Abstract Submitted
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Field-dependent Magnetic Anisotropy of Single Crystal $Fe_{1-x}Ga_x$ Films on ZnSe(100)[1] HONGYAN LI, ADAM MCCLURE, IAN VRABLE, GALINA MALOVICHKO, YVES IDZERDA, Physics department, Montana State University — Magnetoelastic alloys in the thin film form that are pinned to a substrate are of current interest as materials for controlled spin dynamic damping. When the single crystal magnetoelastic alloy material $Fe_{1-x}Ga_x$ (which has a large magnetostriction value in the bulk) is epitaxially deposited onto the non-magnetoelastic material ZnSe, a biaxial strain is generated at the interface because of lattice mismatch. Anisotropic mechanical strain relaxation will generate a uniaxial magnetic anisotropy in the thin film. The application of a magnetic field will modify the strain resulting in an additional field dependent uniaxial contribution. This has been demonstrated using multi-frequency, angle-dependent ferromagnetic resonance measurements on single crystal $Fe_{1-x}Ga_x$ thin films, ranging from 0% to 60% Ga concentration, deposited on ZnSe(001) surfaces that display a field independent cubic anisotropy while the uniaxial anisotropy is dependent on the applied field.

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