

# Physical Chemistry Seminar

Tuesday,  
February 26, 2013

11:00 am

Room 1315  
Chemistry Building

## Investigating Electrostatic Mechanisms of Biomolecular Organization and Function Through Vibrational Spectroscopy



Professor Lauren Webb  
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Host: Professor Marty Zanni

Macromolecular interactions in biological systems are now a major focus of interest. In the post-genomic era, enhanced understanding of the cooperation between biological molecules is necessary to explore the complexity of living cells. The affinity and specificity of macromolecular interactions are the result of both structural and electrostatic driving forces, but while the field of structural biology has made great advances, much less is understood about electrostatic influences. Here, we describe how vibrational spectroscopy can be used to measure electrostatic fields in two complex biomolecular systems: 1) stable protein-protein interfaces and 2) peptides intercalated in free-standing lipid bilayer membranes. Furthermore, we are developing computational models that accurately predict these interactions. We do this using vibrational Stark effect (VSE) spectroscopy, in which spectral shifts of a probe oscillator's energy is related directly to that probe's local electrostatic environment.

Refreshments will be available prior to the seminar at 10:45 a.m. outside room 1315

Graduate Students may meet with the speaker at 1:00 p.m. in Room 8335