

Abstract Submitted
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Local Magnetic Characterization of Continuous (Ga,Mn)As Film using Mechanical Force Detection¹ I. H. LEE, YU. OBUKHOV, J. KIM, The Ohio State University, X. LI, N. SAMARTH, The Pennsylvania State University, D. V. PELEKHOV, P. C. HAMMEL, The Ohio State University — We report on low temperature ($T = 4.2$ K) studies of the local spin dynamics in ferromagnetic samples using Ferromagnetic Resonance Force Microscopy (FMRFM) and probe-induced Magnetic Force Microscopy (MFM). Both techniques are based on sensitive mechanical detection of the dipolar magnetic interaction between a micromagnetic probe mounted on a flexible micro-cantilever and magnetic moments in the sample. The probe magnet not only detects the magnetic force, but also perturbs sample spin magnetization by adding the strongly inhomogeneous magnetic field. We demonstrate that the combination of FMRFM and probe-induced MFM can be used to extract and map local magnetic properties of a continuous (Ga,Mn)As film such as saturation magnetization and anisotropy field. These new approaches to scanned magnetic force imaging open the door to powerful new tools for spatially resolved studies of nanoscale magnetism and spin-based devices.

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