Abstract Submitted
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Magnetism of Discrete, $L1_0$ Ordered FePt Nanoparticles HAO ZENG, Department of Physics, the State University of New York, Buffalo, NY 14260, MICHAEL DEMARCO, Department of Physcs, Buffalo State College, DAREN LI, PING LIU, Department of Physics, University of Texas at Arlington — Discrete, $L1_0$ ordered FePt nanoparticles have been made by annealing the as-synthesized nanoparticles in the presence of NaCl powder.[1] These particles exhibit high degree of chemical ordering and very large coercivity at room temperature. The temperature dependent magnetic properties of these non-aggregated nanoparticles have been studied systematically as a function of particle size. The magnetization reversal behavior of 4 nm particles can be well explained by Stoner-Wohlfarth coherent rotation model, while that of 8 nm and 15 nm particles is more complicated. Mossbauer spectroscopy measurements indicate the existence of a paramagnetic phase in these highly ordered nanoparticles. The amount of the second phase decreases with temperature but persists even in liquid He temperature. This is attributed to canted spins at the particle surfaces. [1]K. Elkins, D. Li, N. Poudyal, V. Nandwana, Z. Jin, K. Chen and J.P. Liu, J. Phys. D: Appl. Phys. 38, 2306 (2005).

Hao Zeng

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