

Supporting Information

Solvent controlled synthesis of new hematite superstructures with large coercive values

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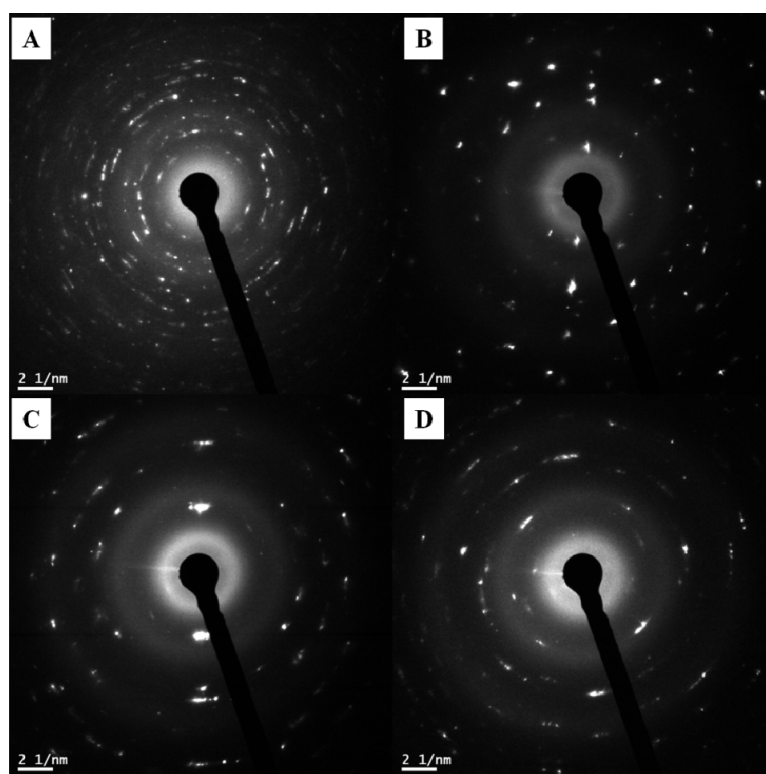


Fig. S1 SAED patterns of iron oxide (α -Fe₂O₃) structures synthesized A) water (SW), B) ethanol (SE), C) propanol (SP), and D) methanol (SM).

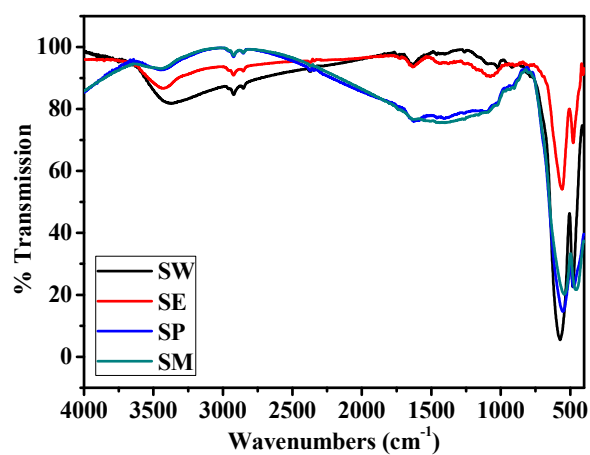


Fig. S2 The FT-IR spectra of hematite iron oxide superstructures synthesized using different solvents.

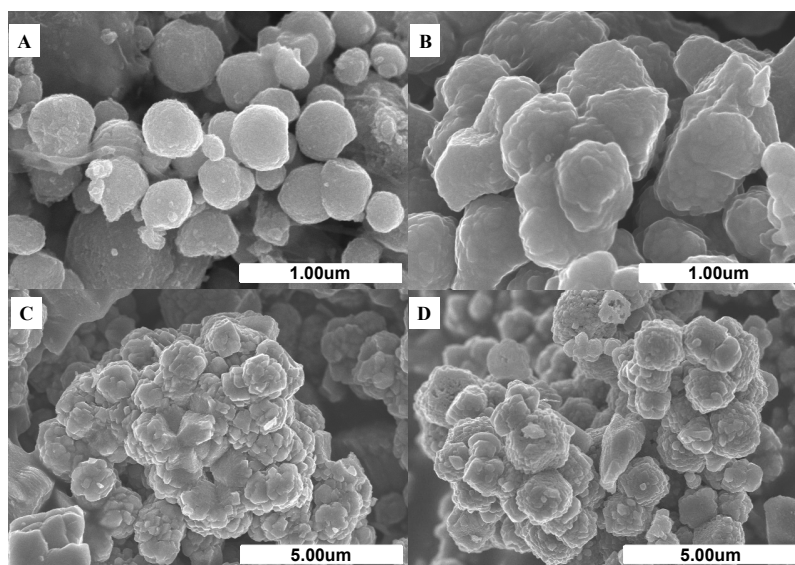


Fig. S3 SEM images of iron oxide (α -Fe₂O₃) superstructures synthesized using ethanol as solvent at 180 °C for A) 1, B) 4, C) 8, and D) 10 h.

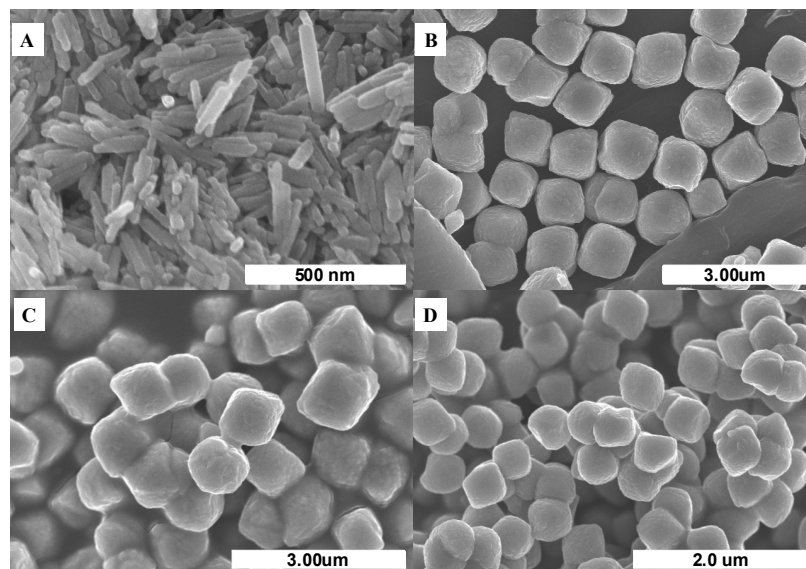


Fig. S4 SEM images of iron oxide (α -Fe₂O₃) superstructures synthesized using water as solvent at 180 °C for A) 1, B) 4, C) 8, and D) 10 h.

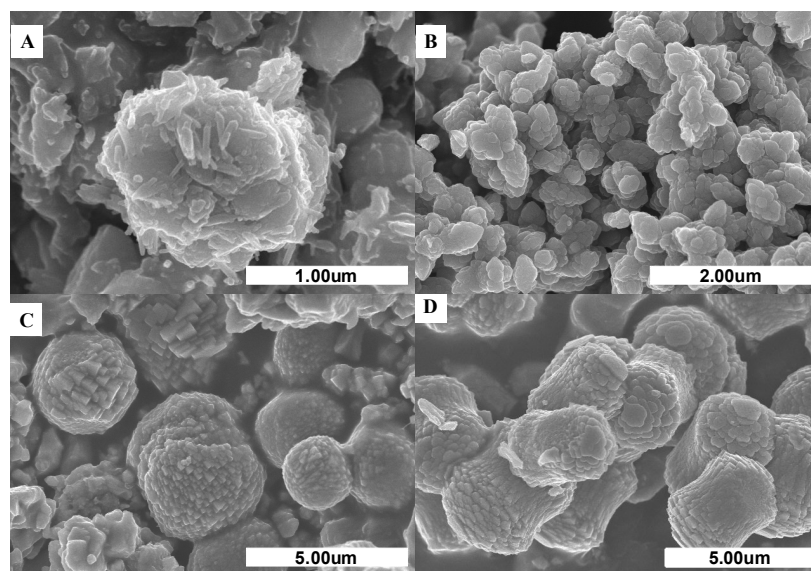


Fig. S5 SEM images of iron oxide (α -Fe₂O₃) superstructures synthesized using propanol as solvent at 180 °C for A) 1, B) 4, C) 8, and D) 10 h.

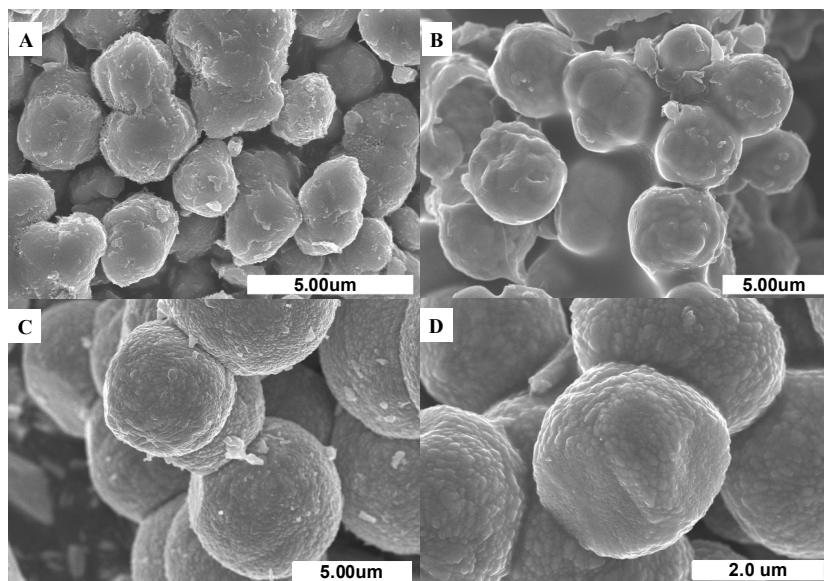


Fig. S6 SEM images of iron oxide (α -Fe₂O₃) superstructures synthesized using methanol as solvent at 180 °C for A) 1, B) 4, C) 8, and D) 10 h.

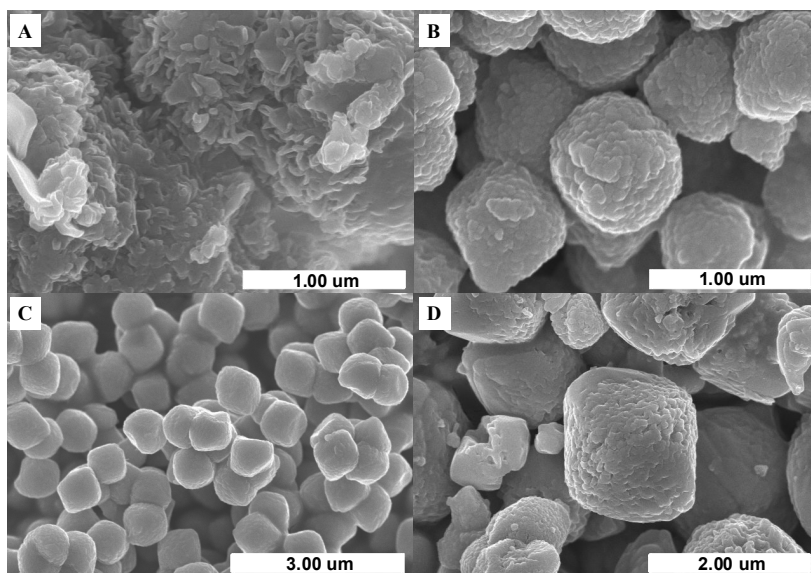


Fig. S7 SEM images of iron oxide (α -Fe₂O₃) superstructures synthesized by varying caffeine A) blank, B) 0.25 mmol, C) 0.5 mmol, and D) 1.0 mmol.

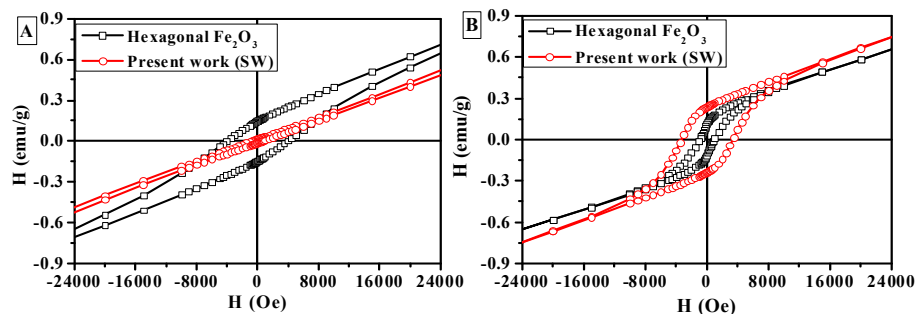


Fig. S8 Hysteresis loops for hematite iron oxides with hexagonal and cube-like morphology A) at 5 K and B) at 300 K, illustrating comparative look highlighting inverse coercivity of present square-like sample.

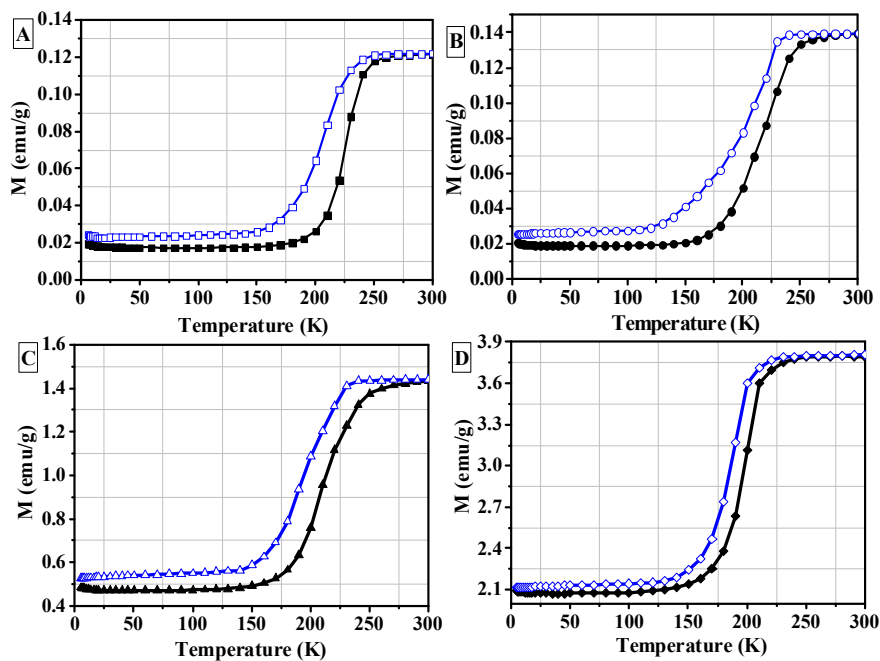


Fig. S9 The zero-field-cooled (ZFC) and field-cooled (FC) measurements of the α -Fe₂O₃ at 1000 Oe synthesized using various solvents A) SW, B) SE, C) SP, and D) SM. (The blue lines represent FC, while black ones are for ZFC).