

Shape Control in Iron Oxide Nanocrystal Synthesis, Induced by Trioctylammonium Ions

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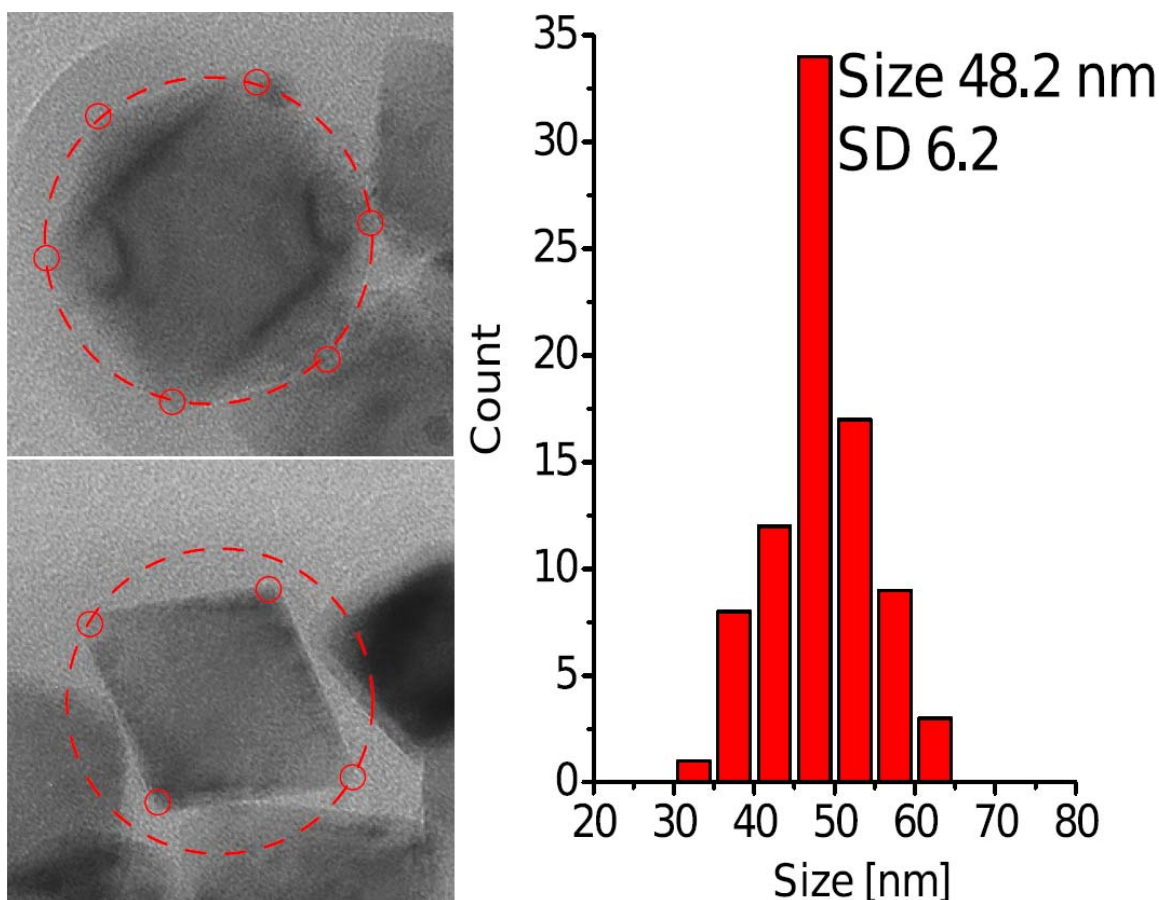


Figure S1. Size distribution (edge length) of iron oxide *nanooctahedra* (right) and schematic explanation of how size was estimated (left).

Particle size was estimated using a circumradius (the minimum radius of a circumference inside which the nanocrystal can be fully embedded), since the different orientation of the *nanooctahedra* might easily lead to misunderstanding. To this end, 4-6 points were identified at the corners of each particle, depending on its orientation on the grid, and then a circumference was drawn along these points, and its diameter (D) was used for calculation of the length (a) of the edges of the octahedron ($D = a \sqrt{2}$).

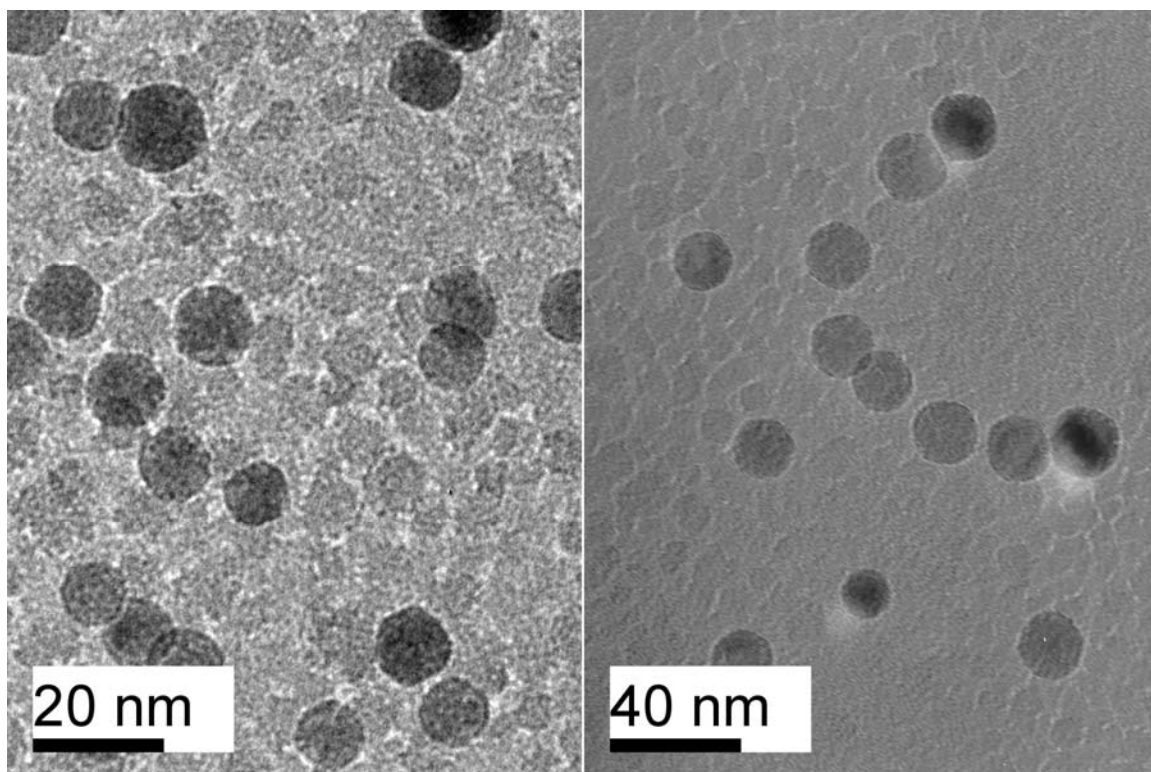


Figure S2. Nanoparticles prepared with pure TOA (top) and with additional 0.2 mmol of TOA (bottom).

In order to check the importance of the trioctylammonium bromide for the shape control, direct *in situ* synthesis of the TOAHB salt was carried out. The corresponding amount of TOA and HBr solution (48% in water) was placed in a four neck flask, several minutes later the mixture became solid due to trioctylamine bromide formation. After completion of the reaction, the iron precursor, oleic acid and the solvent were added to the flask and the synthesis was carried out as usual. Figure 6 shows a TEM image of the corresponding nanoparticles, which exhibit octahedral shape but many particles are truncated probably due to the presence of water in the reaction mixture.

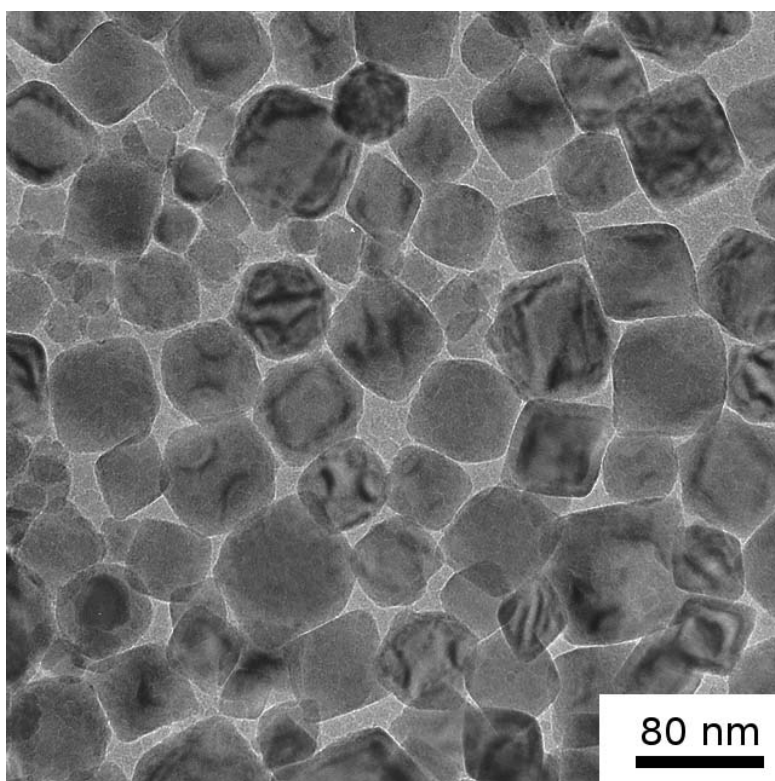


Figure S3: TEM image of the iron oxide nanoparticles with *in situ* preparation of the trioctylamine bromide.

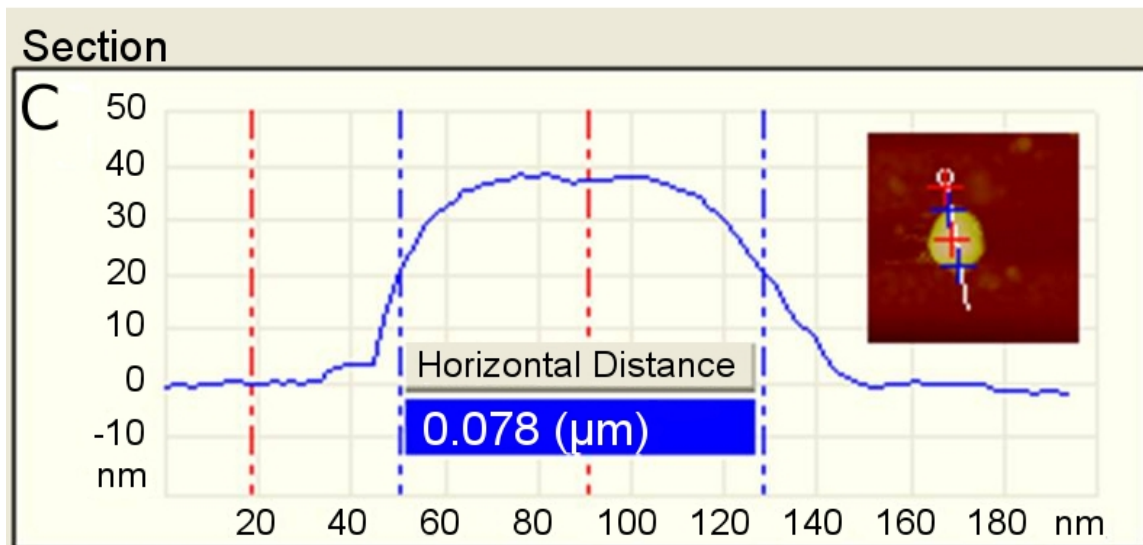


Figure S4. AFM profile of one of iron oxide octahedron.