Abstract Submitted
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Phase Transformation in Silica-Coated FePt Nanoparticles[1] LEVENT COLAK, GEORGE HADJIPANAYIS, University of Delaware — The A1 to $L1_0$ phase transformation has been examined in silica-coated FePt particles. The nanoparticles were synthesized by reduction of platinum acetylacetonate (Pt $(acac)_2$) followed by thermal decomposition of iron pentacarbonyl ($Fe(CO)_5$) in the presence of oleic acid (OA) and oleyl amine (OY) as surfactants at low temperature [1]. The monodispersed FePt nanoparticles, with a size of 5.8 nm were then coated with silica (SiO_2) shells [2] . The thickness of the silica shell could be controlled between 7.5-25 nm. The coated particles were subjected to thermal processing at 800 $^\circ$C for various amounts of times. No significant sintering was observed up to 2 hours of annealing for the shell thickness of 15.0 nm. In some silica-coated samples an increase in the particle size was observed after annealing. Selected Area Diffraction analysis and magnetic measurements showed the development of ordered $L1_0$ structure. Coercivity values up to 15 kOe at 7K are obtained. The phase transformation is currently being examined in other samples annealed at different times and temperatures and the results will be reported.**1**.Levent Colak and George C. Hadjipanayis, Nanotechnology 19 (2008) 235703.**2**.M. Aslam, L. Fu, S. Li, Vinayak P. Dravid, Journal of Colloid and Interface Science 290 (2005) 444–449.

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