Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Giant Polarization Rotation in BiFeO3/SrTiO3 Thin Films.[1] M.C. LANGNER, Y.H. CHU, L.M. MARTIN, M. GAJEK, R. RAMESH, J. ORENSTEIN, UC Berkeley, LBNL — We use optical second harmonic generation to probe dynamics of the ferroelectric polarization in (111) oriented BiFeO3 thin films grown on SrTiO3 substrates. The second harmonic response indicates 3m point group symmetry and is consistent with a spontaneous polarization normal to the surface of the film. We measure large changes in amplitude and lowering of symmetry, consistent with polarization rotation, when modest electric fields are applied in the plane of the film. At room temperature the rotation is an order of magnitude larger than expected from reported values of the dielectric constant and increases further (as 1/T) as temperature is lowered. We propose a substrate interaction model to explain these results.

[1]This work supported by Division of Materials Sciences and Engineering, Office of Basic Energy Sciences, DOE

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Date submitted: 27 Nov 2007 Electronic form version 1.4