Abstract Submitted
for the NWS14 Meeting of
The American Physical Society

Terahertz Spectroscopy of Metal-Insulator Transition in Vanadium Dioxide ANDREW STICKEL, ZACK THOMPSON, Oregon State University, YOUNGGYUN JEONG, Seoul National University, MICHAEL PAUL, ALI MOUSAVIAN, Oregon State University, DAI-SIK KIM, Seoul National University, YUN-SHIK LEE, Oregon State University, OREGON STATE UNIVERSITY TEAM, SEOUL NATIONAL UNIVERSITY COLLABORATION — Vanadium Dioxide is an attractive material for high-speed optical and electrical switching as it undergoes a metal-insulator transition near room temperature (340 K). We examine the phase transition using free-space THz transmission spectroscopy. THz probe is sensitive to the metal-to-insulator transition, because the insulating phase is transparent at THz frequencies while the metal phase is highly reflective. We demonstrate that THz transmission exhibits hysteresis of the metal-insulator transition during a temperature cycle. The phase transition gives rise to not only a reduction in transmission but also a spectral broadening as temperature increases.

Andrew Stickel
Oregon State University

Date submitted: 21 Mar 2014 Electronic form version 1.4