Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Ferroelectric thickness effects on LaSrMnO3/PbZrTiO3 Heterostructures JINLING ZHOU, West Virginia University, EVAN WOLF, CHARLES FRYE, DISHENG CHEN, SRINIVAS POLISETTY, MIKEL HOLCOMB, DAVID LEDERMAN COLLABORATION, YING-HAO CHU COLLABORATION — Magnetoelectric (ME) coupling is the coupling of magnetic and electric properties within a material. It allows the possibility of dual control of the material through the manipulation of either electric or magnetic fields and therefore could potentially revolutionize the current technology. However, little is known about the factors that influence the strength of this magnetoelectric coupling. In the presented research, ferromagnetic LSMO and ferroelectric PZT are constructed as wedged adjacent layers for the purpose of studying the coupling effects and physical properties in each layer and the resulting interface. X-ray absorption spectroscopy (XAS) and photoemission electron microscopy (PEEM) are used as the major techniques to map out magnetism, ferroelectricity, and the interfacial coupling. The XAS spectra illustrate a strong effect on the magnetic properties depending on ferroelectric thickness. PEEM images display the magnetic and ferroelectric domains in each material layer, allowing further insight into why the coupling depends on layer thickness. This research will aid the understanding of coupling in not only magnetoelectric heterostructures, but also in other similar complex oxide systems.

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Date submitted: 23 Nov 2010 Electronic form version 1.4