Abstract Submitted
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FePt Nano-particles and Nano -wires[1] LEVENT COLAK, GEORGE HADJIPANAYIS, UNIVERSITY OF DELAWARE TEAM — In this work, we have studied the microstructure and magnetic properties of FePt nano-particles, nano-rods, and nano-wires synthesized by a modified chemical synthesis route described elsewhere[1],[2] The effect of synthesis parameters on the particle shape has been investigated for nanoparticles with sizes of 5-7 nm, for nano-rods and nano-wires with a diameter of 2-3 nm and a length of 20 and 100 nm, respectively. Low injection temperature for the iron precursor and usage of surfactants as reaction solvents resulted in 7 nm nano-cubes whereas a high heating rate to refluxing temperature and high injection temperature resulted in spherical shapes with 5 nm diameter. Nano-rods and nano-wires are formed by simply adjusting the relative ratios of surfactants to reaction solvents (oleic acid, oleyl amine and octadecene/benzylether) and the refluxing time. Transmission electron microscope (TEM) studies show that usage of high concentrations of oleyl amine and longer refluxing times induce nano-wire formation. HRTEM and magnetometry studies are currently in progress to investigate the development of particle morphology and microstructure during the synthesis and determine their influence on the magnetic properties. 1. C.Wang et. al. Angew. Chem. Int. Ed. 2007, 46,1-4. 2. M. Chen et. al. J. Am. Chem. Soc. 2007, 129, 6348-6349.

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