

**A Family of 3D Lanthanide-Organic Frameworks Constructed from
Parallelogram Secondary Building Units: Synthesis, Structures and
Properties.**

Ya-guang Sun, Jian Li, Ke-long Li, Zhen-he Xu, Fu Ding, En-jun Gao, Shu-ju Wang, Li-xin You,
Gang Xiong, Philippe F. Smet

Table S1 Selected bond distances (Å) and bond angles (°)

Compound 1			
Bond	Dist(Å)	Bond	Dist(Å)
La(1)-O(9)#1	2.413 (2)	La(2)-O(18)	2.514(7)
La(1)-O(2)	2.503	La(2)-O(16)	2.523(7)
La(1)-O(12)	2.506 (2)	La(2)-O(14)	2.549 (3)
La(1)-O(7)	2.576 (5)	La(2)-O(3)	2.551 (3)
La(1)-O(11)	2.595 (3)	La(2)-O(1)	2.588 (3)
La(1)-O(4)	2.614 (8)	La(2)-O(17) #4	2.593(4)
La(1)-O(6)	2.629(2)	La(2)-O(19)	2.595 (4)
La(1)-O(8)	2.634(5)	La(2)-O(15)	2.625 (9)
La(1)-O(13)	2.636	La(2)-O(5)	2.625 (9)
Angle	(°)	Angle	(°)
O(9)-La(1)-O(2)	81.2(5)	O(18)-La(2)-O(16)	139.4(5)
O(9)-La(1)-O(12)	85.0(5)	O(18)-La(2)-O(14)	68.4(4)
O(2)-La(1)-O(12)	149.7(5)	O(16)-La(2)-O(14)	143.9(4)
O(9)-La(1)-O(7)	125.1(6)	O(18)-La(2)-O(3)	64.0(5)
O(2)-La(1)-O(7)	102.7(6)	O(16)-La(2)-O(3)	75.9(5)
O(12)-La(1)-O(7)	64.3(5)	O(14)-La(2)-O(3)	128.6(4)
O(9)-La(1)-O(11)	72.6(6)	O(18)-La(2)-O(1)	97.0(5)
O(2)-La(1)-O(11)	128.0(6)	O(16)-La(2)-O(1)	73.2(5)
O(12)-La(1)-O(11)	71.9(5)	O(14)-La(2)-O(1)	136.0(4)
O(7)-La(1)-O(11)	129.2(5)	O(3)-La(2)-O(1)	69.4(5)
O(9)-La(1)-O(4)	68.5(6)	O(18)-La(2)-O(17) #2	73.2(5)
O(2)-La(1)-O(4)	63.0(5)	O(16)-La(2)-O(17) #2	128.8(5)
O(12)-La(1)-O(4)	86.9(5)	O(14)-La(2)-O(17) #2	73.3(4)
O(7)-La(1)-O(4)	65.7(5)	O(3)-La(2)-O(17) #2	108.9(5)
O(11)-La(1)-O(4)	136.9(6)	O(1) -La(2)-O(17) #2	62.6(4)
O(9)-La(1)-O(6)	155.4(5)	O(18)-La(2)-O(19)	145.6(6)
O(2)-La(1)-O(6)	75.4(4)	O(16)-La(2)-O(19)	72.9(7)
O(12)-La(1)-O(6)	119.3(4)	O(14)-La(2)-O(19)	90.0(6)
O(7)-La(1)-O(6)	68.7(5)	O(3)-La(2)-O(19)	141.2(6)
O(11)-La(1)-O(6)	116.4(5)	O(1) -La(2)-O(19)	79.9(6)
O(4)-La(1)-O(6)	106.7(5)	O(17) #2-La(2)-O(19)	75.1(6)
O(9)-La(1)-O(8)	150.4(5)	O(18)-La(2)-O(5)	73.4(5)
O(2)-La(1)-O(8)	124.4(4)	O(16)-La(2)-O(5)	88.5(5)
O(12)-La(1)-O(8)	78.0(4)	O(14)-La(2)-O(5)	78.3(5)
O(7)-La(1)-O(8)	68.2(5)	O(3)-La(2)-O(5)	70.8(5)
O(11)-La(1)-O(8)	79.0(5)	O(1) -La(2)-O(5)	139.2(5)
O(4)-La(1)-O(8)	133.6(5)	O(17) #2-La(2)-O(5)	142.2(5)
O(6)-La(1)-O(8)	49.6(4)	O(19)-La(2)-O(5)	129.8(5)
O(9)-La(1)-O(13)	98.7(6)	O(18)-La(2)-O(15)	127.5(5)
O(2)-La(1)-O(13)	72.9(5)	O(16)-La(2)-O(15)	69.1(5)

O(12)-La(1)-O(13)	136.2(5)	O(14)-La(2)-O(15)	75.0(4)
O(7)-La(1)-O(13)	135.2(5)	O(3)-La(2)-O(15)	121.6(5)
O(11)-La(1)-O(13)	67.9(6)	O(1)-La(2)-O(15)	135.1(5)
O(4)-La(1)-O(13)	135.2(5)	O(17)#2-La(2)-O(15)	129.5(5)
O(6)-La(1)-O(13)	67.1(5)	O(19)-La(2)-O(15)	66.6(5)
O(8)-La(1)-O(13)	78.0(5)	O(5)-La(2)-O(15)	63.2(4)

Symmetry codes: #1 x-1,y,z-1; #2 x+1,-y+1/2,z+1/2; #3 x+1,y,z+1; #4 x-1,-y+1/2,z-1/2;
#5 -x+1,-y,-z+2

Compound 2

Bond	Dist(Å)	Bond	Dist(Å)
Pr(1)-O(18)	2.444(4)	Pr(2)-O(4) #2	2.371(4)
Pr(1)-O(8)	2.456(4)	Pr(2)-O(14) #1	2.449(4)
Pr(1)-O(19)	2.492(4)	Pr(2)-O(5)	2.466(4)
Pr(1)-O(7)	2.515(4)	Pr(2)-O(15)	2.524(4)
Pr(1)-O(9)	2.534(4)	Pr(2)-O(13)	2.530(4)
Pr(1)-O(10)	2.558(4)	Pr(2)-O(16)	2.563(5)
Pr(1)-O(12)#1	2.561(4)	Pr(2)-O(2)	2.555(4)
Pr(1)-O(17)	2.578(4)	Pr(2)-O(6)	2.567(4)
Pr(1)-O(11)#1	2.573(4)	Pr(2)-O(1)	2.582(4)
Angle	(°)	Angle	(°)
O(18)-Pr(1)-O(8)	139.06(14)	O(4)#2-Pr(2)-O(14)	85.48(14)
O(18)-Pr(1)-O(19)	143.93(13)	O(4)#2-Pr(2)-O(5)	81.20(14)
O(8)-Pr(1)-O(19)	69.34(14)	O(14)-Pr(2)-O(5)	150.83(14)
O(18)-Pr(1)-O(7)	74.73(13)	O(4)#2-Pr(2)-O(15)	71.81(16)
O(8)-Pr(1)-O(7)	64.65(12)	O(14)-Pr(2)-O(15)	71.38(14)
O(19)-Pr(1)-O(7)	129.97(13)	O(5)-Pr(2)-O(15)	127.33(15)
O(18)-Pr(1)-O(9)	72.97(12)	O(4)#2-Pr(2)-O(13)	128.18(15)
O(8)-Pr(1)-O(9)	96.58(13)	O(14)-Pr(2)-O(13)	65.56(13)
O(19)-Pr(1)-O(9)	135.51(13)	O(5)-Pr(2)-O(13)	103.36(14)
O(7)-Pr(1)-O(9)	69.73(13)	O(15)-Pr(2)-O(13)	128.97(14)
O(18)-Pr(1)-O(10)	129.48(13)	O(4)#2-Pr(2)-O(2)	148.78(14)
O(8)-Pr(1)-O(10)	72.55(14)	O(14)-Pr(2)-O(2)	78.70(13)
O(19)-Pr(1)-O(10)	72.14(13)	O(5)-Pr(2)-O(2)	123.97(13)
O(7)-Pr(1)-O(10)	110.13(14)	O(15)-Pr(2)-O(2)	77.65(14)
O(9)-Pr(1)-O(10)	63.37(12)	O(13)-Pr(2)-O(2)	68.41(13)
O(18)-Pr(1)-O(12)#1	69.22(12)	O(4)#2-Pr(2)-O(16)	95.44(16)
O(8)-Pr(1)-O(12)#1	128.19(12)	O(14)-Pr(2)-O(16)	135.53(15)
O(19)-Pr(1)-O(12)#1	74.96(13)	O(5)-Pr(2)-O(16)	71.88(14)
O(7)-Pr(1)-O(12)#1	120.71(13)	O(15)-Pr(2)-O(16)	66.89(15)
O(9)-Pr(1)-O(12)#1	134.89(12)	O(13)-Pr(2)-O(16)	135.55(15)
O(10)-Pr(1)-O(12)#1	129.15(13)	O(2)-Pr(2)-O(16)	78.11(15)
O(18)-Pr(1)-O(11)#1	88.99(14)	O(4)#2-Pr(2)-O(6)	70.15(16)
O(8)-Pr(1)-O(11)#1	73.59(13)	O(14)-Pr(2)-O(6)	86.36(14)

O(19)-Pr(1)-O(11)#1	78.54(14)	O(5)-Pr(2)-O(6)	64.73(13)
O(7)-Pr(1)-O(11)#1	70.78(13)	O(15)-Pr(2)-O(6)	137.03(16)
O(9)-Pr(1)-O(11)#1	139.63(13)	O(13)-Pr(2)-O(6)	66.19(14)
O(10)-Pr(1)-O(11)#1	141.15(13)	O(2)-Pr(2)-O(6)	134.42(14)
O(12)#1-Pr(1)-O(11)#1	63.31(12)	O(16)-Pr(2)-O(6)	135.70(15)
O(18)-Pr(1)-O(17)	73.75(16)	O(4)#2-Pr(2)-O(1)	153.46(14)
O(8)-Pr(1)-O(17)	145.04(15)	O(14)-Pr(2)-O(1)	120.94(12)
O(19)-Pr(1)-O(17)	88.19(16)	O(5)-Pr(2)-O(1)	73.98(13)
O(7)-Pr(1)-O(17)	141.72(15)	O(15)-Pr(2)-O(1)	116.58(14)
O(9)-Pr(1)-O(17)	80.67(14)	O(13)-Pr(2)-O(1)	68.14(13)
O(10)-Pr(1)-O(17)	75.24(15)	O(2)-Pr(2)-O(1)	50.99(12)
O(12)#1-Pr(1)-O(17)	65.97(13)	O(16)-Pr(2)-O(1)	68.18(14)
O(11)#1-Pr(1)-O(17)	129.28(13)	O(6)-Pr(2)-O(1)	106.38(14)

Symmetry codes: #1 $x+1, -y+1/2, z+1/2$; #2 $x-1, y, z-1$; #3 $x+1, y, z+1$; #4 $x-1, -y+1/2, z-1/2$;

#5 $-x+1, -y, -z+1$

Compound 3

Bond	Dist(Å)	Bond	Dist(Å)
Sm(1)-O(1)	2.325(9)	Sm(2)-O(8)	2.434(9)
Sm(1)-O(9)	2.417(9)	Sm(2)-O(19)	2.457(10)
Sm(1)-O(6)	2.433(9)	Sm(2)-O(16)	2.466(10)
Sm(1)-O(12)	2.484(10)	Sm(2)-O(7)	2.485(8)
Sm(1)-O(13)	2.494(10)	Sm(2)-O(18)	2.486(8)
Sm(1)-O(4)#1	2.508(9)	Sm(2)-O(10)	2.513(9)
Sm(1)-O(14)	2.539(10)	Sm(2)-O(17)	2.519(10)
Sm(1)-O(3)#1	2.545(9)	Sm(2)-O(11)	2.522(9)
Sm(1)-O(5)	2.556(10)	Sm(2)-O(15)	2.534(9)
Angle	(°)	Angle	(°)
O(1)-Sm(1)-O(9)	85.0(3)	O(8)-Sm(2)-O(19)	139.9(3)
O(1)-Sm(1)-O(6)	80.8(3)	O(8)-Sm(2)-O(16)	69.0(3)
O(9)-Sm(1)-O(6)	152.1(4)	O(19)-Sm(2)-O(16)	143.4(3)
O(1)-Sm(1)-O(12)	73.2(4)	O(8)-Sm(2)-O(7)	66.0(3)
O(9)-Sm(1)-O(12)	70.7(4)	O(19)-Sm(2)-O(7)	74.2(3)
O(6)-Sm(1)-O(12)	126.6(4)	O(16)-Sm(2)-O(7)	130.7(3)
O(1)-Sm(1)-O(13)	128.1(4)	O(8)-Sm(2)-O(18)	98.4(3)
O(9)-Sm(1)-O(13)	66.3(3)	O(19)-Sm(2)-O(18)	71.0(3)
O(6)-Sm(1)-O(13)	104.6(3)	O(16)-Sm(2)-O(18)	137.6(3)
O(12)-Sm(1)-O(13)	128.2(4)	O(7)-Sm(2)-O(18)	69.3(3)
O(1)-Sm(1)-O(4)#1	148.0(4)	O(8)-Sm(2)-O(10)	72.5(3)
O(9)-Sm(1)-O(4)#1	79.6(3)	O(19)-Sm(2)-O(10)	129.8(3)
O(6)-Sm(1)-O(4)#1	123.5(3)	O(16)-Sm(2)-O(10)	71.6(3)
O(12)-Sm(1)-O(4)#1	75.2(4)	O(7)-Sm(2)-O(10)	111.6(3)
O(13)-Sm(1)-O(4)#1	70.0(3)	O(18)-Sm(2)-O(10)	66.0(3)
O(1)-Sm(1)-O(14)	94.5(4)	O(8)-Sm(2)-O(17)	145.5(3)

O(9)-Sm(1)-O(14)	135.3(4)	O(19)-Sm(2)-O(17)	72.2(4)
O(6)-Sm(1)-O(14)	70.1(4)	O(16)-Sm(2)-O(17)	89.9(4)
O(12)-Sm(1)-O(14)	66.5(4)	O(7)-Sm(2)-O(17)	139.3(4)
O(13)-Sm(1)-O(14)	136.5(4)	O(18)-Sm(2)-O(17)	78.6(3)
O(4)#1-Sm(1)-O(14)	77.6(4)	O(10)-Sm(2)-O(17)	75.1(4)
O(1)-Sm(1)-O(3)#1	152.0(3)	O(8)-Sm(2)-O(11)	128.8(3)
O(9)-Sm(1)-O(3)#1	123.0(3)	O(19)-Sm(2)-O(11)	68.7(3)
O(6)-Sm(1)-O(3)#1	73.2(3)	O(16)-Sm(2)-O(11)	74.9(3)
O(12)-Sm(1)-O(3)#1	114.5(4)	O(7)-Sm(2)-O(11)	120.7(3)
O(13)-Sm(1)-O(3)#1	70.0(3)	O(18)-Sm(2)-O(11)	132.4(3)
O(4)#1-Sm(1)-O(3)#1	51.6(3)	O(10)-Sm(2)-O(11)	127.7(3)
O(14)-Sm(1)-O(3)#1	67.1(3)	O(17)-Sm(2)-O(11)	65.8(3)
O(1)-Sm(1)-O(5)	69.3(4)	O(8)-Sm(2)-O(15)	72.5(3)
O(9)-Sm(1)-O(5)	86.4(4)	O(19)-Sm(2)-O(15)	90.3(4)
O(6)-Sm(1)-O(5)	66.1(3)	O(16)-Sm(2)-O(15)	77.5(3)
O(12)-Sm(1)-O(5)	137.4(4)	O(7)-Sm(2)-O(15)	70.8(3)
O(13)-Sm(1)-O(5)	66.7(3)	O(18)-Sm(2)-O(15)	139.2(3)
O(4)#1-Sm(1)-O(5)	136.6(3)	O(10)-Sm(2)-O(15)	139.6(4)
O(14)-Sm(1)-O(5)	135.1(3)	O(17)-Sm(2)-O(15)	130.8(3)
O(3)#1-Sm(1)-O(5)	108.1(3)	O(11)-Sm(2)-O(15)	65.1(3)

Symmetry codes: #1 x+1,y,z+1; #2 x-1,y,z-1; #3 -x+1,-y,-z+1; #4 x,-y+1/2,z+1/2;

#5 x,-y+1/2,z-1/2

Compound 4

Bond	Dist(Å)	Bond	Dist(Å)
Eu(1)-O(19)	2.394(4)	Eu(2)-O(1)#1	2.310(4)
Eu(1)-O(7)	2.405(4)	Eu(2)-O(10)	2.402(4)
Eu(1)-O(17)	2.415(4)	Eu(2)-O(5)	2.414(4)
Eu(1)-O(8)	2.471(4)	Eu(2)-O(3)	2.475(4)
Eu(1)-O(11)	2.478(4)	Eu(2)-O(15)	2.484(4)
Eu(1)-O(18)	2.488(4)	Eu(2)-O(16)	2.484(4)
Eu(1)-O(14)	2.526(4)	Eu(2)-O(9)	2.492(4)
Eu(1)-O(13)	2.528(4)	Eu(2)-O(4)	2.521(4)
Eu(1)-O(12)	2.531(4)	Eu(2)-O(6)	2.522(4)
Angle	(°)	Angle	(°)
O(19)-Eu(1)-O(7)	139.69(13)	O(1)#1-Eu(2)-O(10)	85.15(14)
O(19)-Eu(1)-O(17)	143.26(13)	O(1)#1-Eu(2)-O(5)	81.46(15)
O(7)-Eu(1)-O(17)	69.67(13)	O(10)-Eu(2)-O(5)	151.97(14)
O(19)-Eu(1)-O(8)	73.81(13)	O(1)#1-Eu(2)-O(3)	147.02(14)
O(7)-Eu(1)-O(8)	66.18(13)	O(10)-Eu(2)-O(3)	79.69(13)
O(17)-Eu(1)-O(8)	131.57(13)	O(5)-Eu(2)-O(3)	123.34(13)
O(19)-Eu(1)-O(11)	72.84(13)	O(1)#1-Eu(2)-O(15)	71.48(16)
O(7)-Eu(1)-O(11)	96.89(14)	O(10)-Eu(2)-O(15)	70.41(14)
O(17)-Eu(1)-O(11)	135.64(13)	O(5)-Eu(2)-O(15)	126.96(15)

O(8)-Eu(1)-O(11)	69.63(13)	O(3)-Eu(2)-O(15)	75.86(14)
O(19)-Eu(1)-O(18)	73.84(15)	O(1)#1-Eu(2)-O(16)	92.43(16)
O(7)-Eu(1)-O(18)	143.95(14)	O(10)-Eu(2)-O(16)	135.30(15)
O(17)-Eu(1)-O(18)	88.05(15)	O(5)-Eu(2)-O(16)	70.07(15)
O(8)-Eu(1)-O(18)	140.25(15)	O(3)-Eu(2)-O(16)	78.62(15)
O(11)-Eu(1)-O(18)	79.21(14)	O(15)-Eu(2)-O(16)	66.60(14)
O(19)-Eu(1)-O(14)	68.62(13)	O(1)#1-Eu(2)-O(9)	130.06(15)
O(7)-Eu(1)-O(14)	128.99(13)	O(10)-Eu(2)-O(9)	66.59(13)
O(17)-Eu(1)-O(14)	74.91(13)	O(5)-Eu(2)-O(9)	104.37(15)
O(8)-Eu(1)-O(14)	120.34(13)	O(3)-Eu(2)-O(9)	69.16(14)
O(11)-Eu(1)-O(14)	133.86(13)	O(15)-Eu(2)-O(9)	128.08(14)
O(18)-Eu(1)-O(14)	66.60(13)	O(16)-Eu(2)-O(9)	136.72(15)
O(19)-Eu(1)-O(13)	89.55(15)	O(1)#1-Eu(2)-O(4)	151.85(13)
O(7)-Eu(1)-O(13)	73.47(14)	O(10)-Eu(2)-O(4)	122.98(13)
O(17)-Eu(1)-O(13)	78.35(14)	O(5)-Eu(2)-O(4)	72.57(13)
O(8)-Eu(1)-O(13)	71.05(14)	O(3)-Eu(2)-O(4)	52.17(12)
O(11)-Eu(1)-O(13)	140.00(13)	O(15)-Eu(2)-O(4)	116.15(14)
O(18)-Eu(1)-O(13)	130.80(13)	O(16)-Eu(2)-O(4)	68.87(15)
O(14)-Eu(1)-O(13)	64.22(12)	O(9)-Eu(2)-O(4)	68.66(13)
O(19)-Eu(1)-O(12)	130.29(14)	O(1)#1-Eu(2)-O(6)	71.15(16)
O(7)-Eu(1)-O(12)	71.87(14)	O(10)-Eu(2)-O(6)	86.30(14)
O(17)-Eu(1)-O(12)	71.21(13)	O(5)-Eu(2)-O(6)	66.10(13)
O(8)-Eu(1)-O(12)	111.37(14)	O(3)-Eu(2)-O(6)	135.93(14)
O(11)-Eu(1)-O(12)	64.45(12)	O(15)-Eu(2)-O(6)	137.17(15)
O(18)-Eu(1)-O(12)	74.29(15)	O(16)-Eu(2)-O(6)	134.85(14)
O(14)-Eu(1)-O(12)	128.29(12)	O(9)-Eu(2)-O(6)	66.91(14)
O(13)-Eu(1)-O(12)	139.90(14)	O(4)-Eu(2)-O(6)	106.67(14)

Symmetry codes: #1 x-1,y,z-1; #2 -x+1,-y,-z+1; #3 x+1,y,z+1; #4 x+1,-y+1/2,z+1/2;

#5 x-1,-y+1/2,z-1/2

Compound 5

Bond	Dist(Å)	Bond	Dist(Å)
Gd(1)-O(3)#1	2.309(8)	Gd(2)-O(8)	2.384(8)
Gd(1)-O(5)	2.399(8)	Gd(2)-O(19)	2.401(8)
Gd(1)-O(14)	2.402(8)	Gd(2)-O(17)	2.405(9)
Gd(1)-O(1)	2.471(9)	Gd(2)-O(7)	2.459(8)
Gd(1)-O(16)	2.475(10)	Gd(2)-O(11)	2.477(8)
Gd(1)-O(13)	2.484(9)	Gd(2)-O(18)	2.481(9)
Gd(1)-O(15)	2.490(10)	Gd(2)-O(12)	2.519(9)
Gd(1)-O(6)	2.504(10)	Gd(2)-O(9)	2.528(9)
Gd(1)-O(2)	2.522(8)	Gd(2)-O(10)	2.541(9)
Angle	(°)	Angle	(°)
O(3)#1-Gd(1)-O(5)	81.3(3)	O(8)-Gd(2)-O(19)	139.7(3)
O(3)#1-Gd(1)-O(14)	84.7(3)	O(8)-Gd(2)-O(17)	69.7(3)

O(5)-Gd(1)-O(14)	152.5(3)	O(19)-Gd(2)-O(17)	143.0(3)
O(3)#1-Gd(1)-O(1)	147.1(3)	O(8)-Gd(2)-O(7)	66.8(3)
O(5)-Gd(1)-O(1)	123.3(3)	O(19)-Gd(2)-O(7)	73.2(3)
O(14)-Gd(1)-O(1)	79.8(3)	O(17)-Gd(2)-O(7)	131.9(3)
O(3)#1-Gd(1)-O(16)	71.8(4)	O(8)-Gd(2)-O(11)	97.8(3)
O(5)-Gd(1)-O(16)	126.6(4)	O(19)-Gd(2)-O(11)	71.9(3)
O(14)-Gd(1)-O(16)	69.8(3)	O(17)-Gd(2)-O(11)	136.9(3)
O(1)-Gd(1)-O(16)	75.6(3)	O(7)-Gd(2)-O(11)	69.4(3)
O(3)#1-Gd(1)-O(13)	129.8(3)	O(8)-Gd(2)-O(18)	144.4(3)
O(5)-Gd(1)-O(13)	104.7(3)	O(19)-Gd(2)-O(18)	73.3(4)
O(14)-Gd(1)-O(13)	67.2(3)	O(17)-Gd(2)-O(18)	88.9(4)
O(1)-Gd(1)-O(13)	69.3(3)	O(7)-Gd(2)-O(18)	139.1(3)
O(16)-Gd(1)-O(13)	128.0(3)	O(11)-Gd(2)-O(18)	78.4(3)
O(3)#1-Gd(1)-O(15)	92.8(4)	O(8)-Gd(2)-O(12)	72.2(3)
O(5)-Gd(1)-O(15)	70.0(4)	O(19)-Gd(2)-O(12)	130.2(3)
O(14)-Gd(1)-O(15)	134.5(4)	O(17)-Gd(2)-O(12)	71.5(3)
O(1)-Gd(1)-O(15)	78.2(4)	O(7)-Gd(2)-O(12)	112.1(3)
O(16)-Gd(1)-O(15)	66.4(4)	O(11)-Gd(2)-O(12)	65.4(3)
O(13)-Gd(1)-O(15)	136.6(3)	O(18)-Gd(2)-O(12)	74.1(3)
O(3)#1-Gd(1)-O(6)	70.5(4)	O(8)-Gd(2)-O(9)	73.5(3)
O(5)-Gd(1)-O(6)	66.4(3)	O(19)-Gd(2)-O(9)	89.4(3)
O(14)-Gd(1)-O(6)	86.7(3)	O(17)-Gd(2)-O(9)	78.0(3)
O(1)-Gd(1)-O(6)	136.5(3)	O(7)-Gd(2)-O(9)	71.1(3)
O(16)-Gd(1)-O(6)	136.9(4)	O(11)-Gd(2)-O(9)	139.7(3)
O(13)-Gd(1)-O(6)	67.4(3)	O(18)-Gd(2)-O(9)	130.9(3)
O(15)-Gd(1)-O(6)	135.0(3)	O(12)-Gd(2)-O(9)	140.2(3)
O(3)#1-Gd(1)-O(2)	151.5(3)	O(8)-Gd(2)-O(10)	129.4(3)
O(5)-Gd(1)-O(2)	72.4(3)	O(19)-Gd(2)-O(10)	68.2(3)
O(14)-Gd(1)-O(2)	123.7(3)	O(17)-Gd(2)-O(10)	75.0(3)
O(1)-Gd(1)-O(2)	52.3(3)	O(7)-Gd(2)-O(10)	120.0(3)
O(16)-Gd(1)-O(2)	115.8(3)	O(11)-Gd(2)-O(10)	132.6(3)
O(13)-Gd(1)-O(2)	69.2(3)	O(18)-Gd(2)-O(10)	66.5(3)
O(15)-Gd(1)-O(2)	68.4(3)	O(12)-Gd(2)-O(10)	127.9(3)
O(6)-Gd(1)-O(2)	107.3(3)	O(9)-Gd(2)-O(10)	64.4(3)

Symmetry codes: #1 x+1,y,z+1; #2 x-1,y,z-1; #3 x+1,-y+3/2,z+1/2; #4 -x+2,-y+2,-z+2;
 #5 x-1,-y+3/2,z-1/2

Compound 6

Bond	Dist(Å)	Bond	Dist(Å)
Tb(1)-O(3)#3	2.283(8)	Tb(2)-O(19)	2.358(7)
Tb(1)-O(14)#2	2.377(7)	Tb(2)-O(7)	2.376(7)
Tb(1)-O(6)	2.391(8)	Tb(2)-O(17)	2.389(8)
Tb(1)-O(1)	2.450(7)	Tb(2)-O(8)	2.443(7)
Tb(1)-O(16)	2.461(9)	Tb(2)-O(18)	2.446(8)

Tb(1)-O(13)	2.475(7)	Tb(2)-O(11)#4	2.452(7)
Tb(1)-O(15)	2.478(9)	Tb(2)-O(10)	2.516(7)
Tb(1)-O(5)	2.495(8)	Tb(2)-O(9)	2.520(8)
Tb(1)-O(2)	2.515(7)	Tb(2)-O(12)#4	2.521(8)
Angle	(°)	Angle	(°)
O(3)#3-Tb(1)-O(14)#2	85.2(3)	O(19)-Tb(2)-O(7)	140.1(2)
O(3)#3-Tb(1)-O(6)	81.2(3)	O(19)-Tb(2)-O(17)	142.6(3)
O(14)#2-Tb(1)-O(6)	152.2(3)	O(7)-Tb(2)-O(17)	70.2(3)
O(3)#3-Tb(1)-O(1)	146.0(3)	O(19)-Tb(2)-O(8)	73.5(3)
O(14)#2-Tb(1)-O(1)	79.9(2)	O(7)-Tb(2)-O(8)	66.8(2)
O(6)-Tb(1)-O(1)	123.5(2)	O(17)-Tb(2)-O(8)	132.4(3)
O(3)#3-Tb(1)-O(16)	91.3(3)	O(19)-Tb(2)-O(18)	73.9(3)
O(14)#2-Tb(1)-O(16)	135.0(3)	O(7)-Tb(2)-O(18)	143.2(3)
O(6)-Tb(1)-O(16)	69.8(3)	O(17)-Tb(2)-O(18)	87.6(3)
O(1)-Tb(1)-O(16)	78.4(3)	O(8)-Tb(2)-O(18)	139.8(3)
O(3)#3-Tb(1)-O(13)	131.3(3)	O(19)-Tb(2)-O(11)#4	73.0(3)
O(14)#2-Tb(1)-O(13)	66.9(2)	O(7)-Tb(2)-O(11)#4	96.6(2)
O(6)-Tb(1)-O(13)	105.1(3)	O(17)-Tb(2)-O(11)#4	135.7(3)
O(1)-Tb(1)-O(13)	69.2(2)	O(8)-Tb(2)-O(11)#4	69.8(2)
O(16)-Tb(1)-O(13)	136.8(3)	O(18)-Tb(2)-O(11)#4	78.6(3)
O(3)#3-Tb(1)-O(15)	70.6(3)	O(19)-Tb(2)-O(10)	68.3(2)
O(14)#2-Tb(1)-O(15)	69.9(3)	O(7)-Tb(2)-O(10)	129.6(2)
O(6)-Tb(1)-O(15)	126.7(3)	O(17)-Tb(2)-O(10)	74.6(2)
O(1)-Tb(1)-O(15)	75.6(3)	O(8)-Tb(2)-O(10)	120.1(2)
O(16)-Tb(1)-O(15)	66.7(3)	O(18)-Tb(2)-O(10)	67.0(3)
O(13)-Tb(1)-O(15)	127.6(3)	O(11)#4-Tb(2)-O(10)	133.6(2)
O(3)#3-Tb(1)-O(5)	71.7(3)	O(19)-Tb(2)-O(9)	89.8(3)
O(14)#2-Tb(1)-O(5)	86.2(3)	O(7)-Tb(2)-O(9)	73.8(2)
O(6)-Tb(1)-O(5)	66.5(3)	O(17)-Tb(2)-O(9)	78.3(3)
O(1)-Tb(1)-O(5)	136.6(3)	O(8)-Tb(2)-O(9)	71.0(2)
O(16)-Tb(1)-O(5)	134.9(3)	O(18)-Tb(2)-O(9)	131.5(3)
O(13)-Tb(1)-O(5)	67.5(2)	O(11)#4-Tb(2)-O(9)	140.2(2)
O(15)-Tb(1)-O(5)	136.5(3)	O(10)-Tb(2)-O(9)	64.5(2)
O(3)#3-Tb(1)-O(2)	151.0(2)	O(19)-Tb(2)-O(12)#4	130.4(3)
O(14)#2-Tb(1)-O(2)	123.8(2)	O(7)-Tb(2)-O(12)#4	71.4(2)
O(6)-Tb(1)-O(2)	72.3(2)	O(17)-Tb(2)-O(12)#4	71.2(3)
O(1)-Tb(1)-O(2)	52.9(2)	O(8)-Tb(2)-O(12)#4	111.9(2)
O(16)-Tb(1)-O(2)	69.0(3)	O(18)-Tb(2)-O(12)#4	73.8(3)
O(13)-Tb(1)-O(2)	68.7(2)	O(11)#4-Tb(2)-O(12)#4	64.5(2)
O(15)-Tb(1)-O(2)	116.7(3)	O(10)-Tb(2)-O(12)#4	128.1(2)
O(5)-Tb(1)-O(2)	106.8(2)	O(9)-Tb(2)-O(12)#4	139.6(2)

Symmetry codes: #1 x+1,-y+3/2,z+1/2; #2 -x,-y+2,-z; #3 x-1,y,z-1; #4 x-1,-y+3/2,z-1/2;

#5 x+1,y,z+1

Compound 7

Bond	Dist(Å)	Bond	Dist(Å)
Dy(1)-O(2)	2.254(7)	Dy(2)-O(16)	2.366(6)
Dy(1)-O(9)	2.368(6)	Dy(2)-O(8)	2.383(6)
Dy(1)-O(6)	2.377(6)	Dy(2)-O(12)	2.392(7)
Dy(1)-O(4)#1	2.448(7)	Dy(2)-O(14)	2.432(7)
Dy(1)-O(10)	2.449(6)	Dy(2)-O(7)	2.438(6)
Dy(1)-O(18)	2.456(7)	Dy(2)-O(15)	2.441(6)
Dy(1)-O(17)	2.479(8)	Dy(2)-O(19)	2.484(6)
Dy(1)-O(3)#1	2.482(6)	Dy(2)-O(11)	2.492(6)
Dy(1)-O(5)	2.494(7)	Dy(2)-O(13)	2.502(6)
Angle	(°)	Angle	(°)
O(2)-Dy(1)-O(9)	84.5(2)	O(16)-Dy(2)-O(8)	140.3(2)
O(2)-Dy(1)-O(6)	81.1(2)	O(16)-Dy(2)-O(12)	143.3(2)
O(9)-Dy(1)-O(6)	152.1(2)	O(8)-Dy(2)-O(12)	69.8(2)
O(2)-Dy(1)-O(4)#1	145.9(2)	O(16)-Dy(2)-O(14)	73.7(3)
O(9)-Dy(1)-O(4)#1	80.6(2)	O(8)-Dy(2)-O(14)	143.4(2)
O(6)-Dy(1)-O(4)#1	123.5(2)	O(12)-Dy(2)-O(14)	87.4(3)
O(2)-Dy(1)-O(10)	130.5(2)	O(16)-Dy(2)-O(7)	73.6(2)
O(9)-Dy(1)-O(10)	67.1(2)	O(8)-Dy(2)-O(7)	66.9(2)
O(6)-Dy(1)-O(10)	105.4(2)	O(12)-Dy(2)-O(7)	132.6(2)
O(4)#1-Dy(1)-O(10)	70.0(2)	O(14)-Dy(2)-O(7)	139.9(3)
O(2)-Dy(1)-O(18)	71.3(3)	O(16)-Dy(2)-O(15)	72.0(2)
O(9)-Dy(1)-O(18)	70.2(2)	O(8)-Dy(2)-O(15)	97.4(2)
O(6)-Dy(1)-O(18)	126.1(2)	O(12)-Dy(2)-O(15)	135.5(2)
O(4)#1-Dy(1)-O(18)	74.8(2)	O(14)-Dy(2)-O(15)	78.8(2)
O(10)-Dy(1)-O(18)	127.8(2)	O(7)-Dy(2)-O(15)	69.5(2)
O(2)-Dy(1)-O(17)	92.3(3)	O(16)-Dy(2)-O(19)	68.6(2)
O(9)-Dy(1)-O(17)	134.5(2)	O(8)-Dy(2)-O(19)	129.4(2)
O(6)-Dy(1)-O(17)	70.2(2)	O(12)-Dy(2)-O(19)	75.1(2)
O(4)#1-Dy(1)-O(17)	77.1(3)	O(14)-Dy(2)-O(19)	66.4(2)
O(10)-Dy(1)-O(17)	136.6(2)	O(7)-Dy(2)-O(19)	120.4(2)
O(18)-Dy(1)-O(17)	65.9(2)	O(15)-Dy(2)-O(19)	133.0(2)
O(2)-Dy(1)-O(3)#1	150.5(2)	O(16)-Dy(2)-O(11)	91.0(2)
O(9)-Dy(1)-O(3)#1	125.0(2)	O(8)-Dy(2)-O(11)	72.8(2)
O(6)-Dy(1)-O(3)#1	71.8(2)	O(12)-Dy(2)-O(11)	78.2(2)
O(4)#1-Dy(1)-O(3)#1	53.3(2)	O(14)-Dy(2)-O(11)	131.5(2)
O(10)-Dy(1)-O(3)#1	69.8(2)	O(7)-Dy(2)-O(11)	71.3(2)
O(18)-Dy(1)-O(3)#1	115.9(2)	O(15)-Dy(2)-O(11)	140.3(2)
O(17)-Dy(1)-O(3)#1	68.0(2)	O(19)-Dy(2)-O(11)	65.2(2)
O(2)-Dy(1)-O(5)	71.2(3)	O(16)-Dy(2)-O(13)	130.2(2)
O(9)-Dy(1)-O(5)	86.0(2)	O(8)-Dy(2)-O(13)	71.4(2)
O(6)-Dy(1)-O(5)	66.8(2)	O(12)-Dy(2)-O(13)	70.3(2)
O(4)#1-Dy(1)-O(5)	137.3(2)	O(14)-Dy(2)-O(13)	74.1(2)

O(10)-Dy(1)-O(5)	67.4(2)	O(7)-Dy(2)-O(13)	111.9(2)
O(18)-Dy(1)-O(5)	137.0(3)	O(15)-Dy(2)-O(13)	65.3(2)
O(17)-Dy(1)-O(5)	135.6(2)	O(19)-Dy(2)-O(13)	127.8(2)
O(3)#1-Dy(1)-O(5)	107.1(2)	O(11)-Dy(2)-O(13)	138.5(2)

Symmetry codes: #1 $x+1,y,z+1$; #2 $x-1,y,z-1$; #3 $-x+1,-y,-z+2$; #4 $x,-y+1/2,z-1/2$;
#5 $x,-y+1/2,z+1/2$

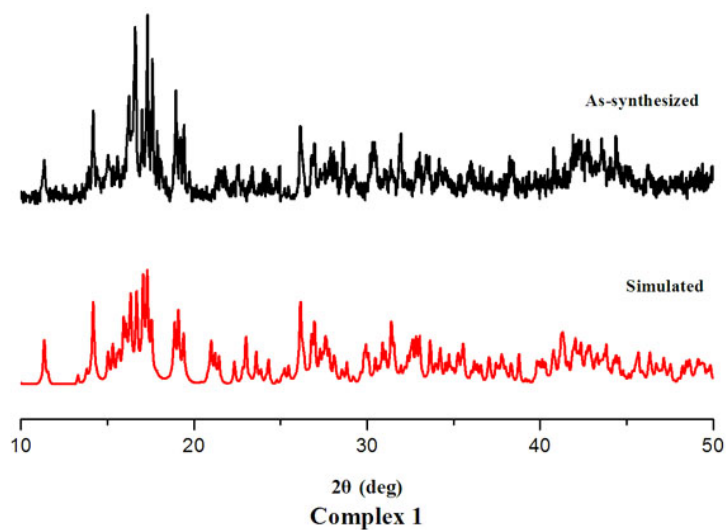


Figure S1. PXRD patterns of complex 1.

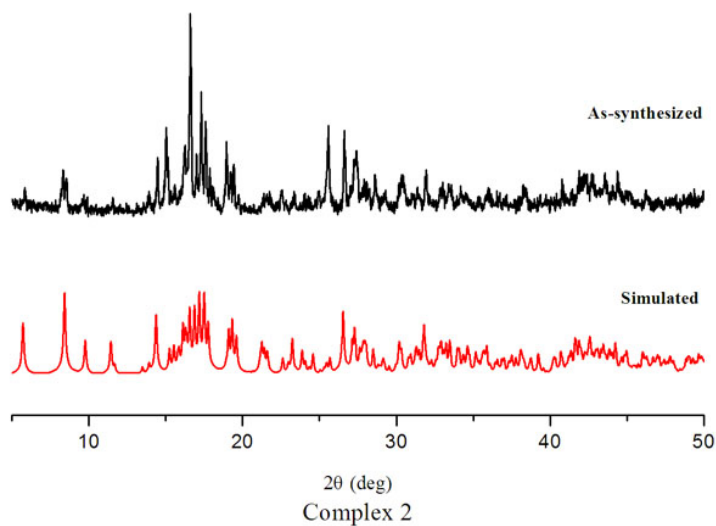


Figure S2. PXRD patterns of complex 2.

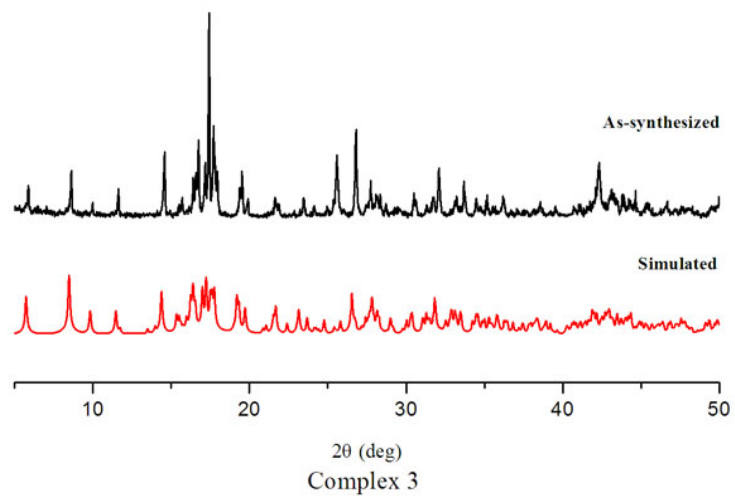


Figure S3. PXRD patterns of complex 3.

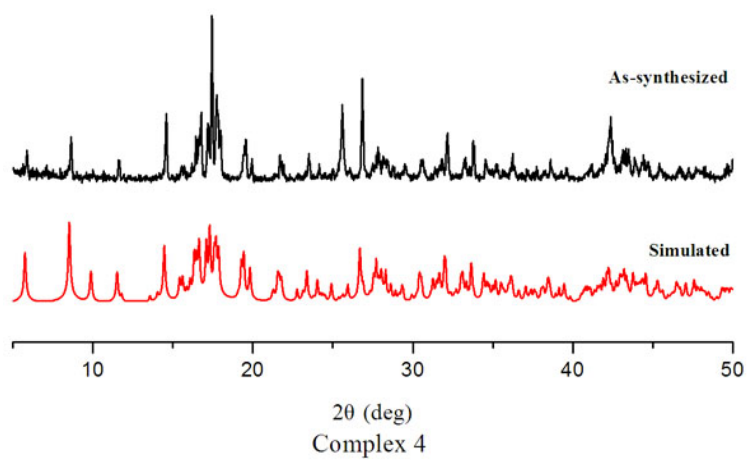


Figure S4. PXRD patterns of complex 4.

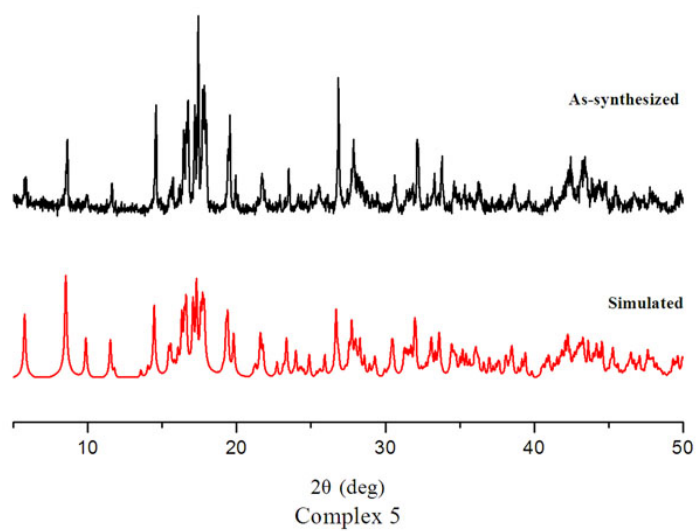


Figure S5. PXRD patterns of complex 5.

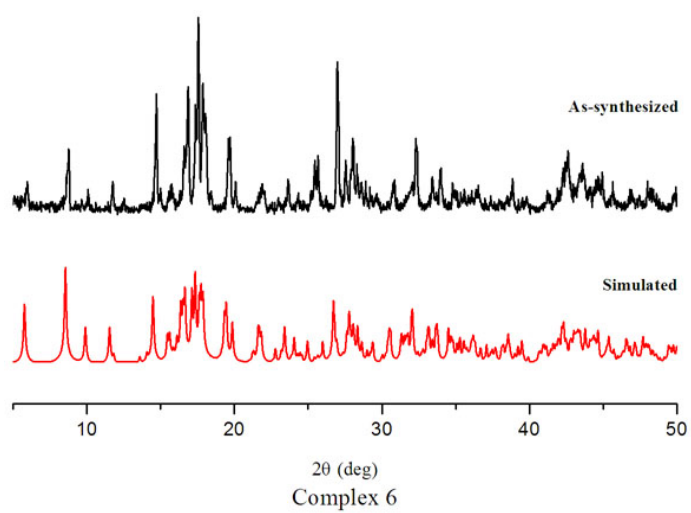


Figure S6. PXRD patterns of complex 6.

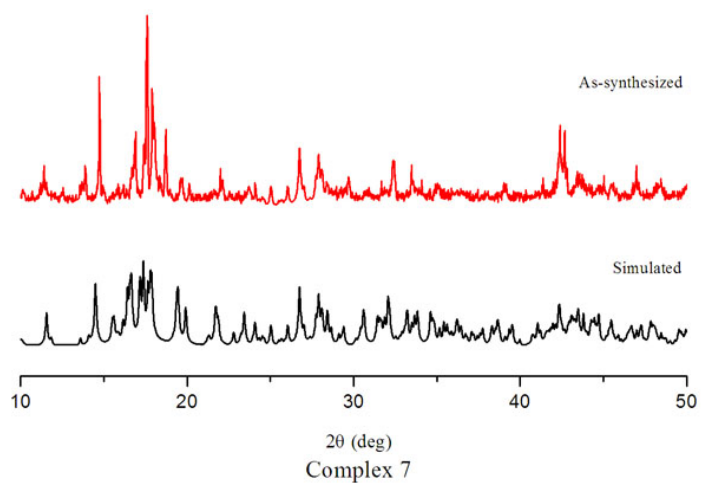


Figure S7. PXRD patterns of complex 7.