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Depth dependence of anisotropy in graded Co/Pd multilayers S.M. WATSON, J.E. DAVIES, NIST, K. LIU, UC-Davis, G.T. ZIMANYI , B.J. KIRBY, J.A. BORCHERS, NIST — As the magnetic recording industry looks beyond perpendicular recording [1] multilayered media such as exchange coupled composite [2] and graded media [3] have the potential for increasing storage density by combining low and high anisotropy materials. The soft layer reduces the required write field while the hard layer helps to maintain the thermal stability. Recent work has shown further enhancements when the anisotropy is gradually increased up to the hard layer anisotropy [3]. Grading the media in this manner is difficult to do experimentally. Equally difficult is accurately measuring the properties that make these materials unique, namely the depth dependence of the anisotropy. In this study we used polarized neutron reflectometry to measure the in-plane magnetization depth profile of graded Co/Pd multilayers with perpendicular-to-plane easy axis as a function of in-plane applied field. This technique allowed us to observe the depth-dependent response of the spins as they were pulled away from their easy axis, thus allowing us to determine the depth dependence of the anisotropy field. [1] M. Mallary, *et al.* IEEE Trans. Magn. **38**, 1719 (2002). [2] R. Victora, *et al.* IEEE Trans. Magn. **41**, 2828 (2005). [3] D. Suess, Appl. Phys. Lett. **89**, 189901 (2006).

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