Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

High contrast nano-Raman spectroscopy with optimized polarization NAM-HEUI LEE, RYAN HARTSCHUH, DISHA MEHTANI, ALEXANDER KISLIUK, MARK FOSTER, ALEXEI SOKOLOV, Department of Polymer Science, The University of Akron, Akron, OH 44325, USA, JOHN MAGUIRE, Materials and Manufacturing Directorate/MLBP, Wright-Patterson AFB, OH 45433, USA — For nanoscale characterization of chemical composition, structure, stresses and conformational states, tip-enhanced Raman spectroscopy (TERS) is an attractive tool. A TERS spectrometer based on side illumination geometry that shows reproducible enhancement of the order of 10^3-10^4, for a variety of molecular, polymeric and semi-conducting materials using silver- and gold-coated silicon nitride tips, will be presented. The radius of the spot from which the Raman signal comes is estimated to be 20nm for CdS thin films. For thick samples, such as a silicon wafer, polarization was optimized to achieve high contrast between the near- and far-field Raman signals. Additionally, systematic studies to estimate the localization volume of the detected near-field Raman signal with the optimized polarization are being performed. Raman imaging with sub-wavelength lateral resolution will be demonstrated on several nano-structures.

Nam-Heui Lee

Date submitted: 30 Nov 2005 Electronic form version 1.4