

Supporting Information

Table of Contents:

Figure S1.	HRTEM images of two different multi-core nanoparticles	S1
Figure S2.	TEM image acquired along $\langle 110 \rangle$ zone axis for Oct NPs	S2
Figure S3.	XRD Diffraction Pattern of MC and Oct NPs	S3
Figure S4.	Increasing the reaction time for CX8: Fe(acac) ₃ ratio 1 to two hours	S4
Figure S5.	Intensity and Number size distribution profile of Single-Core NPs	S5
Figure S6.	Intensity and Number size distribution profile of Multi-Core NPs	S6
Figure S7.	Intensity and Number size distribution profile of Octahedral NPs	S7
Figure S8.	Magnetization vs applied field curves measured at 5K	S8

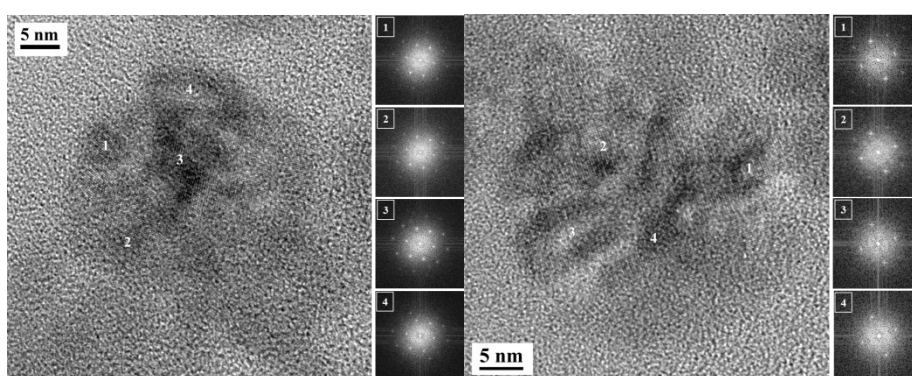


Figure S1: HRTEM images of two different multi-core nanoparticles. FFTs taken in different regions of the aggregate (i.e. the cores inside the NPs) show the same crystallographic orientation.

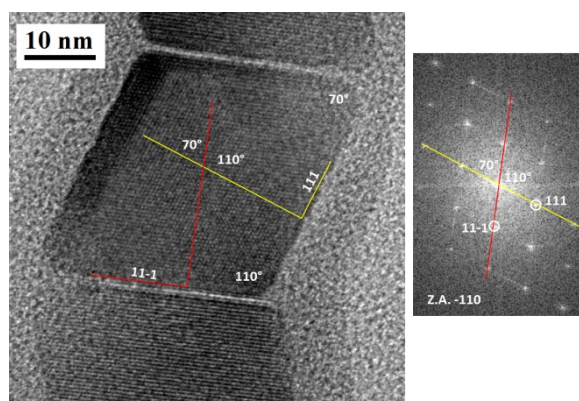


Figure S2: TEM image acquired along $\langle 110 \rangle$ zone axis showing that $\{111\}$ type facets are exposed in the prepared octahedral magnetite NPs.

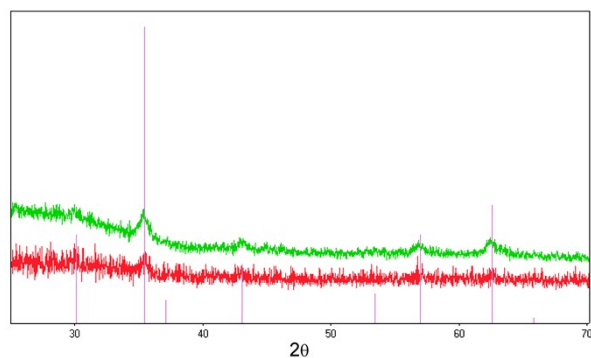


Figure S3: X-Ray diffraction patterns of multi-core (green line) and octahedral NPs (red line). The black vertical thin lines highlight the peaks corresponding to the diffraction planes reported in the database for magnetite.

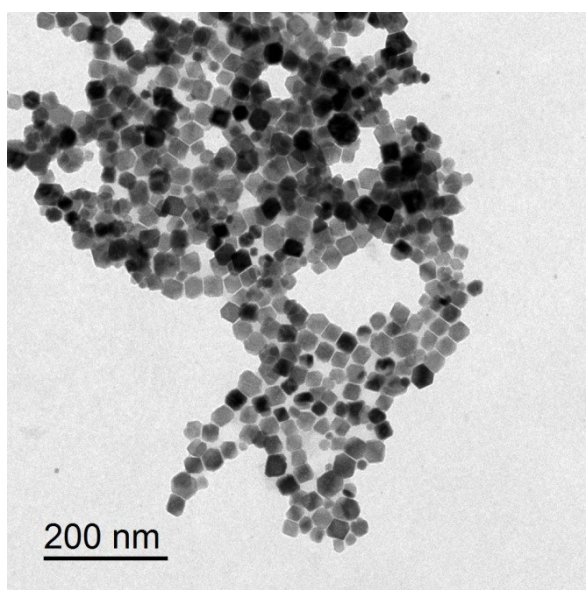


Figure S4. Increasing the reaction time for CX8: Fe(acac)₃ ratio 1 to two hours leads to no further modifications in the octahedral morphology of the nanoparticles.

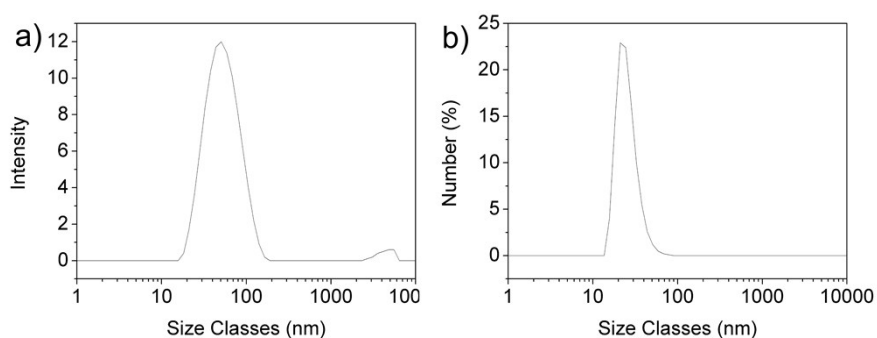


Figure S5: Intensity (a) and Number (b) size distribution profile of Single-Core NPs

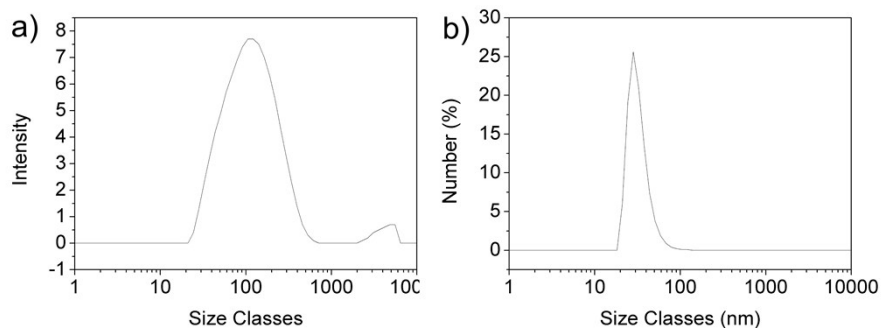


Figure S6: Intensity (a) and Number (b) size distribution profile of Multi-Core NPs

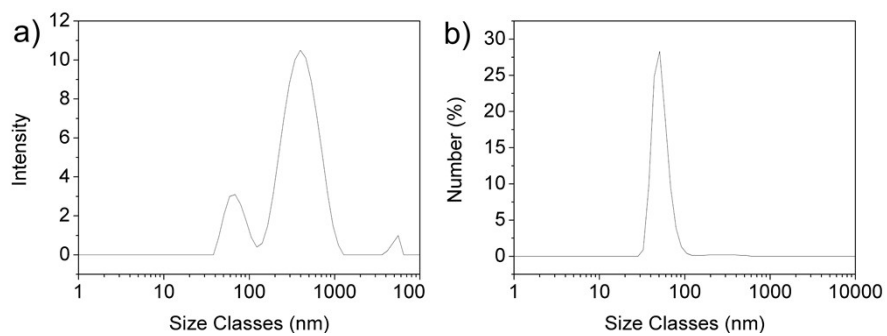


Figure S7: Intensity (a) and Number (b) size distribution profile of Octahedral NPs

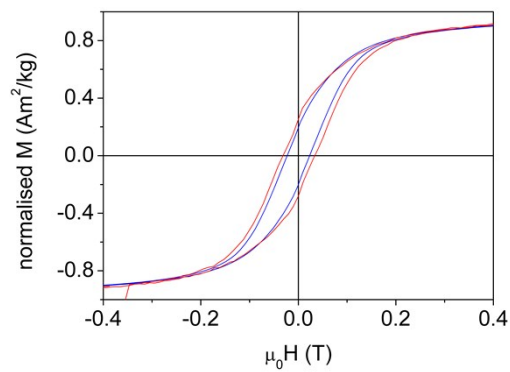


Figure S8: Magnetization vs applied field curves, measured and 5K for single-core (black line), multi-core (blue line) and octahedral NPs (red line)