

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Broadband THz Spectroscopy of Single Nanoscale Objects¹ LU CHEN, GIRIRAJ JNAWALI, MENGCHEN HUANG, PATRICK IRVIN, University of Pittsburgh, SANGWOO RYU, CHANG-BEOM EOM, University of Wisconsin-Madison, JEREMY LEVY, University of Pittsburgh — Broadband terahertz (around 10 THz) generation and detection at 10 nm scales has recently been demonstrated² using LaAlO₃/SrTiO₃ nanostructures created by conductive atomic force microscope lithography.³ This unprecedented control of terahertz emission, on a scale four orders of magnitude smaller than the diffraction limit, provides a useful technique to investigate a variety of nanoscale objects. Here we report initial efforts to apply THz spectroscopy to a variety of objects whose dimensions are comparable to our spatial resolution. Systems under investigation include semiconductor quantum dots, Au nanorods and single molecules.

¹We gratefully acknowledge support for this work from AFOSR (FA9550-12-1-0268, FA9550-12-1-0342), ONR (N00014-13-1-0806), and NSF (DMR-1124131)

²Y. Ma, *et al.*, Nano Lett. **13**, 2884 (2013)

³C. Cen, *et al.*, Nat. Mater. **7**, 298 (2008)

Lu Chen
University of Pittsburgh

Date submitted: 15 Nov 2013

Electronic form version 1.4