

PHYSICAL PROPERTIES OF MAGNETITE NANOPARTICLES COVERED BY 11-MERCAPTOUNDECANOIC ACID

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For application of magnetite nanoparticles in biomedicine the biocompatible surface is required. In this contribution the new method of nanoparticle preparation and characterization their physical properties is given. Magnetite nanoparticles were synthesized sol gel method by the precipitation of water solution FeCl₂/FeCl₃ with NH₄OH in the presence of 11-mercaptoundecanoic acid. The presence of covalent binding of mercaptoundecanoic acid by thiol bridge was checked by FTIR spectroscopy. Zeta potential revealed that magnetite nanoparticles were negative charged at alkaline pH range. Negative charges on the magnetite nanoparticle surface support the tight interaction with positively charged protein cytochrome c. Magnetic measurements revealed that the prepared magnetite nanoparticles shows superparamagnetic behavior without remanence and coercivity at room temperature. FC and ZFC measurements at magnetic field 100 Oe confirmed the existence the blocking temperature.

9.7 cm

13.4 cm

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