Supporting Information

Table S1. Summary of Crystal Data and Structural Refinement Parameters

compound	**1**	**2**	**3**	**4**	**6**
empirical formula	$C_{132}H_{94}N_{18}Nd_2O_{17}$	$C_{132}H_{94}N_{18}Sm_2O_{17}$	$C_{132}H_{94}N_{18}Eu_2O_{17}$	$C_{132}H_{94}N_{18}Gd_2O_{17}$	$C_{132}H_{94}N_{18}Dy_2O_{17}$
formula weight	2492.75	2504.99	2508.20	2518.77	2529.27
crystal system	Triclinic	Triclinic	Triclinic	Triclinic	Triclinic
space group	P-1	P-1	P-1	P-1	P-1
a (Å)	13.6238(10)	13.6332(18)	13.659(3)	13.616(3)	13.6739(8)
b (Å)	14.4019(10)	14.3983(19)	14.392(3)	14.396(3)	14.3581(8)
c (Å)	16.3902(12)	16.347(2)	16.317(3)	16.304(3)	16.2252(9)
α (°)	78.7970(10)	78.969(3)	78.947(3)	78.978(4)	79.0640(10)
β (°)	77.3460(10)	77.335(3)	77.370(4)	77.352(4)	77.5790(10)
γ (°)	65.5370(10)	65.518(2)	65.555(4)	65.513(3)	65.7110(10)
V (Å^3)	2836.6(4)	2831.0(6)	2830.8(10)	2819.6(10)	2817.2(3)
Z	1	1	1	1	1
ρ_{calcd} (g·cm^{-3})	1.453	1.463	1.465	1.480	1.485
μ (mm^{-1})	0.983	1.105	1.175	1.244	1.394
F(000)	1258	1262	1264	1270	1270
reflns collected	14362	14346	14170	14184	14338
Reflns unique	9948	9900	9886	9867	9869
$R_{(int)}$	0.0294	0.0644	0.0607	0.0595	0.0263
parameters	766	766	766	772	766
S on F^2	0.951	0.967	1.083	0.937	1.037
R_1, wR_2 [I>2σ(I)]	0.0478, 0.1271	0.0699, 0.1269	0.0898, 0.1854	0.0599, 0.0935	0.0417, 0.1050
R_1, wR_2 (all data)	0.0589, 0.1378	0.1106, 0.1495	0.1129, 0.2028	0.1096, 0.1120	0.0524, 0.1155
$\Delta\rho_{max\ and\ min}$(e.Å^{-3})	1.138 and -0.767	0.918 and -0.670	0.931 and -1.932	0.823 and -0.787	1.649 and -0.910
	7	**8**	**9**	**15**	**16**
empirical formula	$C_{132}H_{94}N_{18}Ho_2O_{17}$	$C_{132}H_{94}N_{18}Er_2O_{17}$	$C_{132}H_{94}N_{18}Yb_2O_{17}$	$C_{60}H_{40}Gd_2N_6O_{14}$	$C_{60}H_{40}Er_2N_6O_{14}$
formula weight	2534.13	2538.79	2550.35	1383.49	1403.51
crystal system	Triclinic	Triclinic	Triclinic	Triclinic	Triclinic
space group	P-1	P-1	P-1	P-1	P-1
a (Å)	13.6709(18)	13.6968(15)	13.6997(17)	8.6566(11)	8.5902(5)
b (Å)	14.3413(18)	14.3565(17)	14.3367(18)	11.3992(15)	11.3902(7)
c (Å)	16.202(2)	16.2082(17)	16.203(2)	14.6846(18)	14.6020(9)
α (°)	79.129(2)	79.075(2)	79.004(2)	69.373(2)	69.5730(10)
β (°)	77.703(2)	77.696(2)	77.826(2)	73.559(2)	73.7410(10)
γ (°)	65.706(2)	65.666(2)	65.631(2)	82.771(2)	82.7900(10)
V (Å^3)	2810.6(6)	2818.7(5)	2814.4(6)	1300.2(3)	1284.72(13)
Z	1	1	1	1	1
ρ_{calcd} (g·cm^{-3})	1.494	1.492	1.501	1.767	1.814
μ (mm^{-1})	1.476	1.557	1.730	2.606	3.323
F(000)	9815	1278	1282	682	690

reflns collected	14070	14341	14110	6380	6507
Reflns unique	9815	9855	9806	4489	4483
$R_{(int)}$	0.0392	0.0343	0.0315	0.0193	0.0197
parameters	772	772	772	376	376
S on F^2	1.003	1.051	0.980	1.087	1.029
R_1, wR_2 [I>2σ(I)]	0.0506, 0.1100	0.0492, 0.1063	0.0412, 0.0893	0.0285, 0.0575	0.0239, 0.0505
R_1, wR_2 (all data)	0.0706, 0.1213	0.0704, 0.1222	0.0539, 0.0948	0.0318, 0.0592	0.0267, 0.0518
$\Delta\rho_{max\ and\ min}$(e.Å^{-3})	1.438 and -0.512	1.514 and -0.895	1.359 and -0.921	0.663 and -0.575	0.527 and -0.545

Table S2. Selected Bond Length (Å) and Angles (°) for1-16

1			
Nd(1)-O(1)	2.447(4)	Nd(1)-O(5)#1	2.751(3)
Nd(1)-O(2)	2.512(3)	Nd(1)-O(6)#1	2.496(3)
Nd(1)-O(3)	2.509(3)	Nd(1)-N(1)#2	2.614(4)
Nd(1)-O(4)	2.492(3)	O(5)-Nd(1)#1	2.751(3)
Nd(1)-O(5)	2.405(3)	O(6)-Nd(1)#1	2.496(3)
Nd(1)-O(7)	2.504(4)	N(1)-Nd(1)#2	2.614(4)
O(5)-Nd(1)-O(4)	76.04(11)	O(5)-Nd(1)-O(1)	91.21(12)
O(5)-Nd(1)-O(6)#1	115.00(10)	O(1)-Nd(1)-O(4)	87.33(12)
O(4)-Nd(1)-O(6)#1	77.67(12)	O(1)-Nd(1)-O(6)#1	144.93(11)
O(1)-Nd(1)-O(7)	124.79(11)	O(5)-Nd(1)-O(7)	80.91(11)

O(6)#1-Nd(1)-O(7)	84.03(12)	O(4)-Nd(1)-O(7)	140.75(11)
O(1)-Nd(1)-O(3)	74.17(12)	O(5)-Nd(1)-O(3)	125.66(11)
O(6)#1-Nd(1)-O(3)	71.62(12)	O(4)-Nd(1)-O(3)	51.78(10)
O(5)-Nd(1)-O(2)	84.84(11)	O(7)-Nd(1)-O(3)	149.53(12)
O(4)-Nd(1)-O(2)	135.14(12)	O(1)-Nd(1)-O(2)	52.47(11)
O(7)-Nd(1)-O(2)	72.36(12)	O(6)#1-Nd(1)-O(2)	146.56(12)
O(5)-Nd(1)-N(1)#2	158.37(12)	O(3)-Nd(1)-O(2)	119.90(11)
O(4)-Nd(1)-N(1)#2	125.11(12)	O(1)-Nd(1)-N(1)#2	85.85(13)
O(7)-Nd(1)-N(1)#2	83.21(13)	O(6)#1-Nd(1)-N(1)#2	77.62(12)
O(2)-Nd(1)-N(1)#2	76.38(12)	O(3)-Nd(1)-N(1)#2	74.05(12)
O(1)-Nd(1)-O(5)#1	152.68(11)	O(5)-Nd(1)-O(5)#1	66.69(12)
O(6)#1-Nd(1)-O(5)#1	48.85(9)	O(4)-Nd(1)-O(5)#1	72.33(11)
O(3)-Nd(1)-O(5)#1	104.98(10)	O(7)-Nd(1)-O(5)#1	69.49(10)
N(1)#2-Nd(1)-O(5)#1	120.64(12)	O(2)-Nd(1)-O(5)#1	135.09(10)
Nd(1)-O(5)-Nd(1)#1	113.31(12)		

2

Sm(1)-O(1)	2.458(5)	Sm(1)-O(5)#1	2.759(5)
Sm(1)-O(2)	2.490(5)	Sm(1)-O(6)#1	2.464(5)
Sm(1)-O(3)	2.487(5)	Sm(1)-N(4)#2	2.587(6)
Sm(1)-O(4)	2.407(5)	O(5)-Sm(1)#1	2.759(5)
Sm(1)-O(5)	2.365(5)	O(6)-Sm(1)#1	2.464(5)
Sm(1)-O(7)	2.471(5)	N(4)-Sm(1)#2	2.587(6)

O(5)-Sm(1)-O(4)	90.77(17)	O(4)-Sm(1)-O(1)	87.13(18)
O(5)-Sm(1)-O(1)	75.79(16)	O(4)-Sm(1)-O(6)#1	145.12(17)
O(5)-Sm(1)-O(6)#1	115.10(17)	O(5)-Sm(1)-O(7)	80.93(16)
O(1)-Sm(1)-O(6)#1	77.83(18)	O(1)-Sm(1)-O(7)	140.43(17)
O(4)-Sm(1)-O(7)	125.05(18)	O(5)-Sm(1)-O(3)	84.12(17)
O(6)#1-Sm(1)-O(7)	83.83(17)	O(1)-Sm(1)-O(3)	134.87(18)
O(4)-Sm(1)-O(3)	52.75(17)	O(7)-Sm(1)-O(3)	72.35(17)
O(6)#1-Sm(1)-O(3)	146.83(17)	O(4)-Sm(1)-O(2)	74.39(18)
O(5)-Sm(1)-O(2)	126.11(16)	O(6)#1-Sm(1)-O(2)	71.47(17)
O(1)-Sm(1)-O(2)	52.47(15)	O(3)-Sm(1)-O(2)	120.30(17)
O(7)-Sm(1)-O(2)	149.04(17)	O(4)-Sm(1)-N(4)#2	86.11(19)
O(5)-Sm(1)-N(4)#2	158.02(18)	O(6)#1-Sm(1)-N(4)#2	77.86(19)
O(1)-Sm(1)-N(4)#2	125.66(18)	O(3)-Sm(1)-N(4)#2	76.68(19)
O(7)-Sm(1)-N(4)#2	83.11(18)	O(5)-Sm(1)-O(5)#1	66.34(18)
O(2)-Sm(1)-N(4)#2	73.85(18)	O(1)-Sm(1)-O(5)#1	72.30(16)
O(4)-Sm(1)-O(5)#1	152.05(16)	O(7)-Sm(1)-O(5)#1	69.15(16)
O(6)#1-Sm(1)-O(5)#1	49.32(14)	O(2)-Sm(1)-O(5)#1	105.46(16)
O(3)-Sm(1)-O(5)#1	134.20(15)	Sm(1)-O(5)-Sm(1)#1	113.66(18)
N(4)#2-Sm(1)-O(5)#1	121.16(18)		

3

Eu(1)-O(1)	2.458(6)	Eu(1)-O(7)	2.454(7)

Eu(1)-O(2)	2.756(6)	Eu(1)-O(2)#1	2.368(6)
Eu(1)-O(3)	2.476(7)	Eu(1)-N(4)#2	2.580(8)
Eu(1)-O(4)	2.406(7)	O(2)-Eu(1)#1	2.368(6)
Eu(1)-O(5)	2.491(6)	N(4)-Eu(1)#2	2.580(8)
Eu(1)-O(6)	2.438(7)	Eu(1)-Eu(1)#1	4.2884(12)

O(2)#1-Eu(1)-O(4)	90.1(2)	Eu(1)#1-O(2)-Eu(1)	113.4(2)
O(2)#1-Eu(1)-O(6)	75.8(2)	O(4)-Eu(1)-O(6)	86.7(2)
O(2)#1-Eu(1)-O(7)	81.0(2)	O(4)-Eu(1)-O(7)	125.5(2)
O(6)-Eu(1)-O(7)	140.2(2)	O(2)#1-Eu(1)-O(1)	115.0(2)
O(4)-Eu(1)-O(1)	145.6(2)	O(6)-Eu(1)-O(1)	78.0(2)
O(7)-Eu(1)-O(1)	83.3(2)	O(2)#1-Eu(1)-O(3)	83.5(2)
O(4)-Eu(1)-O(3)	53.2(2)	O(6)-Eu(1)-O(3)	134.8(2)
O(7)-Eu(1)-O(3)	72.4(2)	O(1)-Eu(1)-O(3)	146.9(2)
O(2)#1-Eu(1)-O(5)	126.6(2)	O(4)-Eu(1)-O(5)	74.5(2)
O(6)-Eu(1)-O(5)	53.0(2)	O(7)-Eu(1)-O(5)	148.6(2)
O(1)-Eu(1)-O(5)	71.7(2)	O(3)-Eu(1)-O(5)	120.6(2)
O(2)#1-Eu(1)-N(4)#2	157.4(2)	O(4)-Eu(1)-N(4)#2	87.0(3)
O(6)-Eu(1)-N(4)#2	126.3(2)	O(7)-Eu(1)-N(4)#2	82.6(3)
O(1)-Eu(1)-N(4)#2	78.1(2)	O(3)-Eu(1)-N(4)#2	76.9(3)
O(5)-Eu(1)-N(4)#2	74.0(2)	O(2)#1-Eu(1)-O(2)	66.6(2)
O(4)-Eu(1)-O(2)	151.5(2)	O(6)-Eu(1)-O(2)	72.2(2)
O(7)-Eu(1)-O(2)	69.0(2)	O(1)-Eu(1)-O(2)	48.91(19)
O(3)-Eu(1)-O(2)	133.9(2)	O(5)-Eu(1)-O(2)	105.51(19)
N(4)#2-Eu(1)-O(2)	120.9(2)	O(2)#1-Eu(1)-Eu(1)#1	36.15(15)
O(4)-Eu(1)-Eu(1)#1	124.48(17)	O(6)-Eu(1)-Eu(1)#1	70.57(15)
O(7)-Eu(1)-Eu(1)#1	71.54(16)	O(1)-Eu(1)-Eu(1)#1	79.10(14)
O(3)-Eu(1)-Eu(1)#1	112.49(16)	O(5)-Eu(1)-Eu(1)#1	120.07(14)
N(4)#2-Eu(1)-Eu(1)#1	147.1(2)	O(2)-Eu(1)-Eu(1)#1	30.45(13)

4

Gd(1)-O(1)	2.463(5)	Gd(1)-O(7)	2.421(5)
Gd(1)-O(2)	2.396(5)	Gd(1)-O(3)#1	2.343(4)
Gd(1)-O(3)	2.777(4)	Gd(1)-N(1)#2	2.554(5)
Gd(1)-O(4)	2.441(4)	O(3)-Gd(1)#1	2.343(4)
Gd(1)-O(5)	2.435(4)	N(1)-Gd(1)#2	2.554(5)
Gd(1)-O(6)	2.469(4)		

O(3)#1-Gd(1)-O(2)	90.04(16)	O(3)#1-Gd(1)-O(7)	81.77(16)
O(2)-Gd(1)-O(7)	126.49(17)	O(3)#1-Gd(1)-O(5)	75.81(14)
O(2)-Gd(1)-O(5)	86.74(16)	O(7)-Gd(1)-O(5)	139.87(16)
O(3)#1-Gd(1)-O(4)	115.47(15)	O(2)-Gd(1)-O(4)	145.31(15)
O(7)-Gd(1)-O(4)	82.34(17)	O(5)-Gd(1)-O(4)	78.01(16)
O(3)#1-Gd(1)-O(1)	83.37(15)	O(2)-Gd(1)-O(1)	53.65(15)
O(7)-Gd(1)-O(1)	72.87(17)	O(5)-Gd(1)-O(1)	135.17(15)
O(4)-Gd(1)-O(1)	146.50(15)	O(3)#1-Gd(1)-O(6)	126.85(15)
O(2)-Gd(1)-O(6)	74.19(16)	O(7)-Gd(1)-O(6)	147.45(16)
O(5)-Gd(1)-O(6)	53.36(14)	O(4)-Gd(1)-O(6)	71.69(15)
O(1)-Gd(1)-O(6)	120.52(15)	O(3)#1-Gd(1)-N(1)#2	157.10(16)
O(2)-Gd(1)-N(1)#2	86.65(18)	O(7)-Gd(1)-N(1)#2	82.05(18)
O(5)-Gd(1)-N(1)#2	126.51(16)	O(4)-Gd(1)-N(1)#2	78.15(17)
O(1)-Gd(1)-N(1)#2	76.44(16)	O(6)-Gd(1)-N(1)#2	73.82(16)
O(3)#1-Gd(1)-O(3)	66.62(16)	O(2)-Gd(1)-O(3)	151.32(14)
O(7)-Gd(1)-O(3)	68.65(15)	O(5)-Gd(1)-O(3)	71.98(14)
O(4)-Gd(1)-O(3)	49.34(13)	O(1)-Gd(1)-O(3)	133.62(14)
O(6)-Gd(1)-O(3)	105.83(14)	N(1)#2-Gd(1)-O(3)	121.36(16)
Gd(1)#1-O(3)-Gd(1)	113.38(15)		

5

Tb(1)-O(1)	2.456(3)	Tb(1)-O(7)	2.406(3)
Tb(1)-O(2)	2.384(3)	Tb(1)-O(3)#1	2.788(3)

Tb(1)-O(3)	2.321(3)	Tb(1)-O(4)#1	2.422(3)
Tb(1)-O(5)	2.454(3)	Tb(1)-N(1)#2	2.543(4)
Tb(1)-O(6)	2.416(3)	O(3)-Tb(1)#1	2.788(3)
N(1)-Tb(1)#2	2.543(4)	O(4)-Tb(1)#1	2.422(3)

O(3)-Tb(1)-O(2)	90.10(11)	O(2)-Tb(1)-O(6)	86.34(11)
O(3)-Tb(1)-O(6)	75.89(10)	O(2)-Tb(1)-O(7)	127.05(12)
O(3)-Tb(1)-O(7)	81.33(12)	O(3)-Tb(1)-O(4)#1	114.64(10)
O(7)-Tb(1)-O(6)	139.51(11)	O(6)-Tb(1)-O(4)#1	77.91(11)
O(2)-Tb(1)-O(4)#1	145.75(11)	O(3)-Tb(1)-O(5)	126.89(10)
O(7)-Tb(1)-O(4)#1	81.93(12)	O(6)-Tb(1)-O(5)	53.15(10)
O(2)-Tb(1)-O(5)	74.30(11)	O(4)#1-Tb(1)-O(5)	71.89(11)
O(7)-Tb(1)-O(5)	147.47(12)	O(2)-Tb(1)-O(1)	53.72(11)
O(3)-Tb(1)-O(1)	83.13(11)	O(7)-Tb(1)-O(1)	73.36(12)
O(6)-Tb(1)-O(1)	134.76(11)	O(5)-Tb(1)-O(1)	120.83(11)
O(4)#1-Tb(1)-O(1)	147.10(11)	O(2)-Tb(1)-N(1)#2	86.93(12)
O(3)-Tb(1)-N(1)#2	156.92(12)	O(7)-Tb(1)-N(1)#2	82.27(12)
O(6)-Tb(1)-N(1)#2	126.65(11)	O(5)-Tb(1)-N(1)#2	74.12(11)
O(4)#1-Tb(1)-N(1)#2	78.79(12)	O(3)-Tb(1)-O(3)#1	66.19(11)
O(1)-Tb(1)-N(1)#2	76.68(12)	O(6)-Tb(1)-O(3)#1	72.04(10)
O(2)-Tb(1)-O(3)#1	150.85(10)	O(4)#1-Tb(1)-O(3)#1	48.93(9)
O(7)-Tb(1)-O(3)#1	68.22(10)	O(1)-Tb(1)-O(3)#1	133.41(10)
O(5)-Tb(1)-O(3)#1	105.70(10)	Tb(1)-O(3)-Tb(1)#1	113.68(11)
N(1)#2-Tb(1)-O(3)#1	121.58(11)		

6

Dy(1)-O(1)	2.448(3)	Dy(1)-O(7)	2.401(3)
Dy(1)-O(2)	2.372(3)	Dy(1)-O(5)#1	2.306(3)
Dy(1)-O(3)	2.445(3)	Dy(1)-N(1)#2	2.520(4)
Dy(1)-O(4)	2.413(3)	O(5)-Dy(1)#1	2.306(3)

Dy(1)-O(5)	2.815(3)	N(1)-Dy(1)#2	2.520(4)
Dy(1)-O(6)	2.402(3)		

O(5)#1-Dy(1)-O(2)	89.91(12)	O(2)-Dy(1)-O(6)	145.93(12)
O(5)#1-Dy(1)-O(6)	114.54(11)	O(2)-Dy(1)-O(7)	127.10(12)
O(5)#1-Dy(1)-O(7)	80.97(12)	O(5)#1-Dy(1)-O(4)	75.83(11)
O(6)-Dy(1)-O(7)	81.98(12)	O(6)-Dy(1)-O(4)	77.88(12)
O(2)-Dy(1)-O(4)	86.29(12)	O(5)#1-Dy(1)-O(3)	127.15(11)
O(7)-Dy(1)-O(4)	139.18(11)	O(6)-Dy(1)-O(3)	72.10(12)
O(2)-Dy(1)-O(3)	74.21(12)	O(4)-Dy(1)-O(3)	53.54(11)
O(7)-Dy(1)-O(3)	147.67(12)	O(2)-Dy(1)-O(1)	53.95(12)
O(5)#1-Dy(1)-O(1)	82.73(11)	O(7)-Dy(1)-O(1)	73.19(12)
O(6)-Dy(1)-O(1)	147.22(13)	O(3)-Dy(1)-O(1)	120.93(12)
O(4)-Dy(1)-O(1)	134.73(12)	O(2)-Dy(1)-N(1)#2	87.31(13)
O(5)#1-Dy(1)-N(1)#2	156.65(12)	O(7)-Dy(1)-N(1)#2	82.28(12)
O(6)-Dy(1)-N(1)#2	78.87(12)	O(3)-Dy(1)-N(1)#2	74.16(12)
O(4)-Dy(1)-N(1)#2	127.03(12)	O(5)#1-Dy(1)-O(5)	66.28(12)
O(1)-Dy(1)-N(1)#2	76.91(13)	O(6)-Dy(1)-O(5)	48.71(10)
O(2)-Dy(1)-O(5)	150.63(11)	O(4)-Dy(1)-O(5)	71.82(11)
O(7)-Dy(1)-O(5)	68.20(11)	O(1)-Dy(1)-O(5)	133.22(10)
O(3)-Dy(1)-O(5)	105.79(10)	Dy(1)#1-O(5)-Dy(1)	113.72(12)
N(1)#2-Dy(1)-O(5)	121.41(12)		

7

Ho(1)-O(1)	2.357(4)	Ho(1)-O(5)#1	2.838(4)
Ho(1)-O(2)	2.434(4)	Ho(1)-O(6)#1	2.385(4)
Ho(1)-O(3)	2.439(4)	Ho(1)-N(1)#2	2.510(5)
Ho(1)-O(4)	2.393(4)	O(5)-Ho(1)#1	2.838(4)
Ho(1)-O(5)	2.282(4)	O(6)-Ho(1)#1	2.385(4)
Ho(1)-O(7)	2.386(4)	N(1)-Ho(1)#2	2.510(5)

O(5)-Ho(1)-O(1)	90.19(14)	O(5)-Ho(1)-O(6)#1	114.06(14)
O(1)-Ho(1)-O(6)#1	146.22(14)	O(5)-Ho(1)-O(7)	81.59(15)
O(1)-Ho(1)-O(7)	127.65(15)	O(6)#1-Ho(1)-O(7)	80.98(15)
O(5)-Ho(1)-O(4)	75.27(13)	O(1)-Ho(1)-O(4)	86.75(14)
O(6)#1-Ho(1)-O(4)	77.86(14)	O(7)-Ho(1)-O(4)	138.55(14)
O(5)-Ho(1)-O(2)	82.83(13)	O(1)-Ho(1)-O(2)	54.36(14)
O(6)#1-Ho(1)-O(2)	146.86(15)	O(7)-Ho(1)-O(2)	73.30(14)
O(4)-Ho(1)-O(2)	135.20(14)	O(5)-Ho(1)-O(3)	126.81(13)
O(1)-Ho(1)-O(3)	74.09(14)	O(6)#1-Ho(1)-O(3)	72.54(14)
O(7)-Ho(1)-O(3)	147.13(15)	O(4)-Ho(1)-O(3)	53.82(13)
O(2)-Ho(1)-O(3)	121.37(14)	O(5)-Ho(1)-N(1)#2	156.55(15)
O(1)-Ho(1)-N(1)#2	87.13(16)	O(6)#1-Ho(1)-N(1)#2	79.23(15)
O(7)-Ho(1)-N(1)#2	81.67(16)	O(4)-Ho(1)-N(1)#2	127.74(14)
O(2)-Ho(1)-N(1)#2	76.70(15)	O(3)-Ho(1)-N(1)#2	74.64(15)
O(5)-Ho(1)-O(5)#1	65.92(15)	O(1)-Ho(1)-O(5)#1	150.93(13)
O(6)#1-Ho(1)-O(5)#1	48.64(12)	O(7)-Ho(1)-O(5)#1	67.46(13)
O(4)-Ho(1)-O(5)#1	71.78(13)	O(2)-Ho(1)-O(5)#1	132.33(12)
O(3)-Ho(1)-O(5)#1	106.25(12)	N(1)#2-Ho(1)-O(5)#1	121.42(14)
Ho(1)-O(5)-Ho(1)#1	114.08(15)		

8

Er(1)-O(1)	2.396(4)	Er(1)-O(5)#1	2.884(4)
Er(1)-O(2)	2.424(4)	Er(1)-O(6)#1	2.378(4)
Er(1)-O(3)	2.344(4)	Er(1)-N(4)#2	2.506(5)
Er(1)-O(4)	2.432(4)	O(5)-Er(1)#1	2.884(4)
Er(1)-O(5)	2.275(4)	O(6)-Er(1)#1	2.378(4)
Er(1)-O(7)	2.371(4)	N(4)-Er(1)#2	2.506(5)

O(5)-Er(1)-O(3)	89.75(15)	O(5)-Er(1)-O(7)	81.13(15)

O(3)-Er(1)-O(7)	128.05(15)	O(5)-Er(1)-O(6)#1	113.49(13)
O(3)-Er(1)-O(6)#1	146.67(14)	O(7)-Er(1)-O(6)#1	80.90(15)
O(5)-Er(1)-O(1)	75.29(13)	O(3)-Er(1)-O(1)	86.45(14)
O(7)-Er(1)-O(1)	138.01(14)	O(6)#1-Er(1)-O(1)	77.48(14)
O(5)-Er(1)-O(2)	127.20(14)	O(3)-Er(1)-O(2)	74.32(14)
O(7)-Er(1)-O(2)	147.05(16)	O(6)#1-Er(1)-O(2)	72.59(14)
O(1)-Er(1)-O(2)	54.17(13)	O(5)-Er(1)-O(4)	82.49(14)
O(3)-Er(1)-O(4)	54.40(14)	O(7)-Er(1)-O(4)	73.68(15)
O(6)#1-Er(1)-O(4)	147.53(15)	O(1)-Er(1)-O(4)	134.96(15)
O(2)-Er(1)-O(4)	121.41(13)	O(5)-Er(1)-N(4)#2	156.29(15)
O(3)-Er(1)-N(4)#2	87.54(16)	O(7)-Er(1)-N(4)#2	82.06(15)
O(6)#1-Er(1)-N(4)#2	80.02(15)	O(1)-Er(1)-N(4)#2	127.97(14)
O(2)-Er(1)-N(4)#2	74.48(14)	O(4)-Er(1)-N(4)#2	76.80(15)
O(5)-Er(1)-O(5)#1	66.14(15)	O(3)-Er(1)-O(5)#1	150.62(13)
O(7)-Er(1)-O(5)#1	66.97(13)	O(6)#1-Er(1)-O(5)#1	47.88(12)
O(1)-Er(1)-O(5)#1	71.81(13)	O(2)-Er(1)-O(5)#1	106.23(12)
O(4)-Er(1)-O(5)#1	132.32(12)	N(4)#2-Er(1)-O(5)#1	121.33(14)
Er(1)-O(5)-Er(1)#1	113.86(15)		

9

Yb(1)-O(1)	2.343(3)	Yb(1)-O(7)	2.342(4)
Yb(1)-O(2)	2.998(3)	Yb(1)-O(2)#1	2.231(3)
Yb(1)-O(3)	2.390(3)	Yb(1)-N(7)#2	2.481(4)
Yb(1)-O(4)	2.374(3)	O(2)-Yb(1)#1	2.231(3)
Yb(1)-O(5)	2.320(3)	N(7)-Yb(1)#2	2.481(4)
Yb(1)-O(6)	2.416(3)		

O(2)#1-Yb(1)-O(5)	89.52(12)	O(2)#1-Yb(1)-O(7)	80.89(12)
O(5)-Yb(1)-O(7)	128.64(12)	O(2)#1-Yb(1)-O(1)	111.73(12)
O(5)-Yb(1)-O(1)	148.18(12)	O(7)-Yb(1)-O(1)	79.68(12)

O(2)#1-Yb(1)-O(4)	74.90(11)	O(5)-Yb(1)-O(4)	86.95(12)
O(7)-Yb(1)-O(4)	136.64(12)	O(1)-Yb(1)-O(4)	76.76(12)
O(2)#1-Yb(1)-O(3)	127.11(11)	O(5)-Yb(1)-O(3)	74.98(11)
O(7)-Yb(1)-O(3)	146.67(12)	O(1)-Yb(1)-O(3)	73.30(11)
O(4)-Yb(1)-O(3)	54.43(10)	O(2)#1-Yb(1)-O(6)	82.38(11)
O(5)-Yb(1)-O(6)	54.86(11)	O(7)-Yb(1)-O(6)	73.84(12)
O(1)-Yb(1)-O(6)	147.59(12)	O(4)-Yb(1)-O(6)	135.63(12)
O(3)-Yb(1)-O(6)	122.40(11)	O(2)#1-Yb(1)-N(7)#2	155.87(13)
O(5)-Yb(1)-N(7)#2	88.41(13)	O(7)-Yb(1)-N(7)#2	81.70(13)
O(1)-Yb(1)-N(7)#2	81.25(12)	O(4)-Yb(1)-N(7)#2	128.95(12)
O(3)-Yb(1)-N(7)#2	75.31(12)	O(6)-Yb(1)-N(7)#2	76.80(12)
O(2)#1-Yb(1)-O(2)	65.76(12)	O(5)-Yb(1)-O(2)	150.61(10)
O(7)-Yb(1)-O(2)	65.42(10)	O(1)-Yb(1)-O(2)	46.61(10)
O(4)-Yb(1)-O(2)	71.92(10)	O(3)-Yb(1)-O(2)	106.58(10)
O(6)-Yb(1)-O(2)	130.99(10)	N(7)#2-Yb(1)-O(2)	120.70(12)
Yb(1)#1-O(2)-Yb(1)	114.24(12)		

10

Pr(1)-O(1)	2.513(3)	Pr(1)-O(4)#2	2.524(3)
Pr(1)-O(2)	2.577(2)	Pr(1)-O(6)#1	2.490(3)
Pr(1)-O(3)	2.497(2)	Pr(1)-N(3)#3	2.746(3)
Pr(1)-O(5)	2.511(3)	O(4)-Pr(1)#2	2.524(3)
Pr(1)-O(7)	2.492(3)	O(6)-Pr(1)#1	2.490(3)
Pr(1)-O(8)	2.471(3)	N(3)-Pr(1)#4	2.746(3)

O(8)-Pr(1)-O(6)#1	90.41(10)	O(8)-Pr(1)-O(7)	72.71(12)
O(6)#1-Pr(1)-O(7)	73.20(11)	O(8)-Pr(1)-O(3)	132.61(9)
O(6)#1-Pr(1)-O(3)	86.97(9)	O(7)-Pr(1)-O(3)	148.77(10)
O(8)-Pr(1)-O(5)	141.93(10)	O(6)#1-Pr(1)-O(5)	64.40(8)
O(7)-Pr(1)-O(5)	72.83(11)	O(3)-Pr(1)-O(5)	76.92(9)

O(8)-Pr(1)-O(1)	131.99(10)	O(6)#1-Pr(1)-O(1)	135.52(9)
O(7)-Pr(1)-O(1)	103.52(12)	O(3)-Pr(1)-O(1)	73.88(9)
O(5)-Pr(1)-O(1)	72.20(9)	O(8)-Pr(1)-O(4)#2	69.51(9)
O(6)#1-Pr(1)-O(4)#2	73.96(9)	O(7)-Pr(1)-O(4)#2	128.90(12)
O(3)-Pr(1)-O(4)#2	64.33(8)	O(5)-Pr(1)-O(4)#2	123.71(9)
O(1)-Pr(1)-O(4)#2	127.27(9)	O(8)-Pr(1)-O(2)	84.91(10)
O(6)#1-Pr(1)-O(2)	143.23(9)	O(7)-Pr(1)-O(2)	70.58(10)
O(3)-Pr(1)-O(2)	122.27(9)	O(5)-Pr(1)-O(2)	98.46(9)
O(1)-Pr(1)-O(2)	51.02(8)	O(4)#2-Pr(1)-O(2)	136.24(9)
O(8)-Pr(1)-N(3)#3	76.25(10)	O(6)#1-Pr(1)-N(3)#3	144.64(9)
O(7)-Pr(1)-N(3)#3	130.41(10)	O(3)-Pr(1)-N(3)#3	79.09(9)
O(5)-Pr(1)-N(3)#3	140.39(9)	O(1)-Pr(1)-N(3)#3	71.09(9)
O(4)#2-Pr(1)-N(3)#3	70.71(9)	O(2)-Pr(1)-N(3)#3	69.01(9)

11

Pr(1)-O(1)	2.497(3)	Pr(1)-O(6)#3	2.505(3)
Pr(1)-O(3)	2.598(3)	O(1)-Pr(1)#2	2.681(3)
Pr(1)-O(4)	2.505(3)	O(2)-Pr(1)#2	2.493(3)
Pr(1)-O(7)	2.503(3)	O(3)-Pr(1)#4	2.543(3)
Pr(1)-O(1)#2	2.681(3)	O(5)-Pr(1)#1	2.420(3)
Pr(1)-O(2)#2	2.493(3)	O(6)-Pr(1)#5	2.505(3)
Pr(1)-O(3)#4	2.543(3)	Pr(1)-Pr(1)#2	4.0755(5)
Pr(1)-O(5)#1	2.420(3)		

O(5)#1-Pr(1)-O(2)#2	78.84(10)	O(2)#2-Pr(1)-O(1)	124.22(9)
O(5)#1-Pr(1)-O(1)	71.79(10)	O(2)#2-Pr(1)-O(7)	72.48(10)
O(5)#1-Pr(1)-O(7)	82.79(10)	O(5)#1-Pr(1)-O(4)	75.73(10)
O(1)-Pr(1)-O(7)	144.30(10)	O(1)-Pr(1)-O(4)	79.24(10)
O(2)#2-Pr(1)-O(4)	136.92(10)	O(5)#1-Pr(1)-O(6)#3	135.79(9)
O(7)-Pr(1)-O(4)	70.31(10)	O(1)-Pr(1)-O(6)#3	73.84(10)

O(2)#2-Pr(1)-O(6)#3	98.84(10)	O(4)-Pr(1)-O(6)#3	123.57(10)
O(7)-Pr(1)-O(6)#3	139.23(10)	O(2)#2-Pr(1)-O(3)#4	76.74(10)
O(5)#1-Pr(1)-O(3)#4	148.00(10)	O(7)-Pr(1)-O(3)#4	70.36(10)
O(1)-Pr(1)-O(3)#4	139.85(9)	O(6)#3-Pr(1)-O(3)#4	68.88(9)
O(4)-Pr(1)-O(3)#4	109.52(9)	O(2)#2-Pr(1)-O(3)	142.11(9)
O(5)#1-Pr(1)-O(3)	126.31(9)	O(7)-Pr(1)-O(3)	82.46(10)
O(1)-Pr(1)-O(3)	92.61(9)	O(6)#3-Pr(1)-O(3)	81.83(9)
O(4)-Pr(1)-O(3)	50.70(9)	O(5)#1-Pr(1)-O(1)#2	73.27(9)
O(3)#4-Pr(1)-O(3)	68.16(10)	O(1)-Pr(1)-O(1)#2	76.24(10)
O(2)#2-Pr(1)-O(1)#2	49.96(9)	O(4)-Pr(1)-O(1)#2	145.12(9)
O(7)-Pr(1)-O(1)#2	120.38(10)	O(3)#4-Pr(1)-O(1)#2	105.23(9)
O(6)#3-Pr(1)-O(1)#2	72.21(9)	O(5)#1-Pr(1)-Pr(1)#2	67.62(6)
O(3)-Pr(1)-O(1)#2	153.67(9)	O(1)-Pr(1)-Pr(1)#2	39.72(6)
O(2)#2-Pr(1)-Pr(1)#2	85.49(7)	O(4)-Pr(1)-Pr(1)#2	115.17(7)
O(7)-Pr(1)-Pr(1)#2	146.12(8)	O(3)#4-Pr(1)-Pr(1)#2	129.88(6)
O(6)#3-Pr(1)-Pr(1)#2	68.19(7)	O(1)#2-Pr(1)-Pr(1)#2	36.52(6)
O(3)-Pr(1)-Pr(1)#2	128.14(7)	Pr(1)#4-O(3)-Pr(1)	111.84(10)
Pr(1)-O(1)-Pr(1)#2	103.76(10)		

12

Er(1)-O(1)	2.271(4)	Er(1)-N(1)#4	2.539(5)
Er(1)-O(3)	2.827(5)	O(2)-Er(1)#6	2.339(4)
Er(1)-O(4)	2.321(4)	O(3)-Er(1)#6	2.314(5)
Er(1)-O(2)#1	2.339(4)	O(5)-Er(1)#7	2.342(5)
Er(1)-O(3)#1	2.314(5)	O(6)-Er(1)#8	2.318(5)
Er(1)-O(5)#3	2.342(5)	N(1)-Er(1)#5	2.539(5)
Er(1)-O(6)#2	2.318(5)		

O(1)-Er(1)-O(3)#1	75.39(16)	O(1)-Er(1)-O(6)#2	79.93(17)
O(3)#1-Er(1)-O(6)#2	100.01(17)	O(1)-Er(1)-O(4)	123.19(15)

O(3)#1-Er(1)-O(4)	161.32(16)	O(6)#2-Er(1)-O(4)	83.02(18)
O(1)-Er(1)-O(2)#1	144.72(15)	O(3)#1-Er(1)-O(2)#1	87.85(16)
O(6)#2-Er(1)-O(2)#1	134.24(16)	O(4)-Er(1)-O(2)#1	77.24(15)
O(1)-Er(1)-O(5)#3	74.57(17)	O(3)#1-Er(1)-O(5)#3	108.81(16)
O(6)#2-Er(1)-O(5)#3	134.62(17)	O(4)-Er(1)-O(5)#3	80.53(17)
O(2)#1-Er(1)-O(5)#3	82.13(15)	O(1)-Er(1)-N(1)#4	136.38(17)
O(3)#1-Er(1)-N(1)#4	78.28(17)	O(6)#2-Er(1)-N(1)#4	71.12(18)
O(4)-Er(1)-N(1)#4	85.42(17)	O(2)#1-Er(1)-N(1)#4	66.52(16)
O(5)#3-Er(1)-N(1)#4	147.81(16)	O(1)-Er(1)-O(3)	74.16(15)
O(3)#1-Er(1)-O(3)	148.36(8)	O(6)#2-Er(1)-O(3)	66.31(17)
O(4)-Er(1)-O(3)	49.44(14)	O(2)#1-Er(1)-O(3)	122.54(14)
O(5)#3-Er(1)-O(3)	70.89(14)	N(1)#4-Er(1)-O(3)	119.62(16)
Er(1)#6-O(3)-Er(1)	112.90(16)		

13

Nd(1)-O(3)	2.4161(18)	O(1)-Nd(1)#3	2.409(2)
Nd(1)-N(1)	2.671(2)	O(2)-Nd(1)#6	2.435(2)
Nd(1)-O(1)#3	2.409(2)	O(3)-Nd(1)#5	2.643(2)
Nd(1)-O(2)#4	2.435(2)	O(4)-Nd(1)#5	2.483(2)
Nd(1)-O(3)#5	2.643(2)	O(5)-Nd(1)#1	2.357(2)
Nd(1)-O(4)#5	2.483(2)	O(6)-Nd(1)#7	2.3755(19)
Nd(1)-O(5)#1	2.357(2)	Nd(1)-Nd(1)#5	4.0522(4)
Nd(1)-O(6)#2	2.3755(19)		

O(5)#1-Nd(1)-O(6)#2	83.16(7)	O(5)#1-Nd(1)-O(1)#3	92.02(7)
O(6)#2-Nd(1)-O(1)#3	144.63(7)	O(5)#1-Nd(1)-O(3)	79.48(7)
O(6)#2-Nd(1)-O(3)	137.83(7)	O(1)#3-Nd(1)-O(3)	74.43(7)
O(5)#1-Nd(1)-O(2)#4	111.49(8)	O(6)#2-Nd(1)-O(2)#4	77.19(7)
O(1)#3-Nd(1)-O(2)#4	135.92(7)	O(3)-Nd(1)-O(2)#4	74.07(7)
O(5)#1-Nd(1)-O(4)#5	156.05(7)	O(6)#2-Nd(1)-O(4)#5	81.78(7)

O(1)#3-Nd(1)-O(4)#5	89.57(7)	O(3)-Nd(1)-O(4)#5	123.79(6)
O(2)#4-Nd(1)-O(4)#5	83.11(7)	O(5)#1-Nd(1)-O(3)#5	151.05(7)
O(6)#2-Nd(1)-O(3)#5	124.38(7)	O(1)#3-Nd(1)-O(3)#5	70.74(7)
O(3)-Nd(1)-O(3)#5	73.64(7)	O(2)#4-Nd(1)-O(3)#5	71.32(7)
O(4)#5-Nd(1)-O(3)#5	50.35(6)	O(5)#1-Nd(1)-N(1)	81.17(8)
O(6)#2-Nd(1)-N(1)	72.21(8)	O(1)#3-Nd(1)-N(1)	72.42(7)
O(3)-Nd(1)-N(1)	140.69(7)	O(2)#4-Nd(1)-N(1)	145.19(7)
O(4)#5-Nd(1)-N(1)	76.55(8)	O(3)#5-Nd(1)-N(1)	113.56(7)
O(5)#1-Nd(1)-Nd(1)#5	117.50(5)	O(6)#2-Nd(1)-Nd(1)#5	144.12(5)
O(1)#3-Nd(1)-Nd(1)#5	67.96(5)	O(3)-Nd(1)-Nd(1)#5	38.74(5)
O(2)#4-Nd(1)-Nd(1)#5	68.13(5)	O(4)#5-Nd(1)-Nd(1)#5	85.15(5)
O(3)#5-Nd(1)-Nd(1)#5	34.90(4)	N(1)-Nd(1)-Nd(1)#5	136.22(6)
Nd(1)-O(3)-Nd(1)#5	106.36(7)		

14

Eu(1)-O(3)	2.263(2)	Eu(1)-O(6)#3	2.434(2)
Eu(1)-O(5)	2.415(2)	O(1)-Eu(1)#1	2.372(2)
Eu(1)-O(7)	2.429(2)	O(2)-Eu(1)#4	2.389(2)
Eu(1)-N(1)	2.557(3)	O(5)-Eu(1)#3	2.481(2)
Eu(1)-O(1)#1	2.372(2)	O(6)-Eu(1)#3	2.434(2)
Eu(1)-O(2)#2	2.389(2)	Eu(1)-Eu(1)#3	3.8840(4)
Eu(1)-O(5)#3	2.481(2)		

O(3)-Eu(1)-O(1)#1	91.09(9)	O(1)#1-Eu(1)-O(2)#2	138.99(8)
O(3)-Eu(1)-O(2)#2	100.01(9)	O(1)#1-Eu(1)-O(5)	73.92(8)
O(3)-Eu(1)-O(5)	74.34(8)	O(3)-Eu(1)-O(7)	78.55(9)
O(2)#2-Eu(1)-O(5)	71.47(8)	O(2)#2-Eu(1)-O(7)	74.20(8)
O(1)#1-Eu(1)-O(7)	146.79(8)	O(3)-Eu(1)-O(6)#3	158.24(9)
O(5)-Eu(1)-O(7)	131.06(8)	O(2)#2-Eu(1)-O(6)#3	79.34(9)
O(1)#1-Eu(1)-O(6)#3	103.70(9)	O(7)-Eu(1)-O(6)#3	80.40(9)

O(5)-Eu(1)-O(6)#3	124.80(7)	O(1)#1-Eu(1)-O(5)#3	74.23(7)
O(3)-Eu(1)-O(5)#3	148.65(8)	O(5)-Eu(1)-O(5)#3	75.01(8)
O(2)#2-Eu(1)-O(5)#3	76.14(8)	O(6)#3-Eu(1)-O(5)#3	52.70(7)
O(7)-Eu(1)-O(5)#3	128.06(8)	O(1)#1-Eu(1)-N(1)	76.95(8)
O(3)-Eu(1)-N(1)	90.61(9)	O(5)-Eu(1)-N(1)	146.72(8)
O(2)#2-Eu(1)-N(1)	141.40(8)	O(6)#3-Eu(1)-N(1)	77.59(9)
O(7)-Eu(1)-N(1)	71.76(9)	O(3)-Eu(1)-Eu(1)#3	112.19(6)
O(5)#3-Eu(1)-N(1)	112.00(8)	O(2)#2-Eu(1)-Eu(1)#3	69.47(5)
O(1)#1-Eu(1)-Eu(1)#3	69.77(5)	O(7)-Eu(1)-Eu(1)#3	143.34(6)
O(5)-Eu(1)-Eu(1)#3	38.10(5)	O(5)#3-Eu(1)-Eu(1)#3	36.91(5)
O(6)#3-Eu(1)-Eu(1)#3	88.15(6)	Eu(1)-O(5)-Eu(1)#3	104.99(8)
N(1)-Eu(1)-Eu(1)#3	139.38(6)		

15

Gd(1)-O(1)	2.377(3)	Gd(1)-N(1)#2	2.549(3)
Gd(1)-O(3)	2.399(3)	O(2)-Gd(1)#1	2.365(3)
Gd(1)-O(5)	2.259(3)	O(3)-Gd(1)#1	2.471(3)
Gd(1)-O(7)	2.420(3)	O(4)-Gd(1)#1	2.427(3)
Gd(1)-O(2)#1	2.365(3)	N(1)-Gd(1)#3	2.549(3)
Gd(1)-O(3)#1	2.471(3)	Gd(1)-Gd(1)#1	3.8692(5)
Gd(1)-O(4)#1	2.427(3)		

O(5)-Gd(1)-O(2)#1	91.27(11)	O(2)#1-Gd(1)-O(1)	139.59(9)
O(5)-Gd(1)-O(1)	99.82(12)	O(2)#1-Gd(1)-O(3)	74.29(9)
O(5)-Gd(1)-O(3)	74.53(10)	O(5)-Gd(1)-O(7)	78.44(11)
O(1)-Gd(1)-O(3)	71.60(10)	O(1)-Gd(1)-O(7)	74.24(10)
O(2)#1-Gd(1)-O(7)	146.16(10)	O(5)-Gd(1)-O(4)#1	157.70(10)
O(3)-Gd(1)-O(7)	131.39(11)	O(1)-Gd(1)-O(4)#1	79.60(11)
O(2)#1-Gd(1)-O(4)#1	103.65(11)	O(7)-Gd(1)-O(4)#1	79.99(11)
O(3)-Gd(1)-O(4)#1	125.16(9)	O(2)#1-Gd(1)-O(3)#1	74.58(9)

O(5)-Gd(1)-O(3)#1	148.72(10)	O(3)-Gd(1)-O(3)#1	74.81(10)
O(1)-Gd(1)-O(3)#1	76.11(10)	O(4)#1-Gd(1)-O(3)#1	53.16(9)
O(7)-Gd(1)-O(3)#1	128.01(10)	O(2)#1-Gd(1)-N(1)#2	76.23(10)
O(5)-Gd(1)-N(1)#2	90.16(12)	O(3)-Gd(1)-N(1)#2	146.25(10)
O(1)-Gd(1)-N(1)#2	141.67(10)	O(4)#1-Gd(1)-N(1)#2	77.69(11)
O(7)-Gd(1)-N(1)#2	71.70(11)	O(5)-Gd(1)-Gd(1)#1	112.36(8)
O(3)#1-Gd(1)-N(1)#2	112.48(10)	O(1)-Gd(1)-Gd(1)#1	69.57(7)
O(2)#1-Gd(1)-Gd(1)#1	70.26(7)	O(7)-Gd(1)-Gd(1)#1	143.44(8)
O(3)-Gd(1)-Gd(1)#1	38.05(6)	O(3)#1-Gd(1)-Gd(1)#1	36.76(6)
O(4)#1-Gd(1)-Gd(1)#1	88.52(7)	Gd(1)-O(3)-Gd(1)#1	105.19(10)
N(1)#2-Gd(1)-Gd(1)#1	139.45(8)		

16

Er(1)-O(3)	2.373(2)	Er(1)-O(6)#1	2.203(3)
Er(1)-O(4)	2.417(2)	O(1)-Er(1)#2	2.316(2)
Er(1)-O(7)	2.367(2)	O(2)-Er(1)#4	2.331(2)
Er(1)-N(1)	2.490(3)	O(4)-Er(1)#1	2.359(2)
Er(1)-O(1)#2	2.316(2)	O(6)-Er(1)#1	2.203(3)
Er(1)-O(2)#3	2.331(2)	Er(1)-Er(1)#1	3.8034(3)
Er(1)-O(4)#1	2.359(2)		

O(6)#1-Er(1)-O(1)#2	91.00(9)	O(1)#2-Er(1)-O(2)#3	140.20(8)
O(6)#1-Er(1)-O(2)#3	99.78(10)	O(1)#2-Er(1)-O(4)#1	74.44(8)
O(6)#1-Er(1)-O(4)#1	75.37(9)	O(6)#1-Er(1)-O(7)	78.17(9)
O(2)#3-Er(1)-O(4)#1	71.57(8)	O(2)#3-Er(1)-O(7)	73.82(9)
O(1)#2-Er(1)-O(7)	145.95(9)	O(6)#1-Er(1)-O(3)	156.53(9)
O(4)#1-Er(1)-O(7)	131.45(9)	O(2)#3-Er(1)-O(3)	79.82(9)
O(1)#2-Er(1)-O(3)	104.36(9)	O(7)-Er(1)-O(3)	79.24(9)
O(4)#1-Er(1)-O(3)	125.48(8)	O(1)#2-Er(1)-O(4)	74.70(8)
O(6)#1-Er(1)-O(4)	149.10(8)	O(4)#1-Er(1)-O(4)	74.44(9)

O(2)#3-Er(1)-O(4)	76.75(8)	O(3)-Er(1)-O(4)	54.03(8)
O(7)-Er(1)-O(4)	128.16(8)	O(1)#2-Er(1)-N(1)	75.75(9)
O(6)#1-Er(1)-N(1)	88.71(10)	O(4)#1-Er(1)-N(1)	145.74(9)
O(2)#3-Er(1)-N(1)	142.03(9)	O(3)-Er(1)-N(1)	78.29(9)
O(7)-Er(1)-N(1)	71.87(9)	O(6)#1-Er(1)-Er(1)#1	112.86(6)
O(4)-Er(1)-N(1)	113.15(9)	O(2)#3-Er(1)-Er(1)#1	70.02(6)
O(1)#2-Er(1)-Er(1)#1	70.48(6)	O(7)-Er(1)-Er(1)#1	143.44(7)
O(4)#1-Er(1)-Er(1)#1	37.74(6)	O(4)-Er(1)-Er(1)#1	36.70(5)
O(3)-Er(1)-Er(1)#1	89.24(6)	Er(1)#1-O(4)-Er(1)	105.56(9)
N(1)-Er(1)-Er(1)#1	139.68(7)		

Symmetry transformations used to generate equivalent atoms: #1 -x+1,-y,-z; #2 -x+1,-y,-z+1 for **1**. #1 -x,-y+1,-z+1; #2 -x,-y+1,-z for **2**. #1 -x+2,-y+1,-z; #2 -x+2,-y+1,-z+1 for **3**. #1 -x,-y+1,-z+2; #2 -x,-y+1,-z+1 for **4**. #1 -x+2,-y,-z; #2 -x+2,-y,-z+1 for **5**. #1 -x+1,-y,-z; #2 -x+1,-y-,-z+1 for **6**. #1 -x+1,-y+1,-z+1; #2 -x+ 1,-y+1,-z for **7**. #1 -x+2,-y,-z; #2 -x+2,-y,-z+1 for **8**. #1 -x,-y+1,-z+1; #2 -x,-y+1,-z for **9**. #1 -x+1,-y+1,-z+1; #2 -x+1,-y+2,-z+1; #3 x,y+1,z; #4 x,y-1,z for **10**. #1 -x+1,-y+1,-z+1; #2 -x,-y,-z+1; #3 x,y-1,z; #4 -x+1,-y,-z+1; #5 x,y+1,z for **11.** #1 x-1/2,-y+3/2,-z+1/4; #2 x,y+1,z; #3 x-1/2,-y+1/2,-z+1/4; #4 x-1/2,-y+5/2,-z+1/4; #5 x+1/2,-y+5/2,-z+1/2; #6 x+1/2,-y+3/2,-z+1/4; #7 x+1/2,-y+1/2,-z+1/4; #8 x,y-1,z for **12**. #1 -x+1,-y+1,-z+1; #2 x,y-1,z; #3 -x+1,-y,-z+2; #4 x+1,y,z-1; #5 -x+2,-y,-z+1; #6 x-1,y,z+1; #7 x,y+1,z for **13**. #1 -x+2,-y+1,-z; #2 x,y,z+1; #3 -x+2,-y+1,-z+1; #4 x,y,z-1 for **14**. #1 -x,-y+1,-z+1; #2 x,y,z+1; #3 x,y,z-1 for **15**. #1 -x,-y+1,-z; #2 -x,-y+1,-z+1; #3 x,y,z-1; #4 x,y,z+1 for **16.**

Table S3. The CIE coordinates of emissions for **3-Eu**, **5-Tb** and **A-I** excited at 365 nm.

Sample	**CIE**	
	x	**y**
5-Tb	0.242	0.397
10% (**A**)	0.213	0.273
20% (**B**)	0.208	0.238

30% (C)	0.270	0.231
40% (D)	0.258	0.239
50% (E)	0.280	0.200
60% (F)	0.267	0.174
70% (G)	0.288	0.174
80% (H)	0.319	0.200
90% (I)	0.280	0.150
3-Eu	0.614	0.343

Table S4. The CIE coordinates of emissions for **C** excited at different wavelengths.

Excitation	**CIE**	
(nm)	**x**	**y**
310	0.240	0.381
315	0.254	0.380
320	0.322	0.372

325	0.330	0.368
330	0.334	0.348
335	0.335	0.318
340	0.326	0.293
345	0.314	0.271
350	0.303	0.255
355	0.291	0.241
360	0.280	0.228
365	0.268	0.217
370	0.253	0.204

Figure S1. The detail of π-π interactions in **1**.

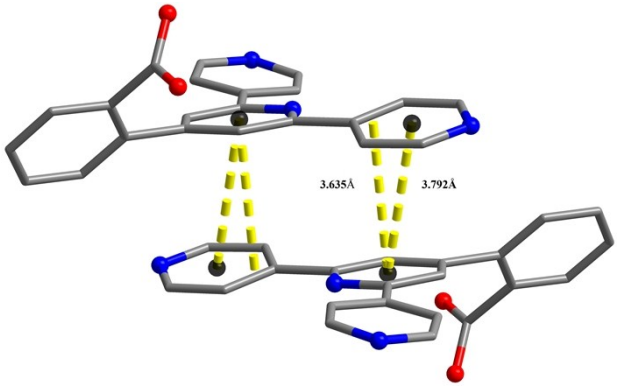


Figure S2. The detail of π-π interactions in **2**.

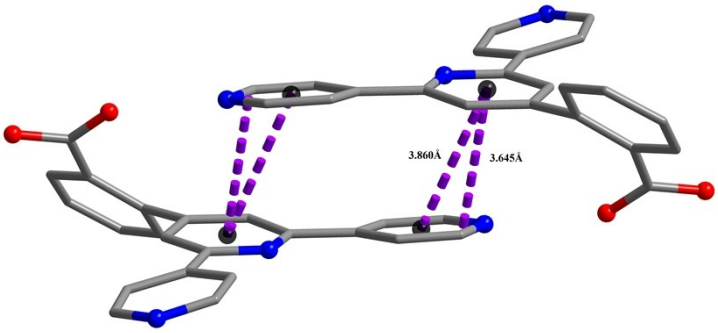


Figure S3. The view of 1D wavy chain inside **12.**

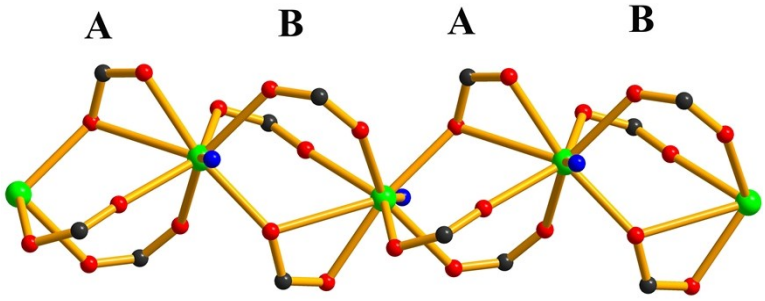


Figure S4. The view of double right-handed chain inside **12.**

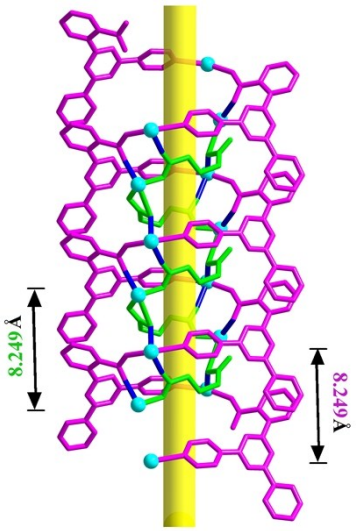


Figure S5. The detail of π-π interactions in **14**.

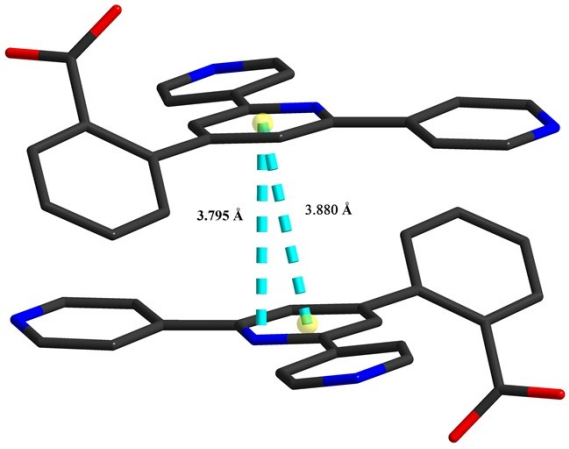


Figure S6. The emission spectra for compounds **1**, **2**, **4**, **6-13** and **16**.

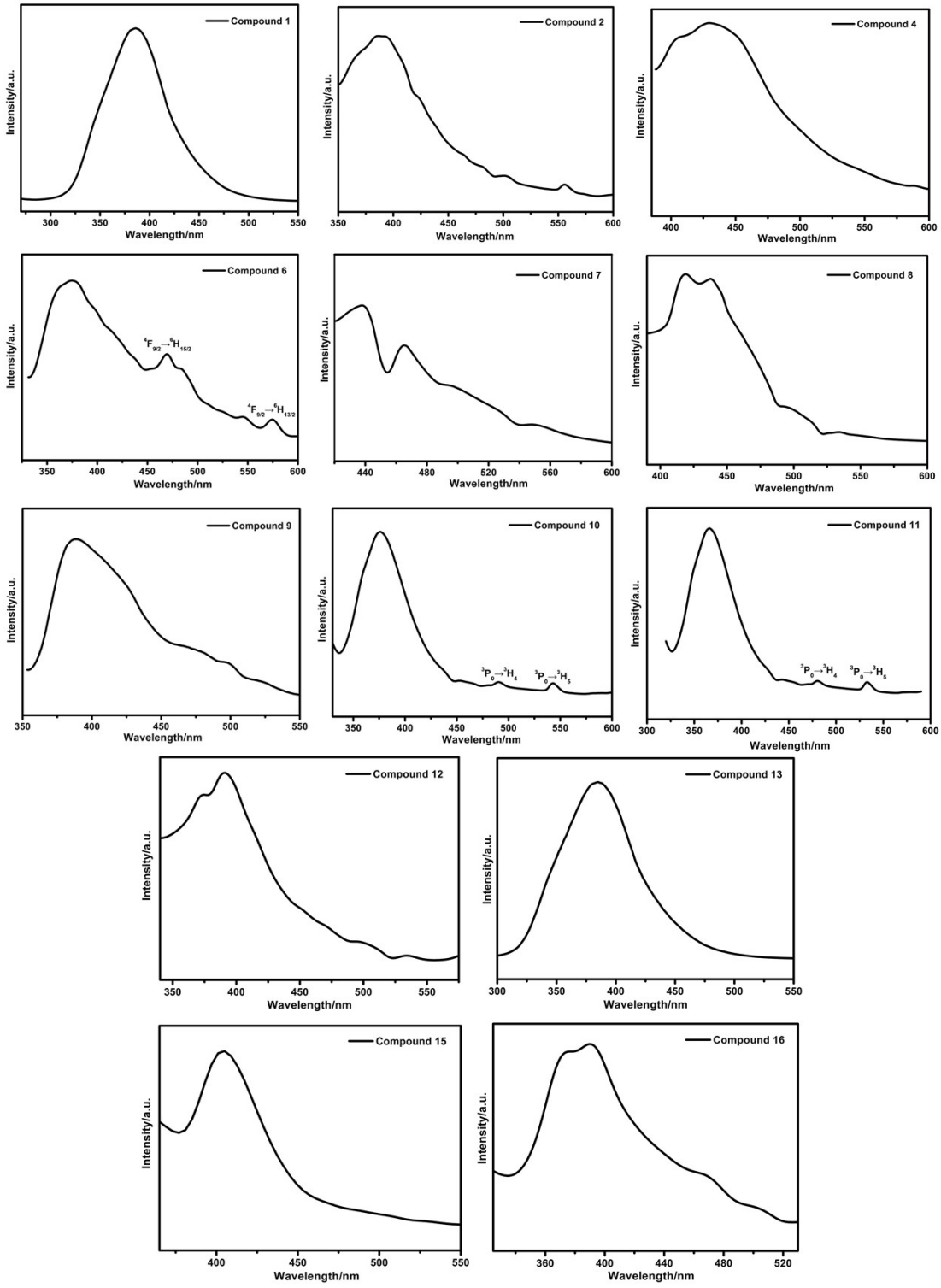

Compound 1
Intensity/a.u.
Wavelength/nm
Compound 2
Intensity/a.u.
Wavelength/nm
Compound 4
Intensity/a.u.
Wavelength/nm
Compound 6
$^4F_{9/2}\rightarrow{}^6H_{15/2}$
$^4F_{9/2}\rightarrow{}^6H_{13/2}$
Intensity/a.u.
Wavelength/nm
Compound 7
Intensity/a.u.
Wavelength/nm
Compound 8
Intensity/a.u.
Wavelength/nm
Compound 9
Intensity/a.u.
Wavelength/nm
Compound 10
$^3P_0\rightarrow{}^3H_4$
$^3P_0\rightarrow{}^3H_6$
Intensity/a.u.
Wavelength/nm
Compound 11
$^3P_0\rightarrow{}^3H_4$
$^3P_0\rightarrow{}^3H_6$
Intensity/a.u.
Wavelength/nm
Compound 12
Intensity/a.u.
Wavelength/nm
Compound 13
Intensity/a.u.
Wavelength/nm
Compound 15
Intensity/a.u.
Wavelength/nm
Compound 16
Intensity/a.u.
Wavelength/nm

Figure S7. The excitation spectra for compounds **1-16**.

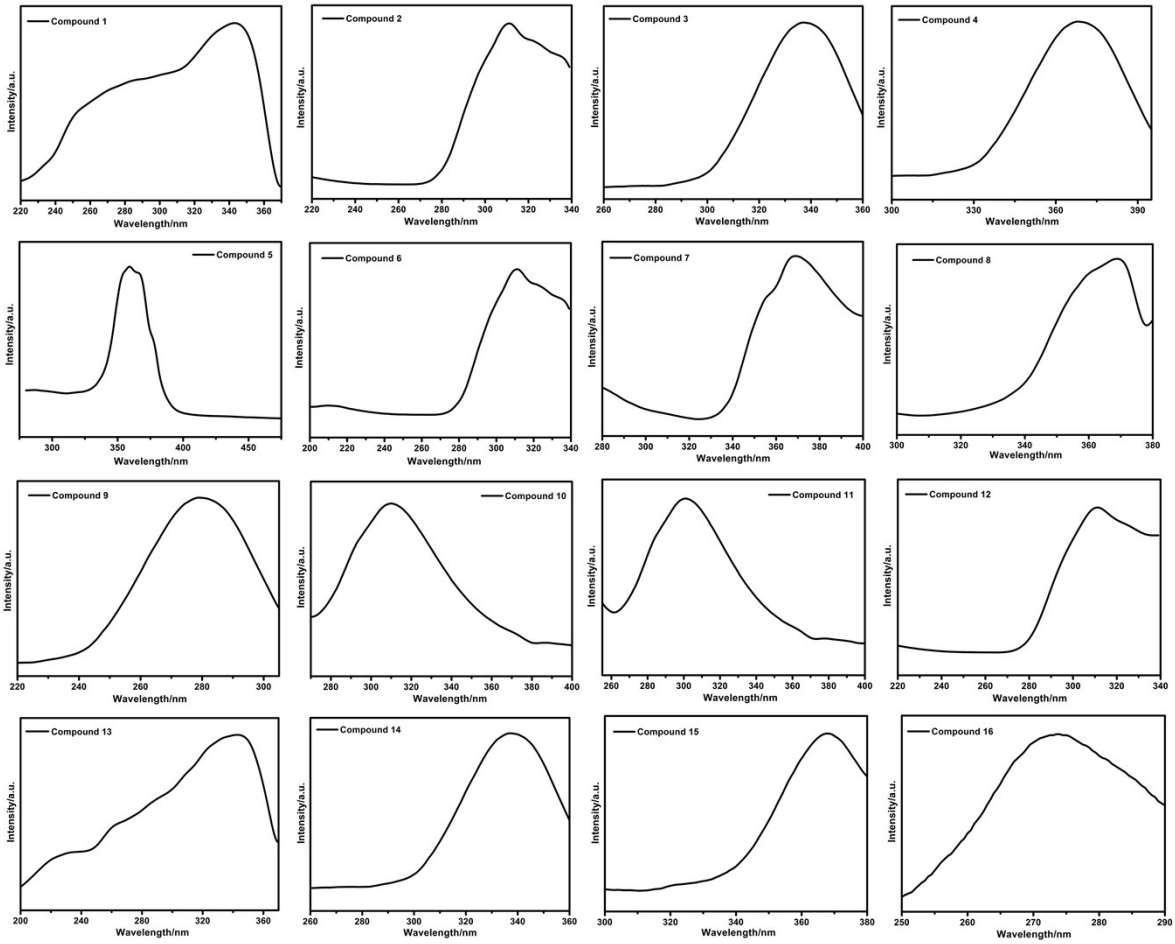


Figure S8. The co-existence of the Eu(III), Tb(III) ions and the ligand based emissions under different excitation.

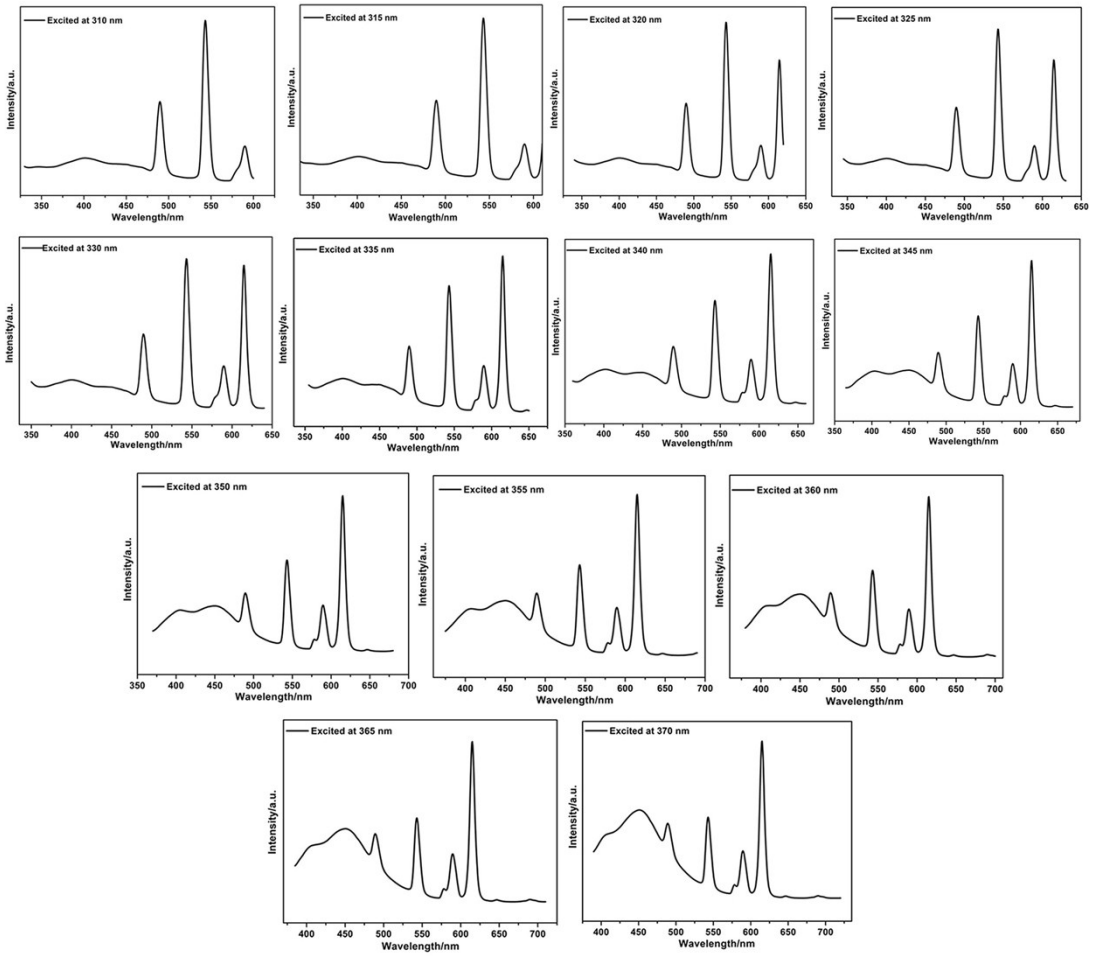


Figure S9. Excitation spectra of the doped compound **C**.

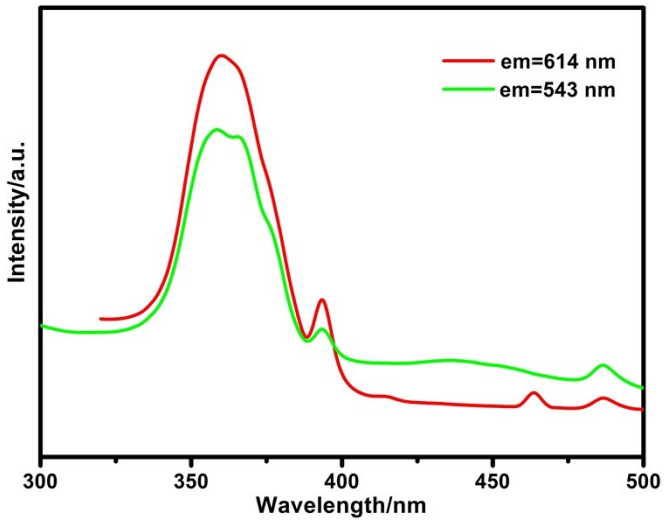


Figure S10. Emission spectra of compounds **3**, **5** and the doped compound **C** excited

at 330 nm.

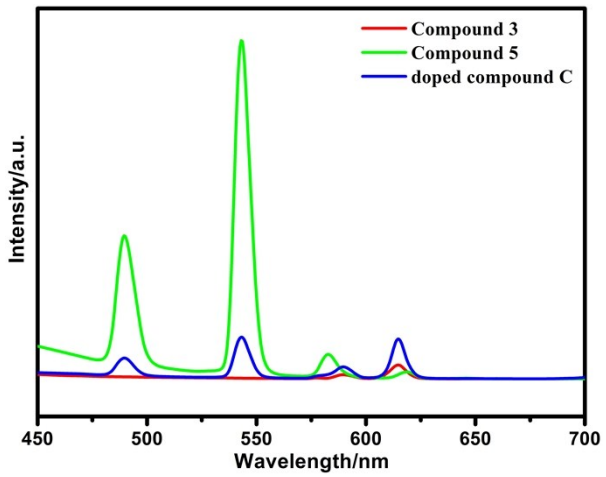


Figure S11. The simulated and experimental PXRD patterns for compounds **1-9** (a-simulated **1**, b-**1**, c-**2**, d-**3**, e-**4**, f-**5**, g-**6**, h-**7**, i-**8**, j-**9**).

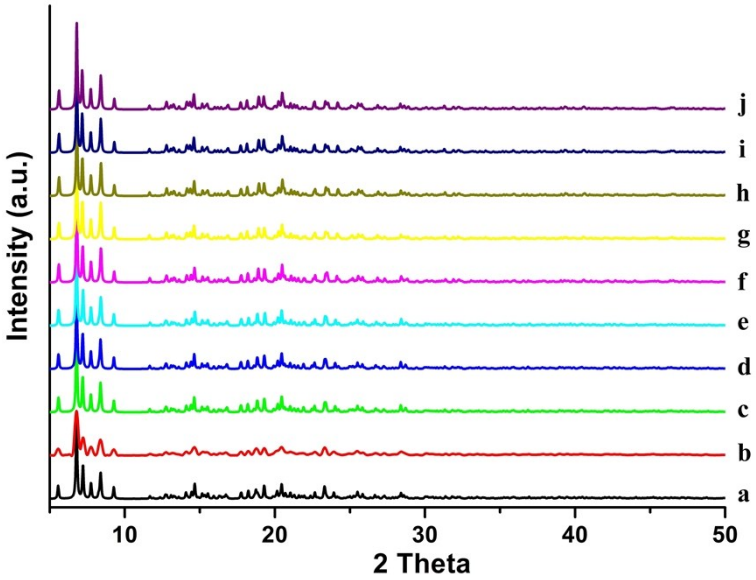
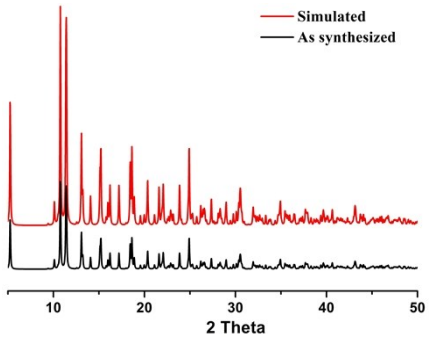
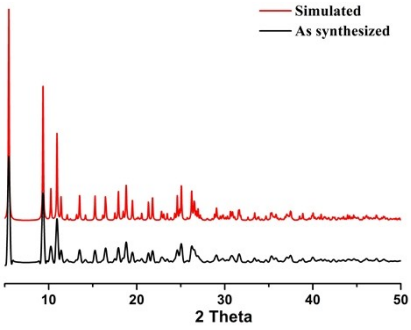


Figure S12. PXRD patterns of compounds **10-13 (a-d)** simulated from the X-ray single-crystal structure and as-synthesized.

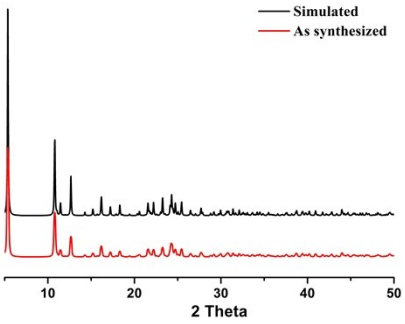
(a)



(b)



(c)



(d)

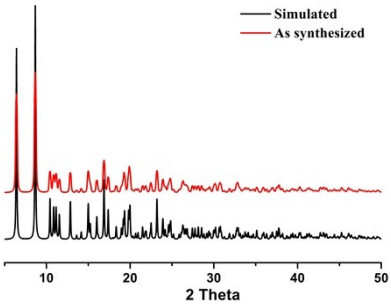


Figure S13. The simulated and experimental PXRD patterns for compounds **14-16** (a-simulated, b-**14**, c-**15**, d-**16**).

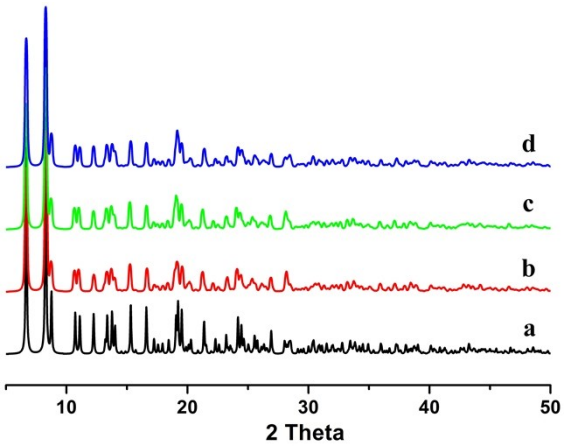


Figure S14. PXRD patterns of **3-Eu**, **5-Tb** and x%-Eu^{3+}-doped **5-Tb**

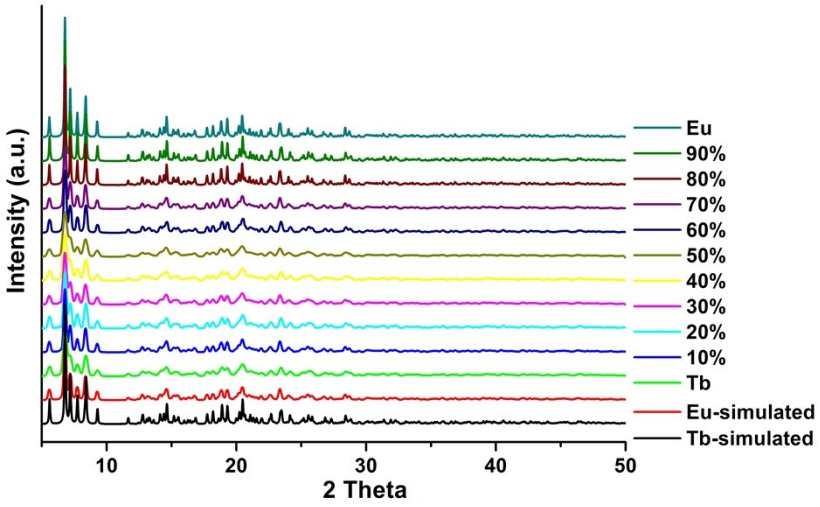


Figure S15. TGA curves for **1-10** (observed weight loss: 3.74% and 84.52%;

calculated weight loss: 3.71% and 84.81%).

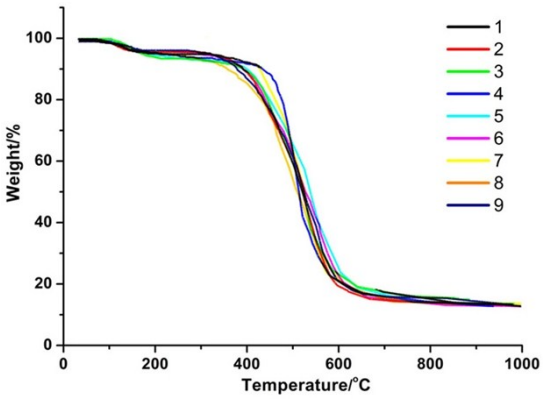


Figure S16. TGA curve for **10** (observed weight loss: 16.73% and 62.96%; calculated weight loss: 16.76% and 63.05%).

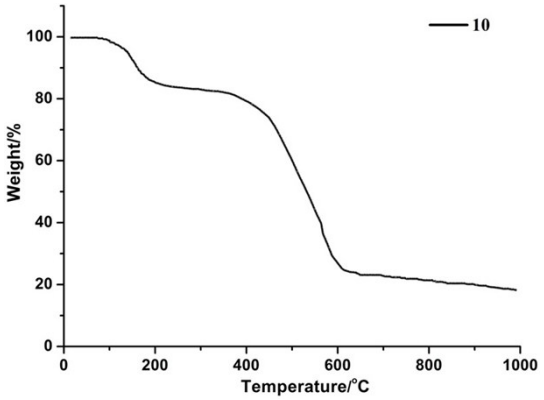


Figure S17. TGA curve for **11** (observed weight loss: 20.28% and 54.94%; calculated weight loss: 20.16% and 55.07%).

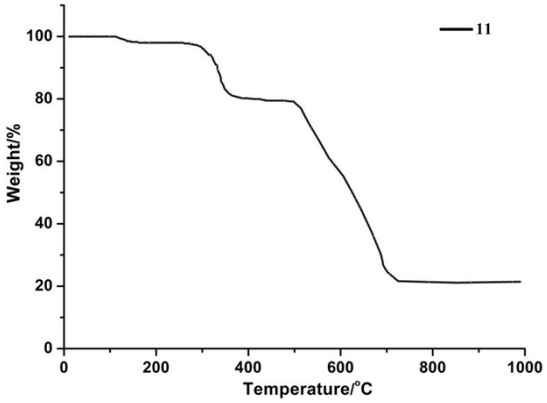


Figure S18. TGA curve for **12** (observed weight loss: 19.91% and 54.22%; calculated weight loss: 20.02% and 54.23%).

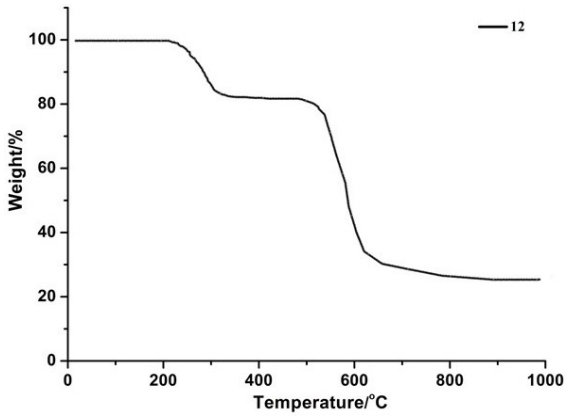


Figure S19. TGA curve for **13** (observed weight loss: 22.82% and 54.92%; calculated weight loss: 22.49% and 54.99%).

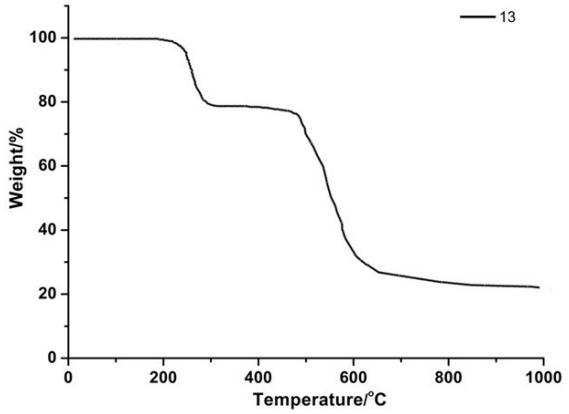


Figure S20. TGA curve for **14-16** (observed weight loss: 2.21%, 23.74% and 50.98%; calculated weight loss: 2.62%, 23.91% and 51.33%).