



Monday, October 15, 2018, 12:00 pm

Seaver Science Library, Room 150

SSC Auditorium next to the library

Professor Ziad Ganim

Department of Chemistry

Yale University

Force-Detected Absorption Spectroscopy in Solution With Optical Tweezers

Measuring absorption spectra of single molecules presents a fundamental challenge for standard transmission-based instruments because of the inherently low signal relative to the large background of the excitation source. Here we demonstrate a new approach for performing absorption spectroscopy in solution using a force measurement to read out optical excitation at the nanoscale. The photoinduced force between model chromophores and an optically trapped gold nanoshell has been measured in water at room temperature. This photoinduced force is characterized as a function of wavelength to yield the force spectrum, which is shown to be correlated to the absorption spectrum for four model systems. The instrument constructed for these measurements combines an optical tweezer with frequency domain absorption spectroscopy over the 400-800 nm range. These measurements provide proof-of-principle experiments for force-detected nanoscale spectroscopies that operate under ambient chemical conditions.

Hosted by Professor Jahan Dawlaty

The scientific community is invited

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