

## **Seminar**

### **Analyzing proteins and cells using plasmonic nanostructures**

**Shourya Dutta Gupta**

**University of Texas at Austin, Texas**

Plasmonics, the study of interaction between light and metal-dielectric structures (generally sub-wavelength), has been exploited significantly in the past for various applications. Plasmonic effects are associated with large local field enhancement which forms the basis for applications like surface enhanced Raman spectroscopy (SERS), fluorescence enhancement, sensing etc. In this presentation, I will discuss how plasmonic structures be applied in the study of proteins and human cells. Firstly, I will talk about how SERS can be used to interrogate the oxidation state of protein molecules attached to a nanoparticle surface. In particular, the change in the oxidation state of an important heme protein, Cytochrome c, using SERS will be demonstrated. Secondly, I will show that IR bio-sensing (operating in midIR region) can be used for analyzing the presence of different 'simple' analytes (eg. ethanol and acetone) in an aqueous. Subsequently, the potential use of these IR plasmonic structures for cancer diagnosis (distinguishing cancerous from non-cancerous cells) will be also shown.

***Thursday, May 5<sup>th</sup> 2016***

***4:00 PM (Tea/Coffee at 3:45 PM)***

***Seminar Hall, TCIS***