Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Temperature Dependent Local Atomic Structure of $LuFe_2O_4$ S. LIU, H. ZHANG, New Jersey Institute of Technology, S. GHOSE, Brookhaven National Laboratory, S.-W. CHEONG, T. EMGE, Rutgers University, Y.-S. CHEN, University of Chicago, T. TYSON, New Jersey Institute of Technology — The LuFe2O4 system has be studied intensively as a novel material with charge ordered driven ferroelectricity. However, the existence and origin of electric polarization and it coupling to the magnetic structure are open questions still to be addressed. Distinctly differing experiments yield different results. In this work, structural measurements on multiple length scales have been conducted over a broad range of temperatures. We have studied the correlation between the structural distortion and the electronic/magnetic properties in single-crystalline $LuFe_2O_4$ by using X-ray diffraction (XRD), temperature and orientation dependent Raman spectroscopy, temperature dependent X-ray pair distribution function (PDF) measurements and DFT modeling. The nature of the observed local atomic and electronic structural changes will be discussed and compared with previous work. This work is supported by DOE Grant DE-FG02-07ER46402.

Sizhan Liu
New Jersey Institute of Technology

Date submitted: 11 Nov 2016 Electronic form version 1.4