Abstract Submitted
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FePt-Si Nanoparticles With Perpendicular Anisotropy[1] J. WAN, Y. ZHANG, Y. HUANG, M. BONDER, G.C. HADJIPANAYIS, Department of Physics and Astronomy, University of Delaware, Newark DE 19711, C. NI, Department of Materials Science and Engineering , University of Delaware, Newark DE 19711, D. WELLER, Seagate Technology, Pittsburgh, PA 15203 — FePt Nanoparticles are attractive for applications in magnetic recording media because of their high magnetocrystalline anisotropy. In this work, FePt-Si nanoparticles were fabricated by sputtering an FePt-Si target onto heated MgO substrates. The deposition temperature varied from 350^o to 500^oC. The ratio of FePt to Si in the films was changed by varying the amount of Si in the target. XRD results show that the lattice parameters of L10 phase changed in the FePt-Si nanoparticles from 3.71 to 3.61 Å for the c parameter and from 3.85 to 3.87 Å for the a parameter. Higher amounts of Si led to a larger change in lattice parameters. The change of lattice parameters in FePt nanoparticles affected the magnetic properties as indicated by the decrease of the coercivity in the FePt-Si samples. TEM images show that the FePt/Si nanoparticles have a better size distribution than the FePt/C nanoparticles. Selected area electron diffraction patterns show that the FePt-Si nanoparticles deposited on MgO have a (001) texture due to the lattice matching between FePt and MgO. The FePt-Si nanoparticles have properties that can be tailored for applications in magnetic recording media.

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