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Synthesis of spherical and cubic magnetic iron oxide nanocrystals at low temperature in air

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Research Highlights

1. Magnetite nanocubes can be synthesized under mild reaction conditions.
2. Size of spherical magnetite nanocrystals can be easily controlled by changing the amount of oleylamine in the reacting solution.
3. Synthesized magnetite nanocrystals exhibit good crystallinity and magnetic property.

Abstract

Synthesis of magnetite nanocrystals typically requires harsh reaction conditions, including high reaction pressures and/or temperatures, to obtain morphology-controlled nanocrystals like cubic magnetite nanocrystals. We report the synthesis of cubic magnetite nanocrystals with a size of 9 nm at reaction temperatures less than 100 °C in air. The synthesized magnetite nanocubes exhibited uniform size and highly crystalline nature. In addition, we synthesized size-controlled

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