

Department of Chemistry



Special Chemistry Seminar

“Nanoscale IR Spectroscopy and Imaging: Looking beyond the Diffraction Limit”

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Abstract: For the last few decades the rapid growth in the field of nanoscience and technology has led to the development of new characterization tools for nanoscale materials. Traditional IR and Raman spectroscopy and imaging offers excellent chemical insights, however, the spatial resolution is limited by the optical diffraction limit ($\sim \lambda/2$). Although, recent Super-resolution microscopy techniques offer superior spatial resolution, they are primarily implemented in fluorescence imaging, hence needs external fluorophore tag for detection. Alternatively, photothermal IR (PTIR) spectroscopy offers a “tag free” spectral detection with high spatial resolution beyond optical diffraction limit (2-5 μm) by exploiting either an AFM or a visible probe.

Recent developments in PTIR technology have significantly augmented the speed and spatial resolution for chemical analysis. One of the new developments allows acquisition of IR images at a specific absorption band simultaneously with sample topography and nano-mechanical properties, providing a complete set of topographical, chemical and mechanical insights with <10 nm spatial resolution.

Thursday, February 15, 2018
3:30 p.m.
Seeley G. Mudd, Room 101

The Scientific Community is Invited