Supplementary Information

Facile deposition of continuous gold shell on Tween-20 modified Fe₃O₄ superparticles

Xiumei Jin, Jinglun Liang, Chunfeng Yang, Ruijun Hao, Jiaqi Zhuang and Wensheng Yang*

Scheme S1 Schematic presentation of the synthetic procedure for the Fe₃O₄/Au core-shell particles.
**Figure S1.** (a) High angle annular dark field scanning TEM (HAADF-STEM) image and (b, c) HAADF-STEM energy dispersive spectrometer (HAADF-STEM-EDS) mapping images of the Fe$_3$O$_4$/Au core-shell particles prepared with 8.4 mM HAuCl$_4$. 
Figure S2. (a) The standard curve of Fe\textsuperscript{2+} (the absorbance of Fe\textsuperscript{2+}-o-phenanthroline complex versus concentration of Fe\textsuperscript{2+}). (b) The concentrations of Fe\textsuperscript{2+} ions released from the Fe\textsubscript{3}O\textsubscript{4} SPs (black) and the flower-shaped Fe\textsubscript{3}O\textsubscript{4}/Au particles (blue) after being soaked in hydrochloric acid (3 M, 0.5 mL) for 2 h.
**Figure S3.** TEM image of the product prepared without pre-adsorption of Au$^{3+}$ ions before the addition of ascorbic acid reductant into the reaction mixture.
Figure S4. TEM images of the products prepared from (a) sodium dodecylsulfate (SDS) modified Fe$_3$O$_4$ SPs and (b) dodecyl trimethyl ammonium bromide (DTAB) modified Fe$_3$O$_4$ SPs. Insert of (b) shows the photograph of the dispersion of the DTAB modified Fe$_3$O$_4$ SPs after addition of HAuCl$_4$. 