Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Ferroelectric field effect transistors on silicon[1] GUANGLEI CHENG, CHENG CEN, University of Pittsburgh, MAITRI WARUSAWITHANA, Florida State University, DARRELL SCHLOM, Cornell University, JEREMY LEVY, University of Pittsburgh — The discovery of ferroelectricity in strained $SrTiO_3$ films grown directly on silicon substrates opens the possibility for a variety of devices that exploit direct field effects in this hybrid system. We report the fabrication and characterization of ferroelectric field effect transistors (FeFET) formed by coherently strained $SrTiO_3$ grown on silicon-on-insulator substrates. We observe persistent channel conductance changes of 85% at large gate bias voltages. A preference for one polarization state is also observed, consistent with a predicted[2] permanent interface dipole at the $SrTiO_3$/silicon interface.

[1]Support from NSF (DMR 0704022) is gratefully acknowledged.
[2]M. P. Warusawithana et al., Science **324**,367 (2009).

Guanglei Cheng
University of Pittsburgh

Date submitted: 20 Nov 2009 Electronic form version 1.4