Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

**Direct Spectroscopic Evidence of Charge Reversal at PZT/LSMO Heterointerface** CHUNG-LIN WU, PEI-WEI LEE, YI-CHUN CHEN, Department of Physics, National Cheng Kung University, Taiwan, LO YUEH CHANG, CHIA-HAO CHEN, National Synchrotron Radiation Research Center, Taiwan, CHEN-WEI LIANG, Department of Materials Science and Engineering, National Chiao Tung University, Taiwan, PU YU, QING HE, RAMAMOORTHY RAMESH, Department of Physics, University of California, Berkeley, USA, YING-HAO CHU, Department of Materials Science and Engineering, National Chiao Tung University, Taiwan — At the heterointerface of a top ferroelectric $Pb(Zr_{0.2}Ti_{0.8})O_3$ (PZT) ultrathin film and a bottom $La_{0.7}Sr_{0.3}MnO_3$ (LSMO) electrode, we used continuous synchrotron radiation photoelectron spectroscopy (SR-PES) to probe *in situ* and demonstrated that the interfacial charges are reversible and their affected valence-band barrier height becomes modulated on switching the polarization in the top layer. By monitoring the core-level shifting of the buried LSMO layer under continuous illumination of synchrotron radiation, we directly observed a temporal screening of polarization induced by the photon-generated carriers in the top PZT layer. This dynamic characterization of the core-level shifting of the buried layer demonstrates an effective method to probe the electric conduction and ferroelectric polarization of an ultra-thin ferroelectric oxide thin film.

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Date submitted: 14 Dec 2010 Electronic form version 1.4