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Spin Dynamics in Exchange Biased Co/FeMn Bilayers¹ JEFFREY PARKER, MUN CHAN, MELISSA HAUGEN, BRUCE BOLON, CHRIS LEIGHTON, PAUL CROWELL, University of Minnesota — We report a study of the spin dynamics in exchange biased Co/FeMn bilayers using time resolved Kerr microscopy (TKRM) with sub-nanosecond resolution. Samples were prepared via UHV dc magnetron sputter deposition onto a Si/SiO_x substrate at room temperature in an applied field of 300 Oe. Deposition of a 30nm Cu buffer layer allowed for (111) textured growth of the subsequent Co/FeMn layers. In all samples the Co thickness was held constant at 6nm, while the FeMn thickness, t , was varied between 0 and 20nm. In accordance with previous work we found a room temperature critical thickness of the FeMn layer of approximately 3.5nm and a broad peak in the coercivity at this thickness. For low FeMn thickness a noticeable asymmetry occurs in the magnetization hysteresis loops only for temperatures below the blocking temperature. TRKM is used to probe the dynamic response of the magnetization to fast magnetic field pulses. The different reversal mechanisms on either side of the hysteresis loop were probed by both the static and dynamic magnetization of the films as a function of temperature (between 40 and 450 K), and applied field.

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