

# Seminar

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## Institute for Plasma Research

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**Title :** Laser Induced Plasma spectroscopic studies of Nitroazoles, Brass and Rocks

**Speaker:** Dr. Nageswara Rao Epuru  
Physical Research Laboratory, Ahmedabad

**Date :** 10th January 2020 (Friday)

**Time :** 10:30 AM

**Venue :** Committee Room 3, (New Building), IPR

### **Abstract :**

Interaction of intense laser light with matter has been studied using various spectroscopic techniques. The nanosecond and femtosecond lasers have been used to understand the fundamental science in light matter interactions. Samples used in this study are: Nitroazoles (explosive molecules), Brass, Copper and Rock. Using nanosecond Laser Induced Breakdown Spectroscopy (LIBS) method, we have estimated the elemental composition in Rock samples. We have developed algorithm for synthetic generated LIBS spectrum and fitted with experimental results. The result of elemental compositions by synthetic generated spectrum matches well with the reference value obtained from the X-ray fluorescence (XRF) spectroscopy. For improving the optical signal enhancement, Nanoparticle Enhanced LIBS (NE-LIBS) studies were performed with Aluminum nanoparticles (NPs) on brass metal target. Two-to-four times signal enhancement in emission line profiles of Zn and Cu has been observed. The results on Femtosecond LIBS spectra of Pyrazoles and Imidazoles, NE-LIBS and Double pulse LIBS will be discussed in this presentation.

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