandhinagar

Photo	Name : Dr. Ramkrishna Rane Qualification : Ph.D (Experimental Plasma Physics) Designation : Scientific Officer-F
Contact	Phone : 079-23269015 Mobile : E-mail ID : ramu@ipr.res.in, ramkrishna.rane@gmail.com
Field of Work	Plasma based coating, Atmospheric pressure cold plasma applications
Projects and Technologies	Completed projects (Major 05 projects) ✓ Setting up of an Industrial Scale Atmospheric Pressure Plasma System for Kullu region to Improve Angora wool processing. (DST order no: DST/TSG/2010/66), Funding Agency : DST ✓ Design and Development of Prototype Plasma Treatment System and Process optimization to improve its adhesion with Polyurethane (PU) and Polyvinyl Chloride (PVC) coatings/Lamination. (DST order No: IDP/IND/2010/34), Funding Agency : DST ✓ Development of Copper metalized coating on 0.3m dia. Lexan Antennae, (order No.AHDI 20050013730101 LO,-2006), Funding Agency : SAC,ISRO ✓ Development of Plasma Surface Engineering Technologies for Rocket Applications MOU between LPSC and IPR, Jan 2007),Funding Agency : LPSC ,ISRO, ✓ Development of Novel Biomedical Implants with Enhanced Reliability, (DST order No: DST order No. : SB/S3/ME/071/2013) Funding Agency : DST

	On-going projects Development of HIPIMS (High Power Impulse Magnetron Sputtering) coating technique. Development of plasma technology for enhancing germination of seeds.
Publications	• Deposition of TiN and TiAlN Thin Films on Stainless Steel Tube by Cylindrical magnetron sputtering ,Kunal Trivedi **Ramkrishna Rane**, Alphonsa Joseph and Sashi Arya, Materials Performance and Characterization 10, 1, 473–488(2021) • Biocompatibility and cyclic fatigue response of surface engineered Ti6Al4V femoral heads for hip-implant application, Aniruddha Samanta, **Ramkrishna Rane**, Ghanshyam Jhala, Biswanath Kundu, Susmit Datta, Jiten Ghosh, Alphonsa Joseph, Subroto Mukherjee, Sandipan Roy and Anoop K. Mukhopadhyay, Ceramics International, 47, 5, 6905(2021) • Bio-tribological Response of Duplex Surface Engineered SS316L for Hip-implant Application, Aniruddha Samanta, **Ramkrishna Rane**, Biswanath Kundu, Dipak . Chanda, Jiten Ghosh, Sandip Bysakh, Ghanshyam Jhala, Alphonsa Joseph, Subroto Mukherjee, Mitun Das and Anoop k. Mukhopadhyay, Applied Surface Science, 507,145009 (2020) • Comparative study of discharge characteristics and associated film growth for post-cathode and inverted cylindrical magnetron sputtering, R **Rane**, A Joshi, S Akkireddy and S Mukherjee, Pramana –J. Phys ,92 (4):55 (2019) • Experimental Investigation of near anode phenomenon in inverted cylindrical magnetron , **R. Rane**, P. Bandyopadhyay, M. Bandyopadhyay, and S. Mukherjee, Physics of Plasmas ,25, 063516 (2018). • Electron sheath evolution controlled by magnetic field in modified hollow cathode discharge , **R. Rane**, S. Chauhan, P. Bharathi, K. Nigam, P. Bandyopadhyay, and S. Mukherjee, Physics of Plasmas, 25, 093509 (2018). • Structural, mechanical and corrosion resistance properties of Ti/TiN bilayers deposited by magnetron sputtering on AISI 316L, K. Shukla , **R. Rane** , J. Alphonsa , P. Maity , S. Mukherjee, Surface & Coatings Technology ,324, 167–174 (2017). • Controllable Transition from Positive space charge to Negative space charge in an inverted Cylindrical Magnetron" **R.Rane**, P. Bandyopadhyay, M. Ranjan, S. Mukherjee, Physics of Plasma, 23, 013514(2016) **Books Chapters** "Basics of Plasma and its industrial applications in Textiles", **R.Rane**, M.Ranjan, S. Mukherjee for the book "Plasma Technologies for Textiles and Apparel", Wood-Head Publishing India Pvt. Ltd. ISBN:978-93-80308-55-5 Atmospheric Pressure Plasma therapy for wound healing and disinfection- A Review" Alphonsa Joseph, **Ramkrishna Rane** and Akshay Vaid for the book "Wound Healing Research: Current Trends and Future Directions". ISBN 978-981-16-2676-0 ISBN 978-981-16-2677-7 (eBook) For details : https://scholar.google.com/citations?user=7Bh87qkAAAAJ&hl=en

Patents	➢ Nema, S.K., Jhala, P.B., Tanwani, N., Rane R., Sanghariyat, A., Mukherjee, S., Gandhi, G.A. and John, P.I. :A process for plasma surface modification and sterilization of Angora fibers, Indian Patent No. 335045 ➢ Nema, S.K., Tanwani, N., Rane R., Sanghariyat, A. and Mukherjee S: An apparatus for plasma surface modification and sterilization of materials, Indian Patent No. 336974. ➢ Atmospheric pressure plasma jet for bio-medical applications", Akshay Vaid ,Chirayu Patil, Adam Sanghariyat, Ramkrishna Rane, Abhijit Majumdar, Subroto Mukherjee, Application No. 3727/MUM/2015 ➢ Satyaprasad, A., Rane R., Alphonsa J., Mukherjee, S. (2010): Plasma Enhanced Jet Vapor Deposition of metallic films, Application No. 494/MUM/2010
Awards	