

Electronic Supplementary Information:

Binary Superparticles from Preformed Fe₃O₄ and Au Nanoparticles

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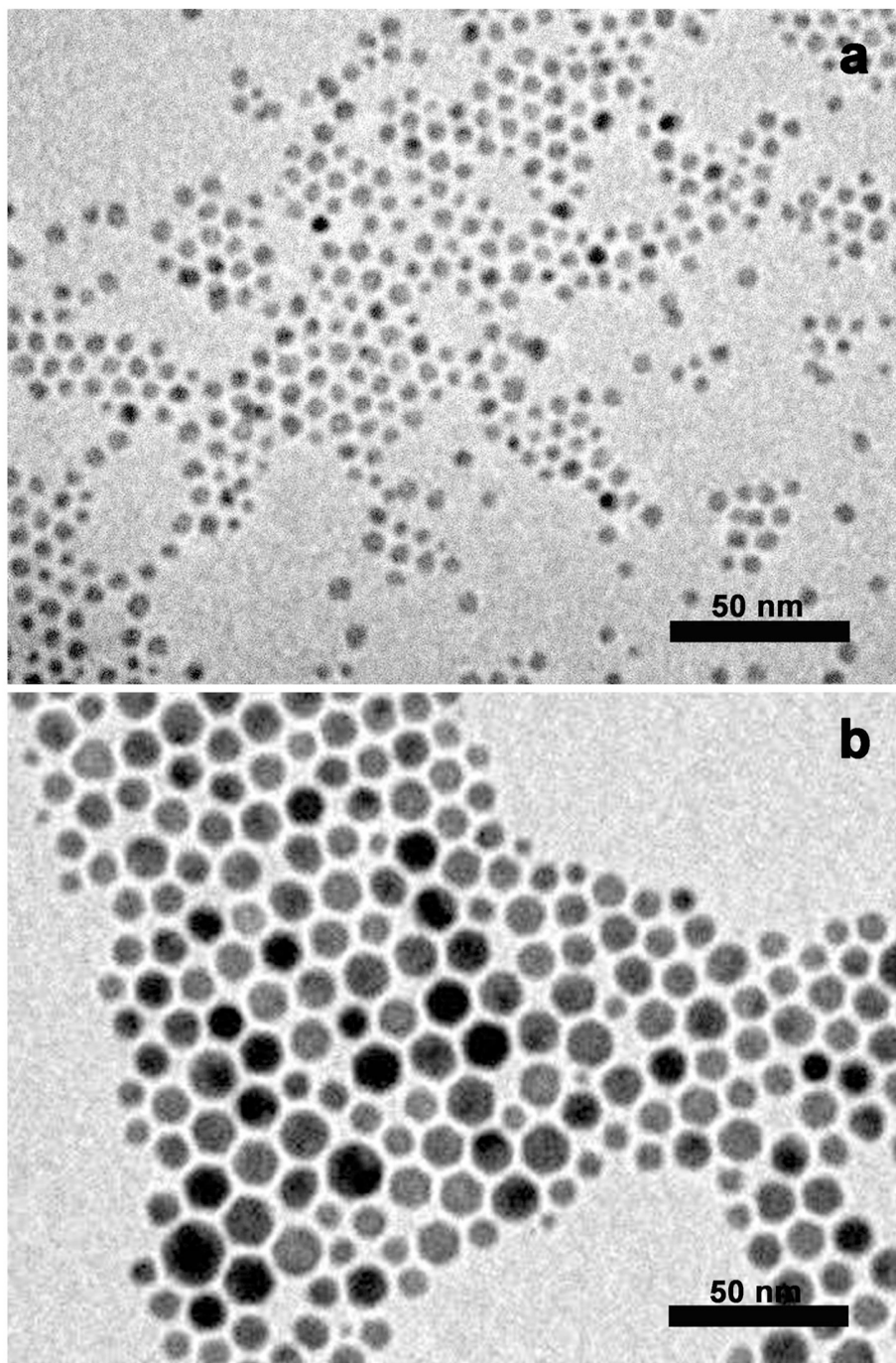
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Figure S1 TEM images of oleic acid-capped Fe_3O_4 (a) and OVDAC-capped Au (b) NPs for the fabrication of Fe_3O_4 -Au binary SPs. The average diameter of Fe_3O_4 and Au NPs was 5.3 and 10.4 nm, respectively.



Details of the preparation of PPy-capped SPs.

The solution of 1 ml DTAB-capped SPs was mixed with an ethylene glycol solution of PVP (2.0 mM, 5 ml), after stirring for several minutes, the gelatin aqueous solution (1.0 wt%, 0.5 ml) was added. Then, the temperature of the mixture was kept at 80 °C for 1 h. After cooling to the room temperature, the products were separated by centrifugation and the PVP-capped SPs were synthesized. Pyrrole monomer was injected into PVP-capped SPs solution by using syringe under magnetic stirring at ambient temperature for half an hour. Then, 1 ml 10 mg/ml aqueous $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$ solution was added into the system and the polymerization took place. Keep stirring for 12 h, PPy-capped SPs were obtained. The products were collected and washed by water and ethanol for several times. The thickness of the PPy shell was controlled by adjusting the concentration of pyrrole monomer.

Figure S2 Size distribution of DTAB-capped Fe_3O_4 -Au SPs (201 ± 31 nm) (a) and PPy-capped Fe_3O_4 -Au SPs (257 ± 57 nm) (b) from TEM observation. Size distribution of DTAB-capped Fe_3O_4 -Au SPs (239 ± 50 nm) (c) and PPy-capped Fe_3O_4 -Au SPs (335 ± 25 nm) (d) from DLS measurement.

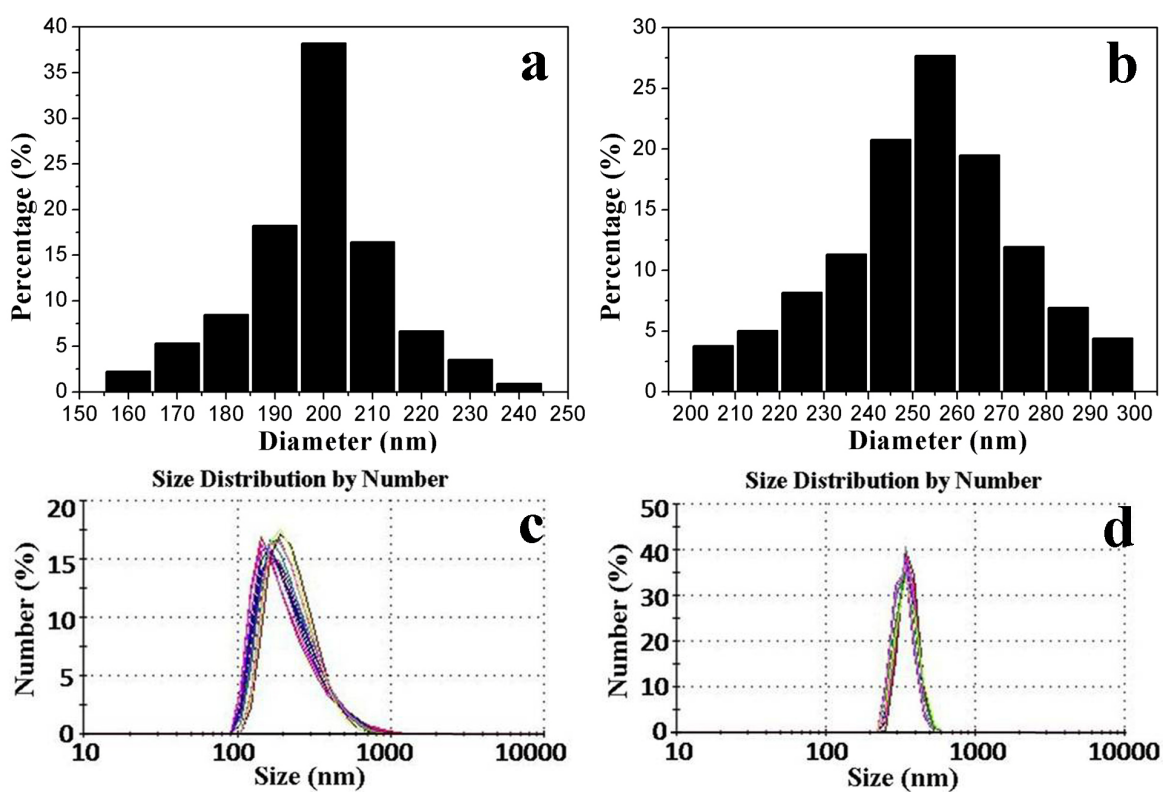


Figure S3 TEM images of MPA-capped aqueous CdTe (a) and DDAB-capped hydrophobic CdTe (b) NPs for the fabrication of Fe₃O₄-CdTe binary SPs. The average diameter of CdTe NPs was 3.5 nm.

