

Abstract Submitted  
for the MAR08 Meeting of  
The American Physical Society

**Nonlinear Terahertz pump-Terahertz probe Measurements of Semiconductor Carrier Dynamics** H Aidan Wen, Aaron Lindenberg<sup>1</sup>, PULSE Center, Stanford Linear Accelerator Center, Lindenberg Lab Team — A table-top terahertz (THz) source has been employed to study the nonlinear response of semiconductors to near-half-cycle femtosecond pulses in the THz regime. We report nonlinear field-induced changes in the far infrared absorption coefficient induced by THz pulses. The transmittance as the function of THz peak field was measured using a z-scan technique and it is observed that the absorption coefficient dramatically increases above a threshold field. Temperature-dependent pump-probe measurements indicate that free carriers are generated by the intense fields, as a result of field-induced tunneling and impact ionization processes.

<sup>1</sup>Department of Materials Science and Engineering, Stanford University

Haidan Wen  
Research Associate

Date submitted: 13 Dec 2007

Electronic form version 1.4