
Electronic Supporting Information

Structural, Luminescent and Magnetic Properties of Yb^{3+}-Er^{3+} Doped Gd_2O_3 Hierarchical Architectures

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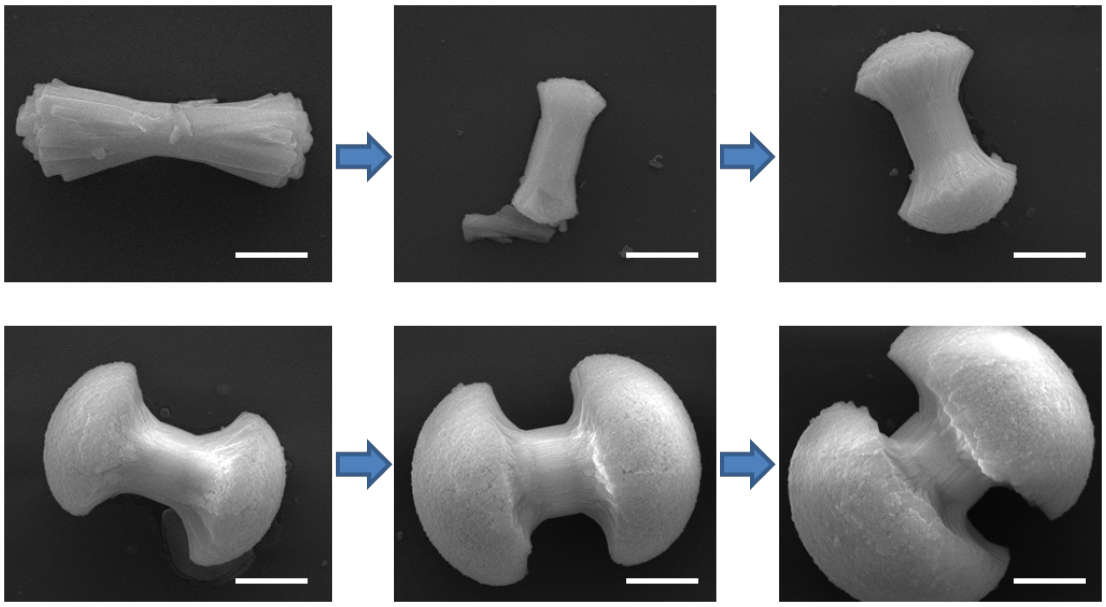

Fig.S1 SEM images (performed on SEM #1) of $Gd(OH)_3$ micro-crystals prepared in 12 h (bar = 2 μm). The evolutionary morphology of particles can be found in the same sample, which indicates the growth process of dumbbell-shape $Gd(OH)_3$ microcrystals should be time-dependent.

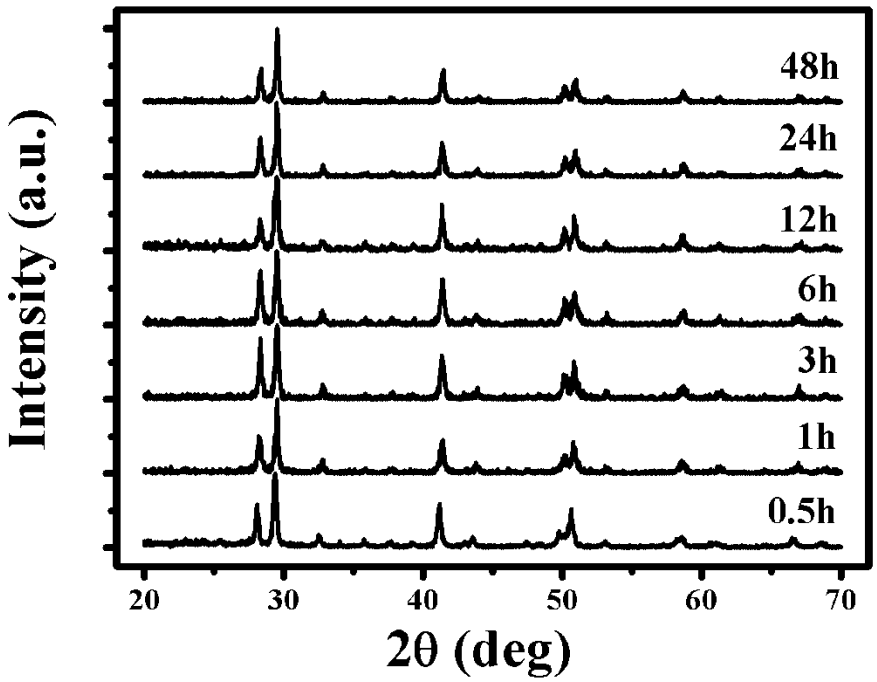

Fig.S2 XRD patterns of $Gd(OH)_3$ at different reaction times. All samples are showing hexagonal phase.

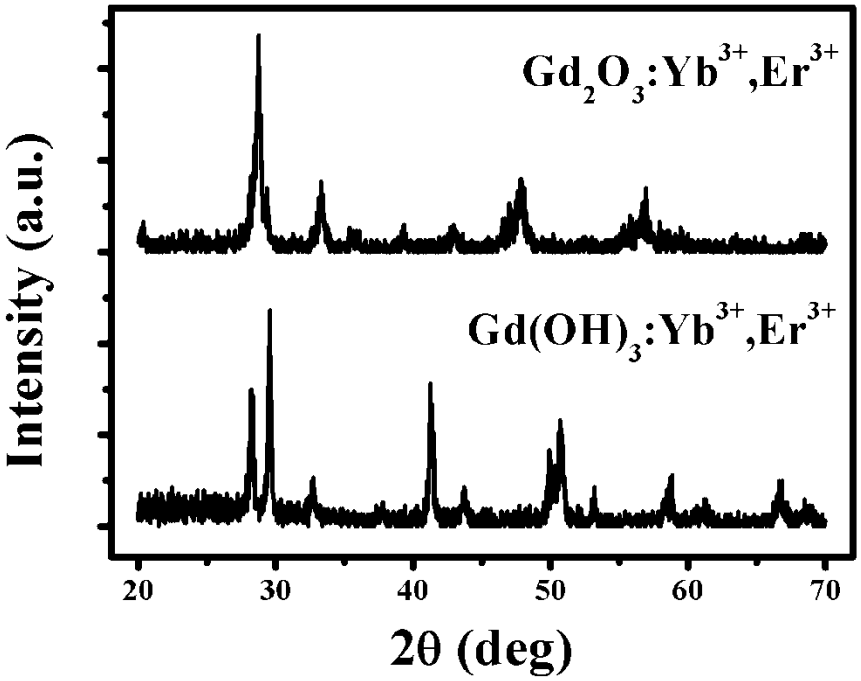

Fig.S3 XRD patterns of Yb^{3+}, Er^{3+} co-doped $Gd(OH)_3$ and Gd_2O_3. The lanthanide doping precursor has the same hexagonal structure with the non-doped precursor. And

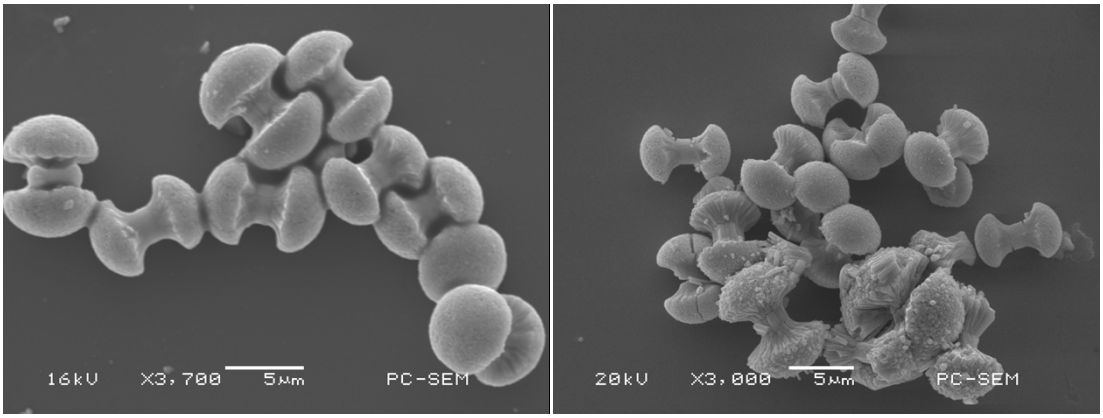

Fig.S4 SEM images of Yb^{3+}/Er^{3+} co-doped $Gd(OH)_3$ and Gd_2O_3.

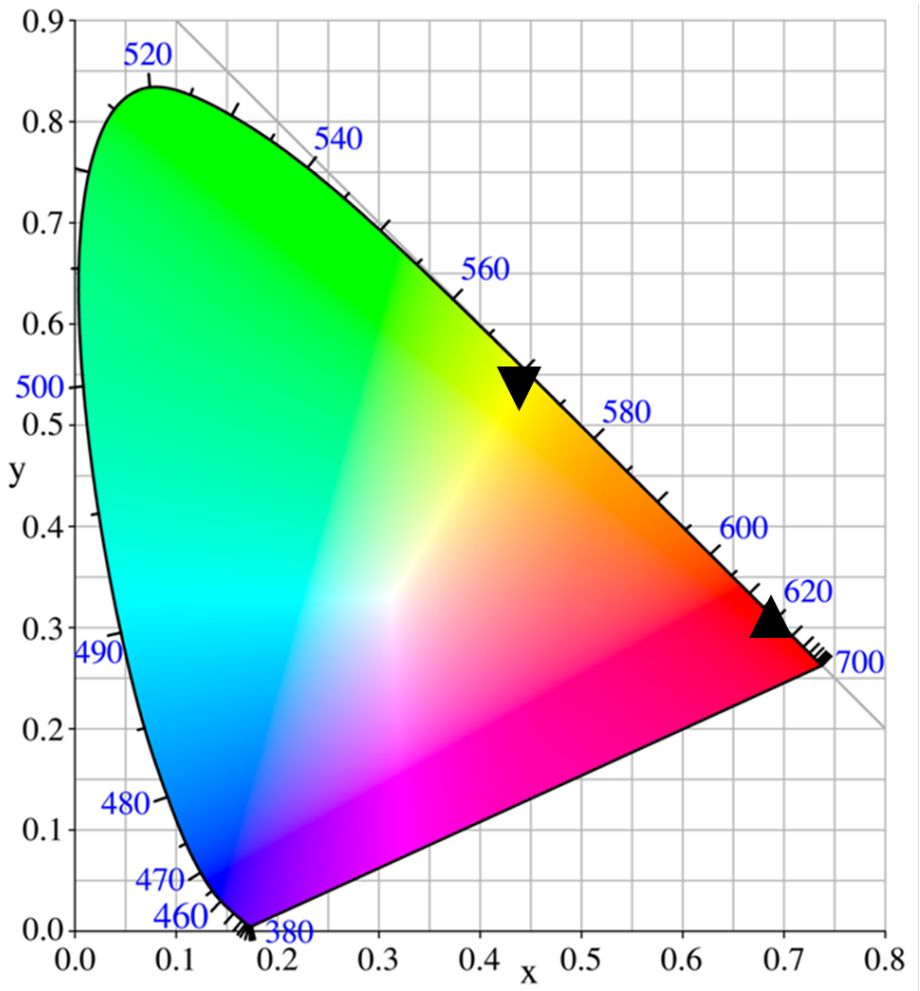

Fig.S5 CIE chromaticity coordinate diagram in UC and QS processes. The upward triangle and the downward triangle represent pure red UC emission and yellow QS emission, respectively.

Table S1 Particle sizes and corresponding magnetic mass susceptibilities of reported Gd^{3+}-based complexes.

	Size (nm)	Magnetic mass susceptibility (emu g^{-1} Oe^{-1})	Ref
$KGdF_4$:Yb,Er	11.6	5.27×10^{-5}	1
$KGdF_4$	49	1.03×10^{-4}	2
$KGdF_4$	25	9.85×10^{-5}	3
$BaGdF_5$	37	7.0×10^{-5}	4
$BaGdF_5$	18.2	6.91×10^{-5}	5
$NaGdF_4$:Yb,Er	845	9.82×10^{-5}	6
$NaYb_{0.15}Gd_{0.85}F_4$	10	7.74×10^{-5}	7
Gd_2O_3	250(D)/2000(L)	2.8×10^{-5}	8
Gd_2O_3	7000(D)/9000(L)	1.132×10^{-4}	this work

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