TIFR Centre for Interdisciplinary Sciences, Narsingi, Hyderabad 500075

Seminar

SERS targets cancer: the future looks BRIGHT?

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Abstract: Surface enhanced Raman scattering (SERS) involves the dramatic enhancement (under ideal conditions more than 10^{10} times) of Raman scattering from molecules adsorbed on or in close proximity to the nanostructured metal surface. Owing to virtually unlimited multiplexing ability and excellent photostability compared to quantum dots and fluorescence dyes, Raman probes are gaining immense attention in several areas of research from chemical and biological sensing to *in vivo* imaging. The Raman probes intended for translational biomedical applications should (i) provide large, uniform and stable SERS signal with NIR excitation (650-900 nm) (ii) remain stable in complex physiological fluids and be biocompatible (iii) be amenable for biofunctionalization and targeted delivery. In this talk, I will focus on (i) tailored design and synthesis of ultra-bright SERS probes using advanced plasmonic engineering (ii) targeted delivery of such probes for Raman imaging and therapy applications. We developed simple yet robust techniques for realizing structurally complex and multifunctional SERS probes such as core-satellite assemblies of gold nanostructures (both non-covalent and covalent), bilayered Raman intense gold nanostructures with hidden tags (BRIGHTs), and multifunctional plasmonic nanorattles. Among these probes, BRIGHTs and nanorattles have been successfully applied for *in vitro* Raman imaging and therapy applications and currently being investigated *in vivo* mice models. Our studies lay the path forward for achieving highly stable, biocompatible, ultra-bright, and multimodal SERS probes for *in vivo* theragnostic applications.

***Date*: Thursday, March 28th 2013**

***Time*: 11:30AM (Tea/Coffee at 11:15AM)**

***Venue*: Conference Hall, TCIS**

All are cordially invited