

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Near-Field Orientation Sensitive Terahertz Micro-Spectroscopy of Single Crystals GHEORGHE ACBAS, ROHIT SINGH, Department of Physics, University at Buffalo, SUNY, Buffalo, NY , EDWARD SNELL, Department of Structural Biology, SUNY Buffalo, Buffalo, NY and Hauptman-Woodward Medical Research Institute, Buffalo, NY, ANDREA MARKELZ, Department of Physics, University at Buffalo, SUNY, Buffalo, NY — We present spectroscopic imaging studies of molecular crystals. These measurements examine the anisotropy of the intra and inter-molecular vibrational modes of single crystals at terahertz frequencies. The method is based on the technique developed in [1-2] for sub-wavelength resolution time domain terahertz spectroscopy (THz TDS), with added polarization orientation dependent measurements and hydration control. This method allows us to study the spectroscopic properties of small single crystals with sizes down to 20 micrometers. In addition, mapping the spectroscopic information at such small spatial scales allows us to reduce the water absorption and interference artifacts that usually affect protein THz TDS measurements. We show the polarization sensitive terahertz absorption spectra in the (0.3-3THz) range of sucrose, oxalic acid and lysozyme protein crystals.

1. M. A. Seo, et. al., Opt. Express, 15(19):11781–11789, 09 (2007)
2. J. R Knab, et. al., App. Phys. Lett.,97, 031115 (2010)

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Date submitted: 11 Nov 2011

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