

# Physics Department Seminar

Friday March 28<sup>th</sup>, 2014

3:00pm in Physical Science 105

## “Polarization and Detection of Nuclear Spins at Low Magnetic Fields”



Ms. Claudia Avalos  
GSR - Pines Lab  
UC Berkeley  
*Chemistry Alum 2008*

### Abstract:

Nuclear magnetic resonance spectroscopy (NMR) is a low energy, non-invasive tool for chemical analysis. In commercial instruments, samples are placed in a superconducting magnet and magnetic resonance is detected inductively. The strong magnet boosts nuclear polarization, increases the magnetic resonance frequency and sensitivity of detection. At low magnetic fields the nuclear polarization is low and inductive detection works very poorly. As a result, magnetic resonance studies have been limited to the high magnetic field regime. In this talk I will discuss novel nuclear polarization and detection methods that allow for low field detection as well as the kind of chemical information that can be obtained at these field regimes.

