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Magnetization depth dependence and reversal processes in exchange coupled FeF_2/F (F=Fe,Ni,Py) bilayers R. MORALES[1], ZHI-PAN LI, O. PETRACIC[2], X. BATLLE[3], IVAN K. SCHULLER, Physics Department, University of California San Diego, La Jolla, USA — Antiferromagnet-ferromagnet (AF-F) bilayers exhibit exchange bias effect, i.e. a shift of the F hysteresis loop after a cooling down below the Neél temperature of the AF. We use SQUID magnetometry and magneto-optical Kerr effect (MOKE) to study the magnetization depth dependence and reversal processes in the F layer of FeF_2(70nm)/F(70nm) (F=Fe, Ni, Py) samples. Since the MOKE penetration depth is about 35nm for F layer, it is possible to achieve depth dependent information on the F probing both sides of the layer. Analyzing the SQUID response arising from the whole sample and MOKE hystesis loops from both AF-F and air interfaces we show that a magnetic structure perpendicular to the interface is created in the F layer near the AF-F interface. The compression of this magnetic structure with the external field is a reversible process. Work supported by US-DOE.

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