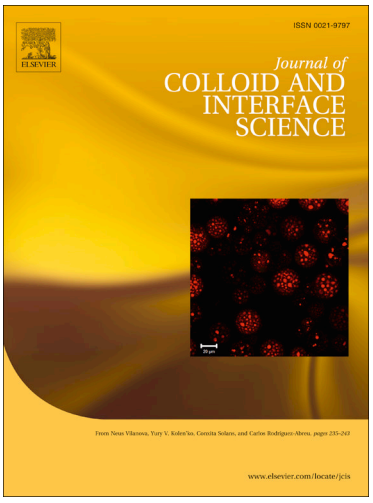

Synthesis of spherical and cubic magnetic iron oxide nanocrystals at low temperature in air

Bumkyo Park, Byung Hyo Kim, Taekyung Yu

PII: S0021-9797(18)30174-7
DOI: https://doi.org/10.1016/j.jcis.2018.02.026
Reference: YJCIS 23298

To appear in: *Journal of Colloid and Interface Science*

Received Date: 19 December 2017
Revised Date: 2 February 2018
Accepted Date: 7 February 2018

Please cite this article as: B. Park, B. Hyo Kim, T. Yu, Synthesis of spherical and cubic magnetic iron oxide nanocrystals at low temperature in air, *Journal of Colloid and Interface Science* (2018), doi: https://doi.org/10.1016/j.jcis.2018.02.026

Article to J. Colloid Interface Sci. 12/2017

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

Bumkyo Park,[a†] Byung Hyo Kim,[b†] and Taekyung Yu,[a]*

[a] *Department of Chemical Engineering, College of Engineering, Kyung Hee University, Youngin 17104, Republic of Korea*

[b] *Center for Nanoparticle Research, Institute of Basic Science (IBS), Seoul 08826, Republic of Korea*

[†]These authors contributed equally to this work.

*Corresponding author. E-mail: tkyu@khu.ac.kr

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