

Poster Presentation

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Synthesis and Characterization of SPIONs for Biomedical applications

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This work reports the synthesis and characterization of superparamagnetic iron oxide nanoparticles (SPIONs), with great potential for biomedical applications. SPIONs were prepared through a decomposition of Fe(acac)₃ in the presence of 1,2 hexadecanodiol (reducing agent), oleic acid and oleylamine (ligands) in a hot organic solvent. The mercaptosuccinic acid (MSA) and 2,3-dimercaptosuccinic acid (DMSA) were exchanged onto the nanocrystal surface making the particles stable in water. The thiolated nanoparticles (SH-NPs) were characterized by Fourier transform infrared spectroscopy (FTIR), X-ray diffraction (XRD), transmission electron microscopy (TEM), and vibrating sample magnetometry (VSM). The as-prepared sample presented an amorphous partially oxidized iron structure. The results showed that the SH-NPs have a mean diameter of 6 nm and display superparamagnetic behavior at room temperature. Preliminary tests of incorporation of these systems were evaluated in Hela cells and stem cells. The results showed that the thiolated nanoparticles have no toxic effects for both cell types with good incorporation after 6 hours of transfection. Magnetic resonance image (MRI) were also carried and showed that the MNPs increase the contrast in systems investigated. Acknowledgements: FAPESP (2011/10125-0), CNPq, CAPES, UNICAMP

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