Seminar

Institute for Plasma Research

Title : Development of plasma process based photoelectrode and process control applications

Speaker: Dr. Dhyey Raval
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Date : 08th April 2022 (Friday)

Time : 03.30 PM

Venue : Online - Join the talk: https://lobby.ipr.res.in/DrDhyeyRaval_PDFTalk

Abstract :

Development of thin film based photoelectrode devices using RF and Pulse DC Magnetron plasma vacuum sputter system for the photovoltaic application. A wide band gap semiconductors suffer from limited visible light absorption, which can be improved by attaching metal nanoparticles. The deposition process parameter such as power, pressure and temperature are optimized for the better electrical and optical characteristics of photoelectrode. This optimization enhances the absorption in the visible region for the fabricated photo electrodes. During process, a vacuum tube furnace is used for the post heat treatment to photoelectrodes. Measured photocurrent of the TiO_2NR (Titania nanorods) with AuNP (Gold nanoparticles) is higher as compared to the bare TiO_2NR electrodes using current and voltage technique. Better opto-electronic properties were observed in the fabricated photoelectrode. A theoretical analysis and simulation using Matlab and origin software for understanding of the device behavior. System operation and maintenance for integration of instruments to obtain better characteristics of the devices