Abstract Submitted
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Exchanged-Coupled FePt Cluster Films T. A. GEORGE, Y. F. XU, L. F. JIN, R. SKOMSKI, D. J. SELLMYER, Department of Physics and Astronomy and Nebraska Center for Materials and Nanoscience, University of Nebraska, Lincoln, NE, 68588-0111, USA — $L1_0$ structure FePt films with (001) texture have attracted much attention for potential application in high-density perpendicular recording. In an effort to fine-tune their magnetic properties, novel structures of continuous FePt coupled to a FePt nano-composite layer have been investigated. The FePt layer, called the Continuous Layer (CL), was magnetron sputtered from a Pt target partially covered with Fe chips. The nano-composite layer uses carbon as a matrix and was made by two different methods: magnetron sputtered multi-layers of FePt and C, and cluster deposited $\sim$5 nm FePt particles with the C sputtered on top. All films were deposited on thermally oxidized Si substrates and processing was done for 300 seconds at 600^oC in an Ar with 5% H_2environment. Characterization was done with SQUID magnetometry and XRD. It was found that for the sputtered bilayer films, fixing the thickness of the nano-composite layer (5, 10, 15, or 20 nm) and varying the CL from 2 to 14 nm gave an increase in the coercivity of the film. The films with cluster deposited FePt particles showed exchange coupling after annealing and a decrease in coercivity over the pure CL. Models of these systems will be discussed in the talk. This work was supported by NSF-MRSEC, NCMN, DOE, INSIC and NRI.

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