

Abstract Submitted  
for the MAR06 Meeting of  
The American Physical Society

**Submicron Material Characterization Using Terahertz Scanning Near-Field Microscopy** HOU-TONG CHEN, ANTOINETTE TAYLOR, RICHARD AVERITT, Los Alamos National Lab, FEDERICO BUERSGENS, ROLAND KERSTING, University of Munich — The recent development of the apertureless terahertz scanning near-field optical microscope (THz-SNOM) allows for submicron spatial resolution [1] and enables a broad variety of novel applications in material characterization. The basic mechanism is that a metallic probe allows for mapping of the THz permittivity of a surface. In this contribution, we report on measurements of microscopic scale charge carrier distributions and dielectric contrast with sub-micrometer resolution in various material systems and structures using THz-SNOM. We have identified a novel imaging mechanism in terms of a configurational resonance [2], which contrasts the widely accepted scattering model at visible and near-infrared frequencies. [1] H.-T. Chen, et al., *Appl. Phys. Lett.* **83**, 3009 (2003). [2] H.-T. Chen, et al., *Phys. Rev. Lett.* **93**, 267401 (2004).

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Date submitted: 30 Nov 2005

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