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ACCEPTED MANUSCRIPT

Synthesis of iron oxide nanorods for enhanced magnetic hyperthermia

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ABSTRACT. Magnetic hyperthermia is one of the most effective methods for treatment of cancer. In this work we discuss synthesis of magnetic iron oxide nanorods (IONRds) and their application for enhanced magnetic hyperthermia. By microwave irradiation the monodisperse water-soluble IONRds with clear morphology were obtained. Magnetic measurements showed that such IONRds have high value of coercivity (141 Oe). Moreover, hyperthermia experiments with synthesized samples were carried out. At the frequency and field strength of alternating magnetic field (AMF) f=261 kHz H=20 kA m⁻¹ the specific absorption rate (SAR) and intrinsic loss power (ILP) values were equal to 147 W g⁻¹ and 1.4 nHm² kg⁻¹ respectively, which confirms the efficiency of synthesized nanorods in hyperthermia applications.

Keywords: nanoparticles, iron oxide, nanorods, hyperthermia

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