

Abstract Submitted  
for the DAMOP06 Meeting of  
The American Physical Society

**Noninvasive imaging in biology using ultrafast coherent control via a pair of chirped pulses** SVETLANA MALINOVSKAYA, University of Michigan, VLADIMIR MALINOVSKY, MagiQ Technologies Inc. — The key to advance cutting edge imaging methods in biology is ultrafast pulsed laser techniques that may control vibrational dynamics in molecules. Given vibrational spectra of biological species contain molecular signatures, imaging may be achieved by selective excitation of particular molecular vibrations using stimulated Raman scattering. We present the results of vibrational mode selective excitation using a pair of femtosecond *chirped* laser pulses in two-photon Raman scheme, and analyze the possibility of adiabatic population transfer in selected vibrational modes. We also discuss how femtosecond pulse shapes should be modified to take into account decoherence effects present in solution.

Svetlana Malininskaya  
University of Michigan

Date submitted: 27 Jan 2006

Electronic form version 1.4