

Supporting Information

Rational design and synthesis of scintillating lanthanide coordination polymers for high efficient X-ray imaging

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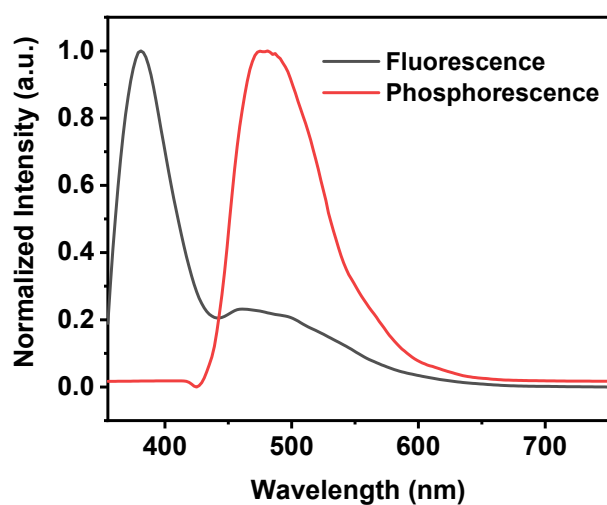


Fig. S1. Fluorescence and phosphorescence spectra of TPC at 77 K in methanol. $\lambda_{\text{ex}}=343$ nm

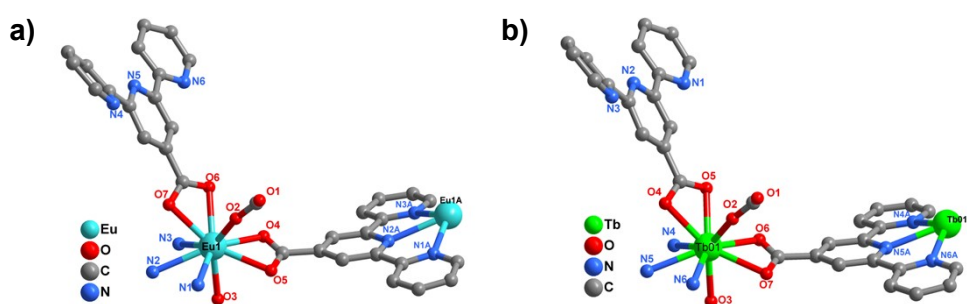


Fig. S2 The coordination environments of the ligand TPC and the lanthanide ions (a) Eu^{3+} and (b) Tb^{3+} .

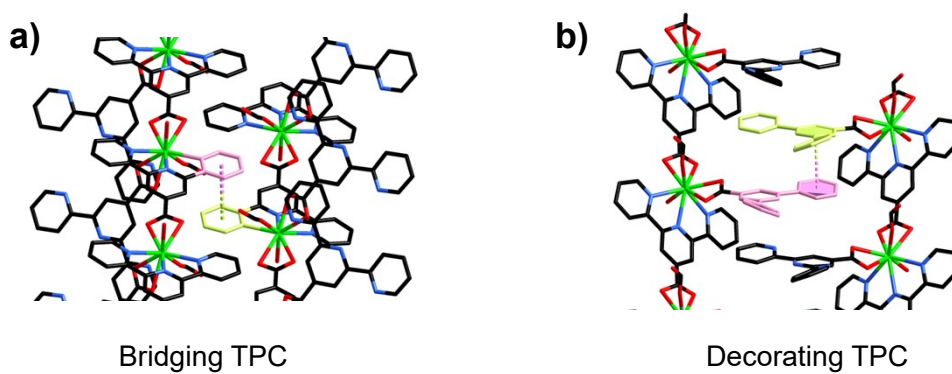


Fig. S3 Representations showing the π - π interactions of (a) bridging and (b) decorating TPC ligands in Eu-TPC and Tb-TPC.

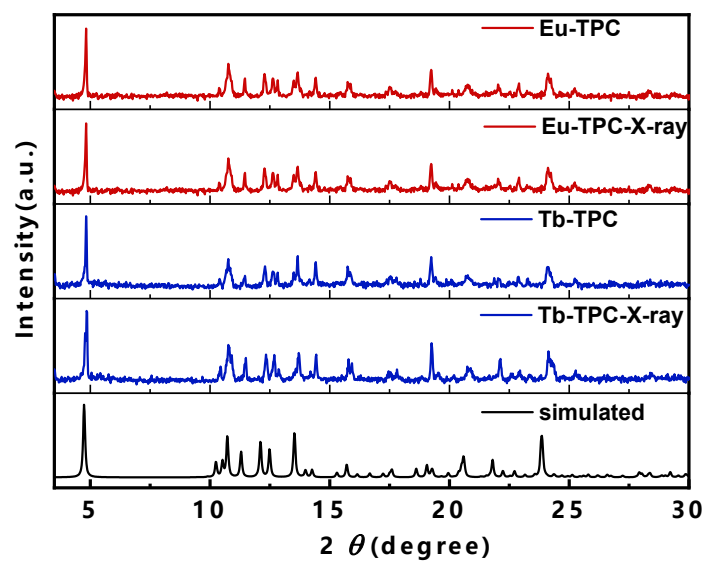


Fig. S4 PXRD patterns of Eu-TPC and Tb-TPC before and after X-ray radiation for 20 cycles (total X-ray dose was up to 4.51 Gy_{air}).

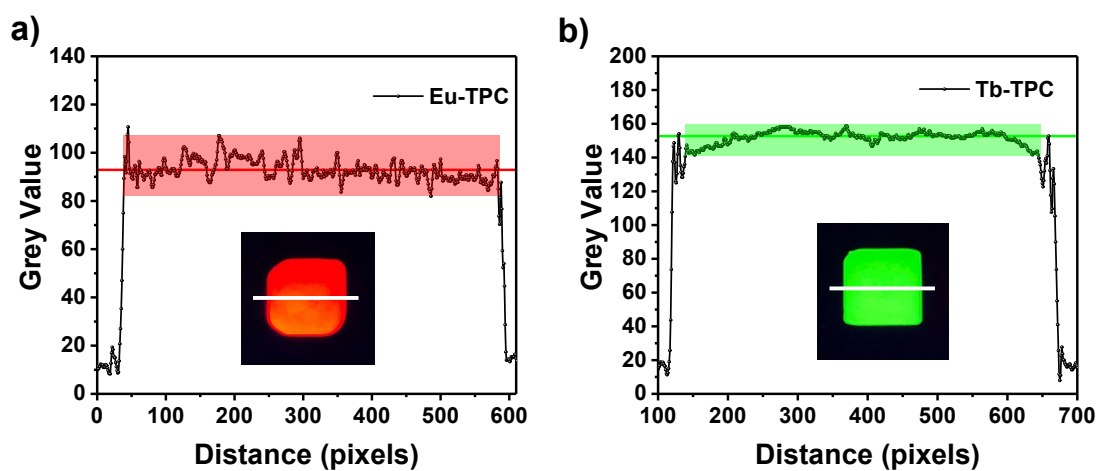


Fig. S5 Gray value analysis of the white lines which across the luminescence images of (a) Eu-TPC film and (b) Tb-TPC film.

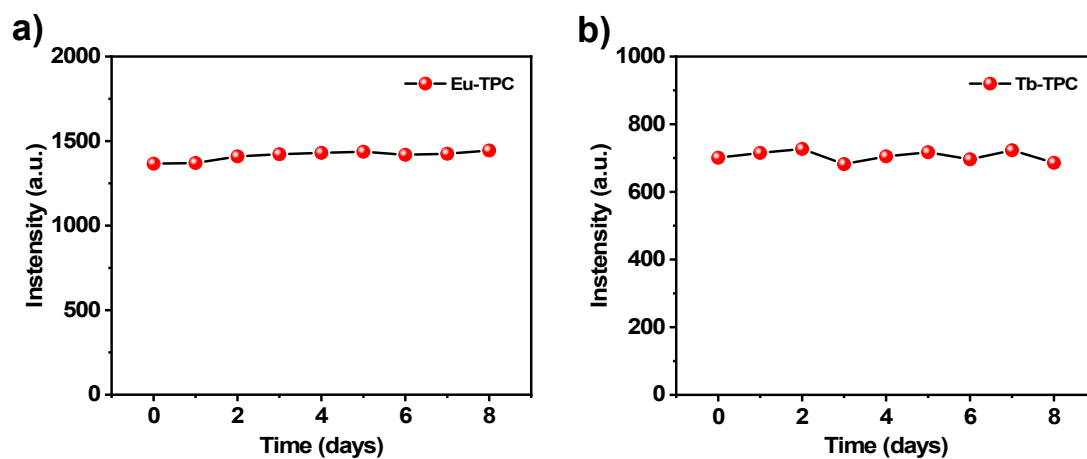


Fig. S6 Luminescence intensity of the (a) Eu-TPC film and (b) Tb-TPC film at the main emission peaks of 619 nm and 543 nm, respectively. The luminescence intensity of the films, which were immersed in water, were recorded every 24 h for 8 day.

Table S1 Detailed crystal parameters and refinement data of the obtained scintillating lanthanide-organic CPs.

	Eu-TPC	Tb-TPC
Empirical formula	C ₃₃ H ₂₃ N ₆ O ₇ Eu	C ₃₃ H ₂₃ N ₆ O ₇ Tb
Formula weight	767.54	774.50
Temperature	299 K	301 K
Crystal system ^a	Monoclinic	Monoclinic
Space group	P2 ₁ /c	P2 ₁ /c
a/Å	8.990(5)	8.8873(10)
b/Å	37.18(2)	36.948(4)
c/Å	9.580(6)	9.4862(9)
α /°	90	90
β /°	106.693(12)	106.511(3)
γ /°	90	90
Volume/ Å ³	3067(3)	2986.5(5)
Z	4	4
Density/Mg·m ⁻³	1.662	1.723
Goodness-of-fit on F ²	1.125	1.046
R ₁	0.0542	0.0418
wR ₂	0.1275	0.0751

^a CCDC 2243266 and 2259402 contains the crystallographic data for this paper, which can be obtained freely from The Cambridge Crystallographic Data Center by www.ccdc.cam.ac.uk/data_request/cif.

Table S2 Selected bond lengths (Å) of the the obtained scintillating lanthanide-organic CPs.

Eu-TPC			Tb-TPC		
Assignment	Bond	Length/Å	Assignment	Bond	Length/Å
Eu-N	Eu1-N1	2.557	Tb-N	Tb1-N4	2.503
	Eu1-N2	2.617		Tb1-N5	2.567
	Eu1-N3	2.556		Tb1-N6	2.520
Eu-O _{HCOO}	Eu1-O2	2.340	Tb-O _{HCOO}	Tb1-O2	2.284
Eu-O _{TPC}	Eu1-O4	2.472	Tb-O _{TPC}	Tb1-O4	2.463
	Eu1-O5	2.561		Tb1-O5	2.459
	Eu1-O6	2.491		Tb1-O6	2.440
	Eu1-O7	2.496		Tb1-O7	2.545
Eu-O _{H2O}	Eu1-O3	2.430	Tb-O _{H2O}	Tb1-O3	2.377