

Abstract Submitted
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High Magnetization FeCo/Pd multilayers¹ MICHAEL WALOCK, MINT Center, The University of Alabama, FRANK KLOSE, The Spallation Neutron Source, Oak Ridge National Laboratory, MAIRBEK CHSHIEV, GARY MANKEY, WILLIAM BUTLER, MINT Center, The University of Alabama — A high saturation magnetization is advantageous in magnetic recording. Currently, the peak of the Slater-Pauling curve is the BCC FeCo system with a saturation magnetization of 2.45 T. Recently, a magnetization of 2.57 T in the FeCo layers of a [40 nm Fe₃₀Co₇₀ /1.7 nm Pd]x25 superlattice has been reported [1, 2]. This behavior may be attributed to an enhanced Fe moment in the expanded FCC matrix, and an accompanying induced moment in the Pd. Our theoretical calculations show an atomic moment enhancement, but this is not great enough to overcome the overall magnetization density reduction caused by the incorporation of Pd in the matrix. The overall effect is a reduced magnetization. Through variation of the FeCo composition and Pd layer thickness, and the combinatorial methods of structural and magnetic characterization, we will gain insight into the magnetic structure of this tertiary thin film system. [1] K. Noma, M. Matsuoka, H. Kanai, Y. Uehara, K. Nomura, and N. Awaji. *IEEE Trans. Magn.* **42**, 140 (2006). [2] *ibid.* **41**, 2920 (2005).

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