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Supporting Information

Controlled Growth and Magnetic Property of α-Fe_2O_3 Nanocrystals: Octahedra, Cuboctahedra and Truncated Cubes

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Instruments and Methods.

XRD experiments were performed on a Philips X'Pert Pro X-ray diffractometer with a monochromatized Cu Kα radiation source and a wavelength of 0.1542 nm. FE-SEM images were obtained with a Supra 40 FE-SEM operated at 5 kV. TEM images were collected on a JEOL-2010 field-emission transmission electron microscope operating at 200 kV accelerating voltage. Magnetic measurements were carried out with a Quantum Design MPMS-XL5 SQUID magnetometer.

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Experimental Section

Synthesis of α-Fe_2O_3: Two mmol β-CD (2.270 g) and 20 mmol $FeCl_3$ (3.244 g) were dissolved in 100 mL of deionized water. The solution was stirred for 4 h at 353 K in a round-bottom flask. After water was removed by rotary evaporation below 323 K, a solid product was obtained, and dried at 373 K for 4 h. Samples **1**, **2** and **3** were prepared by sintering the solid product at 723 K for 8, 16 and 24 h, respectively. Samples **4** and **5** were prepared by sintering the solid product at 673 and 773 K for 24 h, respectively.

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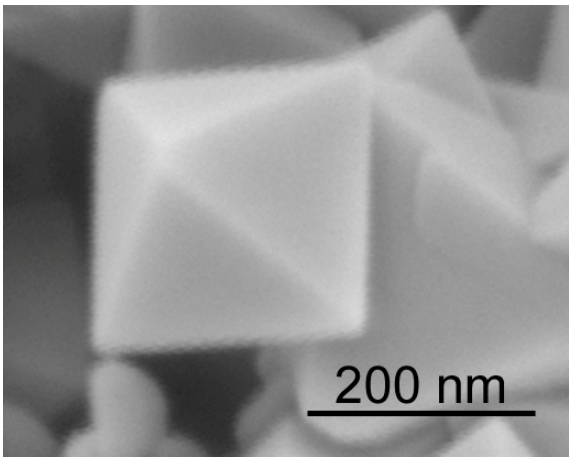

Figure S1. FE-SEM image of Sample **1** for higher magnification displayed more details about the octahedral.

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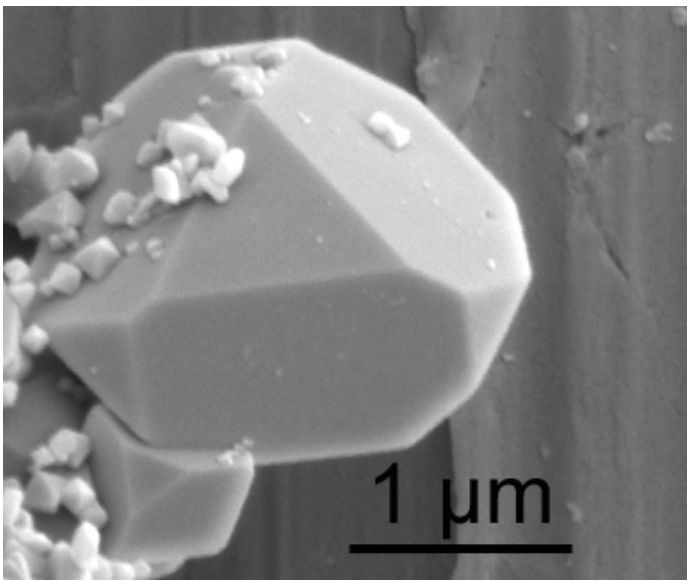

Figure S2. FE-SEM image of Sample **2** for well-ordered cuboctahedral particles.

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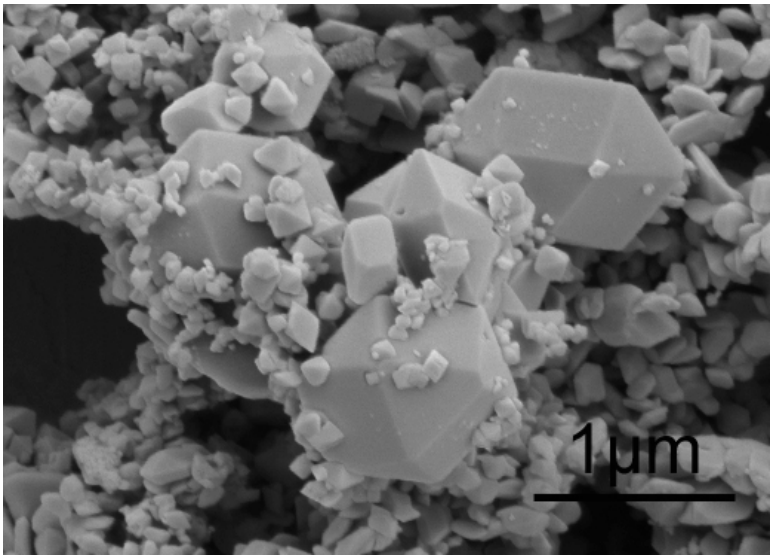

Figure S3. FE-SEM image of Sample **3** for well-ordered cuboctahedral particles.

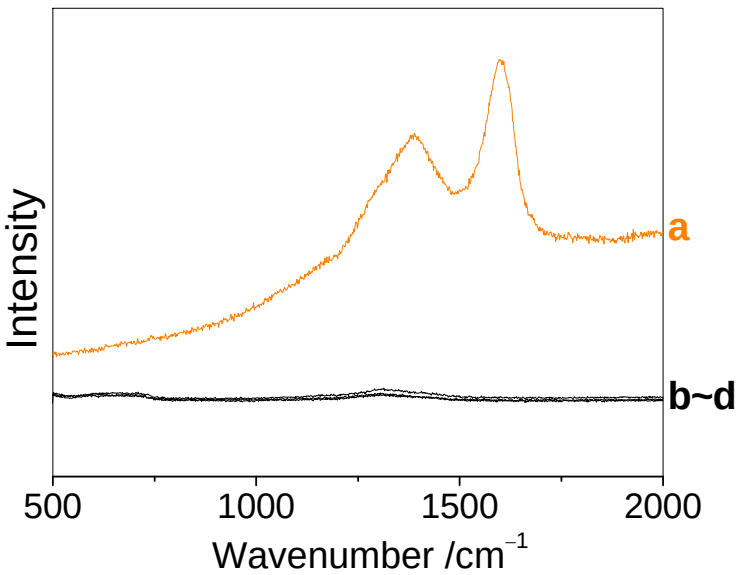

Figure S4. Raman spectra of (a) a mixture of β-CD and $FeCl_3$ that was sintered at 723 K for 0.5 h and (b-d) Samples **1**~**3**.

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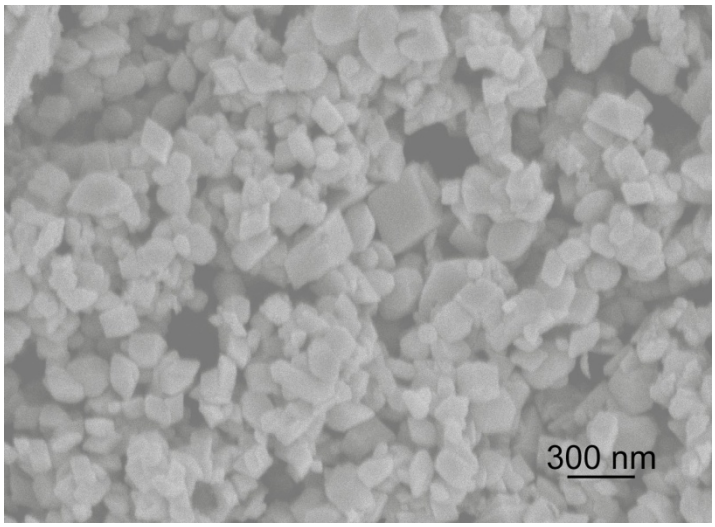

Figure S5. FE-SEM image of Sample **4**.

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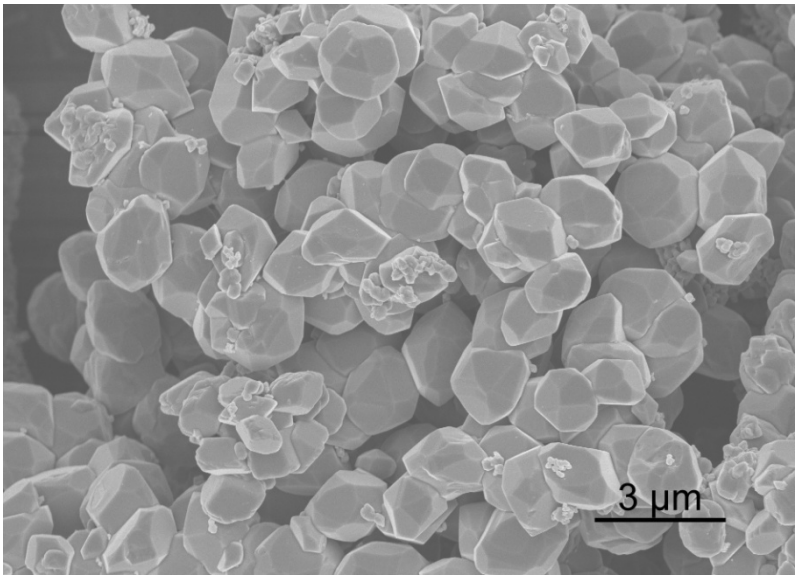

Figure S6. FE-SEM image of Sample **5**.

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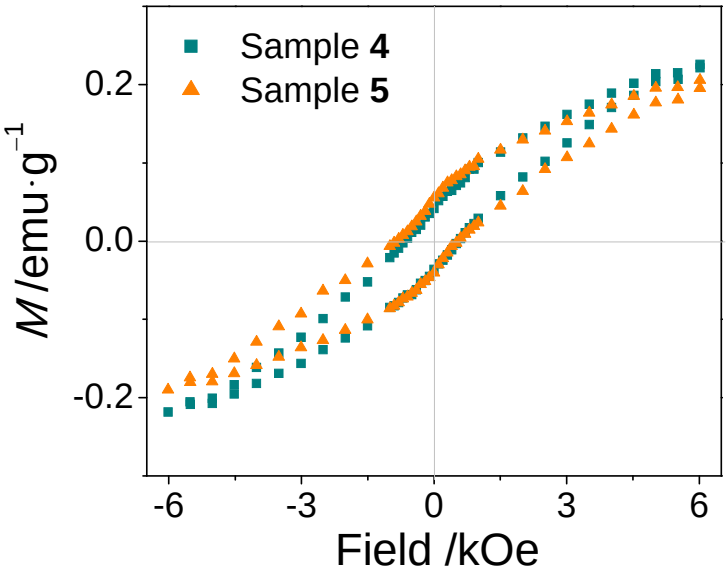

Figure S7. Field dependences of magnetizations of Samples **4** and **5** at 300 K.