Abstract Submitted
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Magnetic properties of $L1_0$ FePtCu:Au films for high-density perpendicular recording[1] M.L. YAN, Y.F. XU, Y.C. SUI, R. SKOMSKI, D.J. SELLMYER, University of Nebraska — We present fabrication methods for tunable magnetic properties of non-epitaxially grown, nanocomposite $L1_0$ FePtCu:Au films including a coupled FePt continuous gradient layer (CGL) for the application of high-density perpendicular recording media. The films are deposited with the structure FePt(x)/[FePtCuAu] on a thermally oxidized Si wafer and subsequently annealed. [FePtCuAu] is a nanocomposite layer (NL) with a fixed layer thickness, 12nm, and FePt(x) is the continuous gradient layer, with the thickness x varying from 0 to 10 nm, which is coupled to the NL. X-ray diffraction patterns show an enhanced degree of orientation for FePtCu:Au films with an increase of the CGL thickness. SQUID measurements show that magnetic properties of the films are tunable by changing the CGL layer thickness. When the CGL thickness is 10 nm, the magnetic properties of the film are $M_s \cong 600$ emu/cc, slope α ($= 4\pi d\mathrm{M}/d\mathrm{H}$) at the coercivity $\cong 1$ and $H_c \cong 6$ kOe. These results are discussed in terms of exchange-coupled layers with differing properties, and demonstrate the possibility of fabricating FePt-based nanocomposite media with properties suitable for high-density perpendicular recording.

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