

SPECIAL PHYSICAL CHEMISTRY SEMINAR

Monday
September 17, 2012

2:30 p.m.

Room 8335
Chemistry

Experimental evolutionary optimization of phase shaped CARS



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Host: Professor Marty Zanni

Coherent anti-Stokes Raman scattering (CARS) spectroscopy and microscopy rely on vibrational resonances to distinguish molecules. In conventional narrowband CARS, the chemical contrast is based on a single vibration. In more complex samples, such as mixtures or samples containing many different compounds, contrast based on a single resonance may not be sufficient. I will present a broadband CARS approach, using a degenerate broadband pump and probe pulse in combination with a narrowband Stokes pulse, where multiple resonances are excited simultaneously. Contrast is obtained by phase shaping the broadband pump and probe pulse, influencing the interference between the different pathways in this broadband CARS process. Using an evolutionary algorithm we are able to optimize for different molecules and obtain background-free images with high chemical selectivity.