



Characterization of Superparamagnetic Iron Oxide Coated with Silicone Used as Contrast Agent for Magnetic Resonance Image for the Gastrointestinal Tract

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Abstract



References



Citations



Supplementary Data



Suggestions

The present work is a report of the characterization of superparamagnetic iron oxide nanoparticles coated with silicone used as a contrast agent in magnetic resonance imaging of the gastrointestinal tract. The hydrodynamic size of the contrast agent is 281.2 nm, where it was determined by transmission electron microscopy and a Fe_3O_4 crystalline structure was identified by X-ray diffraction, also confirmed by Mössbauer Spectroscopy. The blocking temperature of 190 K was determined from magnetic measurements based on the Zero Field Cooled and Field Cooled methods. The hysteresis loops were measured at different temperatures below and above the blocking temperature. Ferromagnetic resonance analysis indicated the superparamagnetic nature of the nanoparticles and a strong temperature dependence of the peak-to-peak linewidth ΔH_{pp} , giromagnetic factor g , number of spins N_S and relaxation time T_2 were observed. This behavior can be attributed to an increase in the superexchange interaction.

Keywords: CONTRAST AGENT; FMR; LUMIREM; MRI; SPION; SUPEREXCHANGE

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