

Abstract Submitted  
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**High Magnetization Polyethylene Glycol Coated Nanoparticles<sup>1</sup>**

M.J. BONDER, Y.H. HUANG, Y. ZHANG, K. WILLIAMS, G.C. HADJIPANAYIS,  
University of Delaware, V. PAPAETHYMIU, University of Ioannina, Greece —  
High magnetization nanoparticles coated with a biocompatible polymer or polysaccharide layer are required for biomedical applications such as targeted drug delivery, MRI contrast enhancement and hyperthermia treatments. This paper discusses the fabrication and characterization of iron nanoparticles coated with carboxyl terminated polyethylene glycol for future biomedical applications. Electron microscopy reveals nanoparticles ranging from 10 to 50 nm in size that have a body centered cubic structure characteristic of  $\alpha$  Fe. Mossbauer spectroscopy reveals the typical sextet expected for Fe with two different hyperfine fields reminiscent of a core shell morphology indicating that there are two distinct Fe sites. The coated nanoparticles are soft ferromagnets with coercivity below 100 Oe and a saturation magnetization of 50 emu/g as shown by SQUID and vibrating sample magnetometry. Optimization studies are underway and the results will be reported.

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Michael J. Bonder  
University of Delaware

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