

Electronic Supplementary Information

Down/Up- Conversion Luminescence Nanocomposites for Dual-modal Cell Imaging

Mingyue An, Jiabin Cui, Qian He and Leyu Wang*

State Key Laboratory of Chemical Resource Engineering, School of Science, Beijing University
of Chemical Technology, Beijing 100029, China

*To whom correspondence should be addressed. E-mail: lywang@mail.buct.edu.cn

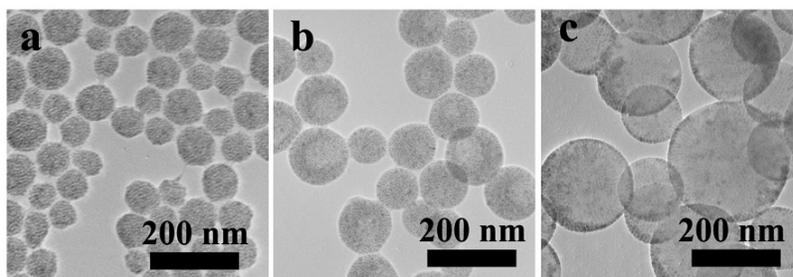


Figure S1. TEM images of the obtained Fe_3O_4 nanocomposites by using different amounts of monomers. The volume of the monomers (emulsion B): a) 700, b) 450, c) 350 μL ; Emulsion B was prepared as follows: styrene (0.3 mL), EGDMA (70 μL) and MAA (20 μL) were mixed with SDS solution (10 mL, 1 mg/mL) under the ultrasonication for 5 min.

As shown in Figure S1, we obtained the Fe_3O_4 nanocomposites with the diameter from ~ 75 nm to ~ 180 nm by adjusting the dosage of monomers. By fixing the amount of hydrophobic Fe_3O_4 NPs, the average size of the as-prepared nanocomposites became larger and larger with the increase of monomers.

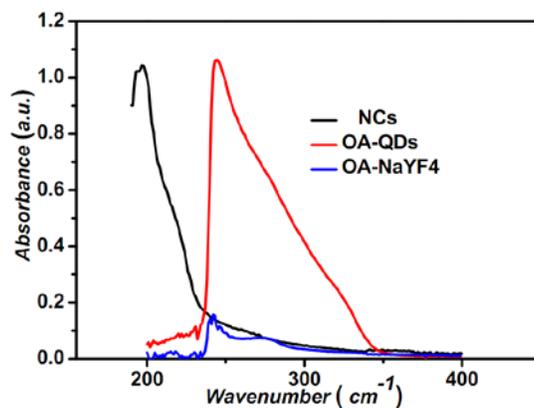


Figure S2. UV-Vis absorption spectra of the DC/UC nanocomposites in water (black line), the hydrophobic ZnS:Mn²⁺ QDs in chloroform (red line) and the hydrophobic NaYF₄:Yb³⁺/Er³⁺ UCNPs in chloroform (blue line). OA-QDs: oleic acid coated QDs; OA-NaYF₄: oleic acid coated UCNPs. As shown in these absorption spectra, no absorption can be observed over 350 nm.

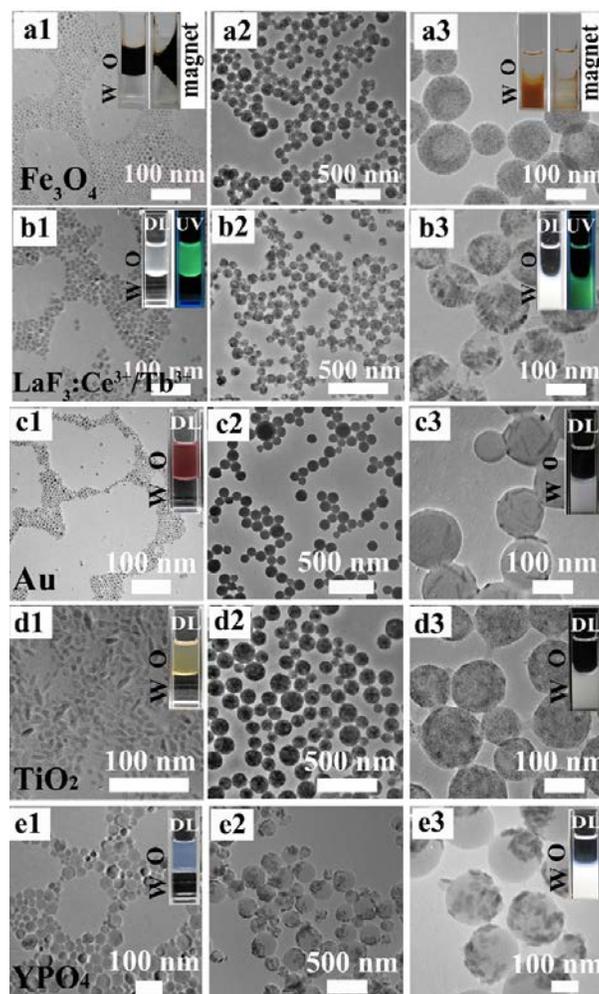


Figure S3. TEM images of hydrophobic NPs (a1, b1, c1, d1, e1) and hydrophilic NCs with low (a2, b2, c2, d2, e2) and high (a3, b3, c3, d3, e3) magnification. (a1-a3): Fe₃O₄; (b1-b3): LaF₃:Ce³⁺/Tb³⁺; (c1-c3): Au; (d1-d3): TiO₂; (e1-e3): YPO₄. Insets: daylight (DL) photographs of NPs dispersed in cyclohexane (a1, b1, c1, d1, e1) and NCs dispersed in water (a3, b3, c3, d3, e3).

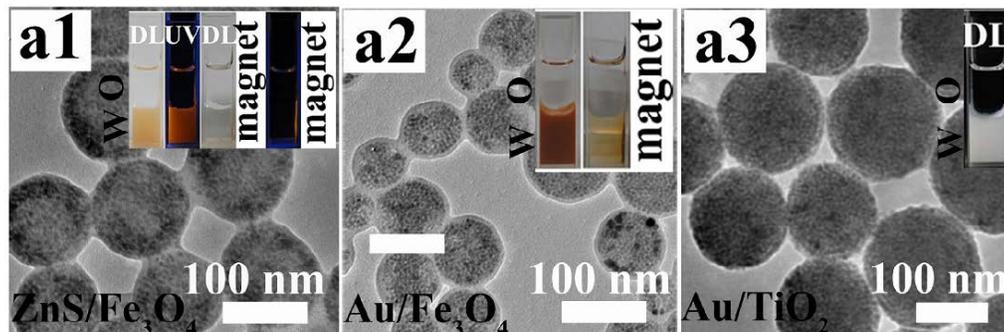


Figure S4. TEM images of ZnS:Mn²⁺-Fe₃O₄ (a1), Au-Fe₃O₄ (a2), and Au-TiO₂ (a3) nanocomposites. Insets: daylight (DL) and luminescence photographs of the nanocomposites dispersed in water. W and O represent water and oil (cyclohexane), respectively.