

Supplemental materials

Table S1

Rietveld refinement results of the $\text{Gd}_{1.559}\text{Y}_{0.03}\text{Lu}_{0.02}\text{Er}_{0.13}\text{Yb}_{0.26}\text{Ho}_{0.001}\text{O}_2\text{S}$ phosphor.

Formula	$\text{Gd}_{1.559}\text{Y}_{0.03}\text{Lu}_{0.02}\text{Er}_{0.13}\text{Yb}_{0.26}\text{Ho}_{0.001}\text{O}_2\text{S}$
2 θ range	10°–80°
Crystal system	Hexagonal
Space group; Z	P3m1(164); 1
Lattice parameters	a = b = 3.829 Å
	c = 6.636 Å
	$\alpha = \beta = 90^\circ$
Volume	$\Gamma = 120^\circ$
	V = 84.26 Å ³
	R _p
R _{wp}	16.47%
χ^2	1.662

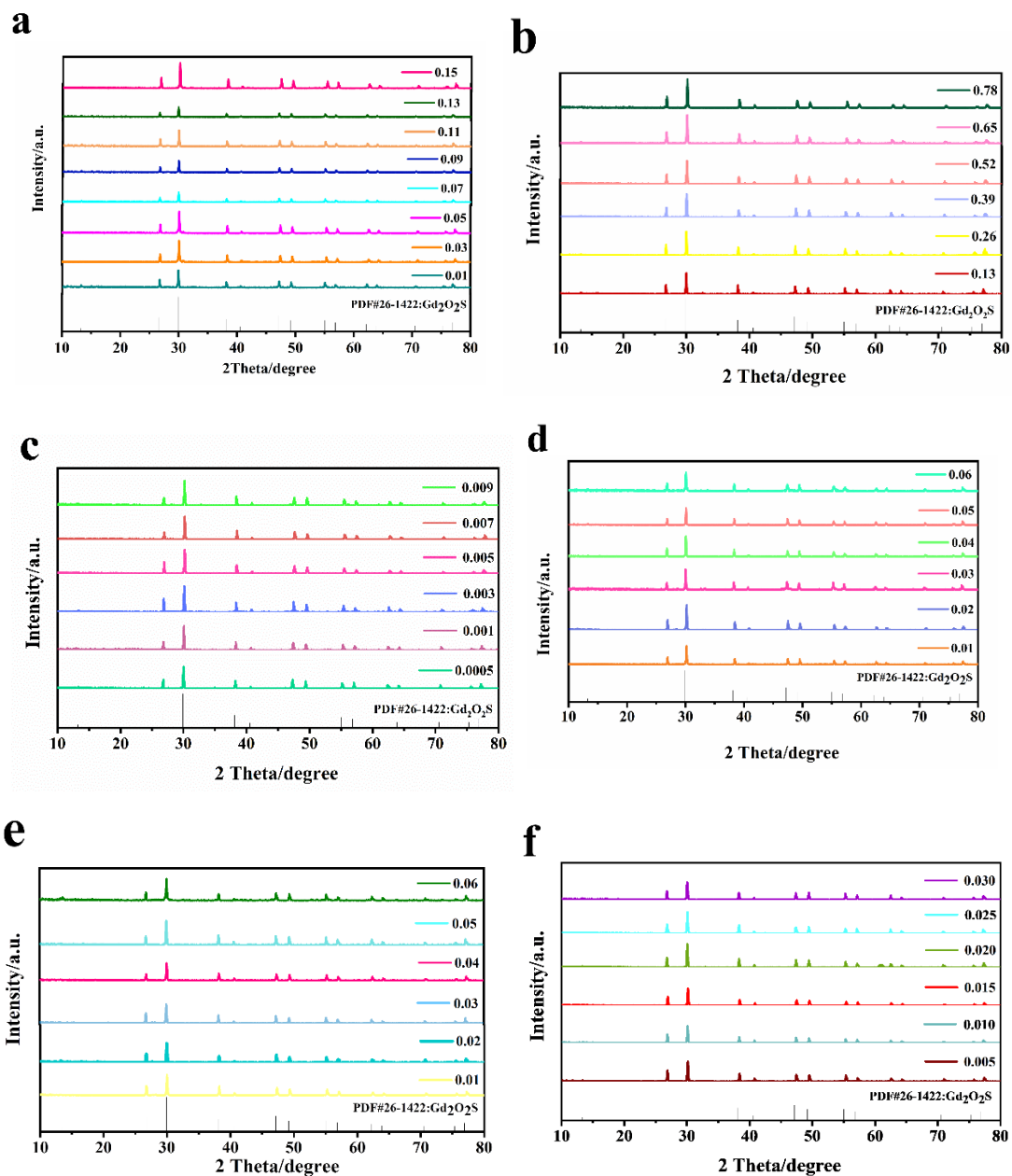


Fig. S1 XRD of $Gd_{2-x}Er_xO_2S$ ($x = 0.01, 0.03, 0.05, 0.07, 0.09, 0.11, 0.13, 0.15$) phosphors (a); $Gd_{1.87-x}Er_{0.13}Yb_xO_2S$ ($x = 0.13, 0.26, 0.39, 0.52, 0.65, 0.78$) phosphors (b); $Gd_{1.61-x}Er_{0.13}Yb_{0.26}Ho_xO_2S$ ($x = 0.0005, 0.001, 0.003, 0.005, 0.007, 0.009$) phosphors (c); $Gd_{1.609-x}Lu_xEr_{0.13}Yb_{0.26}Ho_{0.001}O_2S$ ($x = 0.01, 0.02, 0.03, 0.04, 0.05, 0.06$) phosphors (d); $Gd_{1.609-x}Y_xEr_{0.13}Yb_{0.26}Ho_{0.001}O_2S$ ($x = 0.01, 0.02, 0.03, 0.04, 0.05, 0.06$) phosphors (e); $Gd_{1.579-x}Y_{0.03}Lu_xEr_{0.13}Yb_{0.26}Ho_{0.001}O_2S$ ($x = 0.005, 0.010, 0.015, 0.020, 0.025, 0.030$) phosphors (f)