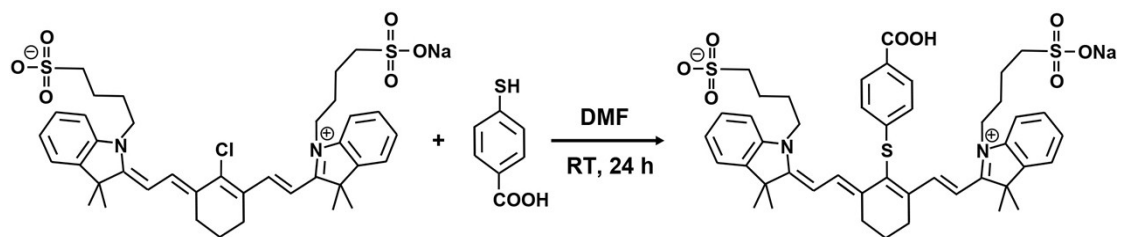


Markedly enhanced upconversion luminescence by combining IR-808 dye sensitization and core-shell-shell structure

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Scheme S1 Synthesis of IR-808 dye.

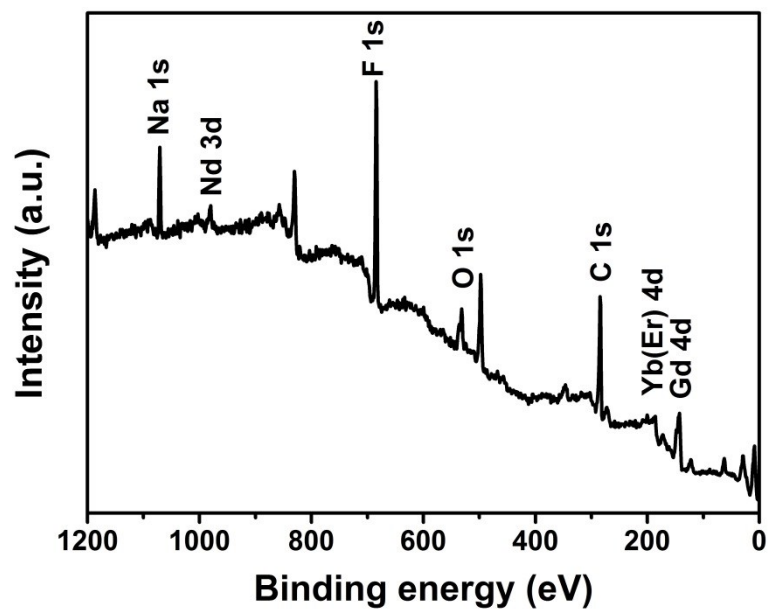


Fig. S1 XPS spectra of OA-UCNPs.

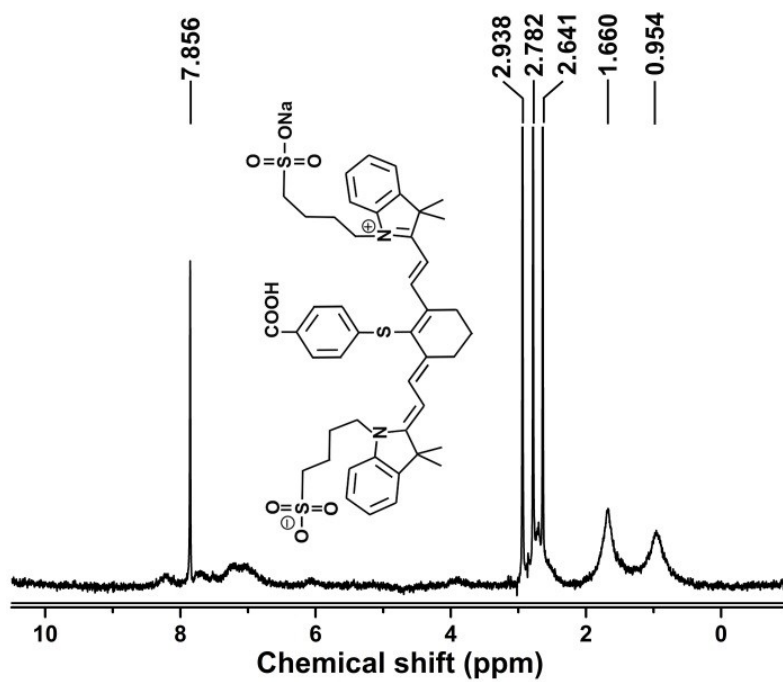


Fig. S2 ^1H NMR (500 MHz, D_2O) spectrum of IR-808 dye (inset is the molecule structure of IR-808 dye).

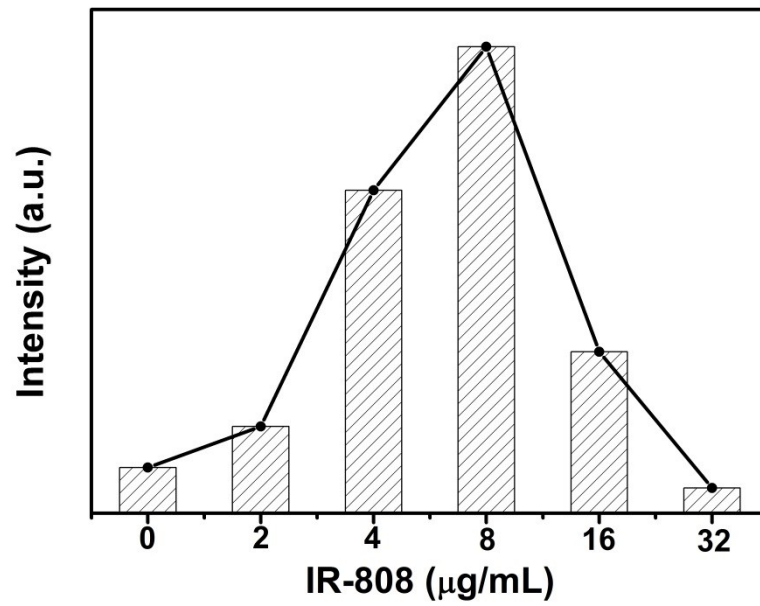


Fig. S3 Integrated UC emission intensity of UCNPs upon increasing amounts of IR-808 dye.

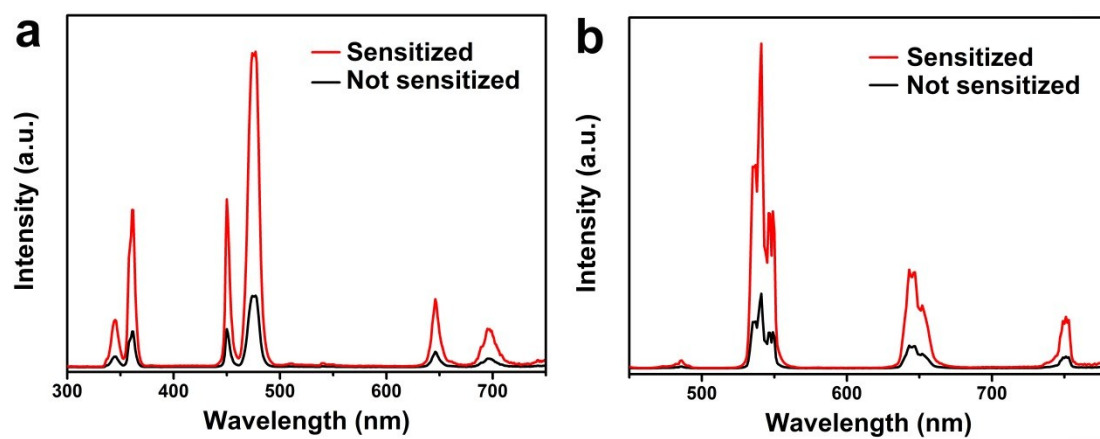


Fig. S4 UC emission spectra of Tm^{3+} -activated (a) and Ho^{3+} -activated (b) core-shell-shell structured nanoparticles before and after IR-808-sensitization.