



MAGNETIC NANOPARTICLE SYNTHESIS FOR MAGNETIC HYPERTHERMIA APPLICATIONS

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Abstract

Synthesis of magnetic nanoparticles (MNPs) in a colloidal form is of rapidly increasing interest due to their scope of unique chemical and physical properties which make them suitable for a host of applications, with a primary focus being put on their use in biomedicine. One specific application being magnetic hyperthermia, which involves targeted cancer cell necrosis by heat generation of MNPs placed in a localized alternating magnetic field. For magnetic hyperthermia use, there is a requirement that these MNPs have a narrow particle size distribution while maintaining high magnetization, complete biocompatibility, and ease of surface modification. Synthesis of gold-coated iron cobalt nanoparticle based ferrofluid has the potential to provide MNPs with these properties while potentially offering higher magnetization and alternate biocompatibility methods than that demonstrated by iron oxide nanoparticles.

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