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Phase transition, morphological transformation and highly enhanced luminescence properties of YOF:Eu^{3+} crystals by Gd^{3+} doping

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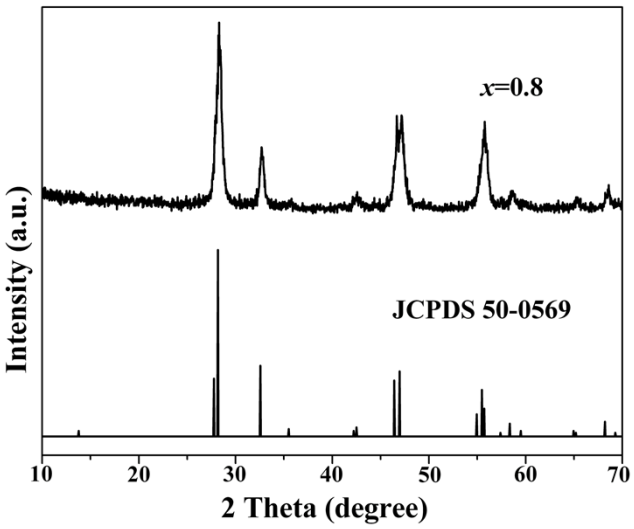

Fig. S1 XRD pattern of $Y_{0.2}Gd_{0.8}OF$ sample.

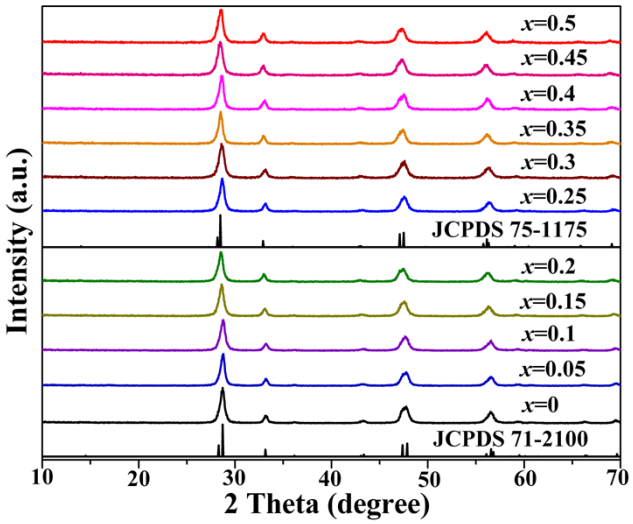

Fig. S2 XRD patterns of $Y_{0.9-x}Gd_xOF$:0.1Eu (x = 0, 0.05, 0.1, 0.15, 0.2, 0.25, 0.3, 0.35, 0.4, 0.45, and 0.5) samples.

Table S1 The refined lattice parameters of $Y_{0.9-x}Gd_xOF$ with different Gd^{3+} concentration

Samples	*a*/Å	*b*/Å	*c*/Å	Cell volumn/Å^3
YOF:0.1Eu	3.8118	3.8118	18.7302	235.68
$Y_{0.85}Gd_{0.05}OF$:0.1Eu	3.8127	3.8127	18.7427	236.07
$Y_{0.80}Gd_{0.10}OF$:0.1Eu	3.8170	3.8170	18.7528	236.62
$Y_{0.75}Gd_{0.15}OF$:0.1Eu	3.8179	3.8179	18.7988	237.02
$Y_{0.70}Gd_{0.20}OF$:0.1Eu	3.8205	3.8205	18.8569	238.36
$Y_{0.65}Gd_{0.25}OF$:0.1Eu	6.6644	6.6644	6.6644	79.73
$Y_{0.60}Gd_{0.30}OF$:0.1Eu	6.6680	6.6680	6.6680	80.08
$Y_{0.55}Gd_{0.35}OF$:0.1Eu	6.6935	6.6935	6.6935	80.10
$Y_{0.50}Gd_{0.40}OF$:0.1Eu	6.7038	6.7038	6.7038	80.18
$Y_{0.45}Gd_{0.45}OF$:0.1Eu	6.7214	6.7214	6.7214	80.76
$Y_{0.40}Gd_{0.50}OF$:0.1Eu	6.7378	6.7378	6.7378	80.78

Table S2 The CIE chromaticity coordinates of Gd^{3+} doped YOF:0.1Eu samples

Gd^{3+} amount	CIE (x,y)	CCT(K)
0	(0.649, 0.350)	2546
0.05	(0.651, 0.347)	2652
0.1	(0.656, 0.343)	2844
0.15	(0.652, 0.348)	2639
0.2	(0.653, 0.346)	2709
0.25	(0.651, 0.348)	2625
0.3	(0.655, 0.348)	2681
0.35	(0.655, 0.344)	2798
0.4	(0.655, 0.345)	2768
0.45	(0.654, 0.345)	2753
0.5	(0.657, 0.345)	2797