Electronic Supplementary Information for CrystEngComm

A series of homonuclear lanthanide coordination polymers based on fluorescent conjugated ligand: syntheses, luminescence and sensor for chromate anion

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1. Additional Figures

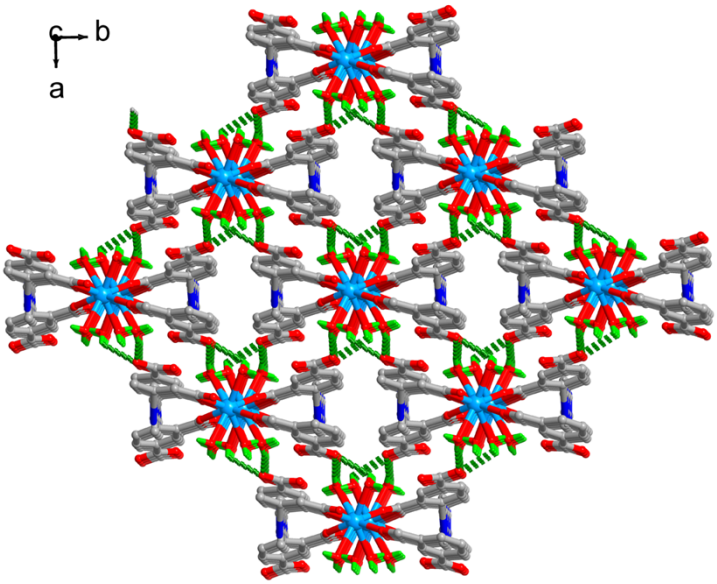
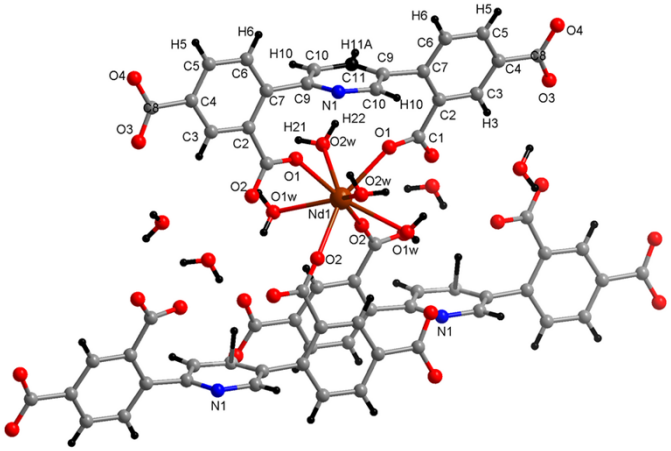
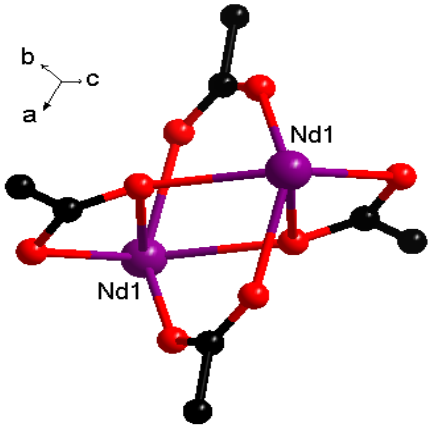


Fig. S1. Polyhedral view of the 3D coordination framework of **1** *via* hydrogen bonding interactions.



(a)



(b)

Fig. S2. (a) The coordination environment in symmetry unit of **2**. (b) Ball and stick view of the paddle-wheel subunit connected by carboxylic group down the a*c* plane in **2**.

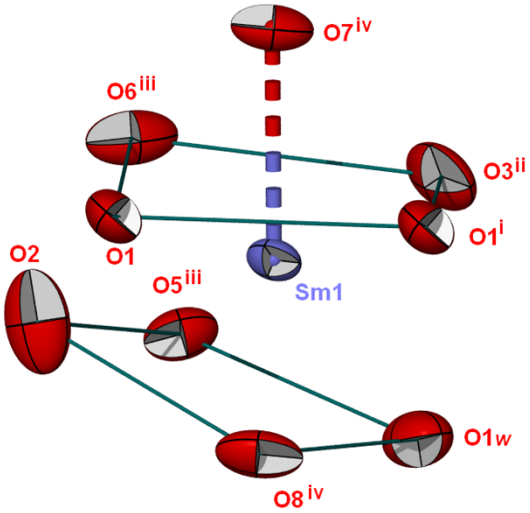


Fig. S3. Scheme showing the coordination environment of central Sm(III) ion in **3**.

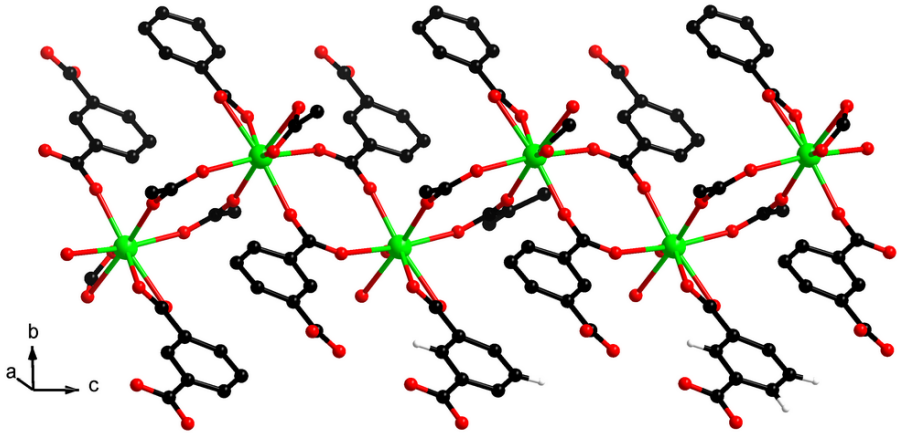
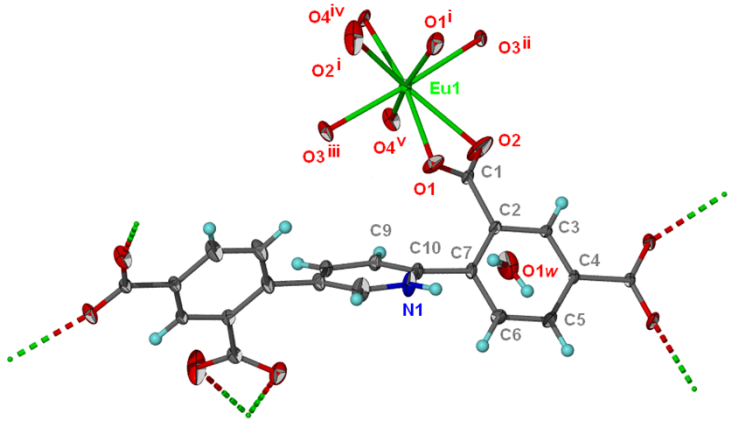
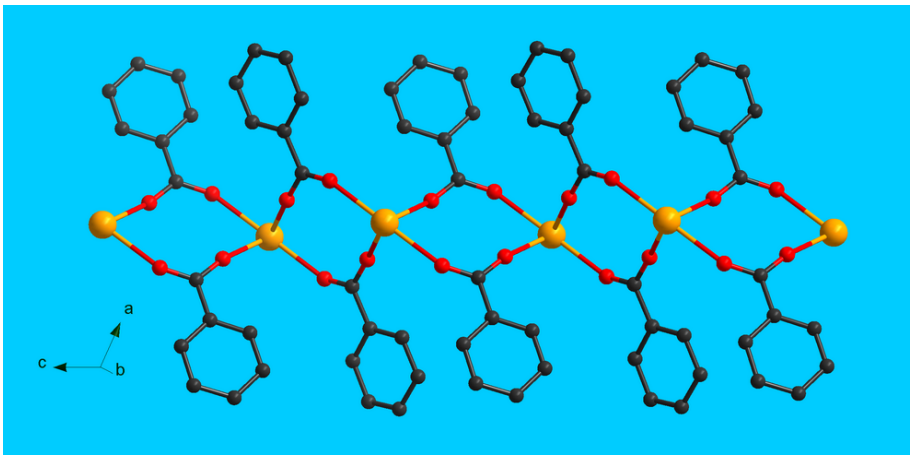


Fig. S4. 1D alternative chain containing eight-membered rings connected by

carboxylates in **4**

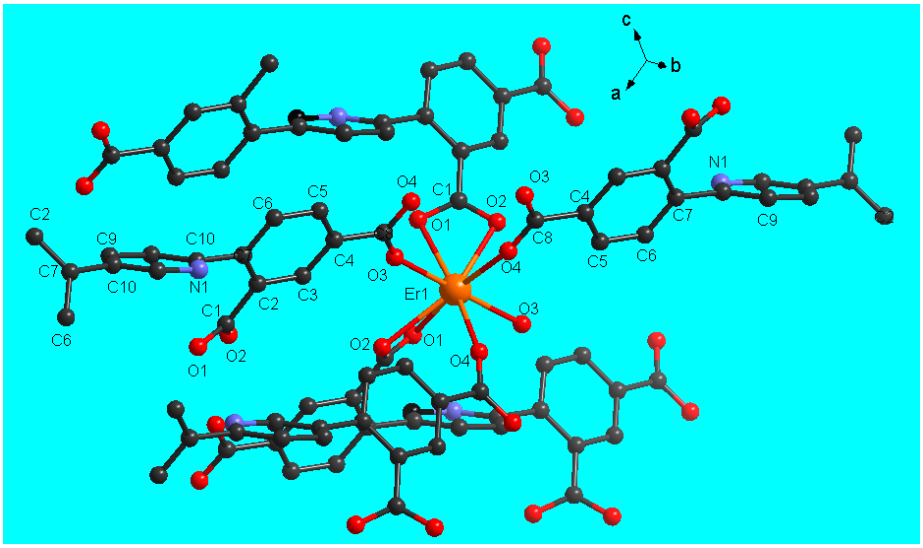


(a)

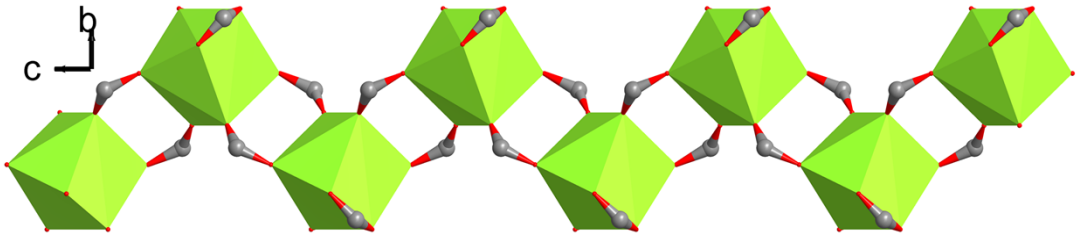


(b)

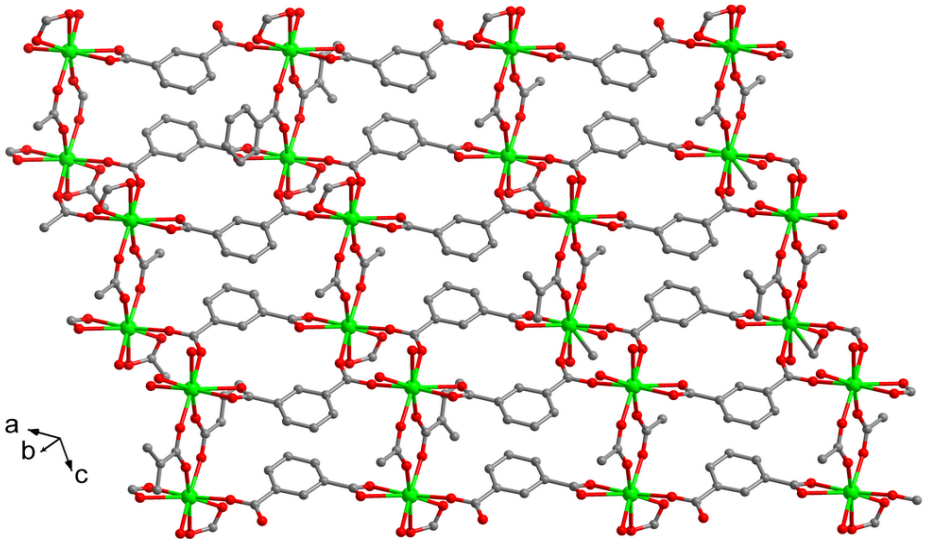
Fig. S5. (a) View of local coordination environment of Eu III) in **4**. (b) Scheme view of 1D alternative chain architecture constructed by benzoic moieties in **4**.



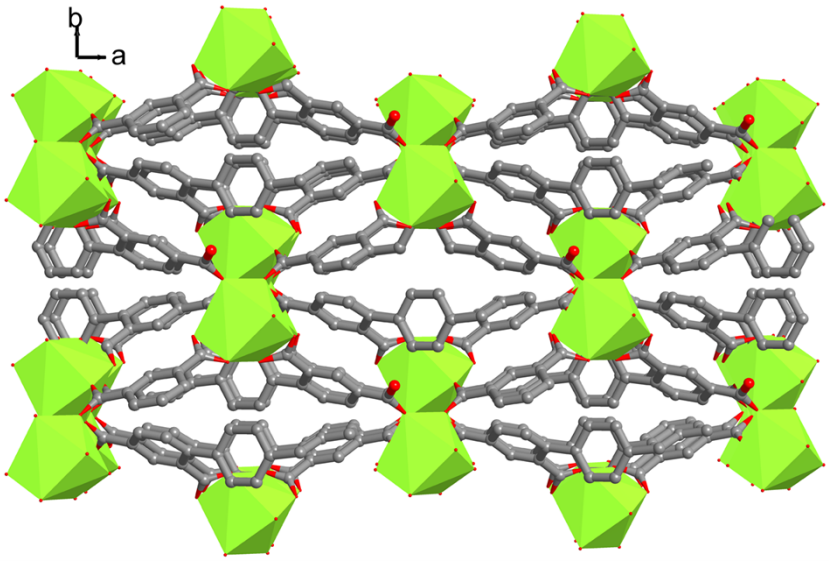
(a)



(b)



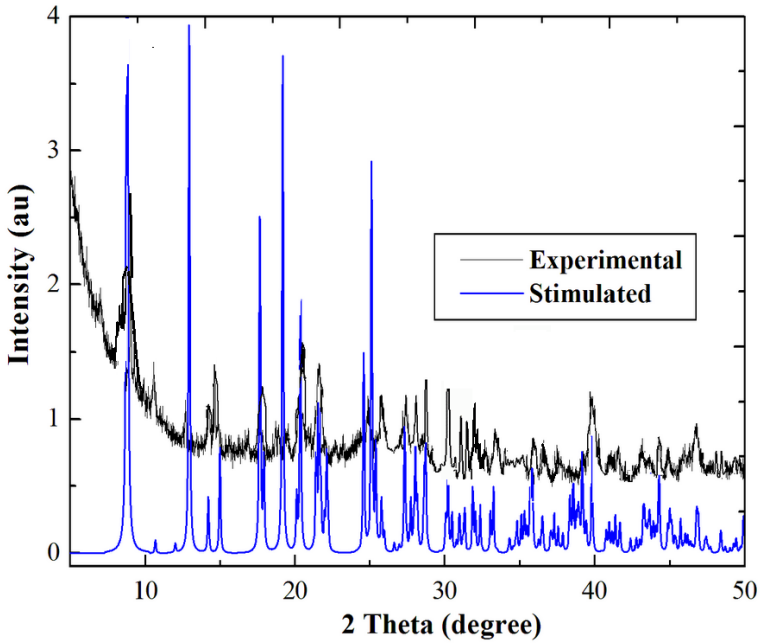
(c)



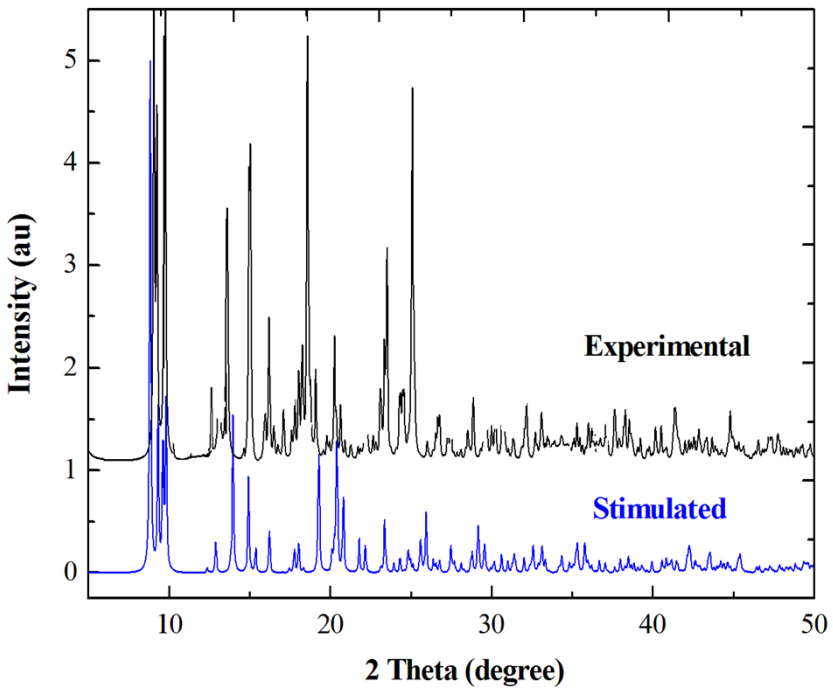
(d)

Fig. S6 (a) Coordination environments of Er(III) ion in **6**. (b) Projective view of infinite 1D alternate chain *via* carboxylic oxygeon in **6**. (c) 2D grid sheet of **6** viewed along approximate

ac plane. (d) 3D grid architecture of **6** viewed in the [101] direction.



(a)



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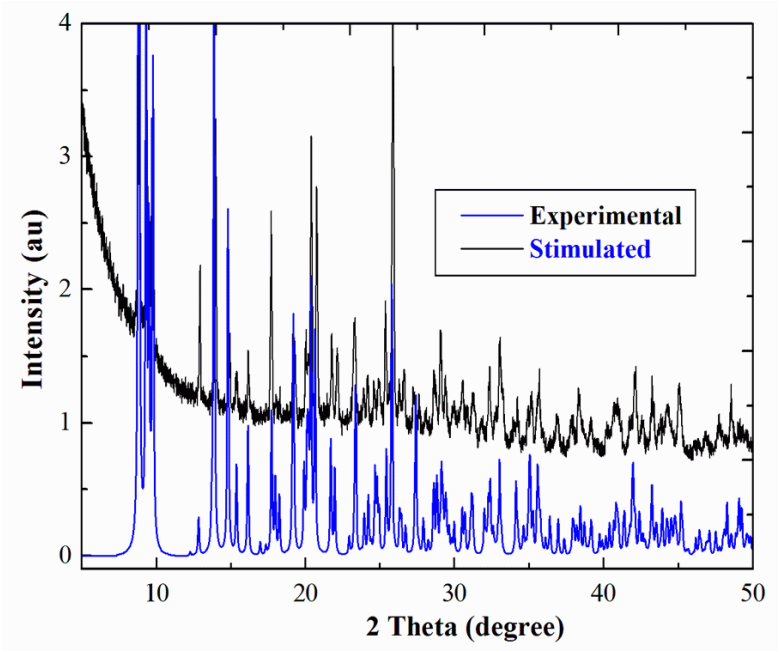
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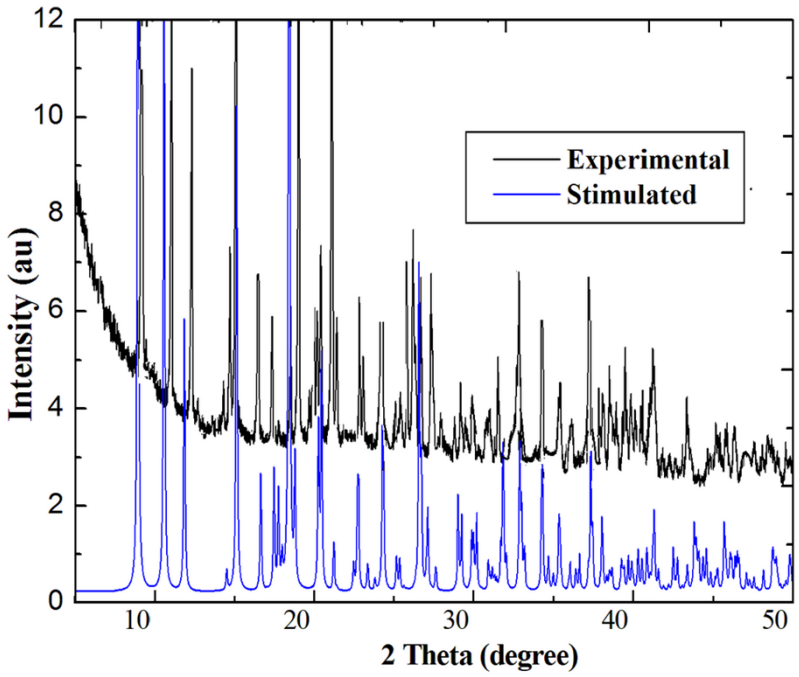
2 Theta (degree)
Experimental
Stimulated
0
1
2
3
4
10
20
30
40
50

(c)


Intensity (au)
2 Theta (degree)
Experimental
Stimulated
0
2
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6
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12
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40
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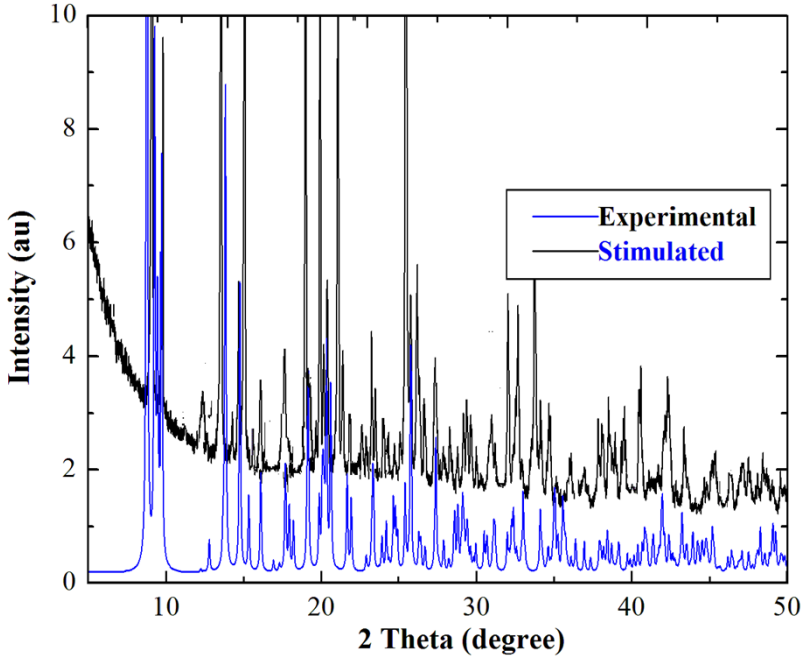
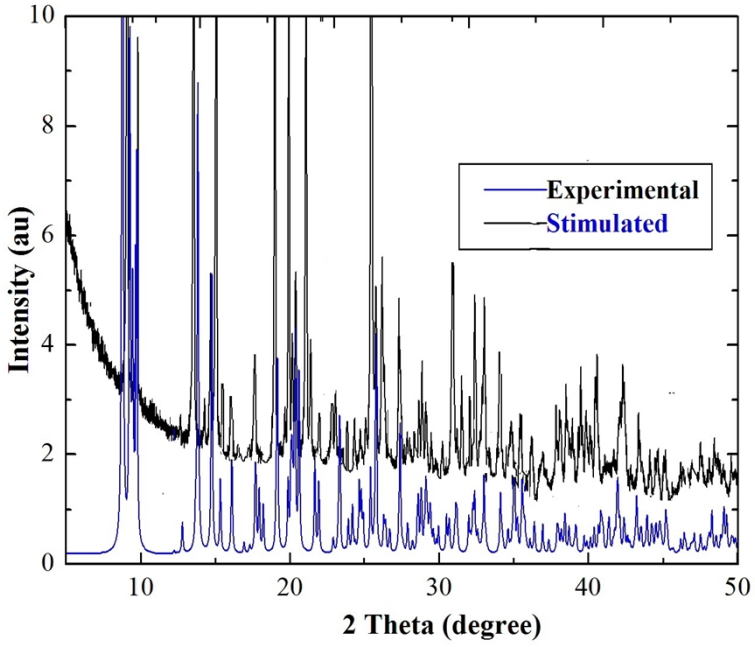
(d)



(e)



(f)

Fig. S7. Comparing the X-ray powder diffraction patterns of polymers microcrystalline powders and stimulated for **1** (a); **2** (b); **3** (c); **4** (d); **5** (d); **6** (f). The black patterns indicate the experimental results.

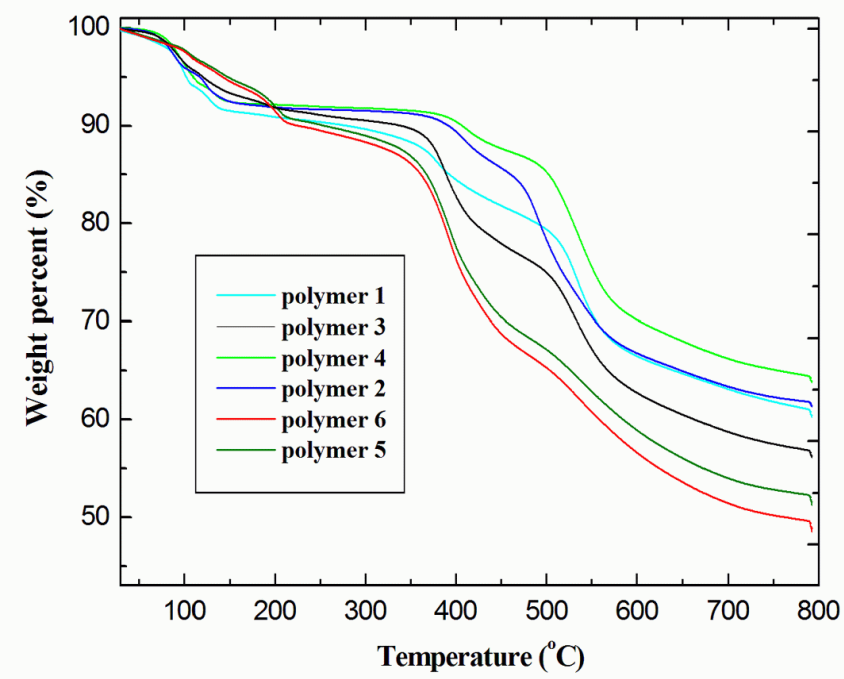


Fig. S8. The thermogravimetric analysis curves for polymers **1 -6**

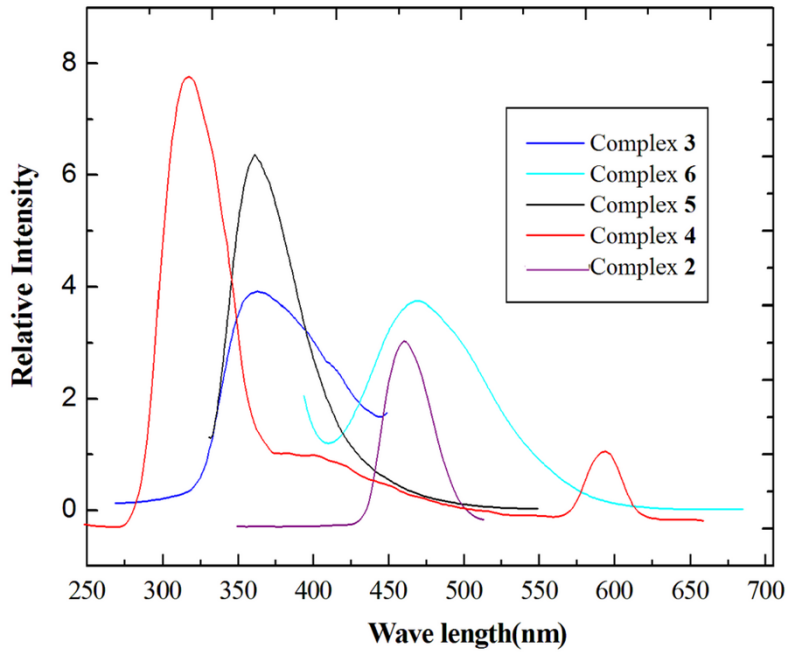


Fig. S9 photo excitation spectra of polymers **2, 3, 4, 5** and **6**

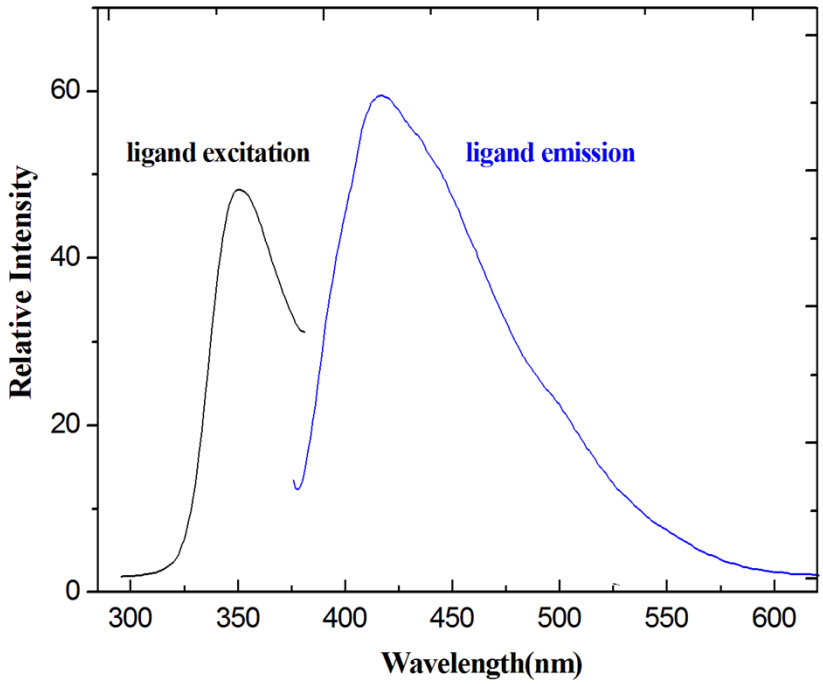


Fig. S10. Excitation and Emission spectra of H_3dppp ligand at room temperature in methanolic suspension state.

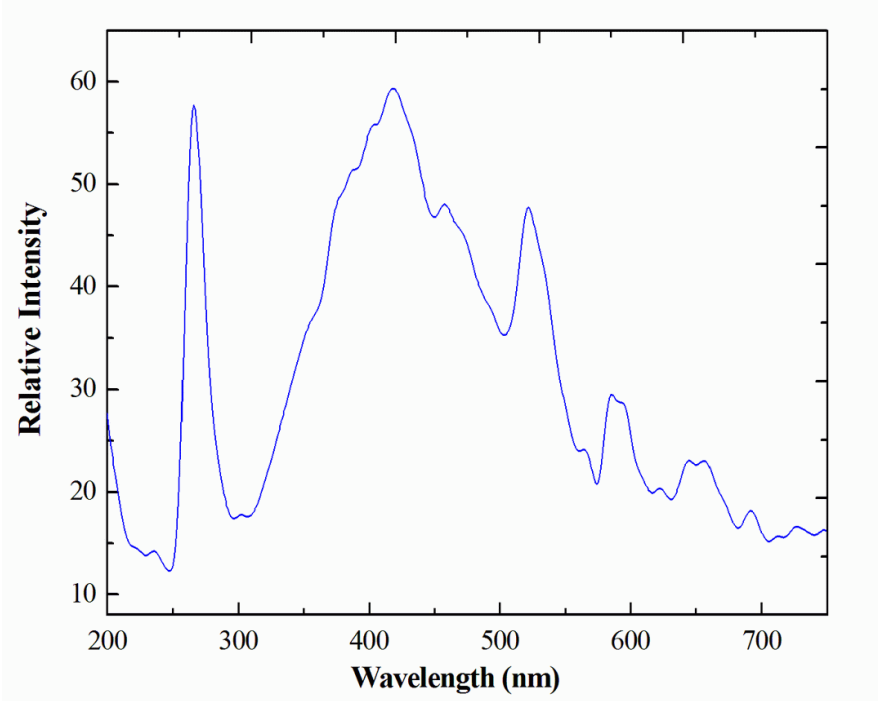


Fig. S11. Emission spectrum of compound **3** (Sm**)** under UV excitation at room temperature in methanolic suspension state.

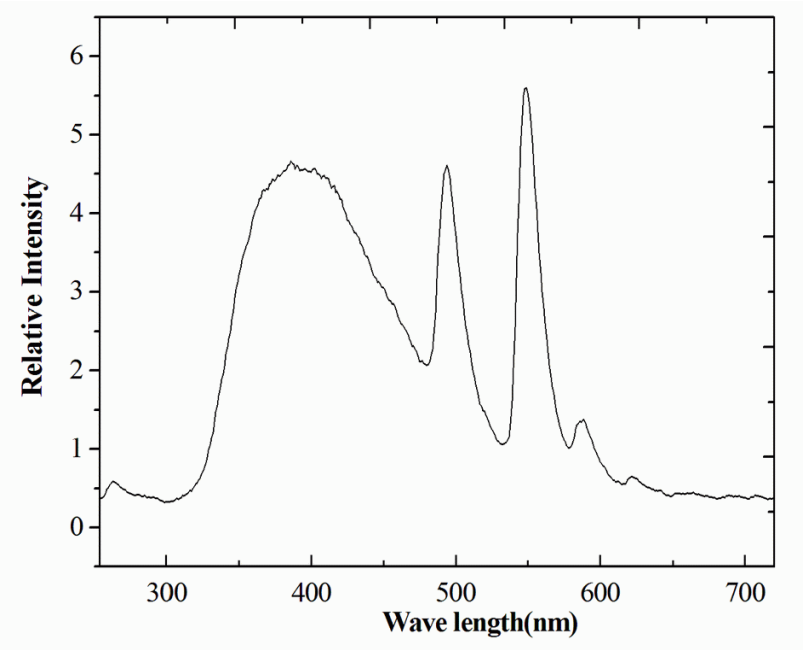


Fig. S12. The luminescence spectra obtained under excitation at 285 nm in aqueous solution for Tb compound **5**, correspond to transitions $^5D_4 \rightarrow {}^7F_J$ (J =3, 4, 5) at room temperature.

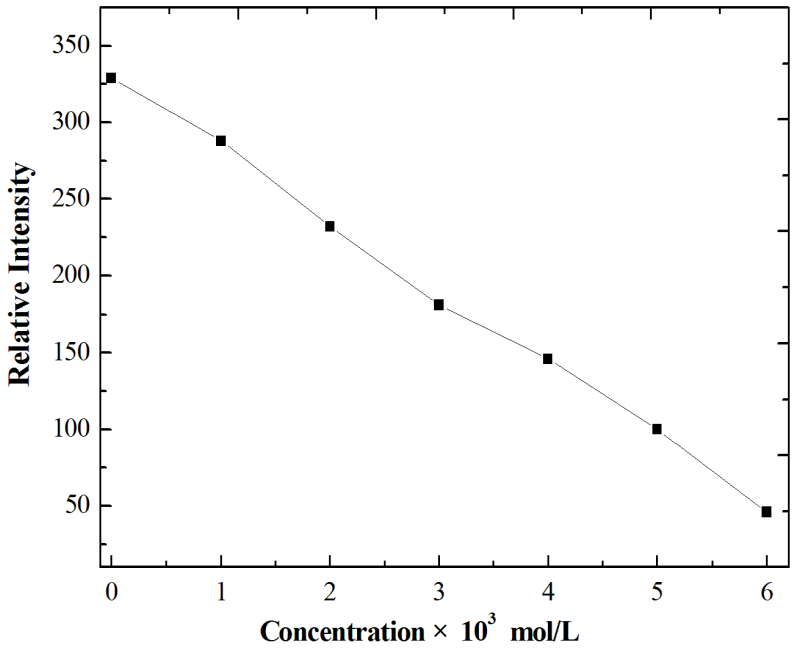


Fig. S13. Diagram representing fluorescence intensity verse the concentration of K_2CrO_4 solution.

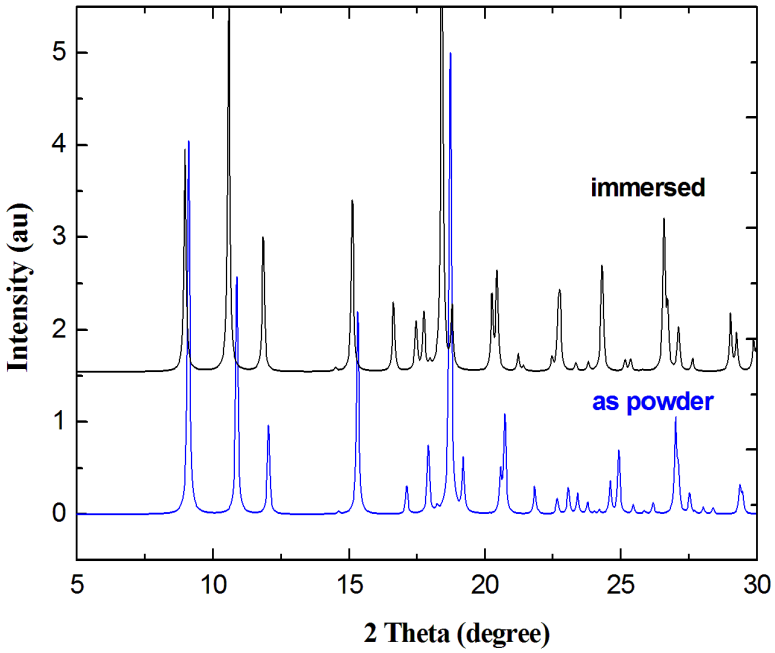


Fig. S14 Comparing the X-ray powder diffraction patterns of microcrystalline of **5** and the ones after being immersed in buffered solution.

3. Additional Tables

Table S1 Selected bond lengths (Å) and bond angles (°) for the polymers **1-6**

Polymer **1**					
Bond	length Å	Bond	length Å	Bond	length Å
Ce(1)-O(2)#1	2.419(3)	Ce(1)-O(1)	2.453(2)	Ce(1)-O(2W)#3	2.636(3)
Ce(1)-O(2)#2	2.419(3)	Ce(1)-O(1W)#3	2.616(3)	Ce(1)-O(2W)	2.636(3)
Ce(1)-O(1)#3	2.453(2)	Ce(1)-O(1W)	2.616(3)		
Bond	Angle	Bond	Angle	Bond	Angle
O(2)#1-Ce(1)-O(2)#2	94.76(14)	O(1)#3-Ce(1)-O(1W)	73.02(10)	O(1)#3-Ce(1)-O(2W)	69.02(10)
O(2)#1-Ce(1)-O(1)#3	95.10(9)	O(1)-Ce(1)-O(1W)	138.80(10)	O(1)-Ce(1)-O(2W)	77.22(9)
O(2)#2-Ce(1)-O(1)#3	149.50(11)	O(1W)#3-Ce(1)-O(1W)	141.71(14)	O(1W)#3-Ce(1)-O(2W)	70.48(10)
O(2)#1-Ce(1)-O(1)	149.50(11)	O(2)#1-Ce(1)-O(2W)#3	141.43(11)	O(1W)-Ce(1)-O(2W)	127.21(9)
O(2)#2-Ce(1)-O(1)	95.10(9)	O(2)#2-Ce(1)-O(2W)#3	77.11(10)	O(2W)#3-Ce(1)-O(2W)	131.26(14)
O(1)#3-Ce(1)-O(1)	90.85(12)	O(1)#3-Ce(1)-O(2W)#3	77.22(9)	C(1)-O(1)-Ce(1)	137.5(2)
O(2)#1-Ce(1)-O(1W)#3	83.06(10)	O(1)-Ce(1)-O(2W)#3	69.02(10)	C(1)-O(2)-Ce(1)#2	171.2(3)
O(2)#2-Ce(1)-O(1W)#3	71.13(11)	O(1W)#3-Ce(1)-O(2W)#3	127.21(9)	Ce(1)-O(1W)-H(11)	109.5
O(1)#3-Ce(1)-O(1W)#3	138.80(10)	O(1W)-Ce(1)-O(2W)#3	70.48(10)	Ce(1)-O(1W)-H(12)	109.5
O(1)-Ce(1)-O(1W)#3	73.02(10)	O(2)#1-Ce(1)-O(2W)	77.11(10)	Ce(1)-O(2W)-H(21)	109.5
O(2)#1-Ce(1)-O(1W)	71.13(11)	O(2)#2-Ce(1)-O(2W)	141.43(11)	Ce(1)-O(2W)-H(22)	109.5
O(2)#2-Ce(1)-O(1W)	83.06(10)				
Polymer **2**					

Bond	length Å	Bond	length Å	Bond	length Å
Nd(1)-O(7)#1	2.329(3)	Nd(1)-O(1W)	2.500(3)	O(4)-Nd(1)#7	2.385(3)
Nd(1)-O(4)#2	2.385(3)	Nd(1)-O(6)#5	2.551(4)	O(5)-Nd(1)#4	2.470(3)
Nd(1)-O(3)#3	2.433(3)	Nd(1)-O(1)	2.568(3)	O(5)-Nd(1)#8	2.724(4)
Nd(1)-O(5)#4	2.470(3)	Nd(1)-O(5)#5	2.724(4)	O(6)-Nd(1)#8	2.551(4)
Nd(1)-O(2)	2.489(4)	Nd(1)-C(21)#5	3.003(4)	O(7)-Nd(1)#9	2.329(3)
Bond	Angle	Bond	Angle	Bond	Angle
O(7)#1-Nd(1)-O(4)#2	130.64(13)	O(4)#2-Nd(1)-O(1W)	67.32(11)	O(3)#3-Nd(1)-O(1)	117.14(11)
O(7)#1-Nd(1)-O(3)#3	75.94(13)	O(3)#3-Nd(1)-O(1W)	141.15(12)	O(5)#4-Nd(1)-O(1)	161.69(12)
O(4)#2-Nd(1)-O(3)#3	134.19(11)	O(5)#4-Nd(1)-O(1W)	89.15(12)	O(2)-Nd(1)-O(1)	50.88(11)
O(7)#1-Nd(1)-O(5)#4	84.86(13)	O(2)-Nd(1)-O(1W)	121.33(12)	O(1W)-Nd(1)-O(1)	73.68(11)
O(4)#2-Nd(1)-O(5)#4	73.96(11)	O(7)#1-Nd(1)-O(6)#5	153.41(15)	O(6)#5-Nd(1)-O(1)	73.49(11)
O(3)#3-Nd(1)-O(5)#4	72.62(12)	O(4)#2-Nd(1)-O(6)#5	68.66(13)	O(7)#1-Nd(1)-O(5)#5	146.41(12)
O(7)#1-Nd(1)-O(2)	85.57(14)	O(3)#3-Nd(1)-O(6)#5	103.85(13)	O(4)#2-Nd(1)-O(5)#5	70.72(11)
O(4)#2-Nd(1)-O(2)	136.77(13)	O(5)#4-Nd(1)-O(6)#5	120.88(12)	O(3)#3-Nd(1)-O(5)#5	71.84(11)
O(3)#3-Nd(1)-O(2)	68.80(12)	O(2)-Nd(1)-O(6)#5	70.14(13)	O(5)#4-Nd(1)-O(5)#5	76.81(11)
O(5)#4-Nd(1)-O(2)	141.42(11)	O(1W)-Nd(1)-O(6)#5	114.90(13)	O(2)-Nd(1)-O(5)#5	91.43(11)
O(7)#1-Nd(1)-O(1W)	68.33(13)	O(7)#1-Nd(1)-O(1)	82.93(13)	O(1W)-Nd(1)-O(5)#5	137.95(11)

Polymer **3**

Bond	length Å	Bond	length Å	Bond	length Å
Sm(1)-O(1)	2.748(3)	Sm(1)-O(3)#4	2.326(2)	O(5)-Sm(1)#7	2.591(2)
Sm(1)-O(1)#1	2.439(2)	Sm(1)-O(8)#5	2.372(2)	O(6)-Sm(1)#7	2.467(2)
Sm(1)-O(2)	2.537(3)	Sm(1)-O(1w)	2.497(2)	O(7)-Sm(1)#3	2.420(2)
Sm(1)-O(5)#2	2.591(2)	O(1)-Sm(1)#1	2.439(2)	O(8)-Sm(1)#8	2.372(2)
Sm(1)-O(6)#2	2.467(2)				
Bond	Angle	Bond	Angle	Bond	Angle
O(3)#4-Sm(1)-O(8)#5	131.50(10)	O(8)#5-Sm(1)-O(2)	68.86(10)	O(1)#1-Sm(1)-O(1)	76.09(8)
O(3)#4-Sm(1)-O(7)#3	76.70(9)	O(7)#3-Sm(1)-O(2)	101.54(10)	O(6)#2-Sm(1)-O(1)	93.50(8)
O(8)#5-Sm(1)-O(7)#3	134.09(8)	O(1)#1-Sm(1)-O(2)	120.90(8)	O(1w)-Sm(1)-O(1)	137.21(8)
O(3)#4-Sm(1)-O(1)#1	84.83(10)	O(6)#2-Sm(1)-O(2)	70.52(10)	O(2)-Sm(1)-O(1)	48.70(8)
O(8)#5-Sm(1)-O(1)#1	74.74(8)	O(1w)-Sm(1)-O(2)	115.86(10)	O(5)#2-Sm(1)-O(1)	121.39(7)
O(7)#3-Sm(1)-O(1)#1	73.12(8)	O(3)#4-Sm(1)-O(5)#2	83.22(9)	C(1)-O(1)-Sm(1)#1	154.1(2)
O(3)#4-Sm(1)-O(6)#2	84.09(10)	O(8)#5-Sm(1)-O(5)#2	102.39(8)	C(1)-O(1)-Sm(1)	89.6(2)
O(8)#5-Sm(1)-O(6)#2	136.70(9)	O(7)#3-Sm(1)-O(5)#2	118.29(7)	Sm(1)#1-O(1)-Sm(1)	103.91(8)
O(7)#3-Sm(1)-O(6)#2	68.72(8)	O(1)#1-Sm(1)-O(5)#2	160.78(8)	C(1)-O(2)-Sm(1)	100.0(2)
O(1)#1-Sm(1)-O(6)#2	141.75(8)	O(6)#2-Sm(1)-O(5)#2	51.42(7)	C(8)-O(3)-Sm(1)#6	151.6(3)
O(3)#4-Sm(1)-O(1w)	69.03(9)	O(1w)-Sm(1)-O(5)#2	72.87(9)	C(20)-O(5)-Sm(1)#7	89.50(18)
O(8)#5-Sm(1)-O(1w)	67.08(9)	O(2)-Sm(1)-O(5)#2	73.85(8)	C(20)-O(6)-Sm(1)#7	95.44(19)
O(7)#3-Sm(1)-O(1w)	142.52(9)	O(3)#4-Sm(1)-O(1)	145.78(8)	C(21)-O(7)-Sm(1)#3	139.0(2)
O(1)#1-Sm(1)-O(1w)	88.81(9)	O(8)#5-Sm(1)-O(1)	70.34(8)	C(21)-O(8)-Sm(1)#8	140.2(2)
O(6)#2-Sm(1)-O(1w)	120.57(9)	O(7)#3-Sm(1)-O(1)	70.72(7)	Sm(1)-O(1w)-H(11)	121(3)

O(3)#4-Sm(1)-O(2)	152.97(10)	O(8)#5-Sm(1)-O(2)	68.86(10)	Sm(1)-O(1w)-H(12)	131(3)
O(3)#4-Sm(1)-O(7)#3	76.70(9)	O(7)#3-Sm(1)-O(2)	101.54(10)	O(6)-C(20)-Sm(1)#7	58.79(17)
O(8)#5-Sm(1)-O(7)#3	134.09(8)	O(1)#1-Sm(1)-O(2)	120.90(8)	O(5)-C(20)-Sm(1)#7	64.45(17)
O(3)#4-Sm(1)-O(1)#1	84.83(10)	O(6)#2-Sm(1)-O(2)	70.52(10)	C(19)-C(20)-Sm(1)#7	163.6(2)
O(8)#5-Sm(1)-O(1)#1	74.74(8)	O(1w)-Sm(1)-O(2)	115.86(10)	O(1)#1-Sm(1)-O(1)	76.09(8)
O(7)#3-Sm(1)-O(1)#1	73.12(8)	O(3)#4-Sm(1)-O(5)#2	83.22(9)	O(6)#2-Sm(1)-O(1)	93.50(8)
O(3)#4-Sm(1)-O(6)#2	84.09(10)	O(8)#5-Sm(1)-O(5)#2	102.39(8)	O(1w)-Sm(1)-O(1)	137.21(8)
O(8)#5-Sm(1)-O(6)#2	136.70(9)	O(7)#3-Sm(1)-O(5)#2	118.29(7)	O(2)-Sm(1)-O(1)	48.70(8)

Polymer **4**

Bond	length Å	Bond	length Å	Bond	length Å
Eu(1)-O(4)#1	2.383(3)	Eu(1)-O(1)	2.554(4)	Eu(1)-C(1)#5	2.922(4)
Eu(1)-O(4)#2	2.383(3)	Eu(1)-O(1)#5	2.554(4)	Eu(1)-C(1)	2.922(4)
Eu(1)-O(3)#3	2.425(3)	Eu(1)-O(2)#5	2.567(4)	O(3)-Eu(1)#3	2.425(3)
Eu(1)-O(3)#4	2.425(3)	Eu(1)-O(2)	2.567(4)	O(4)-Eu(1)#6	2.383(3)
Bond	Angle	Bond	Angle	Bond	Angle
O(4)#1-Eu(1)-O(4)#2	74.8(2)	O(3)#4-Eu(1)-O(2)#5	70.44(14)	O(2)#5-Eu(1)-C(1)#5	24.82(13)
O(4)#1-Eu(1)-O(3)#3	93.19(12)	O(1)-Eu(1)-O(2)#5	99.48(17)	O(2)-Eu(1)-C(1)#5	123.75(17)
O(4)#2-Eu(1)-O(3)#3	81.38(11)	O(1)#5-Eu(1)-O(2)#5	50.09(12)	O(4)#1-Eu(1)-C(1)	88.05(13)
O(4)#1-Eu(1)-O(3)#4	81.38(11)	O(4)#1-Eu(1)-O(2)	75.63(17)	O(4)#2-Eu(1)-C(1)	160.60(13)
O(4)#2-Eu(1)-O(3)#4	93.19(12)	O(4)#2-Eu(1)-O(2)	137.46(13)	O(3)#3-Eu(1)-C(1)	90.74(12)
O(3)#3-Eu(1)-O(3)#4	173.19(16)	O(3)#3-Eu(1)-O(2)	70.44(14)	O(3)#4-Eu(1)-C(1)	93.15(13)
O(4)#1-Eu(1)-O(1)	104.32(14)	O(3)#4-Eu(1)-O(2)	111.79(15)	O(1)-Eu(1)-C(1)	25.45(12)
O(4)#2-Eu(1)-O(1)	169.76(12)	O(1)-Eu(1)-O(2)	50.09(12)	O(1)#5-Eu(1)-C(1)	90.90(13)
O(3)#3-Eu(1)-O(1)	108.86(12)	O(1)#5-Eu(1)-O(2)	99.48(16)	O(2)#5-Eu(1)-C(1)	123.75(17)
O(3)#4-Eu(1)-O(1)	76.63(13)	O(2)#5-Eu(1)-O(2)	144.2(2)	O(2)-Eu(1)-C(1)	24.82(13)
O(4)#1-Eu(1)-O(1)#5	169.76(12)	O(4)#1-Eu(1)-C(1)#5	160.60(13)	C(1)#5-Eu(1)-C(1)	110.17(19)
O(4)#2-Eu(1)-O(1)#5	104.32(14)	O(4)#2-Eu(1)-C(1)#5	88.05(14)	C(1)-O(1)-Eu(1)	93.8(3)
O(3)#3-Eu(1)-O(1)#5	76.63(13)	O(3)#4-Eu(1)-O(2)#5	70.44(14)	C(1)-O(2)-Eu(1)	93.9(3)
O(3)#4-Eu(1)-O(1)#5	108.86(12)	O(1)-Eu(1)-O(2)#5	99.48(17)	C(8)-O(3)-Eu(1)#3	149.8(3)
O(1)-Eu(1)-O(1)#5	78.37(19)	O(3)#3-Eu(1)-C(1)#5	93.15(13)	C(8)-O(4)-Eu(1)#6	161.1(3)
O(4)#1-Eu(1)-O(2)#5	137.46(13)	O(3)#4-Eu(1)-C(1)#5	90.74(12)	O(2)-C(1)-Eu(1)	61.2(3)
O(4)#2-Eu(1)-O(2)#5	75.63(17)	O(1)-Eu(1)-C(1)#5	90.90(13)	O(1)-C(1)-Eu(1)	60.7(2)
O(3)#3-Eu(1)-O(2)#5	111.79(15)	O(1)#5-Eu(1)-C(1)#5	25.45(12)	C(2)-C(1)-Eu(1)	172.1(3)

Polymer **5**

Bond	length Å	Bond	length Å	Bond	length Å
Tb(1)-O(4)#2	2.282(11)	Tb(1)-O(2)#6	2.455(13)	Tb(1)-C(7)#6	2.813(14)
Tb(1)-O(4)#3	2.282(11)	Tb(1)-O(2)	2.455(13)	Tb(1)-C(7)	2.813(14)
Tb(1)-O(3)#4	2.350(12)	Tb(1)-O(1)	2.458(12)	O(3)-Tb(1)#4	2.350(12)
Tb(1)-O(3)#5	2.350(12)	Tb(1)-O(1)#6	2.458(12)	O(4)-Tb(1)#7	2.282(11)

Bond	Angle	Bond	Angle	Bond	Angle
O(4)#2-Tb(1)-O(4)#3	75.2(6)	O(3)#5-Tb(1)-O(1)	76.2(4)	O(1)#6-Tb(1)-C(7)#6	26.3(4)
O(4)#2-Tb(1)-O(3)#4	94.3(4)	O(2)#6-Tb(1)-O(1)	98.0(6)	O(4)#2-Tb(1)-C(7)	88.0(5)
O(4)#3-Tb(1)-O(3)#4	80.0(4)	O(2)-Tb(1)-O(1)	50.3(4)	O(4)#3-Tb(1)-C(7)	160.2(5)
O(4)#2-Tb(1)-O(3)#5	80.0(4)	O(4)#2-Tb(1)-O(1)#6	170.2(4)	O(3)#4-Tb(1)-C(7)	91.1(4)
O(4)#3-Tb(1)-O(3)#5	94.3(4)	O(4)#3-Tb(1)-O(1)#6	104.6(4)	O(3)#5-Tb(1)-C(7)	93.0(4)
O(3)#4-Tb(1)-O(3)#5	172.9(6)	O(3)#4-Tb(1)-O(1)#6	76.2(4)	O(2)#6-Tb(1)-C(7)	123.1(6)
O(4)#2-Tb(1)-O(2)#6	137.5(5)	O(3)#5-Tb(1)-O(1)#6	109.6(4)	O(2)-Tb(1)-C(7)	24.3(4)
O(4)#3-Tb(1)-O(2)#6	76.6(6)	O(2)#6-Tb(1)-O(1)#6	50.3(4)	O(1)-Tb(1)-C(7)	26.3(4)
O(3)#4-Tb(1)-O(2)#6	111.5(5)	O(2)-Tb(1)-O(1)#6	98.0(6)	O(1)#6-Tb(1)-C(7)	90.2(4)
O(3)#5-Tb(1)-O(2)#6	70.9(5)	O(1)-Tb(1)-O(1)#6	77.3(6)	C(7)#6-Tb(1)-C(7)	110.2(7)
O(4)#2-Tb(1)-O(2)	76.6(6)	O(4)#2-Tb(1)-C(7)#6	160.2(5)	C(7)-O(1)-Tb(1)	92.9(10)
O(4)#3-Tb(1)-O(2)	137.5(5)	O(4)#3-Tb(1)-C(7)#6	88.0(5)	C(7)-O(2)-Tb(1)	95.4(11)
O(3)#4-Tb(1)-O(2)	70.9(5)	O(3)#4-Tb(1)-C(7)#6	93.0(4)	C(8)-O(3)-Tb(1)#4	151.3(10)
O(3)#5-Tb(1)-O(2)	111.5(5)	O(3)#5-Tb(1)-C(7)#6	91.1(4)	C(8)-O(4)-Tb(1)#7	161.9(11)
O(2)#6-Tb(1)-O(2)	142.8(9)	O(2)#6-Tb(1)-C(7)#6	24.3(4)	O(2)-C(7)-Tb(1)	60.3(8)
O(4)#2-Tb(1)-O(1)	104.6(4)	O(2)-Tb(1)-C(7)#6	123.1(6)	O(1)-C(7)-Tb(1)	60.8(8)
O(4)#3-Tb(1)-O(1)	170.2(4)	O(1)-Tb(1)-C(7)#6	90.2(4)	C(2)-C(7)-Tb(1)	173.8(11)
O(3)#4-Tb(1)-O(1)	109.6(4)				

Polymer **6**

Bond	length Å	Bond	length Å	Bond	length Å
Er(1)-O(4)#1	2.384(4)	Er(1)-O(1)	2.556(5)	Er(1)-O(2)	2.567(5)
Er(1)-O(4)#2	2.384(4)	Er(1)-O(1)#5	2.556(5)	O(3)-Er(1)#4	2.424(4)
Er(1)-O(3)#3	2.424(4)	Er(1)-O(2)#5	2.567(5)	O(4)-Er(1)#6	2.384(4)
Er(1)-O(3)#4	2.424(4)				

Bond	Angle	Bond	Angle	Bond	Angle

O(4)#1-Er(1)-O(4)#2	74.6(3)	O(4)#2-Er(1)-O(1)#5	104.43(18)	O(4)#2-Er(1)-O(2)	137.29(17)
O(4)#1-Er(1)-O(3)#3	81.35(14)	O(3)#3-Er(1)-O(1)#5	108.95(15)	O(3)#3-Er(1)-O(2)	111.9(2)
O(4)#2-Er(1)-O(3)#3	93.13(16)	O(3)#4-Er(1)-O(1)#5	76.63(17)	O(3)#4-Er(1)-O(2)	70.40(18)
O(4)#1-Er(1)-O(3)#4	93.13(16)	O(1)-Er(1)-O(1)#5	78.4(2)	O(1)-Er(1)-O(2)	50.22(16)
O(4)#2-Er(1)-O(3)#4	81.35(14)	O(4)#1-Er(1)-O(2)#5	137.29(17)	O(1)#5-Er(1)-O(2)	99.5(2)
O(3)#3-Er(1)-O(3)#4	173.1(2)	O(4)#2-Er(1)-O(2)#5	75.7(2)	O(2)#5-Er(1)-O(2)	144.3(3)
O(4)#1-Er(1)-O(1)	104.43(18)	O(3)#3-Er(1)-O(2)#5	70.40(18)	C(1)-O(1)-Er(1)	93.7(3)
O(4)#2-Er(1)-O(1)	169.70(15)	O(3)#4-Er(1)-O(2)#5	111.9(2)	C(1)-O(2)-Er(1)	93.9(4)
O(3)#3-Er(1)-O(1)	76.63(17)	O(1)-Er(1)-O(2)#5	99.5(2)	C(8)-O(3)-Er(1)#4	150.0(4)
O(3)#4-Er(1)-O(1)	108.95(15)	O(1)#5-Er(1)-O(2)#5	50.22(16)	C(8)-O(4)-Er(1)#6	160.9(4)
O(4)#1-Er(1)-O(1)#5	169.70(15)	O(4)#1-Er(1)-O(2)	75.7(2)		

Symmetry transformations used to generate equivalent atoms: for **1:** #1 -x+1/2, y-1/2,-z+3/2; #2 -x+1/2, y+1/2,-z+3/2. for **2** #1 -x,-y+1,-z ; #2 x, y-1,z ;#3 -x+1, y,-z+1/2. #4 x, y+1, z. #5 -x+1,-y+1,-z . for **3**: #1 -x+2,y+1/2,-z+1/2; #2 -x+3,-y,-z+1. for **4:** #1 -x+1,-y+1,-z+1; #2 x-1,-y+3/2, z-1/2 ; #3 -x+1,-y+2,-z+1. for **5:** #1 -x+1,y-1/2,-z+1/2; #2 -x,-y,-z. #3 -x,y-3/2, -z+1/2. #4 x, -y+3/2, z-1/2. #5 -x+1, y+1/2,-z+1/2; #6 -x+1,-y,-z+1; #7 -x,y+3/2,-z+1/2, #5 -x,-y,-z+1. For **6**: #1 -x+1,-y,-z+1; #2 -x+2, -y+1, -z+1; #3 -x+2, -y, -z+1.

Table S2 The hydrogen bond lengths (Å) and angles (°) for polymers **1-6**

D-H...A	d(D-H)	d(H...A)	d(D...A)	<(DHA)
Polymer **1**				
O(1W)-H(11)...O(4)#4	0.84	2.40	2.712(5)	102.6
O(2W)-H(21)...O(4)#5	0.84	1.87	2.696(4)	169.2
O(2W)-H(22)...O(3)#6	0.84	2.35	3.055(4)	141.8
N(1)-H(1)...O(3)#6	0.88	2.26	3.002(6)	142.1
N(1)-H(1)...O(4)#6	0.88	2.40	3.245(5)	160.3
Polymer **2**				
O(1W)-H(11)...O(1)#4	0.84	2.19	2.904(4)	142.8
O(1W)-H(12)...O(8)#5	0.84	2.40	2.827(5)	112.7
Polymer **3**				
O(1w)-H(11)...O(4)#4	0.844(10)	2.12(2)	2.867(4)	147(4)
O(1w)-H(12)...O(5)#1	0.844(10)	2.124(15)	2.956(3)	168(4)
N(1)-H(1)...O(2w)	0.88	2.08	2.800(7)	138.3
N(13')-H(13')...O(2w')	0.88	1.90	2.678(7)	146.0
Polymer **4**				
O(11)-H(1W)...O(3)#1	0.86	2.00	2.846(2)	167.4
O(11)-H(2W)...N(1)#4	0.88	1.93	2.783(3)	164.2
Polymer **5**				

O(11)-H(1W)...O(2)#4	0.85	2.02	2.841(6)	161.4
O(11)-H(2W)...N(1)#5	0.85	1.95	2.755(7)	157.1
Polymer **6**				
O(11)-H(1W)...N(2)#4	0.82	1.97	2.739(3)	157.0
O(11)-H(2W)...O(7)#2	0.96	1.78	2.680(3)	155.6

Symmetry transformations used to generate equivalent atoms: for **1:** #4 x, y+1, z. #5 -x+1,-y+1,-z. for **2** : #4 -x+2,y+1/2,-z+1/2; #5 -x+3,-y,-z+1. for **3**: #1 -x+2,y+1/2,-z+1/2; #4 -x+3,-y,-z+1. for **4:** #1 -x+1,-y+1,-z+1; #2 x-1,-y+3/2, z-1/2 ; #3 -x+1,-y+2,-z+1. for **5:** #1 -x+1,y-1/2,-z+1/2; #2 -x,-y,-z. #3 -x,y-3/2, -z+1/2. #4 x, -y+3/2, z-1/2. #5 -x+1, y+1/2,-z+1/2; #6 -x+1,-y,-z+1; #7 -x, y+3/2,-z+1/2, #5 -x,-y,-z+1. For **6**: #2 -x+2, -y+1, -z+1; #4 -x+2, -y, -z+1.