

Abstract Submitted  
for the NWS10 Meeting of  
The American Physical Society

**Investigating Surface-Enhanced Coherent Anti-Stokes Raman Spectroscopy for Biological Imaging** SARAH R. NICHOLS<sup>1</sup>, Whitman College, BRANDON R. BACHLER, Physics Dept., University of Michigan, JENNIFER P. OGILVIE, Dept. of Physics and Biophysics, University of Michigan — Due to the intrinsic molecular contrast it provides, biological imaging based on coherent anti-Stokes Raman scattering (CARS) is appealing. However, weak CARS signals from most biological samples have restricted the applications of CARS microscopy to imaging high number density vibrations such as C-H stretching modes from lipids and proteins. Surface-enhanced CARS (SECARS) offers the possibility of significantly enhanced sensitivity: nanostructured metallic surfaces provide localized field enhancements, increasing CARS signal levels by several orders of magnitude. We are currently investigating coherent and incoherent Raman scattering signals on nanostructured gold substrates to assess the potential sensitivity gain available to biological imaging based on SECARS.

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Date submitted: 30 Aug 2010

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