Abstract Submitted
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High coercivity in FePt nanoparticle assemblies V. NANDWANA, K. E. ELKINS, T.S. VEDANTAM, J.P. LIU, Department of Physics, University of Texas at Arlington — Ultra-fine FePt nanoparticles have been synthesized via a novel chemical solution synthesis route. Without using a reducing agent, the stoichiometric FePt nanoparticles were produced by the decomposition of iron acetylacetonate and platinum acetylacetonate in octyl ether in the presence of oleic acid and oleyl amine. The particle size was found by transmission electronic microscopy observation to be around 2 nm. The particles were then deposited on a substrate to form thin-film-like assemblies and undertaken heat treatments. Upon annealing the as-synthesized nanoparticles were expected to transform from FCC structure to the high anisotropic FCT structure and therefore magnetic hardening was developed in the assemblies. Coercivity up to 2.7 T has been obtained in the samples with the Fe:Pt molar ratio of 1.2:1 after being annealed at 650 $^\circ$C for 1 hour in forming gas (Ar + 7% H_2). The high coercivity indicates a highly completed phase transition from the FCC structure to the FCT structure.

J.P. Liu

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