Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Infrared characterization of rare earth orthoferrite materials[1] J.A. BOND, A.D. LAFORGE, K.A. COLLIER, A.P. RAMIREZ, Z. SCHLESINGER, University of California, Santa Cruz — The rare earth orthoferrite ($REFeO_3$) family of compounds displays a remarkable range of magnetic and dielectric properties due to complex interplay between charge and spin degrees of freedom. This coupling leads to unusual phase diagrams and novel physics. We use infrared optical measurements, along with magnetic susceptibility and specific heat, to characterize single crystals of $REFeO_3$ (RE = Dy, Sm, Gd, Er, Tm). Temperature evolution of the phonon structure is evaluated in conjunction with the magnetic and thermal response to identify trends in the coupling of ordered states.

[1]The authors acknowledge support from NSF DMR-0554796.

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Date submitted: 20 Nov 2009 Electronic form version 1.4