Abstract Submitted
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Molecular Beam Epitaxy of $Fe_3Ga/Ga_{1-x}Al_xAs$ Heterostructures: Growth, Properties and Spin Transport C. J. PALMSTRØM, C. ADELMANN, X. LOU, S. K. SRIVASTAVA, P. A. CROWELL, University of Minnesota — Single crystal Fe_3Ga thin films have been grown on $Ga_{1-x}Al_xAs$ (001) by molecular beam epitaxy. The films are found to be pseudomorphic on $Ga_{1-x}Al_xAs$ and grow in a tetragonally-distorted Heusler-like $D0_3$ crystal structure. The Fe_3Ga films are ferromagnetic above room temperature with a saturation magnetization of 1200 emu/cm^3. They exhibit a perpendicular magnetic anisotropy due to the strain-induced tetragonal distortion. Rutherford backscattering spectrometry finds no interfacial reactions of $Fe_3Ga/GaAs$ heterostructures, suggesting that Fe_3Ga is thermally stable on GaAs. Spin injection from Fe_3Ga into GaAs has been assessed by using $Fe_3Ga/Ga_{1-x}Al_xAs$ spin light-emitting diode (LED) structures. A steady-state spin polarization of 20% is obtained at 2K. The bias dependence of spin injection is found to be very similar to that of $Fe/Ga_{1-x}Al_xAs$ spin LEDs [1]. This work was supported in part by ONR and NSF-MRSEC. [1] C. Adelmann *et al.*, Phys. Rev. B **71**, 121301 (2005).

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