

Abstract Submitted
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Magnetic properties in multiferroic Fe/BaTiO₃/SrTiO₃(001)¹ M. PECHAN, C. YU, Physics, Miami University, S. SRIVASTAVA, C. PALMSTRØM, Chemical Engineering & Materials Science, University of Minnesota, M. BIEGASLSKI, C. BROOKS, D. SCHLOM, Materials Science and Engineering, Penn State University — Fe (001) films (30 nm) have been epitaxially grown on ferroelectric BaTiO₃/SrTiO₃(001) to study the interaction between the multiferroic components. We report the magnetic properties as a precursor to a full investigation of the multiferroic interactions. Ferromagnetic resonance measurements were carried out at 36 GHz cavity and variable frequency microstrip resonators. Four-fold anisotropy is present in these Fe (001) films with energy density $\sim 1.3 \times 10^5$ erg/cm³, consistent with bulk Fe values and indicating high quality Fe grown on the ferroelectric. Also present is a small, additional resonance peak, with large out-of-plane uniaxial anisotropy [$\sim 0.75 \cdot (2\pi M^2)$] attributed to strained Fe at the interface, although structural data shows the majority of the film is relaxed. This interfacial Fe will likely provide the desired coupling between the ferromagnetic and ferroelectric components in the system. Frequency/field in-plane dispersion curves further confirm the high quality of the Fe films in these samples.

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