Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

FMR Linewidth divergence in V_2O_3/Ni bilayers[1] JOSE DE LA VENTA, Department of Physics, Colorado State University, JUAN GABRIEL RAMIREZ, THOMAS SAERBECK, SIMING WANG, IVAN K. SCHULLER, Department of Physics and Center for Advanced Nanoscience, University of California San Diego — The effects of stress on the magnetic properties of ferromagnetic thin films are dramatic when the ferromagnets are in proximity with materials undergoing structural phase transitions (SPT) [1]. Here we report on Ferromagnetic Resonance (FMR) measurements on V_2O_3/Ni bilayers across the SPT of V_2O_3. The SPT occurs on V_2O_3 at 160 K from a metallic/rhombohedral to an insulating/monoclinic phase. Our results reveal a rotation of the anisotropy axis in Nickel films when cooled below the SPT of V_2O_3. The obtained anisotropy axis will be compared to the underlying structural morphology obtained from x-ray diffraction. More interestingly, the FMR linewidth as a function of the temperature shows a divergence across the SPT. This suggests a breakdown of the uniform precession of the Ni magnetization caused by the induced strain across the SPT. Discussion among linewidth-broadening mechanisms will be addressed.

[1] J. de la Venta, S. Wang, J. G. Ramirez, and I. K. Schuller, Appl. Phys. Lett. 102, 122404 (2013).

[1]Work supported by Office of Basic Energy Science, U.S. Department of Energy, under Grant No. DE FG03-87ER-45332 and AFOSR grant number FA9550-12-1-0381.

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Date submitted: 12 Nov 2013 Electronic form version 1.4