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**Scanning Probe Ferromagnetic Resonance Imaging of Stripe Patterned Exchange Bias IrMn-NiFe Film Using Nanoscale Confined Modes**  
INHEE LEE, ROHAN ADUR, The Ohio State University, CHRISTINE HAMANN, IFW Dresden, YURI OBUKHOV, The Ohio State University, JEFFREY MCCORD, Forschungszentrum Dresden-Rossendorf, DENIS PELEKHOV, The Ohio State University, BERND BUCHNER, IFW Dresden, CHRIS HAMMEL, The Ohio State University — We report scanned probe Ferromagnetic Resonance (FMR) imaging of the spatially modulated internal exchange-bias field in the exchange coupled ferromagnet (FM)/antiferromagnet (AF)  $\text{Ni}_{81}\text{Fe}_{19}$  / $\text{Ir}_{23}\text{Mn}_{77}$  bilayer material using Magnetic Resonance Force Microscopy (MRFM). The exchange bias is spatially modulated by ion beam irradiation into a periodic stripe pattern having 2 or 20 micron periods. Adjacent stripes have oppositely aligned exchange bias fields. Our new method of FMR imaging employs the locally confined FMR modes created by a strong, non-uniform probe tip field on the out-of-plane saturated  $\text{Ni}_{81}\text{Fe}_{19}$  film. We image the spatial variation of the inhomogeneous internal field with spectroscopic precision clearly resolving two exchange bias regions. Analysis of the local magnetic properties and their transition at the boundary of two exchange bias regions will be presented. This work was supported by the U.S. Department of Energy through Grant No. DE-FG02-03ER46054.

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