Abstract Submitted
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Effects of magnetic interactions in Ni nanowire arrangements OVIDIU TRUSCA, DORIN CIMPOESU, LEONARD SPINU, Univ. of New Orleans Dept. of Physics & AMRI, JOHN B. WILEY, JIN HEE LIM, Univ. of New Orleans Dept. of Chemistry & AMRI — Systems of magnetic nanowires are considered strong candidates for many technological applications. The main parameter controlling the frequency response of magnetic nanowires assemblies is their aspect ratio (length to diameter ratio) [1], that can be tuned by changing the dimensions of wires. We modified the nanowires aspect ratio by keeping constant the length and changing the diameter. This required designing templates of different diameters with the same average distance between the pores. Two sets of Ni nanowires samples with diameters of 40, 60, 80 nm and constant length of 500 and 1000 nm respectively, obtained by electrodeposition, were studied using X-band ferromagnetic resonance measurements at room temperature. The two series of samples are ideally candidates for verifying the models recently proposed to describe the interactions in such systems [2]. As the nanowire's diameter increases, the peak observed in the angular dependence of the FMR resonant field diminishes. [1] A. Fert, L. Piraux, J. Magn. Magn. Mater, vol. 200, pp. 338-358, 1999. [2] I. Dumitru, et al., IEEE Trans.Mag 42(10), 3225, 2006. Work supported by Louisiana Board of Regents Contract #LEQSF(2007-12)-ENH-PKSFI-PRS-04.

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