Supporting Information

Insights into the Growth Principles of REF_3 (RE = La-Lu, Y) Nanocrystals: Hexagonal and/or Orthorhombic

Juan Xie,[a] Ziyu Gao,[b] Enlong Zhou,[b] Xingwen Cheng,[b] Yangbo Wang,[b] Xiaoji Xie,[b] Ling Huang,*[b] Wei Huang*[a,b]

[a]Key Laboratory for Organic Electronics and Information Displays (KLOEID) and Institute of Advanced Materials (IAM), Jiangsu National Synergetic Innovation Center for Advanced Materials (SICAM), Nanjing University of Posts & Telecommunications, Nanjing 210023 China.

[b]Key Laboratory of Flexible Electronics (KLOFE) and Institute of Advanced Materials (IAM), Jiangsu National Synergetic Innovation Center for Advanced Materials (SICAM), Nanjing Tech University (NanjingTech), Nanjing 211816 China.

KEYWORDS:

Correspondence and requests for materials should be addressed to L.H. and W.H. (email: iamlhuang@njtech.edu.cn; iamwhuang@njtech.edu.cn).

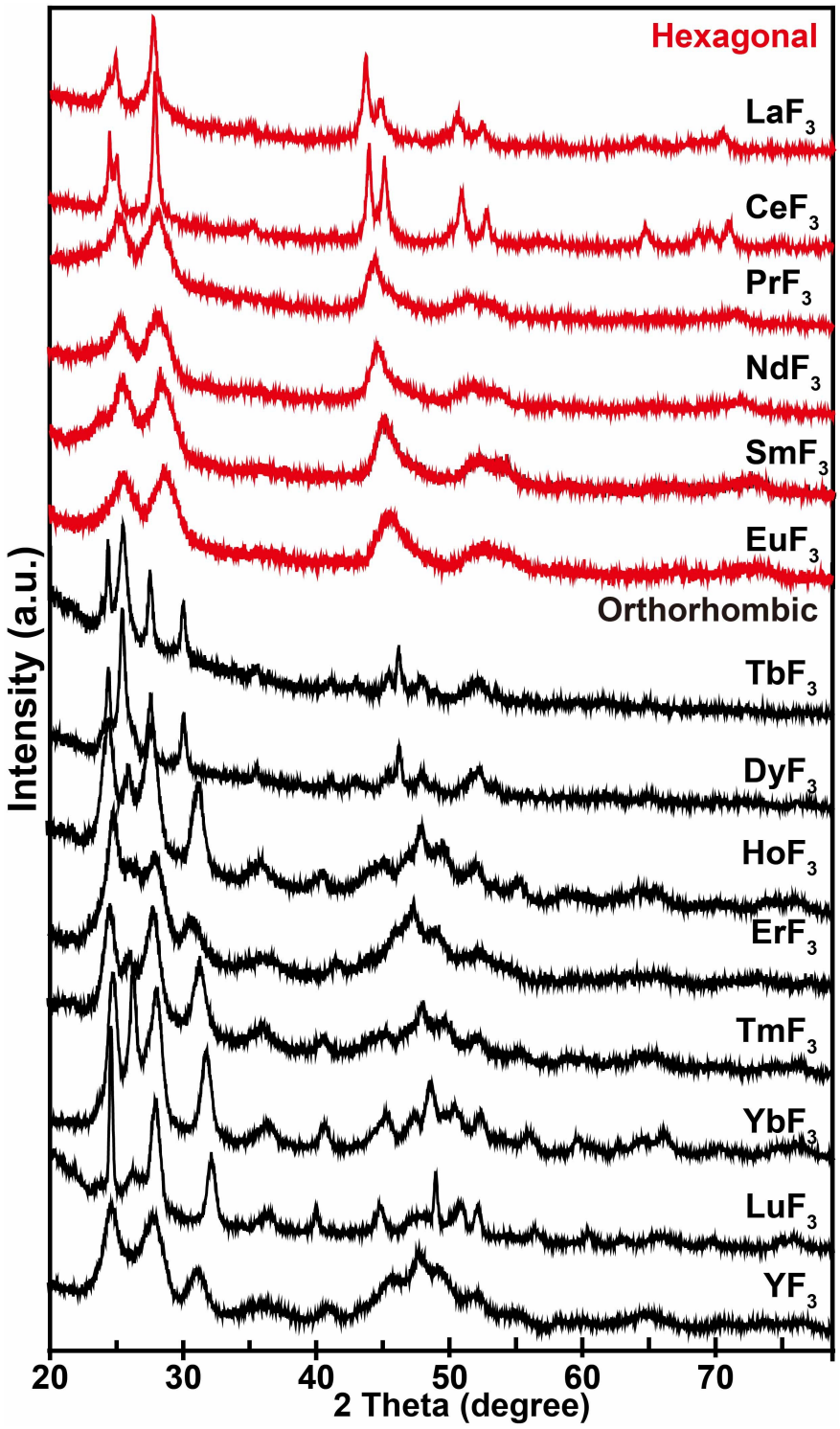

Fig. S1. XRD patterns of REF_3 nanocrystals obtained after reacting at 300 ^oC for 90 min. Red lines are the XRD patterns of REF_3 (RE = La, Ce, Pr, Nd, Sm, Eu), which adopt hexagonal structure. Black lines are the XRD patterns of REF_3 (RE = Tb, Dy, Ho, Er, Tm, Yb, Lu, Y), which exhibit orthorhombic structure.

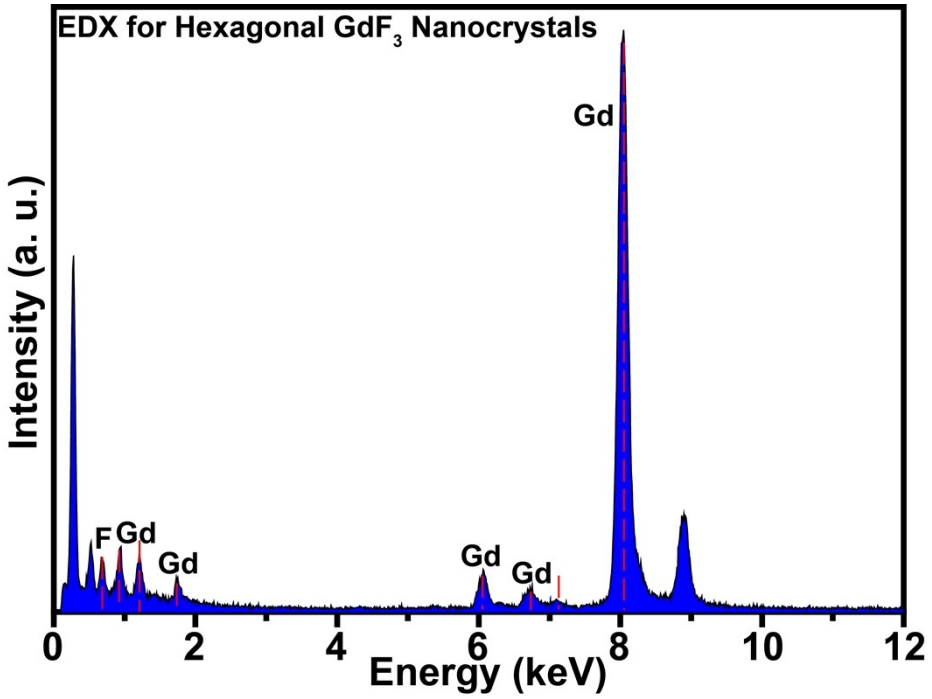

Fig. S2. The energy dispersive X-ray (EDX) spectrum of hexagonal GdF_3 nanocrystals synthesized at the F^-:Gd^{3+} molar ratio of 9.

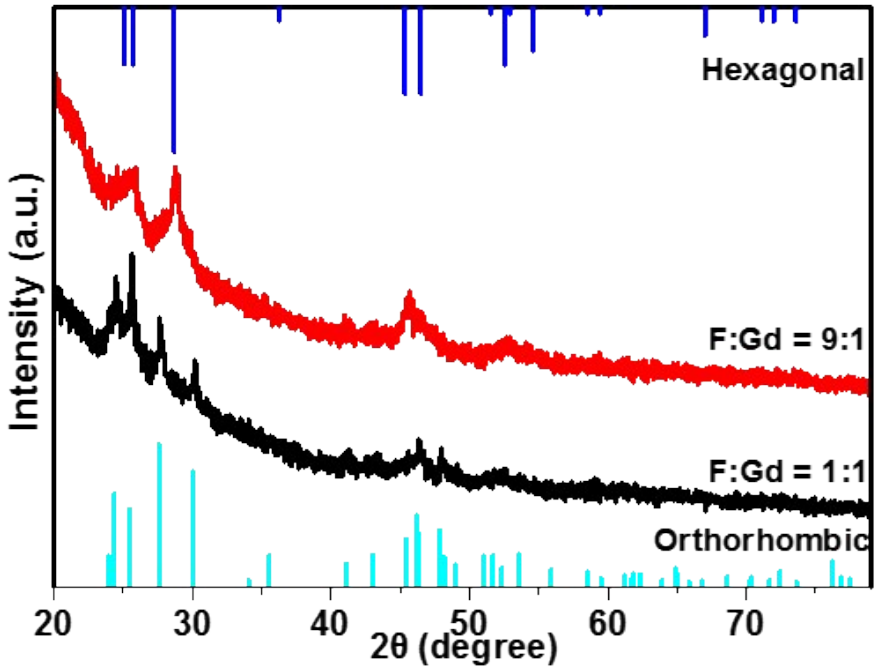

Fig. S3. XRD patterns of GdF_3 nanocrystals obtained after reacting at 300 ^oC for 0 min. (a) red line is the XRD pattern of hexagonal GdF_3 (F^-:Gd^{3+} = 9:1) and black line is the XRD pattern of orthorhombic GdF_3 (F^-:Gd^{3+} = 1:1); The diffraction patterns at the top and bottom are the literature references of hexagonal structure (JCPDS 32-0373) EuF_3 and orthorhombic (JCPDS 49-1804) GdF_3, respectively.

Table S1. ICP analysis results of Ln content in GdF_3:Ln samples.

GdF_3:Ln	GdF_3:La	GdF_3:Pr	GdF_3:Sm	GdF_3:Eu	GdF_3:Tb	GdF_3:Dy	GdF_3:Er	GdF_3:Yb
	La	Pr	Sm	Eu	Tb	Dy	Er	Yb
Nominal (mol %)	25	25	25	25	25	25	25	25
Analyzed (mol %)	22.8	23.6	24.1	22.3	25.4	24.2	23.4	25.8

Table S2. ICP analysis results of Pr content in GdF_3:Pr samples and La content in GdF_3:La samples.

GdF_3:Pr (x mol %)	Pr	
	Nominal (mol %)	Analyzed (mol %)
	2	2.3
	5	3.8
	10	8.7
	15	15.1
GdF_3:La (x mol %)	La	
	Nominal (mol %)	Analyzed (mol %)
	2	1.8

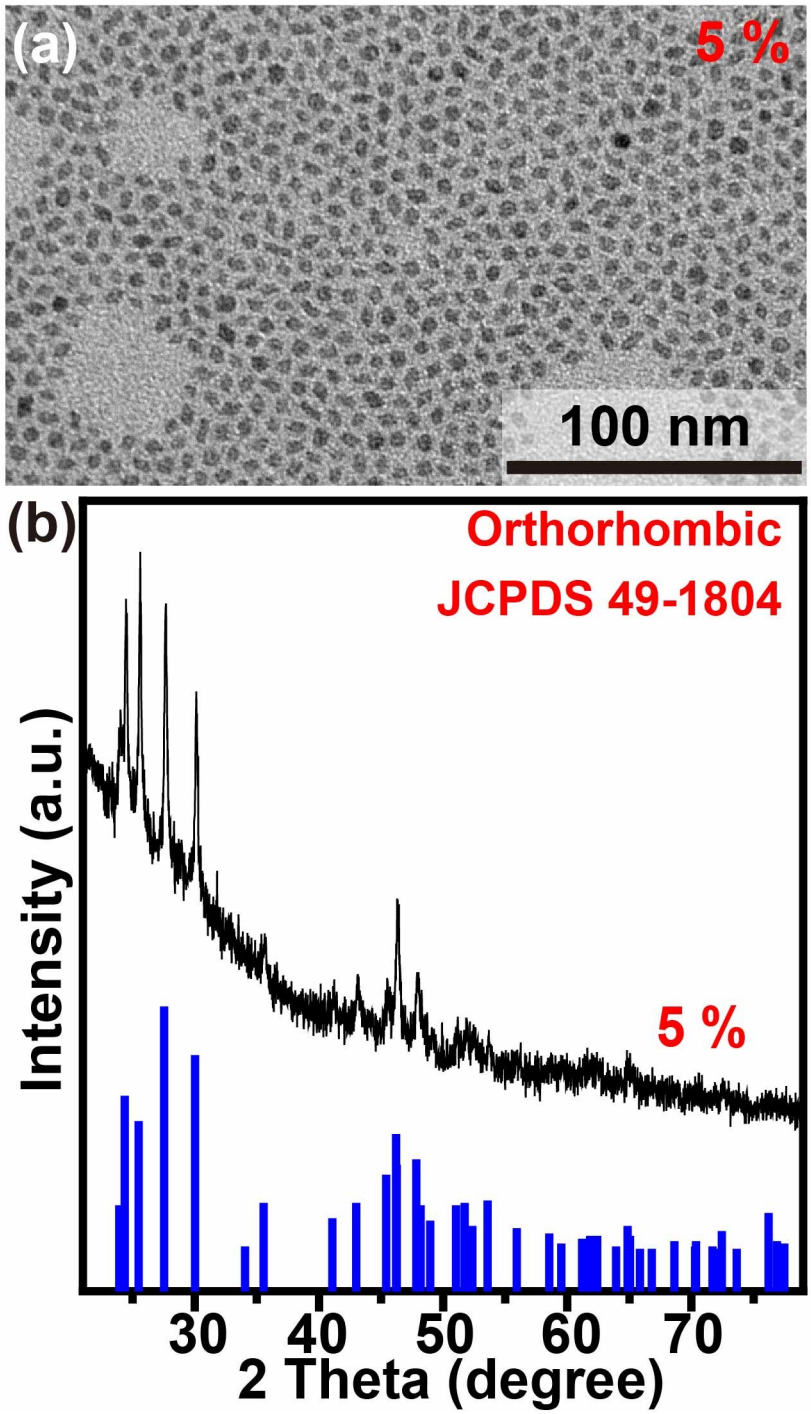

Fig. S4. (a) TEM image and (b) XRD pattern of GdF_3 nanocrystals doped with 5 mol% Li^+.

Table S3. ICP results of Li content in GdF_3:Li nanocrystals.

GdF_3:Li (x mol %)	Li	
	Nominal (mol %)	Analyzed (mol %)
	5	2.73