

Seminar

Institute for Plasma Research

Title : Synthesis of polyaniline-Au nanocomposite thin films by plasma-based techniques for flexible self-powered photodetectors

Speaker : Dr. Tapan Barman
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Date : 26th September 2016 (Monday)

Time : 03.30 PM

Venue : Seminar Hall, IPR

Abstract:

Conjugated polymers such as polyaniline, polythiophene are electronically conducting polymers. The electrical conductivity of these polymers in some states is in the range of semiconductors. The conducting polymer based electronic materials have various advantages as compared to the conventional inorganic counterparts. The light weight, low cost, easy processability, flexibility, roll to roll processability of the conducting polymer-based electronic devices are the main points of attraction. Particularly, organic solar cells attract more attention due to flexibility and organic LED due to the ability to generate white light from a single material.

Robustness in organic devices is observed when prepared with organometallic nanocomposites with selected metal nanoparticles, which show plasmonic behavior. The multifunctionality and possibility of realizing unique properties of nanocomposite materials, which are unachievable with pure substances, make nanocomposite materials demanding for different smart devices. It has found application in cancer therapy, drug delivery and photo-sensitive devices. The application of nanocomposite materials in the light-harvesting devices is particularly interesting. It has been observed that in the photovoltaic devices, the incorporation of properly designed nanoparticles of materials like Au, Ag, TiN etc. can increase the light absorption significantly, thereby can enhance the efficiency of devices.
