

Abstract Submitted  
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**Magnetic Investigations of Titanium Doped Gamma Iron Oxides Dispersed in Polymers** MIRCEA CHIPARA, Indiana University Cyclotron Facility, IOAN MORJAN, RODICA ALEXANDRESCU, National Institute for Lasers, Plasma and Radiation Physics, Bucharest, Romania, JEFFREY ZALESKI, DAVID BAXTER, NICHOLAS REMMES, Indiana University, MIRCEA CHIPARA COLLABORATION<sup>1</sup>, SYNTHESIS OF MAGNETIC PHASE COLLABORATION, DAVID BAXTER COLLABORATION<sup>2</sup> — Titanium doped gamma iron oxide nanoparticles were prepared by laser pyrolysis. X-Ray studies indicated the presence of  $\gamma$  Fe<sub>2</sub>O<sub>3</sub> and  $\beta$  FeO(OH). Small amounts of  $\gamma$  titanium maghemite were observed. The average particle size is 5 nm (Transmission Electron Microscopy). Magnetic nanoparticles were dispersed by sonicating a solution of styrene-isoprene-styrene blockcopolymer. The solvent was evaporated by heating at 75 °C for 24 hours. The as obtained films were studied by SQUID and ferromagnetic resonance (FMR). The temperature dependence of the magnetization and of hysteresis loops in the temperature range 4 K – 300 K is reported. The temperature dependence of FMR line parameters in then range 100 K to 450 K is reported. A weak matrix effect within the glass transition range of the polymeric matrix has been observed.

<sup>1</sup>Dispersion of magnetic nanoparticles within polymers and characterization

<sup>2</sup>Magnetic measurements

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