

Size and Shape Controlled Magnetic Nanocrystal and PLGA Encapsulated Biodegradable Nanobead

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The synthesis of Fe₃O₄ nanoparticle has been focused because of their diverse potential applications. The synthesis of nanoparticle with monodisperse size distribution is the most important, because the properties of these nanoparticles depend on their dimensions. We have designed and prepared monodisperse, size-controllable, and shape-controllable nanocrystal. We control the particle size by varying the experimental conditions without size sorting process. Iron oxide nanoparticle can be entrapped within PLGA which is biodegradable material. Inside the hydrophilic surface, hydrophobic condition is constituted, so that drug can be delivered with iron oxide nanoparticle encapsulated with PLGA. Entrapping within the water-soluble material by hydrophobic interaction, the magnetic property of magnetite nanoparticle can be improved. Selection of the dispersed and the continuous phase is important in successful nanoparticle formation and efficient entrapment of drug.