Supporting Information

Cationic Metal-Organic Frameworks Based on Linear Zwitterionic Ligands for $Cr_2O_7^{2-}$ and Ammonia Sensing

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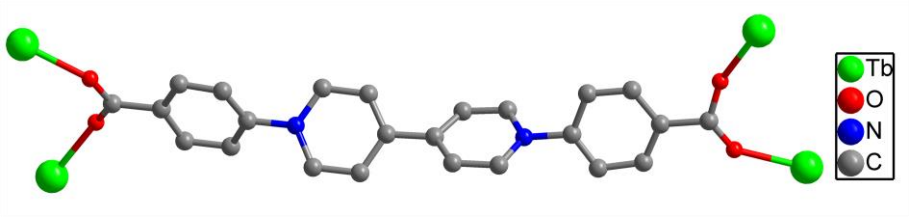

Figure S1 Coordination mode of Harris notation [4.1111] for the deprotonated bcbp ligands within Tb-MOF.

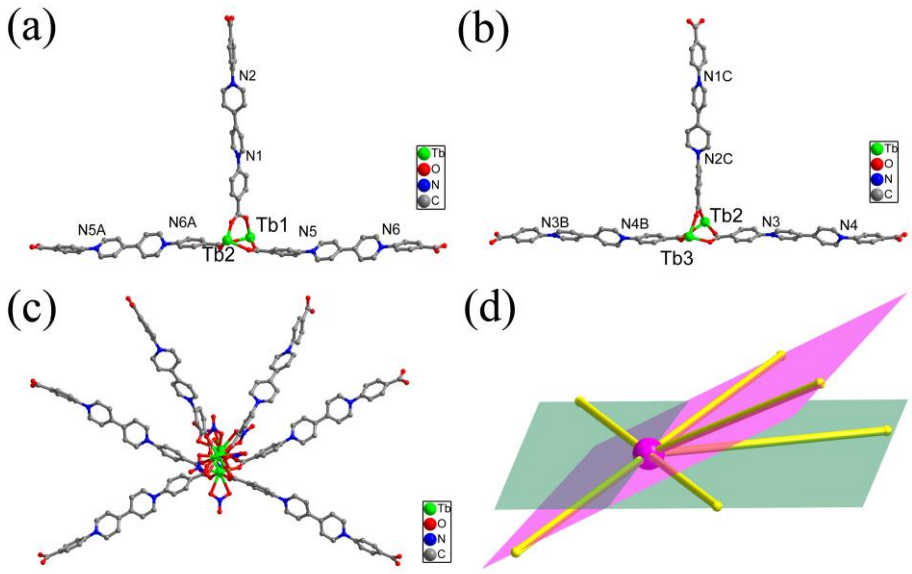

Figure S2 (a) T-shaped $Tb_2(bcbp)_3$ unit based on Tb1 and Tb2. (b) T-shaped $Tb_2(bcbp)_3$ unit based on Tb2 and Tb3. (c) The trinuclear $Tb_3(bcbp)_6$ secondary building unit composed of two $Tb_2(bcbp)_3$ units. (d) The dihedral angle of two simplified $Tb_2(bcbp)_3$ units. The Symmetry codes: A, 1/2+x, 1/2+y, 1+z; B, 1/2+x, -1/2+y, 1+z; C, x, -y, -1/2+z.

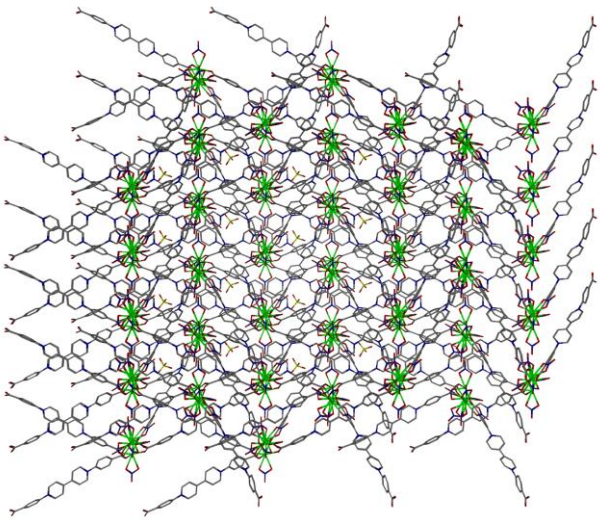

Figure S3 Perspective view of three-dimensional cationic framework of the as-synthesized Tb-MOF along *a* axis.

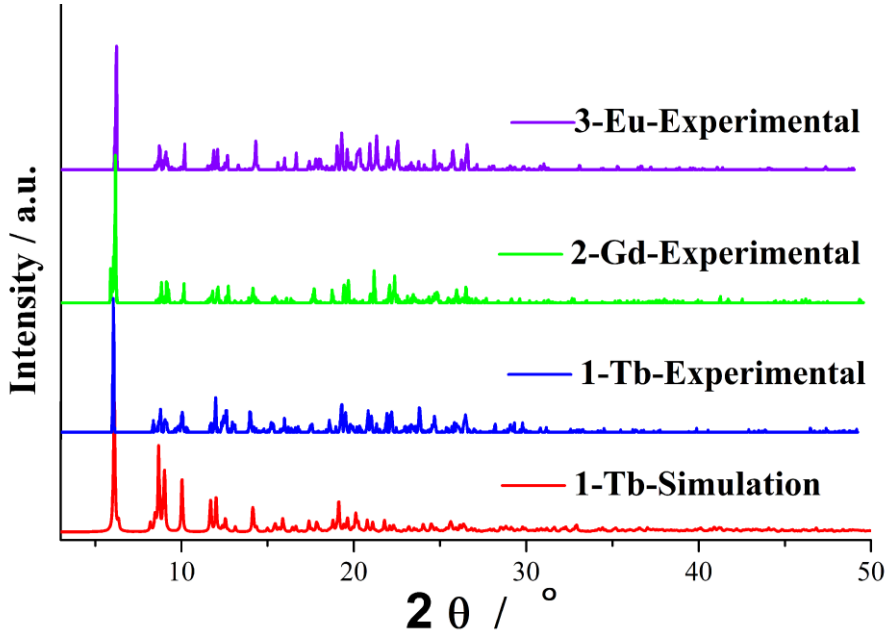

Figure S4 PXRD patterns of compounds **1-3**.

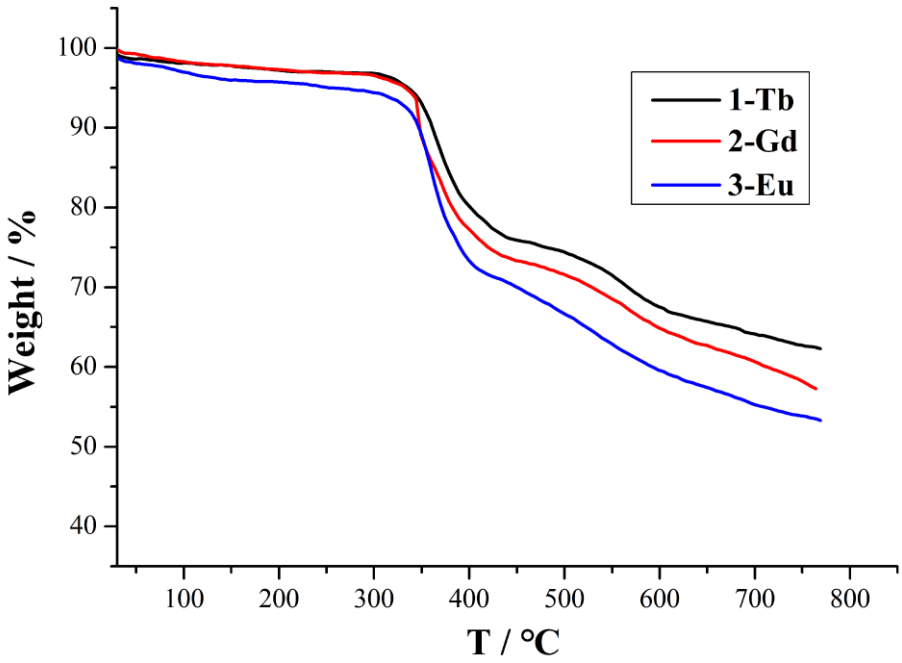

Figure S5 TGA curves of compounds **1-3**.

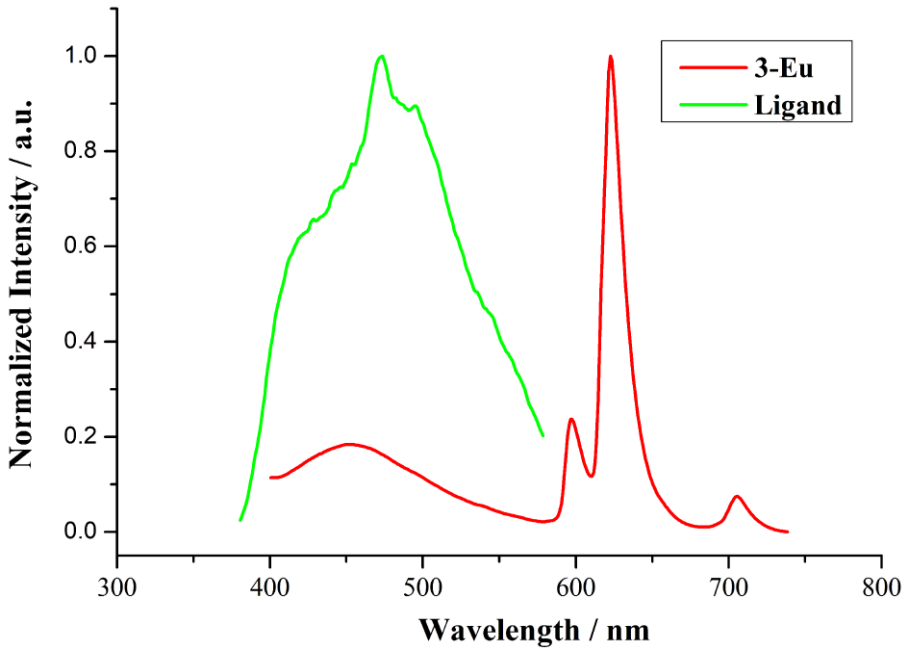

Figure S6 Room-temperature emission spectra of the $H_2bcbpCl_2$ ligand (green line, λ_{ex} = 309 nm) and compound **3** (Eu-MOF, red line, λ_{ex} = 376 nm) in the solid state.

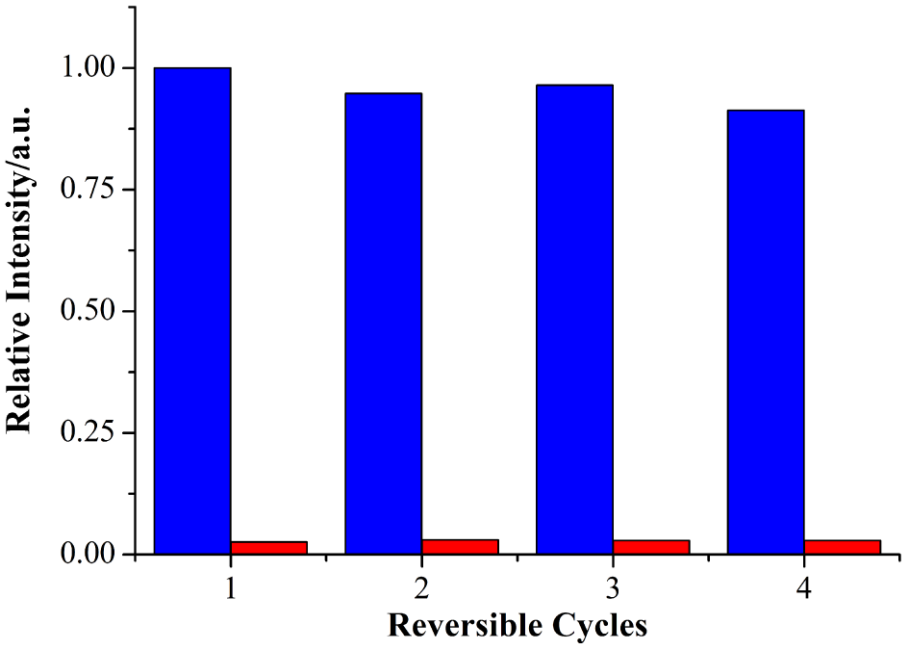

Figure S7 Relative intensities of emission spectra at 622 nm (excited at 376 nm) of Eu-MOF were recorded before (blue) and after (red) treated with $Cr_2O_7^{2-}$ for four cycles.

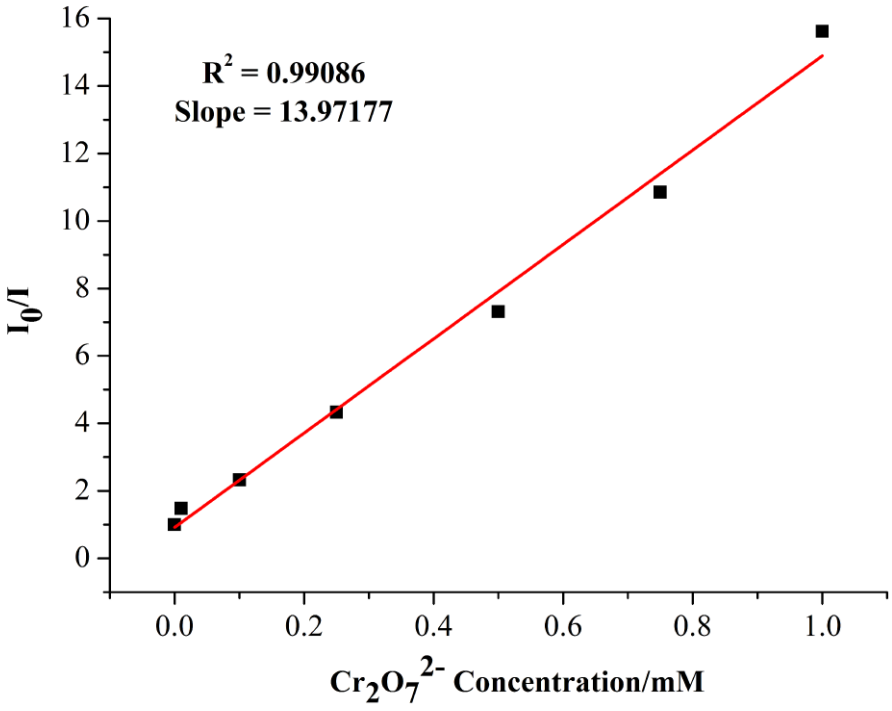

Figure S8 The Stern−Volmer plot of compound **3** (Eu-MOF) quenched by $Cr_2O_7^{2-}$ in DMF, where I_0 and I are the luminescent intensity before and after the addition of $Cr_2O_7^{2-}$. The red line corresponds to a linear fitting result.

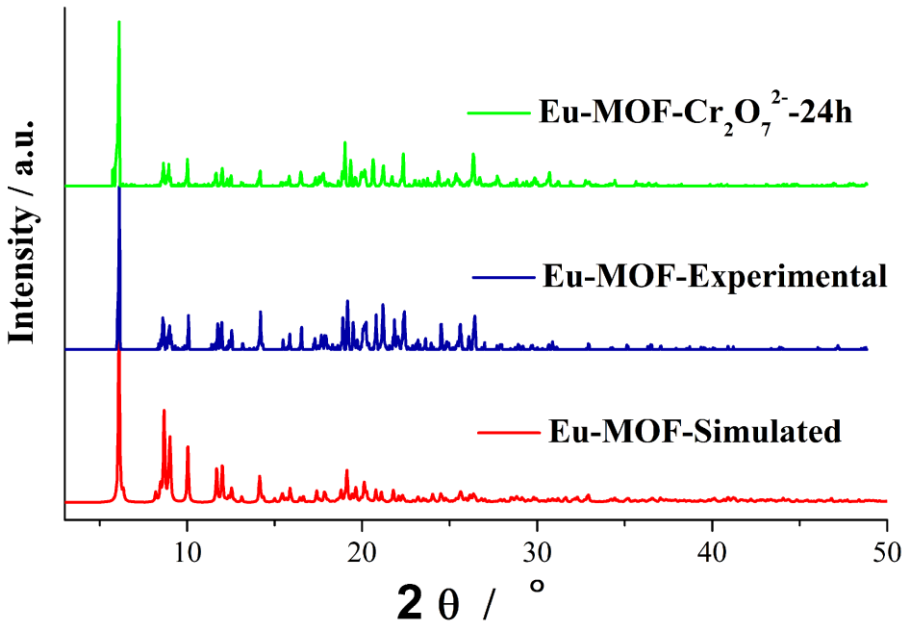

Figure S9 PXRD patterns of Eu-MOF and the as-synthesized samples immersing in $Cr_2O_7^{2-}$ solution for 24 hours.

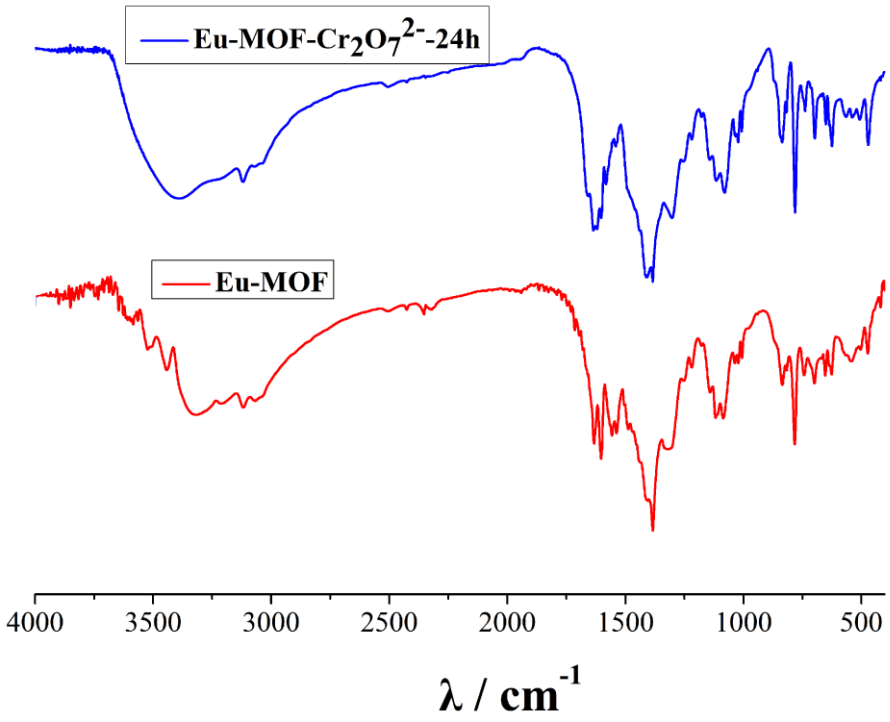

Figure S10 FT-IR spectra of Eu-MOF and the as-synthesized samples immersing in $Cr_2O_7^{2-}$ solution for 24 hours.

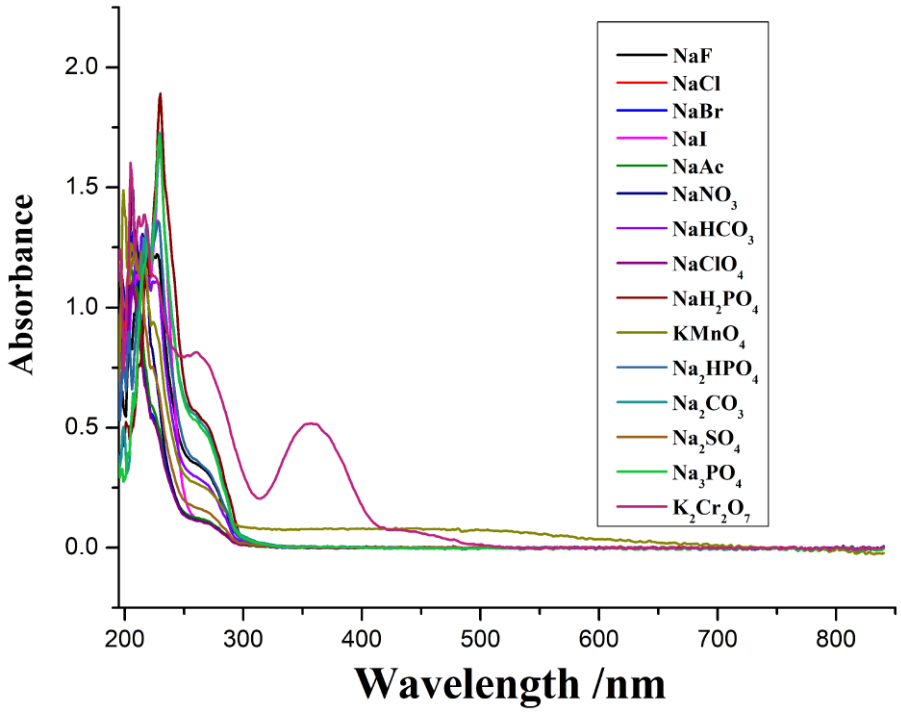

Figure S11 UV-vis adsorption spectra of inorganic anions in DMF solutions (1.5 mM).

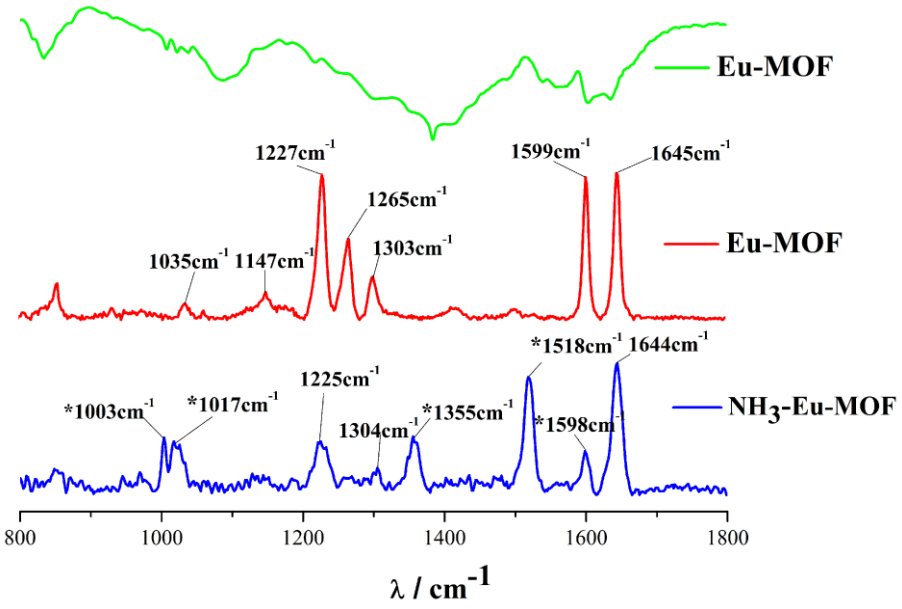

Figure S12 IR spectrum of Eu-MOF (green), Raman spectra of Eu-MOF (red) and NH3-Eu-MOF (blue). Raman spectra were recorded with 100% laser power irradiation in order to minimize the fluorescence interference. Laser: 785 nm, laser intensity: 10 mW.

Table S1. The KSV of Eu-MOF and some reported metal-organic frameworks acting as luminescent $Cr_2O_7^{2-}$ probes.

Compounds	**Solvents**	***K*SV**	**References**
$[Eu_2L(1,3\text{-}bdc)_3]\cdot 5H_2O$	H_2O	15500	*Dalton Trans.*, 2018, 47, 12051.
$[Bi(BTC)(H_2O)]\cdot H_2O$	DMF/ H_2O	19500	*Cryst. Growth Des.*, 2019, 19, 7217.
DSM@1	H_2O	53300	*J. Mater. Chem. C*, 2018, 6, 6440.
$[Zn_7(TPPE)_2(SO_4^{2-})_7](DMF\cdot H_2O)$	H_2O	10900	*Cryst. Growth Des.*, 2017, 17, 6041.
$\{[Co_{1.5}(TBIP)_{1.5}(L)]\cdot 0.5H_2O\}_n$	H_2O	20900	*Inorg. Chem.*, 2019, 58, 15696.
$[Eu_2(HICA)(BTEC)(H_2O)_2]_n$	H_2O	11410	*Inorg. Chem.*, 2020, 59, 2005.
$\{[Cd(L)(BPDC)]\cdot 2H_2O\}_n$	H_2O	6400	*Cryst. Growth Des.*, 2017, 17, 67.
$\{[Eu_3(bcbp)_3(NO_3)_7]\cdot NO_3\cdot ClO_4\}_n$	DMF	10660	This work

Table S2. Selected bond lengths [Å] and angles [°] for compound **1**.

Bond	Distance /Å	Bond	Distance /Å
Tb(1)-O(2)	2.285(18)	Tb(2)-O(23)	2.536(12)
Tb(1)-O(9)	2.300(12)	Tb(3)-O(7)#2	2.284(13)
Tb(1)-O(12)#1	2.312(10)	Tb(3)-O(4)#3	2.288(14)
Tb(1)-O(19)	2.466(13)	Tb(3)-O(6)	2.319(11)
Tb(1)-O(16)	2.499(15)	Tb(3)-O(26)	2.466(14)
Tb(1)-O(21)	2.505(14)	Tb(3)-O(28)	2.472(15)
Tb(1)-O(18)	2.515(14)	Tb(3)-O(31)	2.528(16)
Tb(1)-O(13)	2.52(2)	Tb(3)-O(25)	2.539(15)
Tb(1)-O(15)	2.56(3)	Tb(3)-O(29)	2.543(17)
Tb(2)-O(1)	2.298(17)	Tb(3)-O(32)	2.566(14)
Tb(2)-O(11)#1	2.299(13)	O(3)-Tb(2)#4	2.355(15)
Tb(2)-O(5)	2.314(12)	O(4)-Tb(3)#4	2.287(14)
Tb(2)-O(10)	2.325(10)	O(7)-Tb(3)#5	2.284(13)
Tb(2)-O(8)#2	2.329(11)	O(8)-Tb(2)#5	2.329(11)
Tb(2)-O(3)#3	2.355(15)	O(11)-Tb(2)#6	2.299(13)
Tb(2)-O(22)	2.525(12)	O(12)-Tb(1)#6	2.312(10)
Angle	/°	Angle	/°
O(2)-Tb(1)-O(9)	93.3(7)	O(8)#2-Tb(2)-O(3)#3	91.5(6)
O(2)-Tb(1)-O(12)#1	81.0(6)	O(1)-Tb(2)-O(22)	143.8(6)
O(9)-Tb(1)-O(12)#1	86.8(4)	O(11)#1-Tb(2)-O(22)	74.7(5)
O(2)-Tb(1)-O(19)	149.6(7)	O(5)-Tb(2)-O(22)	74.2(4)
O(9)-Tb(1)-O(19)	81.2(5)	O(10)-Tb(2)-O(22)	70.6(4)
O(12)#1-Tb(1)-O(19)	128.0(5)	O(8)#2-Tb(2)-O(22)	124.0(5)
O(2)-Tb(1)-O(16)	77.6(6)	O(3)#3-Tb(2)-O(22)	129.6(7)

O(9)-Tb(1)-O(16)	125.4(5)	O(1)-Tb(2)-O(23)	136.4(7)
O(12)#1-Tb(1)-O(16)	141.8(5)	O(11)#1-Tb(2)-O(23)	74.1(5)
O(19)-Tb(1)-O(16)	81.5(5)	O(5)-Tb(2)-O(23)	74.1(4)
O(2)-Tb(1)-O(21)	154.6(6)	O(10)-Tb(2)-O(23)	120.8(4)
O(9)-Tb(1)-O(21)	74.6(6)	O(8)#2-Tb(2)-O(23)	73.7(5)
O(12)#1-Tb(1)-O(21)	76.2(4)	O(3)#3-Tb(2)-O(23)	142.7(6)
O(19)-Tb(1)-O(21)	51.9(5)	O(22)-Tb(2)-O(23)	50.4(4)
O(16)-Tb(1)-O(21)	127.7(6)	O(7)#2-Tb(3)-O(4)#3	86.8(5)
O(2)-Tb(1)-O(18)	77.0(8)	O(7)#2-Tb(3)-O(6)	89.2(4)
O(9)-Tb(1)-O(18)	74.8(5)	O(4)#3-Tb(3)-O(6)	86.3(5)
O(12)#1-Tb(1)-O(18)	150.2(5)	O(7)#2-Tb(3)-O(26)	84.2(5)
O(19)-Tb(1)-O(18)	72.7(6)	O(4)#3-Tb(3)-O(26)	122.1(5)
O(16)-Tb(1)-O(18)	50.6(6)	O(6)-Tb(3)-O(26)	150.3(5)
O(21)-Tb(1)-O(18)	119.5(6)	O(7)#2-Tb(3)-O(28)	73.2(5)
O(2)-Tb(1)-O(13)	73.3(10)	O(4)#3-Tb(3)-O(28)	153.5(6)
O(9)-Tb(1)-O(13)	158.1(7)	O(6)-Tb(3)-O(28)	76.4(5)
O(12)#1-Tb(1)-O(13)	74.2(6)	O(26)-Tb(3)-O(28)	73.9(5)
O(19)-Tb(1)-O(13)	119.1(8)	O(7)#2-Tb(3)-O(31)	145.8(5)
O(16)-Tb(1)-O(13)	69.6(7)	O(4)#3-Tb(3)-O(31)	85.8(7)
O(21)-Tb(1)-O(13)	110.3(9)	O(6)-Tb(3)-O(31)	123.5(5)
O(18)-Tb(1)-O(13)	117.3(8)	O(26)-Tb(3)-O(31)	71.8(6)
O(2)-Tb(1)-O(15)	119.9(9)	O(28)-Tb(3)-O(31)	120.4(7)
O(9)-Tb(1)-O(15)	146.6(7)	O(7)#2-Tb(3)-O(25)	78.3(5)
O(12)#1-Tb(1)-O(15)	94.4(7)	O(4)#3-Tb(3)-O(25)	71.5(6)
O(19)-Tb(1)-O(15)	71.9(8)	O(6)-Tb(3)-O(25)	154.9(5)
O(16)-Tb(1)-O(15)	70.3(6)	O(26)-Tb(3)-O(25)	50.6(5)
O(21)-Tb(1)-O(15)	73.3(7)	O(28)-Tb(3)-O(25)	119.3(5)
O(18)-Tb(1)-O(15)	113.9(7)	O(31)-Tb(3)-O(25)	67.7(6)
O(13)-Tb(1)-O(15)	48.4(10)	O(7)#2-Tb(3)-O(29)	125.1(5)
O(1)-Tb(2)-O(11)#1	75.5(7)	O(4)#3-Tb(3)-O(29)	143.1(6)
O(1)-Tb(2)-O(5)	139.0(6)	O(6)-Tb(3)-O(29)	77.3(6)
O(11)#1-Tb(2)-O(5)	145.1(4)	O(26)-Tb(3)-O(29)	82.9(6)
O(1)-Tb(2)-O(10)	88.1(6)	O(28)-Tb(3)-O(29)	52.0(5)
O(11)#1-Tb(2)-O(10)	87.6(4)	O(31)-Tb(3)-O(29)	76.5(7)
O(5)-Tb(2)-O(10)	96.7(4)	O(25)-Tb(3)-O(29)	127.6(6)
O(1)-Tb(2)-O(8)#2	78.7(7)	O(7)#2-Tb(3)-O(32)	156.6(5)
O(11)#1-Tb(2)-O(8)#2	95.1(5)	O(4)#3-Tb(3)-O(32)	75.4(6)
O(5)-Tb(2)-O(8)#2	89.3(5)	O(6)-Tb(3)-O(32)	74.8(5)
O(10)-Tb(2)-O(8)#2	165.4(5)	O(26)-Tb(3)-O(32)	118.0(6)
O(1)-Tb(2)-O(3)#3	69.7(8)	O(28)-Tb(3)-O(32)	117.9(6)
O(11)#1-Tb(2)-O(3)#3	142.5(6)	O(31)-Tb(3)-O(32)	49.1(5)
O(5)-Tb(2)-O(3)#3	71.6(6)	O(25)-Tb(3)-O(32)	109.4(6)
O(10)-Tb(2)-O(3)#3	77.8(6)	O(29)-Tb(3)-O(32)	68.5(6)

Symmetry transformations used to generate equivalent atoms: #1, x+1/2,y+1/2,z+1; #2, x+1/2,y-1/2,z+1; #3, x,-y,z-1/2; #4, x,-y,z+1/2; #5, x-1/2,y+1/2,z-1; #6 x-1/2,y-1/2,z-1.

Table S3. Selected bond lengths [Å] and angles [°] for compound **2**.

Bond	Distance /Å	Bond	Distance /Å
Gd(1)-O(9)	2.279(10)	Gd(2)-O(23)	2.538(11)
Gd(1)-O(2)	2.281(13)	Gd(3)-O(4)#2	2.252(12)
Gd(1)-O(12)#1	2.306(8)	Gd(3)-O(7)#3	2.301(10)
Gd(1)-O(19)	2.483(10)	Gd(3)-O(6)	2.311(9)
Gd(1)-O(21)	2.496(13)	Gd(3)-O(28)	2.483(12)
Gd(1)-O(15)	2.501(18)	Gd(3)-O(29)	2.485(15)
Gd(1)-O(16)	2.509(12)	Gd(3)-O(26)	2.490(12)
Gd(1)-O(13)	2.510(16)	Gd(3)-O(31)	2.525(13)
Gd(1)-O(18)	2.514(12)	Gd(3)-O(25)	2.572(13)
Gd(2)-O(5)	2.299(9)	Gd(3)-O(32)	2.577(12)
Gd(2)-O(1)	2.306(13)	O(3)-Gd(2)#4	2.336(12)
Gd(2)-O(11)#1	2.311(10)	O(4)-Gd(3)#4	2.252(12)
Gd(2)-O(10)	2.333(9)	O(7)-Gd(3)#5	2.301(10)
Gd(2)-O(3)#2	2.336(12)	O(8)-Gd(2)#5	2.340(9)
Gd(2)-O(8)#3	2.340(9)	O(11)-Gd(2)#6	2.311(10)
Gd(2)-O(22)	2.507(10)	O(12)-Gd(1)#6	2.306(8)
Angle	/°	Angle	/°
O(9)-Gd(1)-O(2)	93.7(5)	O(3)#2-Gd(2)-O(8)#3	93.0(5)
O(9)-Gd(1)-O(12)#1	88.0(3)	O(5)-Gd(2)-O(22)	74.6(3)
O(2)-Gd(1)-O(12)#1	82.2(4)	O(1)-Gd(2)-O(22)	142.9(4)
O(9)-Gd(1)-O(19)	79.9(4)	O(11)#1-Gd(2)-O(22)	74.7(4)
O(2)-Gd(1)-O(19)	147.4(5)	O(10)-Gd(2)-O(22)	70.4(3)
O(12)#1-Gd(1)-O(19)	128.9(4)	O(3)#2-Gd(2)-O(22)	129.6(6)
O(9)-Gd(1)-O(21)	74.6(4)	O(8)#3-Gd(2)-O(22)	124.2(4)
O(2)-Gd(1)-O(21)	156.0(4)	O(5)-Gd(2)-O(23)	74.4(4)
O(12)#1-Gd(1)-O(21)	76.6(4)	O(1)-Gd(2)-O(23)	135.1(5)
O(19)-Gd(1)-O(21)	52.4(4)	O(11)#1-Gd(2)-O(23)	74.3(4)
O(9)-Gd(1)-O(15)	146.5(6)	O(10)-Gd(2)-O(23)	121.0(3)
O(2)-Gd(1)-O(15)	119.7(7)	O(3)#2-Gd(2)-O(23)	143.9(4)
O(12)#1-Gd(1)-O(15)	93.4(6)	O(8)#3-Gd(2)-O(23)	73.5(4)
O(19)-Gd(1)-O(15)	73.3(7)	O(22)-Gd(2)-O(23)	50.7(3)
O(21)-Gd(1)-O(15)	73.2(7)	O(4)#2-Gd(3)-O(7)#3	87.1(5)
O(9)-Gd(1)-O(16)	124.2(4)	O(4)#2-Gd(3)-O(6)	84.9(5)
O(2)-Gd(1)-O(16)	75.5(4)	O(7)#3-Gd(3)-O(6)	89.0(4)
O(12)#1-Gd(1)-O(16)	141.3(4)	O(4)#2-Gd(3)-O(28)	154.5(5)
O(19)-Gd(1)-O(16)	81.9(5)	O(7)#3-Gd(3)-O(28)	74.3(4)
O(21)-Gd(1)-O(16)	128.5(4)	O(6)-Gd(3)-O(28)	77.7(5)
O(15)-Gd(1)-O(16)	71.8(6)	O(4)#2-Gd(3)-O(29)	141.8(5)
O(9)-Gd(1)-O(13)	160.2(5)	O(7)#3-Gd(3)-O(29)	126.0(5)
O(2)-Gd(1)-O(13)	74.4(8)	O(6)-Gd(3)-O(29)	78.1(5)
O(12)#1-Gd(1)-O(13)	74.9(5)	O(28)-Gd(3)-O(29)	51.8(5)
O(19)-Gd(1)-O(13)	118.7(6)	O(4)#2-Gd(3)-O(26)	123.6(5)
O(21)-Gd(1)-O(13)	110.1(7)	O(7)#3-Gd(3)-O(26)	84.0(4)
O(15)-Gd(1)-O(13)	47.1(8)	O(6)-Gd(3)-O(26)	150.1(5)
O(16)-Gd(1)-O(13)	68.9(6)	O(28)-Gd(3)-O(26)	72.4(5)
O(9)-Gd(1)-O(18)	74.6(5)	O(29)-Gd(3)-O(26)	82.6(5)
O(2)-Gd(1)-O(18)	75.0(6)	O(4)#2-Gd(3)-O(31)	86.6(5)
O(12)#1-Gd(1)-O(18)	150.1(5)	O(7)#3-Gd(3)-O(31)	145.7(4)
O(19)-Gd(1)-O(18)	72.4(5)	O(6)-Gd(3)-O(31)	123.9(4)
O(21)-Gd(1)-O(18)	120.1(5)	O(28)-Gd(3)-O(31)	118.5(5)
O(15)-Gd(1)-O(18)	114.6(6)	O(29)-Gd(3)-O(31)	75.4(6)
O(16)-Gd(1)-O(18)	49.6(5)	O(26)-Gd(3)-O(31)	71.8(5)

O(13)-Gd(1)-O(18)	116.0(7)	O(4)#2-Gd(3)-O(25)	72.2(5)
O(5)-Gd(2)-O(1)	139.9(5)	O(7)#3-Gd(3)-O(25)	77.2(4)
O(5)-Gd(2)-O(11)#1	145.6(4)	O(6)-Gd(3)-O(25)	153.6(4)
O(1)-Gd(2)-O(11)#1	74.2(5)	O(28)-Gd(3)-O(25)	118.8(4)
O(5)-Gd(2)-O(10)	96.1(3)	O(29)-Gd(3)-O(25)	128.1(5)
O(1)-Gd(2)-O(10)	88.8(5)	O(26)-Gd(3)-O(25)	51.5(4)
O(11)#1-Gd(2)-O(10)	87.9(3)	O(31)-Gd(3)-O(25)	68.8(5)
O(5)-Gd(2)-O(3)#2	72.4(5)	O(4)#2-Gd(3)-O(32)	75.0(5)
O(1)-Gd(2)-O(3)#2	70.2(6)	O(7)#3-Gd(3)-O(32)	156.4(4)
O(11)#1-Gd(2)-O(3)#2	141.1(5)	O(6)-Gd(3)-O(32)	74.5(4)
O(10)-Gd(2)-O(3)#2	76.5(5)	O(28)-Gd(3)-O(32)	117.0(5)
O(5)-Gd(2)-O(8)#3	90.3(4)	O(29)-Gd(3)-O(32)	67.7(5)
O(1)-Gd(2)-O(8)#3	77.8(5)	O(26)-Gd(3)-O(32)	118.6(5)
O(11)#1-Gd(2)-O(8)#3	94.3(4)	O(31)-Gd(3)-O(32)	49.8(4)
O(10)-Gd(2)-O(8)#3	165.3(4)	O(25)-Gd(3)-O(32)	110.6(5)

Symmetry transformations used to generate equivalent atoms: #1, x+1/2,y+1/2,z+1; #2, x,-y,z-1/2; #3, x+1/2,y-1/2,z+1; #4, x,-y,z+1/2; #5, x-1/2,y+1/2,z-1; #6 x-1/2,y-1/2,z-1.

Table S4. Selected bond lengths [Å] and angles [°] for compound **3**.

Bond	Distance /Å	Bond	Distance /Å
Eu(1)-O(2)	2.293(12)	Eu(2)-O(23)	2.546(10)
Eu(1)-O(9)	2.314(9)	Eu(3)-O(4)#3	2.304(10)
Eu(1)-O(12)#1	2.335(8)	Eu(3)-O(7)#2	2.335(9)
Eu(1)-O(19)	2.507(9)	Eu(3)-O(6)	2.347(8)
Eu(1)-O(13)	2.522(17)	Eu(3)-O(28)	2.506(12)
Eu(1)-O(18)	2.523(13)	Eu(3)-O(26)	2.511(11)
Eu(1)-O(21)	2.523(11)	Eu(3)-O(29)	2.524(12)
Eu(1)-O(16)	2.533(12)	Eu(3)-O(31)	2.535(12)
Eu(1)-O(15)	2.578(16)	Eu(3)-O(25)	2.561(12)
Eu(2)-O(1)	2.326(13)	Eu(3)-O(32)	2.577(10)
Eu(2)-O(10)	2.337(8)	O(3)-Eu(2)#4	2.395(13)
Eu(2)-O(5)	2.340(10)	O(4)-Eu(3)#4	2.304(10)
Eu(2)-O(11)#1	2.356(9)	O(7)-Eu(3)#5	2.335(9)
Eu(2)-O(8)#2	2.369(8)	O(8)-Eu(2)#5	2.369(8)
Eu(2)-O(3)#3	2.394(13)	O(11)-Eu(2)#6	2.356(9)
Eu(2)-O(22)	2.546(10)	O(12)-Eu(1)#6	2.335(8)
Angle	/°	Angle	/°
O(2)-Eu(1)-O(9)	93.9(5)	O(8)#2-Eu(2)-O(3)#3	93.9(5)
O(2)-Eu(1)-O(12)#1	82.5(4)	O(1)-Eu(2)-O(22)	143.5(4)
O(9)-Eu(1)-O(12)#1	88.0(3)	O(10)-Eu(2)-O(22)	70.4(3)
O(2)-Eu(1)-O(19)	148.3(5)	O(5)-Eu(2)-O(22)	74.1(3)
O(9)-Eu(1)-O(19)	79.3(4)	O(11)#1-Eu(2)-O(22)	75.2(3)
O(12)#1-Eu(1)-O(19)	127.5(3)	O(8)#2-Eu(2)-O(22)	123.3(4)
O(2)-Eu(1)-O(13)	75.0(7)	O(3)#3-Eu(2)-O(22)	128.9(5)
O(9)-Eu(1)-O(13)	160.2(4)	O(1)-Eu(2)-O(23)	134.4(6)

O(12)#1-Eu(1)-O(13)	74.5(4)	O(10)-Eu(2)-O(23)	120.3(3)
O(19)-Eu(1)-O(13)	118.6(6)	O(5)-Eu(2)-O(23)	74.7(3)
O(2)-Eu(1)-O(18)	75.7(6)	O(11)#1-Eu(2)-O(23)	74.2(3)
O(9)-Eu(1)-O(18)	74.0(5)	O(8)#2-Eu(2)-O(23)	73.3(4)
O(12)#1-Eu(1)-O(18)	150.4(4)	O(3)#3-Eu(2)-O(23)	144.2(4)
O(19)-Eu(1)-O(18)	72.7(5)	O(22)-Eu(2)-O(23)	50.0(3)
O(13)-Eu(1)-O(18)	117.6(6)	O(4)#3-Eu(3)-O(7)#2	87.3(4)
O(2)-Eu(1)-O(21)	155.0(4)	O(4)#3-Eu(3)-O(6)	85.3(4)
O(9)-Eu(1)-O(21)	73.1(4)	O(7)#2-Eu(3)-O(6)	88.3(3)
O(12)#1-Eu(1)-O(21)	75.8(3)	O(4)#3-Eu(3)-O(28)	153.9(4)
O(19)-Eu(1)-O(21)	51.7(4)	O(7)#2-Eu(3)-O(28)	73.4(4)
O(13)-Eu(1)-O(21)	110.4(7)	O(6)-Eu(3)-O(28)	76.8(4)
O(18)-Eu(1)-O(21)	119.0(5)	O(4)#3-Eu(3)-O(26)	124.2(5)
O(2)-Eu(1)-O(16)	75.9(4)	O(7)#2-Eu(3)-O(26)	83.7(4)
O(9)-Eu(1)-O(16)	124.8(4)	O(6)-Eu(3)-O(26)	148.8(4)
O(12)#1-Eu(1)-O(16)	141.3(4)	O(28)-Eu(3)-O(26)	72.0(5)
O(19)-Eu(1)-O(16)	82.8(4)	O(4)#3-Eu(3)-O(29)	142.2(5)
O(13)-Eu(1)-O(16)	69.1(5)	O(7)#2-Eu(3)-O(29)	124.6(5)
O(18)-Eu(1)-O(16)	50.9(5)	O(6)-Eu(3)-O(29)	77.0(5)
O(21)-Eu(1)-O(16)	129.1(4)	O(28)-Eu(3)-O(29)	51.3(5)
O(2)-Eu(1)-O(15)	122.3(7)	O(26)-Eu(3)-O(29)	82.9(5)
O(9)-Eu(1)-O(15)	143.8(5)	O(4)#3-Eu(3)-O(31)	87.5(5)
O(12)#1-Eu(1)-O(15)	94.3(5)	O(7)#2-Eu(3)-O(31)	147.1(4)
O(19)-Eu(1)-O(15)	70.7(5)	O(6)-Eu(3)-O(31)	123.6(4)
O(13)-Eu(1)-O(15)	49.3(7)	O(28)-Eu(3)-O(31)	118.3(5)
O(18)-Eu(1)-O(15)	114.2(5)	O(26)-Eu(3)-O(31)	72.6(4)
O(21)-Eu(1)-O(15)	72.4(6)	O(29)-Eu(3)-O(31)	75.5(6)
O(16)-Eu(1)-O(15)	71.7(6)	O(4)#3-Eu(3)-O(25)	72.1(4)
O(1)-Eu(2)-O(10)	89.8(5)	O(7)#2-Eu(3)-O(25)	77.8(4)
O(1)-Eu(2)-O(5)	140.2(5)	O(6)-Eu(3)-O(25)	153.9(4)
O(10)-Eu(2)-O(5)	95.8(3)	O(28)-Eu(3)-O(25)	119.0(4)
O(1)-Eu(2)-O(11)#1	73.6(5)	O(26)-Eu(3)-O(25)	52.1(4)
O(10)-Eu(2)-O(11)#1	87.8(3)	O(29)-Eu(3)-O(25)	129.1(5)
O(5)-Eu(2)-O(11)#1	145.8(3)	O(31)-Eu(3)-O(25)	69.6(4)
O(1)-Eu(2)-O(8)#2	77.8(5)	O(4)#3-Eu(3)-O(32)	75.2(5)
O(10)-Eu(2)-O(8)#2	166.2(3)	O(7)#2-Eu(3)-O(32)	156.6(3)
O(5)-Eu(2)-O(8)#2	90.1(3)	O(6)-Eu(3)-O(32)	75.1(4)
O(11)#1-Eu(2)-O(8)#2	94.3(3)	O(28)-Eu(3)-O(32)	117.3(5)
O(1)-Eu(2)-O(3)#3	71.2(6)	O(26)-Eu(3)-O(32)	118.9(4)
O(10)-Eu(2)-O(3)#3	76.2(4)	O(29)-Eu(3)-O(32)	68.1(5)
O(5)-Eu(2)-O(3)#3	72.0(4)	O(31)-Eu(3)-O(32)	49.0(4)
O(11)#1-Eu(2)-O(3)#3	141.1(4)	O(25)-Eu(3)-O(32)	110.3(4)

Symmetry transformations used to generate equivalent atoms: #1, x+1/2,y+1/2,z+1; #2, x+1/2,y-1/2,z+1; #3, x,-y,z-1/2; #4, x,-y,z+1/2; #5, x-1/2,y+1/2,z-1; #6, x-1/2,y-1/2,z-1 .