## Abstract Submitted for the NWS08 Meeting of The American Physical Society

Electrochemically Prepared Fe/GaAs (110)<sup>1</sup> SARMITA MA-JUMDER, ANTHONY ARROTT, KAREN KAVANAGH, Dept. of Physics, Simon Fraser University, Burnaby, BC V5A 1S6 Canada — Iron has been deposited electrochemically on oriented, n-type GaAs (110) bulk substrates  $(2x10^{17} \text{ Si})$  at various temperatures in aqueous electrolytes. The film structure, growth kinetics, and residual strain have been investigated via high-resolution x-ray diffraction, and the magnetic properties via SQUID and FMR measurements. The resulting films grow epitaxially with a small tensile strain of  $5 \times 10^{-4}$  % although the lattice misa (GaAs)) would predict a compressive strain in the Fe. match (+1.4%, a Fe >The preparation of the GaAs surface using ammonium hydroxide, and an initial pulsed constant current power source during deposition, are critical to this result. The thickness versus square root time shows the expected diffusion-limited growth kinetics with an average growth rate of 100-200 nm/minute. The magnetization curves indicate that the film is composed of a single crystalline material with inhomogeneities aligned with the substrate. There is a superimposed uniaxial, anisotropy confirmed by the angular dependence of the FMR resonance field.

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