Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Nano-Optics for Chemical and Materials Characterization
MICHAEL BEVERSLUIS, STEPHAN STRANICK, National Institute of Standards and Technology — Light microscopy can provide non-destructive, real-time, three-dimensional imaging with chemically-specific contrast, but diffraction frequently limits the resolution to roughly 200 nm. Recently, structured illumination techniques have allowed fluorescence imaging to reach 50 nm resolution [1]. Since these fluorescence techniques were developed for use in microbiology, a key challenge is to take the resolution-enhancing features and apply them to contrast mechanisms like vibrational spectroscopy (e.g., Raman and CARS microscopy) that provide morphological and chemically specific imaging.. We are developing a new hybrid technique that combines the resolution enhancement of structured illumination microscopy with scanning techniques that can record hyperspectral images with 100 nm spatial resolution. We will show such superresolving images of semiconductor nanostructures and discuss the advantages and requirements for this technique. Referenence: 1. M. G. L. Gustafsson, P. Natl. Acad. Sci. USA 102, 13081-13086 (2005).

Michael Beversluis
National Institute of Standards and Technology

Date submitted: 22 Nov 2006 Electronic form version 1.4