

Electronic Supplementary Information

Core-shell materials bearing iron (II) carbonyl units and their CO-release *via* upconversion process

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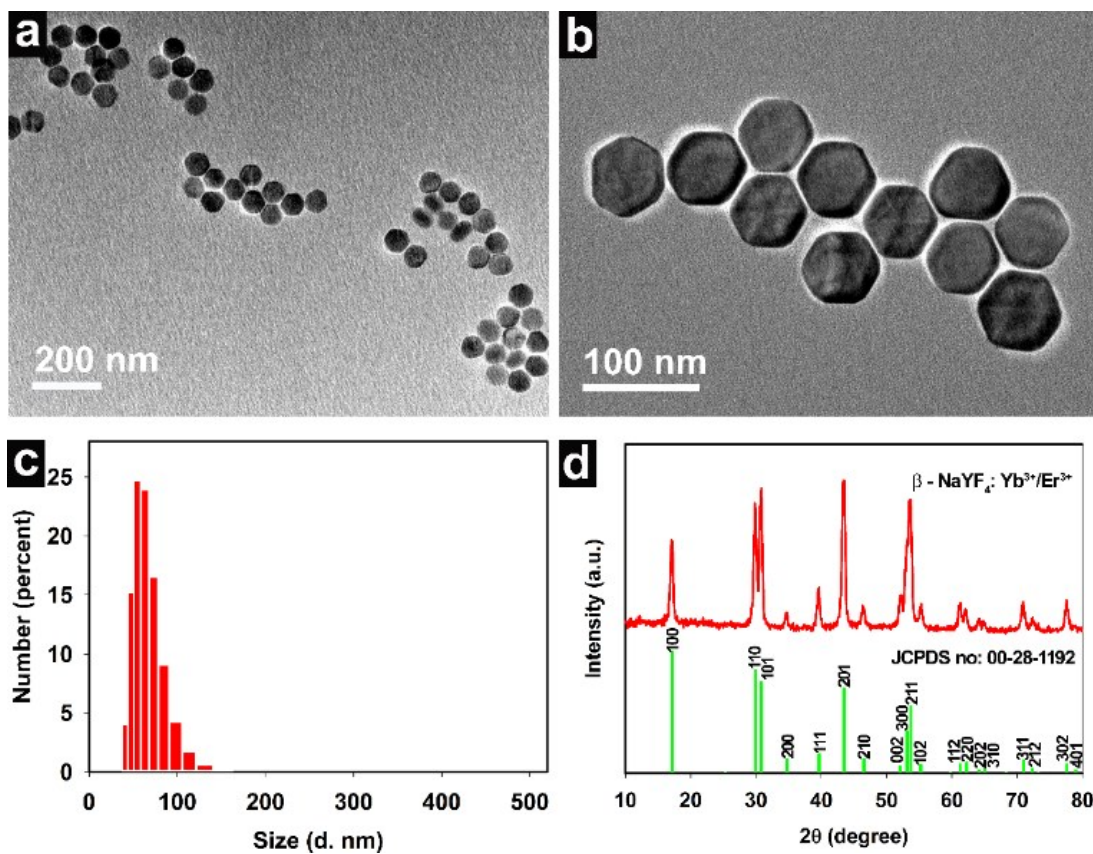


Fig. S1 Characterizations of β -NaYF₄:Yb³⁺/Er³⁺ UCNPs: (a) and (b) TEM images, (c) hydrodynamic diameter distribution in cyclohexane, (d) X-ray diffraction pattern (A JCPDS file of standard β -NaYF₄:Yb³⁺/Er³⁺ powder is given as a reference).



Fig. S2 Photograph of UCNPs which was dispersed in cyclohexane.

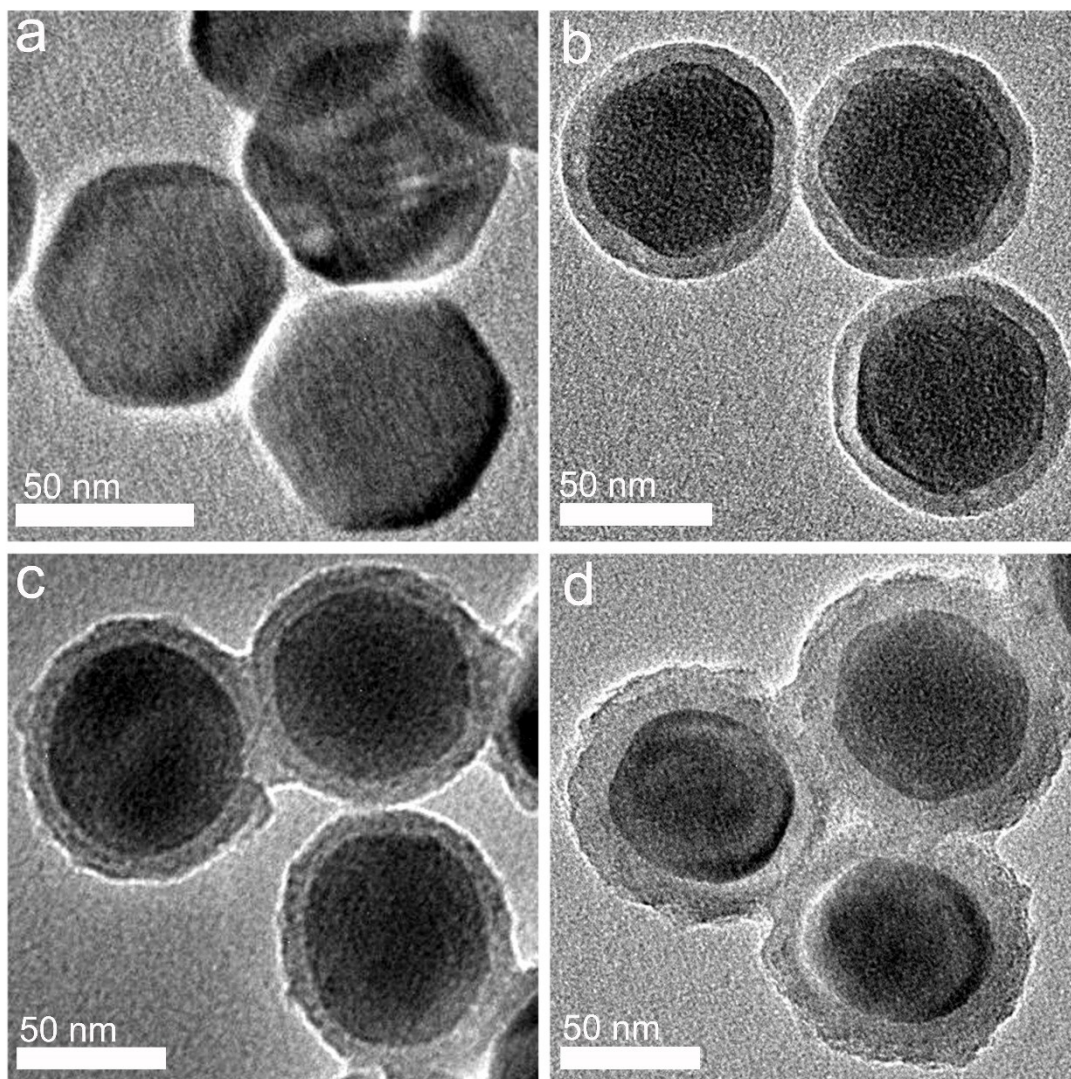


Fig. S3 Magnification TEM images of the nanoparticles at different stages of the one-pot formation reaction: (a) UCNPs, (b) UCNPs@SiO₂, (c) UCNPs@SiO₂-SH, (d) UCNPs@SiO₂-CORMs.

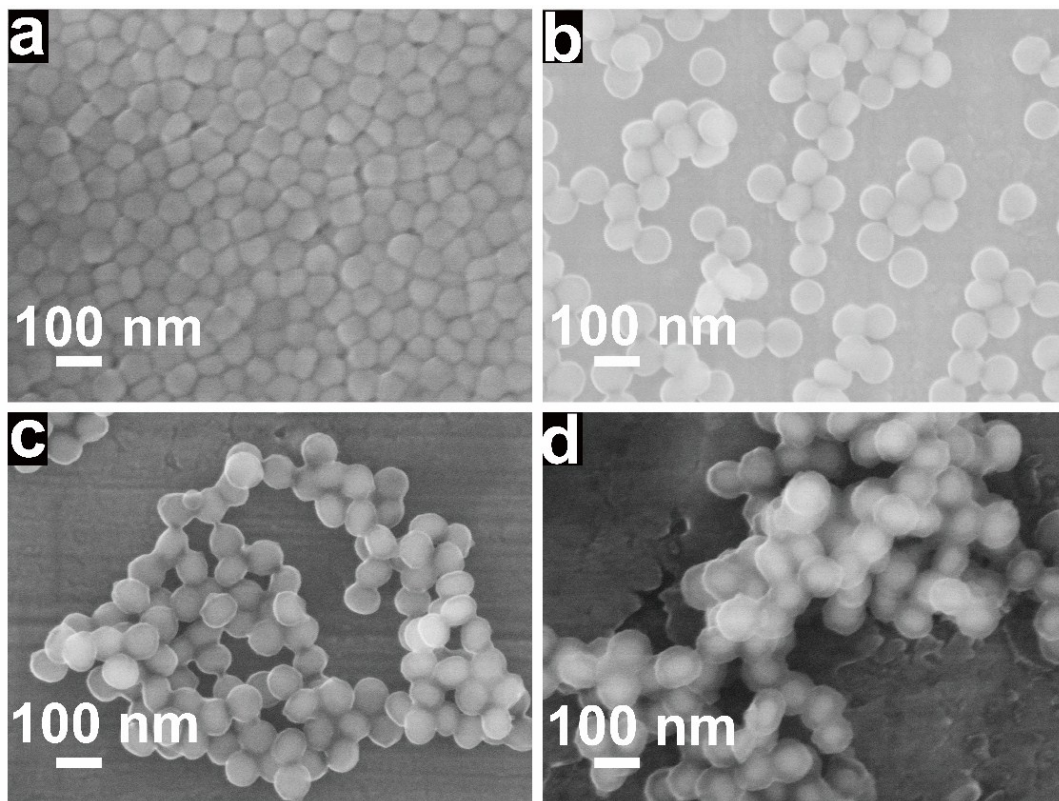


Fig. S4 SEM images of UCNPs (a), UCNPs@SiO₂ (b), UCNPs@SiO₂-SH (c), UCNPs@SiO₂-CORMs (d).

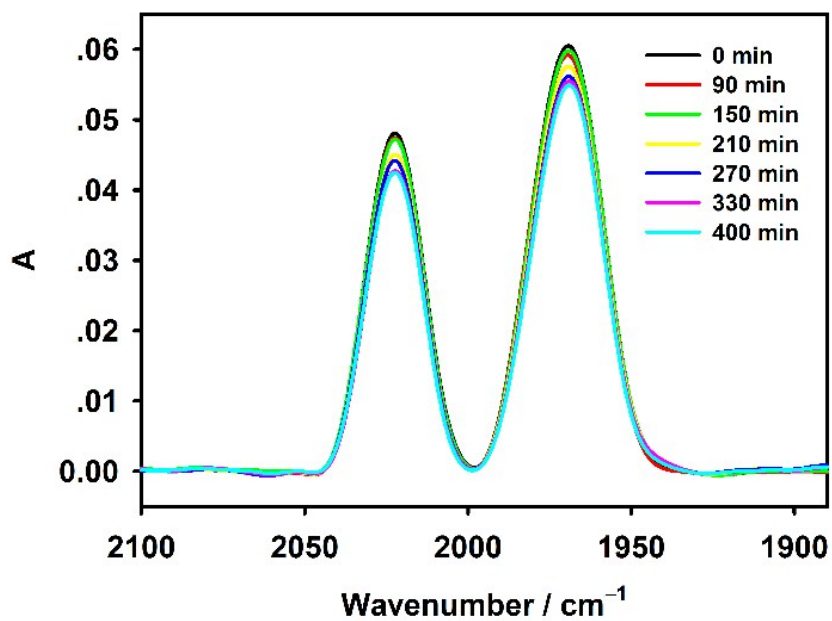


Fig. S5 Infrared spectral variation in DMSO / D₂O (1:1) in dark.

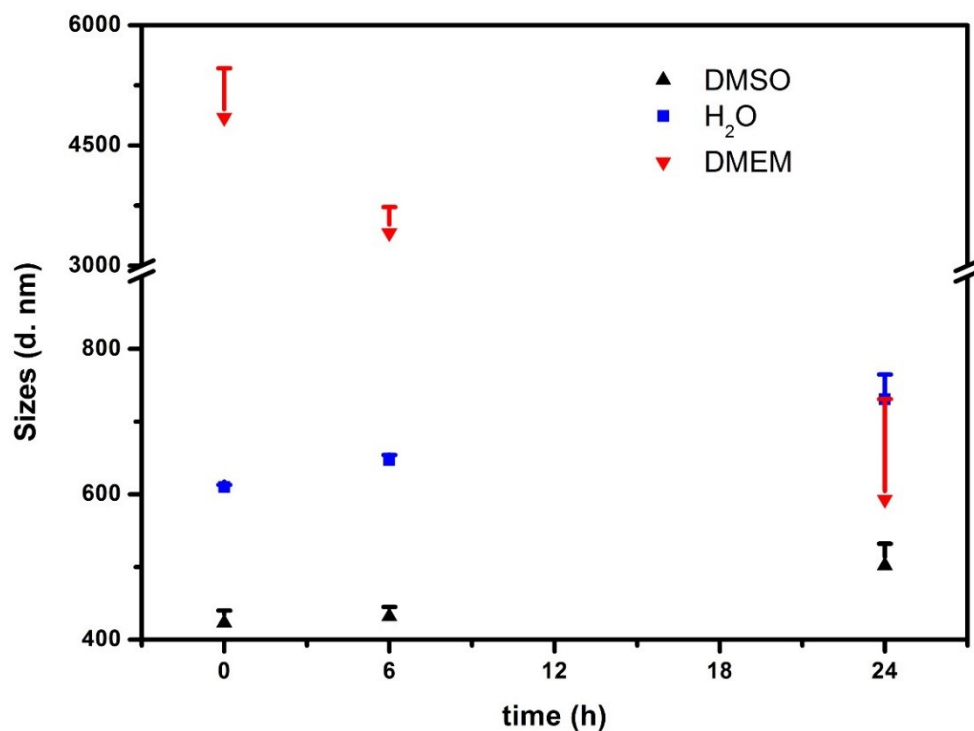


Fig. S6 Diameter sizes of the UCNPs@SiO₂-CORMs nanomaterials determined by dynamic light scattering test in different media within 24 h. For the water medium and DMEM, 10% of DMSO was added to disperse the materials.

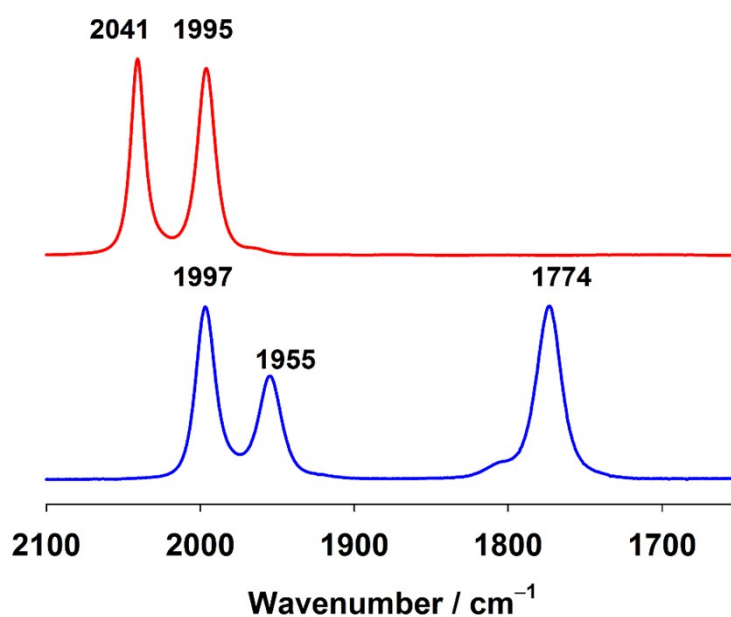


Fig. S7 FTIR spectra of $[(\eta^5\text{-Cp})\text{Fe}(\mu\text{-CO})(\text{CO})_2]$ (blue) and complex **1** (red) in CH₂Cl₂

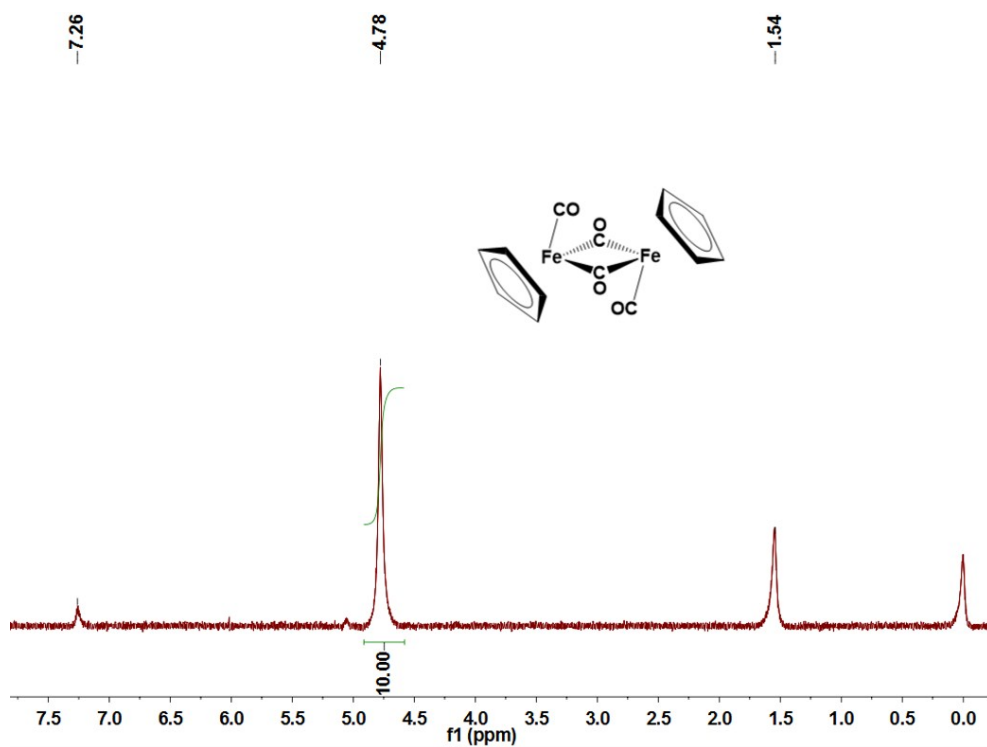


Fig. S8 ^1H NMR spectrum of $[(\eta^5\text{-Cp})\text{Fe}(\mu\text{-CO})(\text{CO})]_2$ in CDCl_3

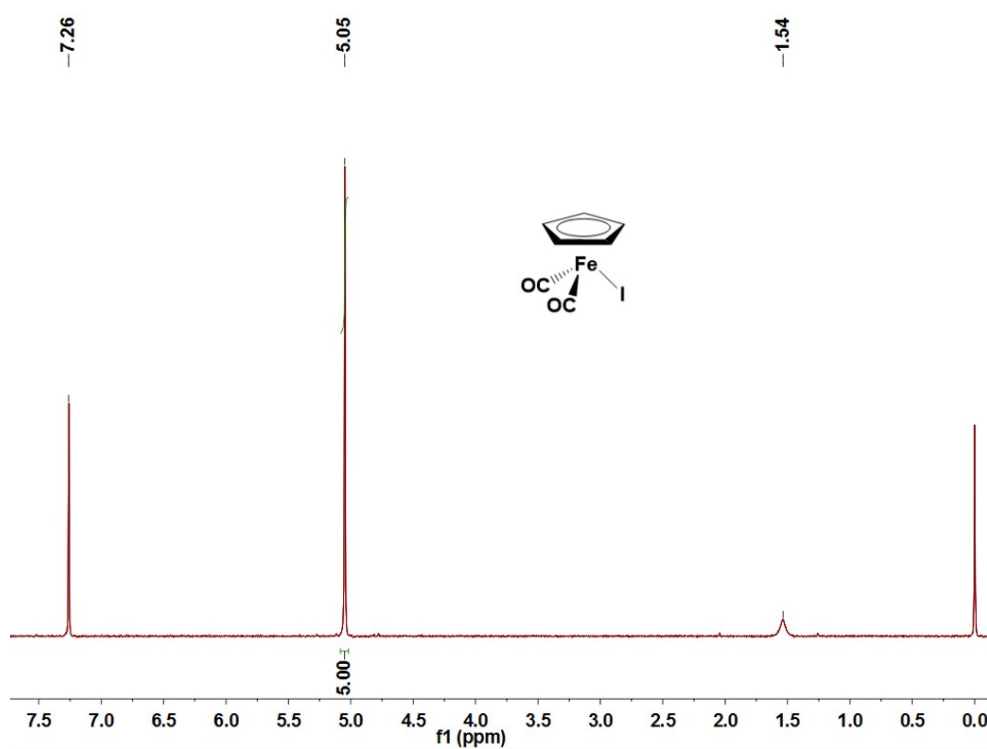


Fig. S9 ^1H NMR spectrum of complex **1** in CDCl_3

Table S1. Particle size distribution of UCNPs (**1**), UCNPs@SiO₂ (**2**), UCNPs@SiO₂-SH (**3**), UCNPs@SiO₂-CORMs (**4**) in ethanol solvent.

	1	2	3	4
Diameter / nm	66 nm	89 nm	104 nm	119 nm