

Seminar

Institute for Plasma Research

Title : Design, Development and Implementation of an Integrated Micro-spectroscopy and Imaging Modality for Material Analysis

Speaker: Dr. Kaushik Choudhury
Institute for Plasma Research, Gandhinagar

Date : 19th December 2018 (Wednesday)

Time : 10.30 AM

Venue : Seminar Hall, IPR

Abstract :

An imaging and spectroscopic modality has been designed, and is being developed by integrating the abilities of confocal Raman microscopy and micro-LIBS to determine elemental and compositional properties of materials at a microscopic level. The designed confocal Raman microscope is capable of carrying out optical sectioning of a sample in reflection mode and can provide layer-by-layer information about its composition. These optical sections can be stacked to reconstruct 3D compositional map of the sample. The integrated micro-LIBS provides the elemental composition as well as structural morphology of the sample surface. MATLAB codes are being developed to process the acquired data and determine the relative elemental composition with a calibration-free method. Additionally, optical tweezers have been integrated with the present system to hold and control the motion of submicron-sized dielectric particles. The details of the design and development and ongoing optimization process will be presented. The test-results of the optical sectioning, micro-Raman and micro-LIBS will also be discussed.
