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Solvothermal synthesis of Sm^{3+}-doped Fe_3O_4 nanoparticles

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Highlights

- Sm^{3+}-doped magnetite nanoparticles were obtained by solvothermal polyol method.
- Magnetic nanoparticles are twice smaller if 2,2′-bipyridine is used as a capping agent.
- Sm^{3+}-doped magnetite nanoparticles have clean surface and are useful as a MRI contrast agent.

Abstract

Magnetic iron oxide nanoparticles doped with samarium were prepared by solvothermal polyol method. An introduction of 2,2′-bipyridine during the synthesis reduces the particle diameter to about 9 nm in average. The difference in physical and magnetic properties of the samples prepared with and without capping agent was outlined on the basis of complex characterization by a number of experimental techniques. The characteristics of resulted product make it suitable for biomedical applications, for instance, as a contrast agent for MRI.