

Electronic Supplementary Information (ESI) for CrystEngComm

Facile synthesis of rare earth-doped CeF₃ two-dimensional nanosheets and their application in ratiometric luminescence temperature sensing

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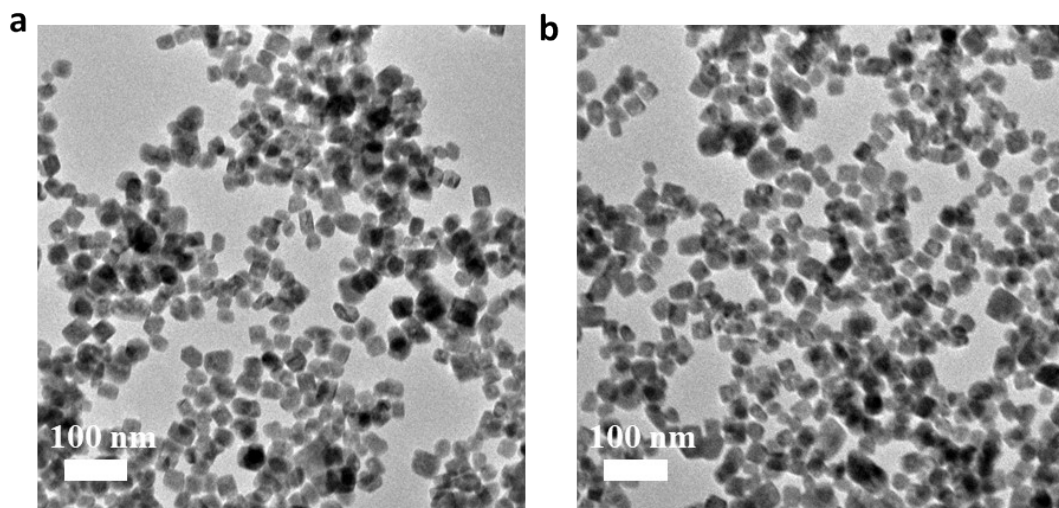


Fig. S1 Transmission electron microscopy (TEM) images of CeF_3 :20% Gd, 20% Tb formed by adding of different amounts of H_2O to the reaction solvent: (a) 16 mL, (b) 18 mL.

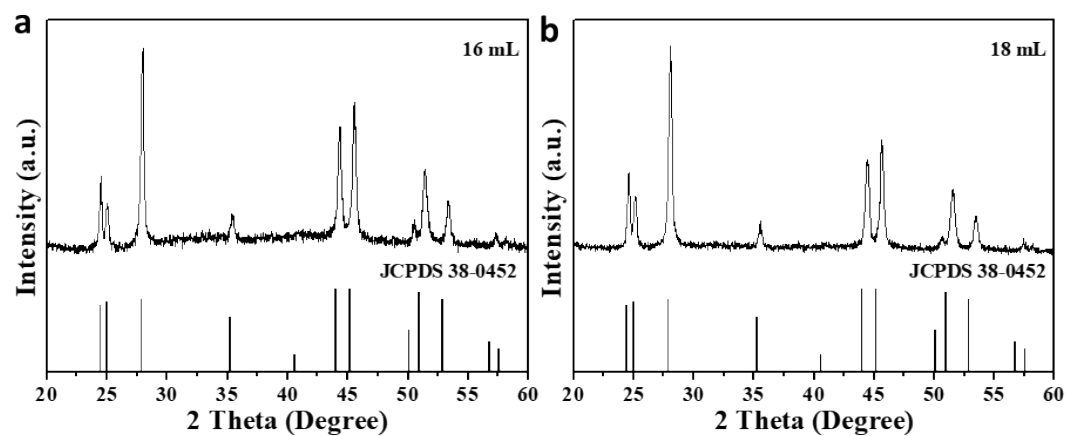


Fig. S2 X-ray diffraction (XRD) patterns of CeF₃:20% Gd, 20% Tb formed by adding of different amounts of H₂O to the reaction solvent: (a) 16 mL, (b) 18 mL.

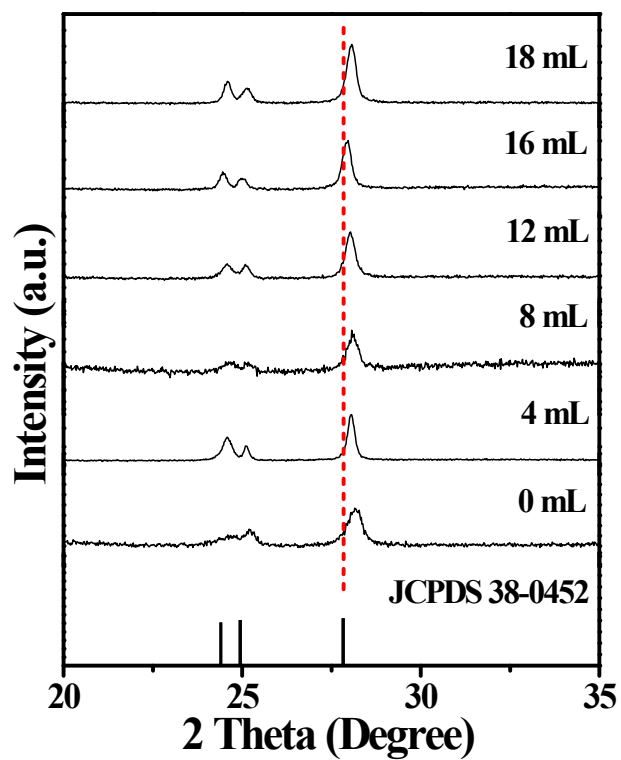


Fig. S3 The magnified XRD patterns of CeF₃:20% Gd, 20% Tb formed by adding of different amounts of H₂O to the reaction solvent.

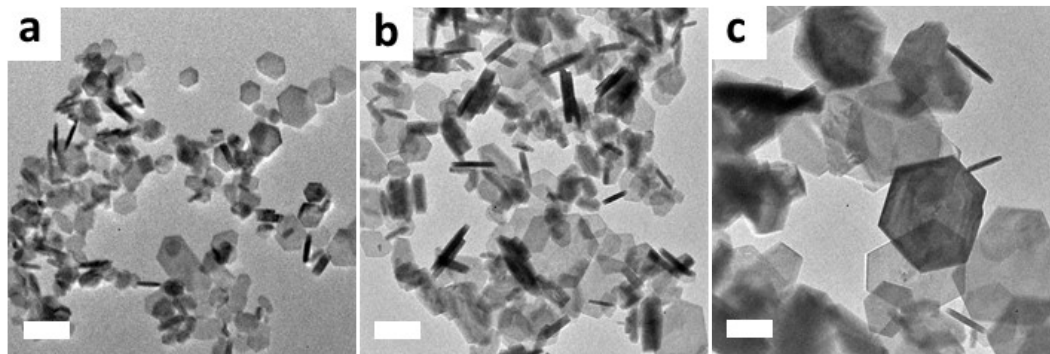


Fig. S4 TEM images of $\text{CeF}_3\text{:X\% Gd, 20\% Tb}$ formed in the presence of 4 mL H_2O in the reaction solvent. X is (a) 0, (b) 10, and (c) 30. Scale bar: 100 nm.

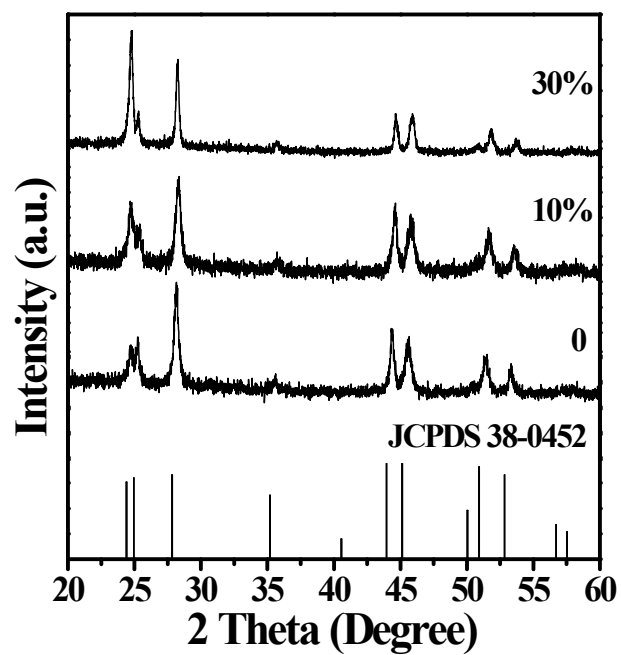


Fig. S5 XRD patterns of CeF₃:X% Gd, 20% Tb formed in the presence of 4 mL H₂O in the reaction solvent. X is 0, 10, and 30.

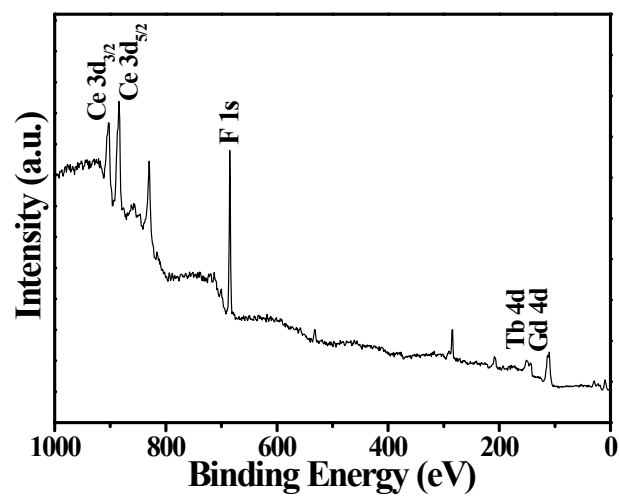


Fig. S6 X-ray photoelectron spectroscopy (XPS) survey spectra of CeF₃:20% Gd, 30% Tb 2D nanosheets formed in the presence of 4 mL H₂O in the reaction solvent.

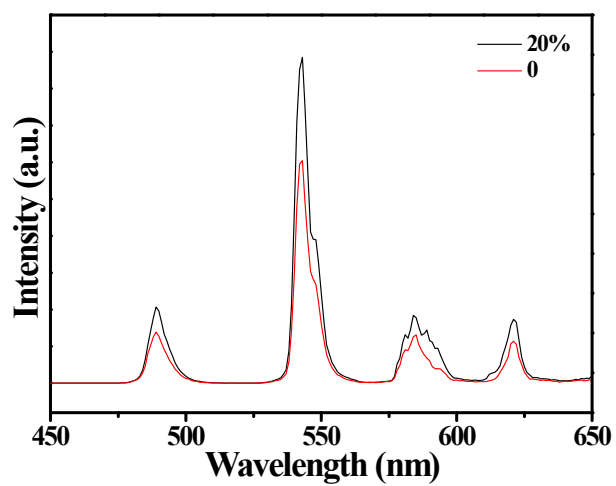


Fig. S7 Emission spectra of CeF₃:X% Gd, 30% Tb (X = 0, 20) under excitation at 254 nm.

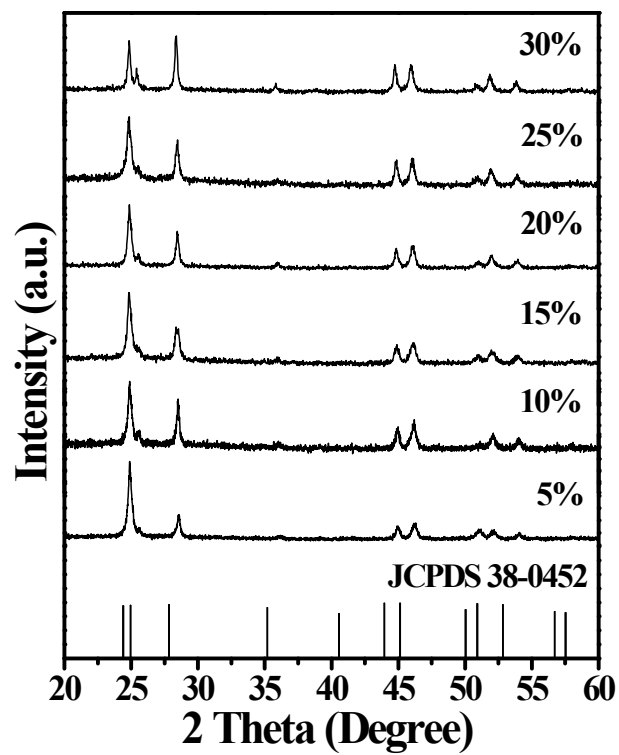


Fig. S8 XRD patterns of CeF₃:20% Gd, (30-X)% Tb, X% Eu (X = 5, 10, 15, 20, 25, and 30) formed in the presence of 4 mL H₂O in the reaction solvent.

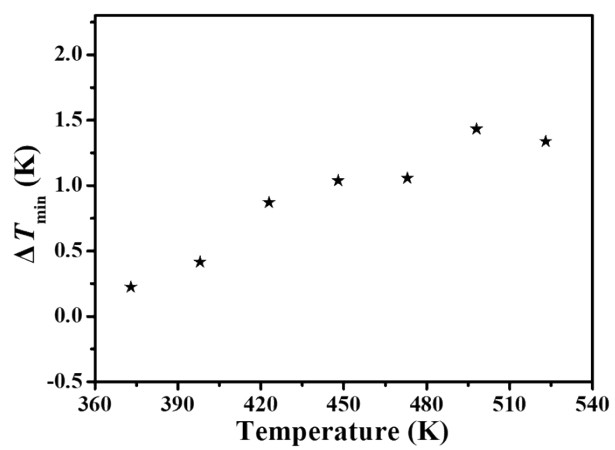


Fig. S9 Temperature uncertainty (ΔT_{min}) of CeF₃:20% Gd, 25% Tb, 5% Eu in the temperature range of 373 to 523 K.

Table S1. The actual doping percentages of Ce, Gd, Tb, and Eu in CeF₃:20% Gd, (30-X)% Tb, X% Eu (X = 0, 5, 10, 15, 20, and 25) were quantified by inductively coupled plasma optical emission spectrometer technique.

	Ce (%)	Gd (%)	Tb (%)	Eu (%)
X = 0	50.46	18.86	30.70	
X = 5	49.46	19.17	25.88	5.49
X = 10	49.79	18.88	20.48	10.86
X = 15	50.80	18.94	15.32	14.94
X = 20	50.77	18.71	10.46	20.06
X = 25	50.40	18.66	4.91	26.03