

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Influence of interfacial non-magnetic materials on soft-hard bilayer interaction A. ZAMBANO, H. OGUCHI, I. TAKEUCHI, Univ. of Maryland, S. LOFLAND, Rowan Univ., J. LIU, Univ. of Texas, D. JOSELL, L. BENDERSKY, NIST, Y. LIU, Z. WANG, Georgia Tech — Among the factors that affect the hard magnet-soft magnet interaction, interfacial nonmagnetic impurities could play a significant role. Resembling 1-dimensional models, magnetic multilayer systems are simple tools to probe it. We have used the high-throughput approach [1] to study thickness gradient effects of a Cu nonmagnetic impurity layer on the interaction between a hard magnetic CoPt layer and a soft magnetic Fe layer. On single chips, multiple samples were grown by e-beam evaporation varying the impurity layer thickness (t_{Cu}). Magnetic hysteresis loops were taken by the magneto-optical Kerr effect, and the layer interaction was characterized by the nucleation field (H_N). H_N vs. t_{Cu} curves indicate that the hard-soft phase interaction is described by a RKKY oscillatory exchange coupling contribution plus a dipolar exponential one. We will discuss how the hard layer crystalline characteristics affect this behavior and how the interface nonmagnetic material can significantly alter the nature of the interaction. Such behavior can have a pronounced effect on hard-soft bulk nanocomposite magnets. ONR MURI N00014-05-1-0497.

[1] Zambano *et al.*, Phys. Rev. B **75**, 144429 (2007).

Antonio Zambano
University of Maryland

Date submitted: 25 Nov 2007

Electronic form version 1.4