

## Supporting Information

### Copper(I)-lanthanide(III) heterometallic metal-organic frameworks with unique topologies constructed from 3-(3-pyridyl) acrylic acid: syntheses, structures, photoluminescent and magnetic properties

**Table S1.** Selected Bond Distances (Å) and angles (°) for compound **1-17**.

<b>Compound 1</b>					
Dy(1)-O(3)#1	2.292(4)	Dy(1)-O(2)	2.465(4)	Cu(2)-Cl(1)	2.2010(19)
Dy(1)-O(5)	2.298(4)	Dy(1)-O(1)	2.476(4)	Cu(2)-Cl(2)	2.473(2)
Dy(1)-O(4)	2.301(4)	Cu(1)-N(2)	1.914(5)	Cu(3)-Cl(3)	2.156(3)
Dy(1)-O(6)#2	2.322(4)	Cu(1)-N(1)#3	1.920(6)	Cu(3)-Cl(2)	2.186(3)
Dy(1)-O(1W)	2.420(4)	Cu(1)-Cl(1)	2.668(2)	Cu(3)-Cl(1)#3	2.507(3)
Dy(1)-O(2W)	2.443(4)	Cu(2)-N(3)	1.952(6)		
O(3)#1-Dy(1)-O(5)	148.90(17)	O(5)-Dy(1)-O(1)		79.01(14)	
O(3)#1-Dy(1)-O(4)	105.68(16)	O(4)-Dy(1)-O(1)		76.34(14)	
O(5)-Dy(1)-O(4)	83.01(16)	O(6)#2-Dy(1)-O(1)		131.08(15)	
O(3)#1-Dy(1)-O(6)#2	80.67(15)	O(1W)-Dy(1)-O(1)		145.15(15)	
O(5)-Dy(1)-O(6)#2	105.86(15)	O(2W)-Dy(1)-O(1)		128.21(13)	
O(4)-Dy(1)-O(6)#2	151.93(16)	O(2)-Dy(1)-O(1)		53.05(13)	
O(3)#1-Dy(1)-O(1W)	138.42(16)	N(2)-Cu(1)-N(1)#3		160.6(3)	
O(5)-Dy(1)-O(1W)	71.68(15)	N(2)-Cu(1)-Cl(1)		99.40(18)	
O(4)-Dy(1)-O(1W)	81.69(15)	N(1)#3-Cu(1)-Cl(1)		97.04(18)	
O(6)#2-Dy(1)-O(1W)	76.26(15)	N(3)-Cu(2)-Cl(1)		150.0(2)	
O(3)#1-Dy(1)-O(2W)	72.27(16)	N(3)-Cu(2)-Cl(2)		105.31(19)	

O(5)-Dy(1)-O(2W)	138.41(16)	Cl(1)-Cu(2)-Cl(2)	100.69(9)
O(4)-Dy(1)-O(2W)	75.94(15)	Cl(3)-Cu(3)-Cl(2)	139.85(15)
O(6)#2-Dy(1)-O(2W)	80.32(15)	Cl(3)-Cu(3)-Cl(1)#3	110.15(11)
O(1W)-Dy(1)-O(2W)	70.08(15)	Cl(2)-Cu(3)-Cl(1)#3	108.62(10)
O(3)#1-Dy(1)-O(2)	78.49(16)	Cu(3)-Cl(2)-Cu(2)	82.33(9)
O(5)-Dy(1)-O(2)	72.70(15)	Cu(2)-Cl(1)-Cu(1)	82.82(7)
O(4)-Dy(1)-O(2)	126.60(14)	Cu(2)-Cl(1)-Cu(1)	106.22(8)
O(6)#2-Dy(1)-O(2)	130.21(14)	Cu(3)#3-Cl(1)-Cu(1)	80.39(7)
O(1W)-Dy(1)-O(2)	81.8(3)	O(2W)-Dy(1)-O(2)	147.53(15)
O(3)#1-Dy(1)-O(1)	74.40(15)		

Symmetry code for:

**1: #1 -x+1,-y+1,-z+1; #2 -x+2,-y+1,-z+1; #3 -x,-y,-z.**

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### Compound 2

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Eu(1)-O(5)#2	2.326(5)	Eu(1)-O(1)	2.345(5)	Eu(1)-O(6)#1	2.350(5)
Eu(1)-O(4)	2.516(5)	Eu(1)-O(3)	2.500(5)	Eu(1)-O(2W)	2.477(5)
Eu(1)-O(1W)	2.457(5)	Eu(1)-O(2)#3	2.375(5)	O(6)-Eu(1)#1	2.349(5)
O(2)-Eu(1)#3	2.375(5)	Cu(2)-Cl(2)	2.639(3)	Cu(1)-Cl(2)#1	2.185(3)
Cu(1)-Cl(1)	2.476(4)	Cl(2)-Cu(1)#1	2.185(3)		
O(5)#2-Eu(1)-O(1)	148.5(2)	O(5)#2-Eu(1)-O(6)#1		105.4(2)	
O(1W)-Eu(1)-O(4)	145.76(18)	O(2)#3-Eu(1)-O(4)		130.59(18)	
O(6)#1-Eu(1)-O(4)	76.40(18)	O(1)-Eu(1)-O(4)		78.64(17)	
O(5)#2-Eu(1)-O(4)	73.57(19)	O(2W)-Eu(1)-O(3)		148.06(19)	
O(1W)-Eu(1)-O(3)	131.05(17)	O(2)#3-Eu(1)-O(3)		82.22(18)	

O(6)#1-Eu(1)-O(3)	125.46(19)	O(1)-Eu(1)-O(3)	72.49(18)
O(5)#2-Eu(1)-O(3)	78.8(2)	O(1W)-Eu(1)-O(2W)	69.68(18)
O(2)#3-Eu(1)-O(2W)	80.09(19)	O(6)#1-Eu(1)-O(2W)	76.21(19)
O(1)-Eu(1)-O(2W)	138.50(19)	O(5)#2-Eu(1)-O(2W)	72.2(2)
O(2)#3-Eu(1)-O(1W)	76.84(19)	O(6)#1-Eu(1)-O(1W)	81.40(18)
O(1)-Eu(1)-O(1W)	72.59(18)	O(5)#2-Eu(1)-O(1W)	138.3(2)
O(6)#1-Eu(1)-O(2)#3	152.2(2)	O(1)-Eu(1)-O(2)#3	107.56(18)
O(5)#2-Eu(1)-O(2)#3	80.6(2)	O(1)-Eu(1)-O(6)#1	81.76(19)
N(3)-Cu(2)-N(2)	159.6(3)	N(3)-Cu(2)-Cl(2)	99.65(18)
N(2)-Cu(2)-Cl(2)	97.90(19)	N(1)-Cu(1)-Cl(2)#1	148.6(2)
N(1)-Cu(1)-Cl(1)	105.8(2)	Cl(2)#1-Cu(1)-Cl(1)	101.11(13)
O(3)-Eu(1)-O(4)	52.15(16)	O(2W)-Eu(1)-O(4)	127.87(16)
Cl(2)#1-Cu(1)-Cu(3A)	92.3(2)	N(1)-Cu(1)-Cu(3A)	117.6(3)
Cu(3A)-Cu(1)-Cu(3A)#1	111.2(2)	Cl(1)-Cu(1)-Cu(3A)#1	147.0(2)
Cl(2)#1-Cu(1)-Cu(3A)#1	48.9(2)	N(1)-Cu(1)-Cu(3A)#1	107.1(3)
Cl(1)-Cu(1)-Cu(3A)	48.4(2)	Cl(1)-Cu(3A)-Cl(2)	116.7(5)
Cu(1)-Cu(3A)-Cu(1)#1	68.8(2)	Cl(3)-Cu(3A)-Cu(1)#1	104.9(4)

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Symmetry code for:

**2: #1 -x+2,-y+1,-z+1; #2 x-1,y-1,z-1; #3 -x,-y,-z; #4 x+1,y+1,z+1.**

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**Compound 3**

Gd(1)-O(6)#1	2.319(7)	Gd(1)-O(5)#2	2.335(6)	Gd(1)-O(2)#3	2.340(7)
Gd(1)-O(4)	2.494(7)	Gd(1)-O(3)	2.490(7)	Gd(1)-O(2W)	2.465(6)
Gd(1)-O(1W)	2.453(7)	Gd(1)-O(1)	2.358(6)	Cu(3)-N(1)#3	1.957(11)

Cu(1)-N(3)	1.902(9)	Cu(1)-N(2)	1.925(11)	Cu(1)-Cl(1)	2.626(4)
Cu(2)-Cl(1)	2.579(7)	Cu(2)-Cl(2)	2.157(7)	Cu(2)-Cl(3)	2.092(7)
O(6)#1-Gd(1)-O(5)#2	105.1(3)	O(6)#1-Gd(1)-O(2)#3		148.2(3)	
O(3)-Gd(1)-O(4)	52.5(2)	O(2W)-Gd(1)-O(4)		128.1(2)	
O(1W)-Gd(1)-O(4)	144.7(2)	O(1)-Gd(1)-O(4)		131.3(2)	
O(2)#3-Gd(1)-O(4)	77.8(2)	O(5)#2-Gd(1)-O(4)		76.4(2)	
O(6)#1-Gd(1)-O(4)	73.9(3)	O(2W)-Gd(1)-O(3)		147.6(2)	
O(1W)-Gd(1)-O(3)	130.8(2)	O(1)-Gd(1)-O(3)		82.3(2)	
O(2)#3-Gd(1)-O(3)	72.6(2)	O(5)#2-Gd(1)-O(3)		126.1(2)	
O(6)#1-Gd(1)-O(3)	78.8(3)	O(1W)-Gd(1)-O(2W)		70.3(2)	
O(1)-Gd(1)-O(2W)	79.6(2)	O(2)#3-Gd(1)-O(2W)		138.9(2)	
O(5)#2-Gd(1)-O(2W)	76.2(3)	O(6)#1-Gd(1)-O(2W)		72.0(3)	
O(1)-Gd(1)-O(1W)	76.9(3)	O(2)#3-Gd(1)-O(1W)		72.4(2)	
O(5)#2-Gd(1)-O(1W)	81.0(2)	O(6)#1-Gd(1)-O(1W)		138.9(3)	
O(2)#3-Gd(1)-O(1)	108.0(2)	O(5)#2-Gd(1)-O(1)		151.6(3)	
O(6)#1-Gd(1)-O(1)	81.0(3)	O(5)#2-Gd(1)-O(2)#3		81.7(2)	
N(3)-Cu(1)-N(2)	159.7(5)	N(3)-Cu(1)-Cl(1)		99.6(3)	
Cl(2)-Cu(2)-Cl(1)	107.2(2)	Cl(3)-Cu(2)-Cl(1)		109.0(3)	
Cl(3)-Cu(2)-Cl(2)	142.5(4)	Cl(1)#2-Cu(3)-Cl(2)		100.56(19)	
N(1)#3-Cu(3)-Cl(2)	105.4(4)	N(1)#3-Cu(3)-Cl(1)#2		149.0(4)	
N(2)-Cu(1)-Cl(1)	97.8(3)				

Symmetry code for:

**3:#1 x+1,y+1,z+1; #2 -x,-y,-z; #3 -x+2,-y+1,-z+1; #4 x-1,y-1,z-1.**

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**Compound 4**

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Tb(1)-O(6)#1	2.305(5)	Tb(1)-O(2)#2	2.313(4)	Tb(1)-O(5)#3	2.317(5)
Tb(1)-O(3)	2.489(5)	Tb(1)-O(4)	2.472(5)	Tb(1)-O(1W)	2.448(5)
Tb(1)-O(2W)	2.439(5)	Tb(1)-O(1)	2.332(5)	Cu(2)-Cl(2)	2.145(4)
Cu(3)-Cl(1)	2.197(2)	Cu(3)-Cl(3)#3	2.473(3)	Cl(3)-Cu(3)#3	2.474(3)
Cu(1)-N(2)	1.917(7)	Cu(1)-Cl(1)	2.659(3)	Cu(3)-N(1)#4	1.948(7)
Cu(2)-Cl(3)	2.180(4)	Cu(2)-Cl(1)	2.525(4)	Cu(1)-N(3)	1.915(6)
O(6)#1-Tb(1)-O(2)#2	148.74(19)	O(6)#1-Tb(1)-O(5)#3	105.90(19)		
O(4)-Tb(1)-O(3)	52.65(15)	O(1W)-Tb(1)-O(3)	128.14(16)		
O(2W)-Tb(1)-O(3)	144.68(17)	O(1)-Tb(1)-O(3)	130.88(17)		
O(5)#3-Tb(1)-O(3)	76.54(17)	O(2)#2-Tb(1)-O(3)	78.90(16)		
O(6)#1-Tb(1)-O(3)	74.18(17)	O(1W)-Tb(1)-O(4)	147.44(17)		
O(2W)-Tb(1)-O(4)	130.52(16)	O(1)-Tb(1)-O(4)	81.69(17)		
O(5)#3-Tb(1)-O(4)	126.23(17)	O(2)#2-Tb(1)-O(4)	72.50(17)		
O(6)#1-Tb(1)-O(4)	78.59(19)	O(2W)-Tb(1)-O(1W)	70.45(17)		
O(1)-Tb(1)-O(1W)	80.00(17)	O(5)#3-Tb(1)-O(1W)	76.34(18)		
O(2)#2-Tb(1)-O(1W)	138.79(18)	O(6)#1-Tb(1)-O(1W)	72.01(19)		
O(1)-Tb(1)-O(2W)	77.10(18)	O(5)#3-Tb(1)-O(2W)	80.85(17)		
O(2)#2-Tb(1)-O(2W)	71.51(17)	O(6)#1-Tb(1)-O(2W)	138.91(18)		
O(5)#3-Tb(1)-O(1)	151.91(19)	O(2)#2-Tb(1)-O(1)	106.29(17)		
Cl(2)-Cu(2)-Cl(3)	140.62(19)	Cl(2)-Cu(2)-Cl(1)	109.70(14)		
Cl(1)-Cu(3)-Cl(3)#3	100.94(11)	N(1)#4-Cu(3)-Cl(3)#3	105.5(2)		
N(1)#4-Cu(3)-Cl(1)	149.2(2)	N(2)-Cu(1)-Cl(1)	97.5(2)		
N(3)-Cu(1)-Cl(1)	99.2(2)	N(3)-Cu(1)-N(2)	160.5(3)		

Cl(3)-Cu(2)-Cl(1) 108.33(13)

Symmetry code for:

**4:#1** x+1,y+1,z+1; **#2** -x+2,-y+2,-z+1; **#3** -x,-y+1,-z; **#4** x-2,y-1,z-1; **#5** x-1,y-1,z-1;  
**#6** x+2,y+1,z+1.

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**Compound 5**

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Dy(1)-O(2)#1	2.285(3)	Dy(1)-O(4)	2.539(3)	Cu(1)-N(3)	2.077(4)
Dy(1)-O(1)	2.373(3)	Dy(1)-O(2W)	2.548(3)	Cu(1)-I(1)#4	2.6472(8)
Dy(1)-O(5)#2	2.395(3)	Dy(1)-O(6)#2	2.825(3)	Cu(1)-Cu(1)#4	2.6672(14)
Dy(1)-O(6)#3	2.408(3)	I(1)-Cu(1)#4	2.6473(8)		
Dy(1)-O(1W)	2.423(3)	I(1)-Cu(1)	2.6586(8)		
Dy(1)-O(3)	2.460(3)	Cu(1)-N(2)	2.064(4)		
O(2)#1-Dy(1)-O(1)	100.85(12)				
O(2)#1-Dy(1)-O(5)#2	144.39(12)	O(1W)-Dy(1)-O(2W)	69.87(11)		
O(1)-Dy(1)-O(5)#2	78.10(12)	O(3)-Dy(1)-O(2W)	142.12(11)		
O(2)#1-Dy(1)-O(6)#3	88.31(12)	O(4)-Dy(1)-O(2W)	126.55(10)		
O(1)-Dy(1)-O(6)#3	147.25(11)	O(2)#1-Dy(1)-O(6)#2	143.18(11)		
O(5)#2-Dy(1)-O(6)#3	111.98(11)	O(1)-Dy(1)-O(6)#2	115.70(11)		
O(2)#1-Dy(1)-O(1W)	81.08(12)	O(5)#2-Dy(1)-O(6)#2	48.69(10)		
O(1)-Dy(1)-O(1W)	138.51(11)	O(6)#3-Dy(1)-O(6)#2	63.58(12)		
O(5)#2-Dy(1)-O(1W)	77.40(12)	O(1W)-Dy(1)-O(6)#2	68.93(11)		
O(6)#3-Dy(1)-O(1W)	73.71(11)	O(3)-Dy(1)-O(6)#2	71.73(10)		
O(5)#2-Dy(1)-O(3)	88.15(12)	O(4)-Dy(1)-O(6)#2	118.56(10)		
O(6)#3-Dy(1)-O(3)	75.54(11)	O(2W)-Dy(1)-O(6)#2	112.53(10)		

O(1W)-Dy(1)-O(3)	137.75(11)	Cu(1)#4-I(1)-Cu(1)	60.35(3)
O(2)#1-Dy(1)-O(4)	74.50(12)	N(2)-Cu(1)-N(3)	109.22(18)
O(1)-Dy(1)-O(4)	73.82(11)	N(2)-Cu(1)-I(1)#4	109.99(12)
O(5)#2-Dy(1)-O(4)	136.30(12)	N(3)-Cu(1)-I(1)#4	110.27(11)
O(6)#3-Dy(1)-O(4)	78.62(11)	N(2)-Cu(1)-I(1)	108.81(12)
O(1W)-Dy(1)-O(4)	143.37(12)	N(3)-Cu(1)-I(1)	105.08(12)
O(3)-Dy(1)-O(4)	52.24(11)	I(1)#4-Cu(1)-I(1)	113.30(3)
O(2)#1-Dy(1)-O(2W)	74.25(12)	N(2)-Cu(1)-Cu(1)#4	151.04(13)
O(1)-Dy(1)-O(2W)	70.91(11)	N(3)-Cu(1)-Cu(1)#4	99.64(12)
O(5)#2-Dy(1)-O(2W)	71.85(12)	I(1)#4-Cu(1)-Cu(1)#4	60.03(2)
O(6)#3-Dy(1)-O(2W)	141.49(11)	I(1)-Cu(1)-Cu(1)#4	59.61(3)

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Symmetry code for :

**5: #1 -x+1/2, -y+1/2, -z+2; #2 x, -y+2, z+1/2; #3 -x+1/2, y-1/2, -z+3/2; #4 -x+1, y, -z+3/2; #5 x, -y+2, z-1/2; #6 -x+1/2, y+1/2, -z+3/2.**

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**Compound 6**

Gd(1)-O(1)	2.279(3)	Gd(1)-O(2)#1	2.370(3)	Gd(1)-O(4)	2.395(3)
Gd(1)-C(17)#3	2.862(4)	Gd(1)-O(3)	2.819(3)	Gd(1)-O(1W)	2.547(3)
Gd(1)-O(5)#3	2.536(3)	Gd(1)-O(6)#3	2.462(3)	Gd(1)-O(2W)	2.425(3)
Gd(1)-O(3)#2	2.402(3)	I(1)-Cu(1)	2.6497(8)	I(1)-Cu(1)#4	2.6581(7)
Cu(1)-Cu(1)#4	2.6604(12)	Cu(1)-I(1)#4	2.6580(7)	Cu(1)-N(2)	2.084(4)
Cu(1)-N(3)	2.062(4)	O(5)-Gd(1)#5	2.536(3)	O(6)-Gd(1)#5	2.462(3)
O(1)-Gd(1)-O(2)#1	100.68(11)	O(1)-Gd(1)-O(4)	143.96(12)		
O(3)#2-Gd(1)-O(2W)	73.56(10)	O(4)-Gd(1)-O(2W)	78.10(11)		
O(1W)-Gd(1)-O(3)	112.47(9)	O(5)#3-Gd(1)-O(3)	118.58(9)		

O(6)#3-Gd(1)-O(3)	71.83(9)	O(2W)-Gd(1)-O(3)	69.23(10)
O(3)#2-Gd(1)-O(3)	63.37(10)	O(4)-Gd(1)-O(3)	49.14(9)
O(2)#1-Gd(1)-O(3)	116.12(9)	O(1)-Gd(1)-O(3)	142.93(10)
O(5)#3-Gd(1)-O(1W)	126.66(9)	O(6)#3-Gd(1)-O(1W)	142.07(10)
O(2W)-Gd(1)-O(1W)	70.02(10)	O(3)#2-Gd(1)-O(1W)	141.68(10)
O(4)-Gd(1)-O(1W)	71.46(10)	O(2)#1-Gd(1)-O(1W)	71.02(10)
O(1)-Gd(1)-O(1W)	74.18(11)	O(6)#3-Gd(1)-O(5)#3	52.30(10)
O(2W)-Gd(1)-O(5)#3	142.62(10)	O(3)#2-Gd(1)-O(5)#3	78.44(10)
O(4)-Gd(1)-O(5)#3	136.47(11)	O(2)#1-Gd(1)-O(5)#3	73.67(10)
O(1)-Gd(1)-O(5)#3	74.62(11)	O(2W)-Gd(1)-O(6)#3	137.96(10)
O(3)#2-Gd(1)-O(6)#3	75.37(10)	O(4)-Gd(1)-O(6)#3	88.32(11)
O(2)#1-Gd(1)-O(6)#3	73.65(10)	O(1)-Gd(1)-O(6)#3	126.39(11)
O(2)#1-Gd(1)-O(2W)	139.08(11)	O(1)-Gd(1)-O(2W)	80.33(11)
O(4)-Gd(1)-O(3)#2	112.24(10)	O(2)#1-Gd(1)-O(3)#2	146.94(11)
O(1)-Gd(1)-O(3)#2	88.51(11)	O(2)#1-Gd(1)-O(4)	78.19(10)
N(3)-Cu(1)-N(2)	109.40(16)	N(3)-Cu(1)-I(1)	109.86(11)
N(3)-Cu(1)-I(1)#4	108.83(11)	N(2)-Cu(1)-I(1)	110.24(11)
I(1)#4-Cu(1)-Cu(1)#4	59.77(2)	I(1)-Cu(1)-Cu(1)#4	60.07(2)
N(2)-Cu(1)-Cu(1)#4	99.47(11)	N(3)-Cu(1)-Cu(1)#4	151.04(12)
I(1)-Cu(1)-I(1)#4	113.53(3)	N(2)-Cu(1)-I(1)#4	104.83(10)

Symmetry code for :

**6: #1 -x+1/2,-y+1/2,-z; #2 -x+1/2,-y+3/2,-z; #3 x,-y+2,z-1/2; #4 -x+1,y,-z+1/2; #5 x,-y+2,z+1/2.**



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**Compound 7**

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Sm(1)-O(1)	2.303(3)	Sm(1)-O(2)#1	2.402(3)	Sm(1)-O(4)	2.427(3)
Sm(1)-O(3)	2.783(3)	Sm(1)-O(1W)	2.575(3)	Sm(1)-O(5)#3	2.563(3)
Sm(1)-O(6)#3	2.492(3)	Sm(1)-O(2W)	2.454(3)	Sm(1)-O(3)#2	2.437(3)
I(1)-Cu(1)	2.6487(8)	I(1)-Cu(1)#4	2.6611(8)	Cu(1)-N(3)	2.055(5)
Cu(1)-N(2)	2.077(4)	Cu(1)-I(1)#4	2.6611(8)	Cu(1)-Cu(1)#4	2.6710(15)
O(6)-Sm(1)#5	2.492(3)	O(5)-Sm(1)#5	2.563(3)		
O(2)#1-Sm(1)-O(4)	77.66(11)	O(1)-Sm(1)-O(3)#2		88.26(12)	
O(2)#1-Sm(1)-O(3)#2	146.68(11)	O(4)-Sm(1)-O(3)#2		112.70(11)	
O(1)-Sm(1)-O(2W)	79.93(12)	O(2)#1-Sm(1)-O(2W)		139.00(12)	
O(4)-Sm(1)-O(2W)	78.34(12)	O(3)#2-Sm(1)-O(2W)		73.87(11)	
O(1)-Sm(1)-O(2)#1	101.25(12)	O(1)-Sm(1)-O(4)		143.80(12)	
O(3)-Sm(1)-C(17)#3	95.53(12)	O(1W)-Sm(1)-C(17)#3		140.53(11)	
O(5)#3-Sm(1)-C(17)#3	25.89(13)	O(6)#3-Sm(1)-C(17)#3		25.83(13)	
O(2W)-Sm(1)-C(17)#3	148.42(12)	O(3)#2-Sm(1)-C(17)#3		74.57(11)	
O(4)-Sm(1)-C(17)#3	113.49(14)	O(2)#1-Sm(1)-C(17)#3		72.35(12)	
O(1)-Sm(1)-C(17)#3	100.10(14)	O(1W)-Sm(1)-O(3)		112.57(10)	
O(5)#3-Sm(1)-O(3)	118.95(10)	O(6)#3-Sm(1)-O(3)		72.58(10)	
O(2W)-Sm(1)-O(3)	69.51(10)	O(3)#2-Sm(1)-O(3)		63.80(12)	
O(4)-Sm(1)-O(3)	49.15(10)	O(2)#1-Sm(1)-O(3)		115.55(10)	
O(1)-Sm(1)-O(3)	142.90(11)	O(5)#3-Sm(1)-O(1W)		126.03(10)	
O(6)#3-Sm(1)-O(1W)	141.85(12)	O(2W)-Sm(1)-O(1W)		70.32(11)	

O(3)#2-Sm(1)-O(1W)	142.24(11)	O(4)-Sm(1)-O(1W)	71.34(11)
O(2)#1-Sm(1)-O(1W)	70.70(11)	O(1)-Sm(1)-O(1W)	74.23(12)
O(6)#3-Sm(1)-O(5)#3	51.70(11)	O(2W)-Sm(1)-O(5)#3	142.61(12)
O(3)#2-Sm(1)-O(5)#3	78.41(10)	O(4)-Sm(1)-O(5)#3	136.49(12)
O(2)#1-Sm(1)-O(5)#3	73.65(11)	O(1)-Sm(1)-O(5)#3	74.59(12)
O(2W)-Sm(1)-O(6)#3	138.71(11)	O(3)#2-Sm(1)-O(6)#3	75.25(11)
O(4)-Sm(1)-O(6)#3	89.12(12)	O(2)#1-Sm(1)-O(6)#3	73.31(11)
O(1)-Sm(1)-O(6)#3	125.72(12)	N(3)-Cu(1)-N(2)	108.94(18)
I(1)-Cu(1)-Cu(1)#4	60.03(2)	I(1)#4-Cu(1)-Cu(1)#4	59.57(3)
N(2)-Cu(1)-Cu(1)#4	99.74(13)	N(3)-Cu(1)-Cu(1)#4	151.19(13)
N(2)-Cu(1)-I(1)#4	104.68(12)	I(1)-Cu(1)-I(1)#4	113.41(3)
N(2)-Cu(1)-I(1)	110.47(11)	N(3)-Cu(1)-I(1)#4	108.83(12)

Symmetry code for :

7: #1  $-x+1/2, -y+5/2, -z$ ; #2  $-x+1/2, -y+3/2, -z$ ; #3  $x, -y+1, z-1/2$ ; #4  $-x+1, y, -z+1/2$ ; #5  $x, -y+1, z+1/2$ .

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### Compound 8

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Tb(1)-O(1)	2.262(3)	Tb(1)-O(2)#1	2.359(3)	Tb(1)-O(4)	2.373(3)
Tb(1)-O(6)#3	2.528(3)	Tb(1)-O(1W)	2.528(3)	Tb(1)-O(5)#3	2.446(3)

Tb(1)-O(2W)	2.408(3)	Tb(1)-O(3)#2	2.376(3)	I(2)-Cu(3)	2.6563(8)
Tb(1)-O(3)	2.875(3)	I(2)-Cu(3)#4	2.6531(8)	Cu(3)-N(3)	2.064(4)
Cu(3)-N(2)	2.080(4)	Cu(3)-I(2)#4	2.6531(8)	Cu(3)-Cu(3)#4	2.6708(14)
O(5)-Tb(1)#5	2.446(3)	O(6)-Tb(1)#5	2.528(3)		
O(1)-Tb(1)-O(2)#1	101.31(11)	O(1)-Tb(1)-O(4)		144.94(13)	
O(1W)-Tb(1)-O(6)#3	127.25(10)	O(5)#3-Tb(1)-O(6)#3		52.36(11)	
O(2W)-Tb(1)-O(6)#3	142.75(11)	O(3)#2-Tb(1)-O(6)#3		78.52(11)	
O(4)-Tb(1)-O(6)#3	135.83(12)	O(2)#1-Tb(1)-O(6)#3		73.98(11)	
O(1)-Tb(1)-O(6)#3	74.98(12)	O(5)#3-Tb(1)-O(1W)		142.16(11)	
O(2W)-Tb(1)-O(1W)	70.09(11)	O(3)#2-Tb(1)-O(1W)		141.21(11)	
O(4)-Tb(1)-O(1W)	72.40(11)	O(2)#1-Tb(1)-O(1W)		71.33(11)	
O(1)-Tb(1)-O(1W)	74.35(12)	O(2W)-Tb(1)-O(5)#3		137.23(10)	
O(3)#2-Tb(1)-O(5)#3	75.59(11)	O(4)-Tb(1)-O(5)#3		87.19(12)	
O(2)#1-Tb(1)-O(5)#3	73.55(11)	O(1)-Tb(1)-O(5)#3		126.79(12)	
O(3)#2-Tb(1)-O(2W)	73.02(12)	O(4)-Tb(1)-O(2W)		77.96(12)	
O(2)#1-Tb(1)-O(2W)	139.22(12)	O(1)-Tb(1)-O(2W)		80.59(12)	
O(4)-Tb(1)-O(3)#2	111.15(11)	O(2)#1-Tb(1)-O(3)#2		147.18(12)	
O(1)-Tb(1)-O(3)#2	88.31(12)	O(2)#1-Tb(1)-O(4)		78.32(11)	
O(6)#3-Tb(1)-O(3)	117.60(10)	O(1W)-Tb(1)-O(3)		112.73(10)	
O(5)#3-Tb(1)-O(3)	70.74(10)	O(2W)-Tb(1)-O(3)		69.50(10)	
O(3)#2-Tb(1)-O(3)	63.28(12)	O(4)-Tb(1)-O(3)		48.19(10)	
O(2)#1-Tb(1)-O(3)	115.22(10)	N(3)-Cu(3)-I(2)#4		109.84(13)	
N(2)-Cu(3)-I(2)#4	110.19(12)	N(3)-Cu(3)-I(2)		108.90(12)	
I(2)-Cu(3)-Cu(3)#4	59.74(3)	I(2)#4-Cu(3)-Cu(3)#4		59.86(3)	

N(2)-Cu(3)-Cu(3)#4	99.35(12)	N(3)-Cu(3)-Cu(3)#4	151.12(12)
I(2)#4-Cu(3)-I(2)	113.09(3)	N(2)-Cu(3)-I(2)	105.23(12)
O(1)-Tb(1)-O(3)	143.26(11)	N(3)-Cu(3)-N(2)	109.46(17)

Symmetry code for :

**8: #1 -x+3/2,-y+1/2,-z+1; #2 -x+3/2,-y+3/2,-z+1; #3 x,-y+2,z+1/2; #4 -x+1,y,-z+1/2; #5 x,-y+2,z-1/2.**

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### Compound 9

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Eu(1)-O(2)#1	2.292(5)	Eu(1)-O(1)	2.380(5)	Eu(1)-O(4)	2.401(5)
Eu(1)-Eu(1)#2	4.4714(8)	Eu(1)-C(17)#3	2.869(8)	Eu(1)-O(3)	2.826(5)
Eu(1)-O(2W)	2.558(5)	Eu(1)-O(5)#3	2.542(5)	Eu(1)-O(6)#3	2.465(5)
Eu(1)-O(1W)	2.432(5)	Eu(1)-O(3)#2	2.426(5)	Br(1)-Cu(3)	2.4889(15)
Cu(3)-N(2)	2.028(7)	Cu(3)-Br(1)#4	2.5419(15)	Cu(3)-Cu(3)#4	2.903(2)
Cu(3)-N(3)	2.024(7)	Br(1)-Cu(3)#4	2.5419(15)		
O(2)#1-Eu(1)-O(1)	99.98(18)	O(2)#1-Eu(1)-O(4)		145.20(19)	

O(4)-Eu(1)-O(3)	48.86(15)	O(1)-Eu(1)-O(3)	115.81(16)
O(2)#1-Eu(1)-O(3)	143.95(16)	O(5)#3-Eu(1)-O(2W)	127.48(17)
O(6)#3-Eu(1)-O(2W)	141.97(17)	O(1W)-Eu(1)-O(2W)	70.11(16)
O(3)#2-Eu(1)-O(2W)	140.72(16)	O(4)-Eu(1)-O(2W)	72.54(17)
O(1)-Eu(1)-O(2W)	71.15(16)	O(2)#1-Eu(1)-O(2W)	73.84(18)
O(6)#3-Eu(1)-O(5)#3	51.43(19)	O(1W)-Eu(1)-O(5)#3	144.20(17)
O(3)#2-Eu(1)-O(5)#3	78.70(17)	O(4)-Eu(1)-O(5)#3	134.31(18)
O(1)-Eu(1)-O(5)#3	73.79(17)	O(2)#1-Eu(1)-O(5)#3	75.21(19)
O(1W)-Eu(1)-O(6)#3	137.00(17)	O(3)#2-Eu(1)-O(6)#3	76.41(17)
O(4)-Eu(1)-O(6)#3	86.77(19)	O(1)-Eu(1)-O(6)#3	73.41(17)
O(2)#1-Eu(1)-O(6)#3	126.3(2)	O(3)#2-Eu(1)-O(1W)	72.97(16)
O(4)-Eu(1)-O(1W)	77.79(18)	O(2)#1-Eu(1)-O(1W)	82.66(18)
O(1)-Eu(1)-O(1W)	138.65(18)	O(4)-Eu(1)-O(3)#2	112.14(17)
O(1)-Eu(1)-O(3)#2	147.75(17)	O(2)#1-Eu(1)-O(3)#2	88.76(18)
O(1)-Eu(1)-O(4)	77.38(17)	O(3)#2-Eu(1)-O(3)	63.50(19)
O(5)#3-Eu(1)-O(3)	117.47(17)	O(2W)-Eu(1)-O(3)	112.59(15)
O(6)#3-Eu(1)-O(3)	71.63(16)	O(1W)-Eu(1)-O(3)	67.99(16)
N(3)-Cu(3)-N(2)	115.4(3)	N(3)-Cu(3)-Br(1)	116.5(2)
Br(1)#4-Cu(3)-Cu(3)#4	53.90(4)	Br(1)-Cu(3)-Cu(3)#4	55.61(4)
N(2)-Cu(3)-Cu(3)#4	96.74(18)	N(3)-Cu(3)-Cu(3)#4	147.3(2)
Br(1)-Cu(3)-Br(1)#4	103.96(5)	N(2)-Cu(3)-Br(1)#4	107.67(19)
N(3)-Cu(3)-Br(1)#4	107.4(2)	N(2)-Cu(3)-Br(1)	105.0(2)

Symmetry code for :

**9: #1 -x,-y-1,-z+1; #2 -x,-y,-z+1; #3 x-1/2,-y+1/2,z-1/2; #4 -x,y,-z+3/2; #5 x+1/2,-y+1/2,z+1/2.**

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**Compound 10**

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La(1)-O(2)#1	2.382(6)	La(1)-O(1)	2.487(5)	La(1)-O(4)#2	2.527(5)
La(1)-O(3)#2	2.794(5)	La(1)-O(1W)	2.632(5)	La(1)-O(6)#3	2.631(6)
La(1)-O(5)#3	2.567(6)	La(1)-O(2W)	2.556(5)	La(1)-O(3)	2.541(5)
Br(1)-Cu(1)	2.5089(17)	Br(1)-Cu(1)#4	2.5096(17)	Cu(1)-N(2)	2.026(8)
Cu(1)-N(3)	2.039(8)	Cu(1)-Br(1)#4	2.5095(17)	O(3)-La(1)#2	2.794(5)
O(4)-La(1)#2	2.527(5)	O(5)-La(1)#5	2.567(6)	O(6)-La(1)#5	2.631(6)
O(2)#1-La(1)-O(1)	102.41(19)	O(2)#1-La(1)-O(4)#2	143.9(2)		
O(1W)-La(1)-O(3)#2	111.50(16)	O(6)#3-La(1)-O(3)#2	119.6(2)		
O(5)#3-La(1)-O(3)#2	74.19(19)	O(2W)-La(1)-O(3)#2	68.80(17)		
O(3)-La(1)-O(3)#2	63.92(18)	O(4)#2-La(1)-O(3)#2	48.93(16)		
O(1)-La(1)-O(3)#2	113.59(16)	O(2)#1-La(1)-O(3)#2	143.64(18)		
O(6)#3-La(1)-O(1W)	126.1(2)	O(5)#3-La(1)-O(1W)	142.71(19)		
O(2W)-La(1)-O(1W)	70.66(17)	O(3)-La(1)-O(1W)	141.72(17)		
O(4)#2-La(1)-O(1W)	70.76(18)	O(1)-La(1)-O(1W)	71.45(17)		
O(2)#1-La(1)-O(1W)	74.58(19)	O(5)#3-La(1)-O(6)#3	49.7(2)		
O(2W)-La(1)-O(6)#3	143.4(2)	O(3)-La(1)-O(6)#3	79.83(18)		
O(4)#2-La(1)-O(6)#3	135.4(2)	O(1)-La(1)-O(6)#3	73.3(2)		
O(2)#1-La(1)-O(6)#3	74.7(2)	O(2W)-La(1)-O(5)#3	138.7(2)		
O(3)-La(1)-O(5)#3	74.96(18)	O(4)#2-La(1)-O(5)#3	90.8(2)		
O(1)-La(1)-O(5)#3	72.74(19)	O(2)#1-La(1)-O(5)#3	123.7(2)		
O(3)-La(1)-O(2W)	72.81(17)	O(4)#2-La(1)-O(2W)	78.63(19)		
O(1)-La(1)-O(2W)	139.48(19)	O(2)#1-La(1)-O(2W)	80.8(2)		

O(4)#2-La(1)-O(3)	112.62(17)	O(1)-La(1)-O(3)	146.72(18)
O(2)#1-La(1)-O(3)	88.80(19)	O(1)-La(1)-O(4)#2	75.86(18)
N(2)-Cu(1)-N(3)	115.1(3)	N(2)-Cu(1)-Br(1)	109.9(2)
Br(1)-Cu(1)-Br(1)#4	105.02(6)	N(3)-Cu(1)-Br(1)#4	104.6(2)
N(2)-Cu(1)-Br(1)#4	113.1(2)	N(3)-Cu(1)-Br(1)	108.5(2)

Symmetry code for :

**10: #1 -x+2,-y+2,-z+2; #2 -x+2,-y+3,-z+2; #3 -x+3/2,y+1/2,-z+3/2; #4 -x+2,y,-z+3/2; #5 -x+3/2,y-1/2,-z+3/2.**

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### Compound 11

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Nd(1)-O(1)#1	2.334(4)	Nd(1)-O(2)	2.434(3)	Nd(1)-O(6)#2	2.458(3)
Nd(1)-O(5)#2	2.775(3)	Nd(1)-O(3)	2.594(4)	Nd(1)-O(2W)	2.588(3)
Nd(1)-O(4)	2.505(4)	Nd(1)-O(5)#3	2.485(3)	Nd(1)-O(1W)	2.475(3)
Cu(3)-N(2)	2.019(5)	Cu(3)-N(3)	2.040(6)	Cu(3)-Br(2)	2.5091(11)
Cu(3)-Br(2)#4	2.5290(12)	Br(2)-Cu(3)#4	2.5289(12)	O(5)-Nd(1)#5	2.485(3)
O(5)-Nd(1)#6	2.775(3)				
O(1)#1-Nd(1)-O(2)	100.40(12)	O(1)#1-Nd(1)-O(6)#2	144.56(14)		
O(3)-Nd(1)-O(5)#2	118.80(12)	O(2W)-Nd(1)-O(5)#2	111.89(10)		
O(4)-Nd(1)-O(5)#2	72.94(12)	O(5)#3-Nd(1)-O(5)#2	63.82(12)		
O(1W)-Nd(1)-O(5)#2	68.85(11)	O(6)#2-Nd(1)-O(5)#2	49.13(10)		
O(2)-Nd(1)-O(5)#2	115.20(11)	O(1)#1-Nd(1)-O(5)#2	144.08(11)		
O(2W)-Nd(1)-O(3)	126.83(12)	O(4)-Nd(1)-O(3)	50.86(14)		
O(5)#3-Nd(1)-O(3)	79.22(11)	O(1W)-Nd(1)-O(3)	143.28(13)		
O(6)#2-Nd(1)-O(3)	134.77(14)	O(2)-Nd(1)-O(3)	73.28(12)		

O(1)#1-Nd(1)-O(3)	74.64(15)	O(4)-Nd(1)-O(2W)	142.64(12)
O(5)#3-Nd(1)-O(2W)	140.83(11)	O(1W)-Nd(1)-O(2W)	69.90(11)
O(6)#2-Nd(1)-O(2W)	71.74(12)	O(2)-Nd(1)-O(2W)	71.69(12)
O(1)#1-Nd(1)-O(2W)	73.86(13)	O(5)#3-Nd(1)-O(4)	75.79(12)
O(1W)-Nd(1)-O(4)	138.30(13)	O(6)#2-Nd(1)-O(4)	88.45(14)
O(2)-Nd(1)-O(4)	73.08(12)	O(1)#1-Nd(1)-O(4)	125.03(15)
O(1W)-Nd(1)-O(5)#3	72.90(11)	O(6)#2-Nd(1)-O(5)#3	112.76(11)
O(2)-Nd(1)-O(5)#3	147.19(12)	O(1)#1-Nd(1)-O(5)#3	89.01(12)
O(6)#2-Nd(1)-O(1W)	79.14(13)	O(2)-Nd(1)-O(1W)	139.34(12)
O(1)#1-Nd(1)-O(1W)	81.37(13)	O(2)-Nd(1)-O(6)#2	76.68(12)
N(2)-Cu(3)-N(3)	114.8(2)	N(2)-Cu(3)-Br(2)	114.58(14)
N(2)-Cu(3)-Br(2)#4	109.10(15)	N(3)-Cu(3)-Br(2)	104.83(14)
Br(2)-Cu(3)-Br(2)#4	104.83(4)	N(3)-Cu(3)-Br(2)#4	108.11(14)
Br(2)#4-Cu(3)-Cu(3)#4	54.83(3)	Br(2)-Cu(3)-Cu(3)#4	55.47(3)
N(3)-Cu(3)-Cu(3)#4	97.25(14)	N(2)-Cu(3)-Cu(3)#4	147.89(15)

Symmetry code for :

**11: #1 -x+1,-y+2,-z+2; #2 x+1/2,-y+1/2,z+1/2; #3 -x+1/2,y+1/2,-z+3/2; #4 -x,y,-z+3/2; #5 -x+1/2,y-1/2,-z+3/2; #6 x-1/2,-y+1/2,z-1/2.**

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### Compound 12

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Sm(1)-O(1)	2.302(3)	Sm(1)-O(2)#1	2.407(3)	Sm(1)-O(4)	2.421(3)
Sm(1)-O(3)	2.807(3)	Sm(1)-O(5)#3	2.572(3)	Sm(1)-O(1W)	2.567(3)
Sm(1)-O(6)#3	2.486(3)	Sm(1)-O(3)#2	2.446(3)	Sm(1)-O(2W)	2.445(3)
Br(1)-Cu(3)	2.5063(9)	Br(1)-Cu(3)#4	2.5338(10)	Cu(3)-N(3)	2.031(5)



Cu(3)-N(2)	2.039(5)	Cu(3)-Br(1)#4	2.5340(10)	O(3)-Sm(1)#2	2.445(3)
O(2)-Sm(1)#1	2.407(3)				
O(1)-Sm(1)-O(2)#1	99.91(11)	O(1)-Sm(1)-O(4)		144.91(13)	
O(5)#3-Sm(1)-O(3)	118.07(11)	O(1W)-Sm(1)-O(3)		112.01(10)	
O(6)#3-Sm(1)-O(3)	71.93(11)	O(3)#2-Sm(1)-O(3)		63.41(11)	
O(2W)-Sm(1)-O(3)	68.50(10)	O(4)-Sm(1)-O(3)		48.93(10)	
O(2)#1-Sm(1)-O(3)	115.83(10)	O(1)-Sm(1)-O(3)		143.99(11)	
O(1W)-Sm(1)-O(5)#3	127.52(11)	O(6)#3-Sm(1)-O(5)#3		51.57(13)	
O(3)#2-Sm(1)-O(5)#3	79.09(11)	O(2W)-Sm(1)-O(5)#3		143.43(12)	
O(4)-Sm(1)-O(5)#3	134.61(13)	O(2)#1-Sm(1)-O(5)#3		73.30(11)	
O(1)-Sm(1)-O(5)#3	74.93(13)	O(6)#3-Sm(1)-O(1W)		142.30(11)	
O(3)#2-Sm(1)-O(1W)	140.44(11)	O(2W)-Sm(1)-O(1W)		69.86(11)	
O(4)-Sm(1)-O(1W)	72.06(11)	O(2)#1-Sm(1)-O(1W)		71.80(11)	
O(1)-Sm(1)-O(1W)	73.93(12)	O(3)#2-Sm(1)-O(6)#3		76.26(11)	
O(2W)-Sm(1)-O(6)#3	137.43(11)	O(4)-Sm(1)-O(6)#3		87.17(13)	
O(2)#1-Sm(1)-O(6)#3	73.19(11)	O(1)-Sm(1)-O(6)#3		126.10(13)	
O(2W)-Sm(1)-O(3)#2	72.58(11)	O(4)-Sm(1)-O(3)#2		112.13(10)	
O(2)#1-Sm(1)-O(3)#2	147.45(11)	O(1)-Sm(1)-O(3)#2		89.04(12)	
O(4)-Sm(1)-O(2W)	78.64(12)	O(2)#1-Sm(1)-O(2W)		139.43(12)	
O(1)-Sm(1)-O(2W)	81.84(12)	O(2)#1-Sm(1)-O(4)		77.49(11)	
N(3)-Cu(3)-N(2)	115.24(19)	N(3)-Cu(3)-Br(1)		115.60(13)	
Br(1)-Cu(3)-Br(1)#4	104.44(4)	N(2)-Cu(3)-Br(1)#4		107.75(13)	
N(3)-Cu(3)-Br(1)#4	107.93(14)	N(2)-Cu(3)-Br(1)		105.13(13)	

Symmetry code for :

**12: #1 -x,-y+2,-z; #2 -x,-y+1,-z; #3 x-1/2,-y+1/2,z-1/2; #4 -x,y,-z+1/2; #5 x+1/2,-**

**y+1/2,z+1/2.**

<b>Compound 13<sup>[a]</sup></b>			
Cu(1)-I(2)	2.6461(16)	Eu(1)-O(5W)	2.399(6)
Cu(1)-I(2)#3	2.6561(15)	Eu(1)-O(6W)	2.413(6)
Cu(1)-I(1)	2.6747(16)	Eu(1)-O(1)#1	2.445(7)
Cu(1)-Cu(1)#3	2.769(3)	Eu(1)-O(3)#1	2.446(6)
Cu(1)-Cu(2)#4	2.793(2)	Eu(1)-O(8)	2.454(6)
Cu(2)-I(1)	2.6292(15)	Eu(1)-O(7)	2.474(6)
Cu(2)-I(1)#4	2.6404(16)	Eu(1)-O(4)	2.479(7)
Cu(2)-I(2)#4	2.6793(16)	Eu(1)-O(2)#1	2.564(6)
Cu(2)-Cu(2)#4	2.776(3)	Eu(1)-O(3)	2.611(6)
Cu(2)-Cu(1)#4	2.793(2)	Eu(1)-Eu(1)#1	4.2521(9)
N(1)-Cu(1)-I(2)	107.2(3)	O(6W)-Eu(1)-O(7)	142.6(2)
N(1)-Cu(1)-I(2)#3	110.3(3)	O(1)#1-Eu(1)-O(7)	70.0(2)
I(2)-Cu(1)-I(2)#3	117.02(5)	O(3)#1-Eu(1)-O(7)	135.11(19)
N(1)-Cu(1)-I(1)	104.5(3)	O(8)-Eu(1)-O(7)	65.44(19)
I(2)-Cu(1)-I(1)	116.53(6)	O(5W)-Eu(1)-O(4)	79.8(2)
I(2)#3-Cu(1)-I(1)	100.52(5)	O(6W)-Eu(1)-O(4)	77.7(2)
N(1)-Cu(1)-Cu(1)#3	128.0(3)	O(1)#1-Eu(1)-O(4)	140.1(2)
I(2)-Cu(1)-Cu(1)#3	58.69(5)	O(3)#1-Eu(1)-O(4)	116.6(2)
I(2)#3-Cu(1)-Cu(1)#3	58.33(5)	O(8)-Eu(1)-O(4)	96.2(2)
I(1)-Cu(1)-Cu(1)#3	127.00(8)	O(7)-Eu(1)-O(4)	74.6(2)
N(1)-Cu(1)-Cu(2)#4	124.8(3)	O(5W)-Eu(1)-O(2)#1	76.6(2)
I(2)-Cu(1)-Cu(2)#4	58.96(4)	O(6W)-Eu(1)-O(2)#1	74.1(2)
I(2)#3-Cu(1)-Cu(2)#4	123.69(6)	O(1)#1-Eu(1)-O(2)#1	52.25(19)
I(1)-Cu(1)-Cu(2)#4	57.71(5)	O(3)#1-Eu(1)-O(2)#1	74.63(19)

Cu(1)#3-Cu(1)- Cu(2)#4	92.25(7)	O(8)-Eu(1)-O(2)#1	116.4(2)
N(2)-Cu(2)-I(1)	109.87(18)	O(7)-Eu(1)-O(2)#1	120.8(2)
N(2)-Cu(2)-I(1)#4	106.87(18)	O(4)-Eu(1)-O(2)#1	147.2(2)
I(1)-Cu(2)-I(1)#4	116.41(5)	O(5W)-Eu(1)-O(3)	122.8(2)
N(2)-Cu(2)-I(2)#4	105.63(18)	O(6W)-Eu(1)-O(3)	69.3(2)
I(1)-Cu(2)-I(2)#4	100.94(5)	O(1)#1-Eu(1)-O(3)	162.3(2)
I(1)#4-Cu(2)-I(2)#4	116.57(6)	O(3)#1-Eu(1)-O(3)	65.6(2)
N(2)-Cu(2)-Cu(2)#4	126.72(19)	O(8)-Eu(1)-O(3)	78.5(2)
I(1)-Cu(2)-Cu(2)#4	58.40(5)	O(7)-Eu(1)-O(3)	109.62(19)
I(1)#4-Cu(2)-Cu(2)#4	58.01(5)	O(4)-Eu(1)-O(3)	50.98(19)
I(2)#4-Cu(2)-Cu(2)#4	127.23(8)	O(2)#1-Eu(1)-O(3)	129.22(19)
N(2)-Cu(2)-Cu(1)#4	118.62(18)	O(5W)-Eu(1)-Eu(1)#1	143.70(16)
I(1)-Cu(2)-Cu(1)#4	130.47(7)	O(6W)-Eu(1)-Eu(1)#1	71.55(15)
I(1)#4-Cu(2)-Cu(1)#4	58.91(5)	O(1)#1-Eu(1)-Eu(1)#1	134.51(16)
I(2)#4-Cu(2)-Cu(1)#4	57.79(5)	O(3)#1-Eu(1)-Eu(1)#1	33.99(14)
Cu(2)#4-Cu(2)- Cu(1)#4	97.09(8)	O(8)-Eu(1)-Eu(1)#1	71.44(13)
O(5W)-Eu(1)-O(6W)	73.8(2)	O(7)-Eu(1)-Eu(1)#1	127.86(14)
O(5W)-Eu(1)-O(1)#1	74.8(2)	O(4)-Eu(1)-Eu(1)#1	82.56(14)
O(6W)-Eu(1)-O(1)#1	122.4(2)	O(2)#1-Eu(1)-Eu(1)#1	103.64(14)
O(5W)-Eu(1)-O(3)#1	145.4(2)	O(3)-Eu(1)-Eu(1)#1	31.58(13)
O(6W)-Eu(1)-O(3)#1	80.1(2)	Cu(2)-I(1)-Cu(2)#4	63.59(5)
O(1)#1-Eu(1)-O(3)#1	101.6(2)	Cu(2)-I(1)-Cu(1)	103.80(5)
O(5W)-Eu(1)-O(8)	141.8(2)	Cu(2)#4-I(1)-Cu(1)	63.39(5)
O(6W)-Eu(1)-O(8)	143.0(2)	Cu(1)-I(2)-Cu(1)#3	62.98(5)
O(1)#1-Eu(1)-O(8)	85.7(2)	Cu(1)-I(2)-Cu(2)#4	63.25(5)
O(3)#1-Eu(1)-O(8)	70.05(19)	Cu(1)#3-I(2)-Cu(2)#4	97.43(5)

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O(5W)-Eu(1)-O(7) 77.0(2) Eu(1)#1-O(3)-Eu(1) 114.4(2)

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**Compound 14<sup>[b]</sup>**

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Gd(1)-O(7W)	2.382(8)	Cu(1)-N(1)	2.051(14)
Gd(1)-O(8W)	2.399(9)	Cu(1)-I(1)	2.676(2)
Gd(1)-O(4)	2.428(9)	Cu(1)-Cu(1)#4	2.773(4)
Gd(1)-O(1)	2.429(9)	Cu(1)-Cu(2)	2.784(3)
Gd(1)-O(5)	2.477(9)	Cu(2)-N(2)#4	2.057(12)
Gd(1)-O(3)	2.551(9)	Cu(2)-I(2)#4	2.672(2)
Gd(1)-O(6)#1	2.435(8)	I(2)-Cu(2)#4	2.672(2)
Gd(1)-O(2)#2	2.462(9)	Cu(2)-Cu(2)#3	2.761(4)
Gd(1)-O(4)	2.428(9)	Cu(2)-Cu(1)	2.784(3)
O(7W)-Gd(1)- O(8W)	73.2(3)	O(8W)-Gd(1)-C(16)	73.0(3)
O(7W)-Gd(1)-O(4)	122.0(3)	O(4)-Gd(1)-C(16)	25.8(3)
O(8W)-Gd(1)-O(4)	75.2(3)	O(1)-Gd(1)-C(16)	89.0(3)
O(7W)-Gd(1)-O(1)	80.5(3)	O(6)#1-Gd(1)-C(16)	102.9(3)
O(8W)-Gd(1)-O(1)	145.3(3)	O(2)#2-Gd(1)-C(16)	153.0(4)
O(4)-Gd(1)-O(1)	101.2(3)	O(5)-Gd(1)-C(16)	95.3(4)
O(7W)-Gd(1)- O(6)#1	143.5(3)	O(3)-Gd(1)-C(16)	26.2(3)
O(8W)-Gd(1)- O(6)#1	141.8(3)	O(1)#2-Gd(1)-C(16)	152.3(3)
O(4)-Gd(1)-O(6)#1	85.7(3)	O(7W)-Gd(1)-C(8)#2	69.4(3)
O(1)-Gd(1)-O(6)#1	70.3(3)	O(8W)-Gd(1)-C(8)#2	99.9(4)
O(7W)-Gd(1)- O(2)#2	77.7(3)	O(4)-Gd(1)-C(8)#2	164.1(3)
O(8W)-Gd(1)-	80.3(3)	O(1)-Gd(1)-C(8)#2	91.3(4)

O(2)#2

O(4)-Gd(1)-O(2)#2	140.9(3)	N(1)-Cu(1)-I(2)	110.1(4)
O(1)-Gd(1)-O(2)#2	116.0(3)	N(1)-Cu(1)-I(2)#4	106.6(3)
O(6)#1-Gd(1)- O(2)#2	95.5(3)	I(2)-Cu(1)-I(2)#4	116.39(8)
O(7W)-Gd(1)-O(5)	142.3(3)	N(1)-Cu(1)-I(1)	105.8(4)
O(8W)-Gd(1)-O(5)	77.3(3)	I(2)-Cu(1)-I(1)	100.84(7)
O(4)-Gd(1)-O(5)	70.5(3)	I(2)#4-Cu(1)-I(1)	116.60(9)
O(1)-Gd(1)-O(5)	135.0(3)	N(1)-Cu(1)-Cu(1)#4	126.6(4)
O(6)#1-Gd(1)-O(5)	65.1(3)	I(2)-Cu(1)-Cu(1)#4	58.42(7)
O(2)#2-Gd(1)-O(5)	74.7(3)	I(2)#4-Cu(1)-Cu(1)#4	57.97(7)
O(7W)-Gd(1)-O(3)	74.1(3)	I(1)-Cu(1)-Cu(1)#4	127.14(12)
O(8W)-Gd(1)-O(3)	76.7(3)	N(1)-Cu(1)-Cu(2)	118.6(4)
O(4)-Gd(1)-O(3)	51.9(3)	I(2)-Cu(1)-Cu(2)	130.30(9)
O(1)-Gd(1)-O(3)	74.6(3)	I(2)#4-Cu(1)-Cu(2)	58.97(7)
O(6)#1-Gd(1)-O(3)	116.6(3)	I(1)-Cu(1)-Cu(2)	57.75(7)
O(2)#2-Gd(1)-O(3)	147.7(3)	Cu(1)#4-Cu(1)-Cu(2)	97.00(12)
O(5)-Gd(1)-O(3)	120.9(3)	N(2)#4-Cu(2)-I(1)	106.9(3)
O(7W)-Gd(1)- O(1)#2	69.5(3)	N(2)#4-Cu(2)-I(1)#3	110.7(4)
O(8W)-Gd(1)- O(1)#2	122.9(3)	I(1)-Cu(2)-I(1)#3	117.11(8)
O(4)-Gd(1)-O(1)#2	161.8(3)	N(2)#4-Cu(2)-I(2)#4	104.4(3)
O(1)-Gd(1)-O(1)#2	65.1(3)	I(1)-Cu(2)-I(2)#4	116.71(8)
O(6)#1-Gd(1)- O(1)#2	78.4(3)	I(1)#3-Cu(2)-I(2)#4	100.27(7)

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O(2)#2-Gd(1)- O(1)#2	50.9(3)	N(2)#4-Cu(2)- Cu(2)#3	128.2(4)
O(5)-Gd(1)-O(1)#2	109.8(3)	I(1)-Cu(2)-Cu(2)#3	58.82(8)
O(3)-Gd(1)-O(1)#2	128.9(3)	I(1)#3-Cu(2)-Cu(2)#3	58.28(7)
O(7W)-Gd(1)- C(16)	97.9(4)		

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**Compound 15<sup>[c]</sup>**

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Nd(1)-O(7W)	2.444(7)	Nd(1)-O(4)	2.640(7)
Nd(1)-O(8W)	2.464(7)	Cu(1)-N(1)	2.087(10)
Nd(1)-O(4)#5	2.481(7)	Cu(1)-I(2)	2.652(2)
Nd(1)-O(1)#6	2.485(8)	Cu(1)-I(2)#3	2.6559(19)
Nd(1)-O(5)#1	2.494(7)	Cu(1)-I(1)	2.6795(19)
Nd(1)-O(3)	2.522(8)	Cu(1)-Cu(1)#3	2.793(3)
Nd(1)-O(2)#6	2.591(8)	Cu(1)-Cu(2)	2.814(3)
O(7W)-Nd(1)- O(8W)	73.4(2)	N(1)-Cu(1)-I(2)	107.1(3)
O(7W)-Nd(1)- O(4)#5	145.8(2)	N(1)-Cu(1)-I(2)#3	110.3(3)
O(8W)-Nd(1)- O(4)#5	80.7(2)	I(2)-Cu(1)-I(2)#3	116.50(7)
O(7W)-Nd(1)- O(1)#6	74.6(2)	N(1)-Cu(1)-I(1)	104.5(3)
O(8W)-Nd(1)- O(1)#6	121.8(3)	I(2)-Cu(1)-I(1)	116.31(7)
O(4)#5-Nd(1)- O(1)#6	101.7(3)	I(2)#3-Cu(1)-I(1)	101.49(7)
O(7W)-Nd(1)- O(5)#1	78.1(2)	N(1)-Cu(1)- Cu(1)#3	127.5(3)

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O(8W)-Nd(1)- O(5)#1	143.1(3)	I(2)-Cu(1)-Cu(1)#3	58.32(6)
O(4)#5-Nd(1)- O(5)#1	133.7(2)	I(2)#3-Cu(1)- Cu(1)#3	58.18(6)
O(1)#6-Nd(1)- O(5)#1	70.8(3)	I(1)-Cu(1)-Cu(1)#3	127.61(10)
O(7W)-Nd(1)-O(6)	142.3(2)	N(1)-Cu(1)-Cu(2)	124.4(3)
O(8W)-Nd(1)-O(6)	142.7(2)	I(2)-Cu(1)-Cu(2)	58.88(5)
O(4)#5-Nd(1)-O(6)	69.3(2)	I(2)#3-Cu(1)-Cu(2)	124.24(8)
O(1)#6-Nd(1)-O(6)	86.7(3)	I(1)-Cu(1)-Cu(2)	57.56(5)
O(5)#1-Nd(1)-O(6)	64.8(2)	Cu(1)#3-Cu(1)- Cu(2)	92.54(9)
O(7W)-Nd(1)-O(3)	79.6(3)	N(2)-Cu(2)-I(1)#4	111.1(3)
O(8W)-Nd(1)-O(3)	77.5(3)	N(2)-Cu(2)-I(1)	106.6(3)
O(4)#5-Nd(1)-O(3)	116.4(2)	I(1)#4-Cu(2)-I(1)	116.45(7)
O(1)#6-Nd(1)-O(3)	140.2(2)	N(2)-Cu(2)-I(2)	104.6(3)
O(5)#1-Nd(1)-O(3)	74.6(3)	I(1)#4-Cu(2)-I(2)	101.49(6)
O(6)-Nd(1)-O(3)	96.0(3)	I(1)-Cu(2)-I(2)	116.10(7)
O(7W)-Nd(1)- O(2)#6	76.2(3)	N(2)-Cu(2)- Cu(2)#4	127.8(3)
O(8W)-Nd(1)- O(2)#6	75.0(3)	I(1)#4-Cu(2)- Cu(2)#4	58.57(6)
O(4)#5-Nd(1)- O(2)#6	75.7(2)	I(1)-Cu(2)-Cu(2)#4	57.88(6)
O(1)#6-Nd(1)- O(2)#6	50.7(2)	I(2)-Cu(2)-Cu(2)#4	127.42(10)
O(5)#1-Nd(1)- O(2)#6	120.3(3)	N(2)-Cu(2)-Cu(1)	117.1(3)

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O(6)-Nd(1)-O(2)#6	116.3(3)	I(1)#4-Cu(2)-Cu(1)	130.75(8)
O(3)-Nd(1)-O(2)#6	147.6(3)	I(1)-Cu(2)-Cu(1)	58.67(5)
O(7W)-Nd(1)-O(4)	121.9(2)	I(2)-Cu(2)-Cu(1)	57.56(5)
O(8W)-Nd(1)-O(4)	69.1(2)	Cu(2)#4-Cu(2)- Cu(1)	97.00(9)
O(4)#5-Nd(1)-O(4)	66.1(3)	N(1)-Cu(1)-I(2)	107.1(3)
O(1)#6-Nd(1)-O(4)	163.4(2)	N(1)-Cu(1)-I(2)#3	110.3(3)
O(5)#1-Nd(1)-O(4)	108.7(2)	I(2)-Cu(1)-I(2)#3	116.50(7)
O(6)-Nd(1)-O(4)	78.6(2)	N(1)-Cu(1)-I(1)	104.5(3)
O(3)-Nd(1)-O(4)	50.3(2)	I(2)-Cu(1)-I(1)	116.31(7)
O(2)#6-Nd(1)-O(4)	130.6(2)	I(2)#3-Cu(1)-I(1)	101.49(7)
Nd(1)#5-O(4)- Nd(1)	113.9(3)	N(1)-Cu(1)- Cu(1)#3	127.5(3)

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**Compound 16<sup>[d]</sup>**

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Gd(1)-O(4)#2	2.368(9)	Cu(1)-Br(2)#5	2.444(3)
Gd(1)-O(2)#3	2.403(9)	Cu(1)-Cu(1)#5	2.746(5)
Gd(1)-O(5)	2.403(10)	Cu(1)-Cu(2)#4	2.801(3)
Gd(1)-O(7W)	2.404(11)	Cu(2)-N(2)#3	2.029(16)
Gd(1)-O(6)#1	2.442(9)	Cu(2)-Br(2)#7	2.528(3)
Gd(1)-O(3)	2.489(10)	Cu(2)-Br(1)#4	2.634(3)
Gd(1)-O(1)	2.490(9)	Cu(2)-Cu(1)#4	2.801(3)
Gd(1)-O(2)	2.491(9)	Cu(1)-Br(2)#5	2.444(3)
O(4)#2-Gd(1)- O(2)#3	151.1(3)	O(1)-Gd(1)-O(4)	132.2(3)
O(4)#2-Gd(1)-O(5)	85.6(3)	O(2)-Gd(1)-O(4)	145.1(3)
O(2)#3-Gd(1)-O(5)	76.6(3)	N(1)-Cu(1)-Br(2)#5	110.4(2)



O(4)#2-Gd(1)- O(7W)	81.5(4)	N(1)-Cu(1)-Br(1)	109.5(2)
O(2)#3-Gd(1)- O(7W)	126.7(4)	Br(2)#5-Cu(1)-Br(1)	116.64(11)
O(5)-Gd(1)-O(7W)	138.0(4)	N(1)-Cu(1)-Br(2)	104.8(2)
O(4)#2-Gd(1)- O(6)#1	77.3(3)	Br(2)#5-Cu(1)-Br(2)	113.76(10)
O(2)#3-Gd(1)- O(6)#1	74.8(3)	Br(1)-Cu(1)-Br(2)	100.77(11)
O(5)-Gd(1)-O(6)#1	66.6(3)	N(1)-Cu(1)-Cu(1)#5	123.4(3)
O(7W)-Gd(1)- O(6)#1	145.9(3)	Br(2)#5-Cu(1)- Cu(1)#5	59.23(9)
O(4)#2-Gd(1)-O(3)	114.9(3)	Br(1)-Cu(1)- Cu(1)#5	125.05(14)
O(2)#3-Gd(1)-O(3)	73.1(3)	Br(2)-Cu(1)- Cu(1)#5	54.53(9)
O(5)-Gd(1)-O(3)	146.2(3)	N(1)-Cu(1)-Cu(2)#4	128.2(2)
O(7W)-Gd(1)-O(3)	74.2(4)	Br(2)#5-Cu(1)- Cu(2)#4	57.16(8)
O(6)#1-Gd(1)-O(3)	90.9(4)	Br(1)-Cu(1)- Cu(2)#4	59.54(9)
O(4)#2-Gd(1)-O(1)	80.5(3)	Br(2)-Cu(1)- Cu(2)#4	126.67(11)
O(2)#3-Gd(1)-O(1)	113.4(3)	Cu(1)#5-Cu(1)- Cu(2)#4	94.48(12)
O(5)-Gd(1)-O(1)	69.7(3)	N(2)#3-Cu(2)-Br(1)	125.5(2)
O(7W)-Gd(1)-O(1)	68.8(4)	N(2)#3-Cu(2)- Br(2)#7	108.3(2)
O(6)#1-Gd(1)-O(1)	131.9(3)	Br(1)-Cu(2)-Br(2)#7	104.78(11)

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O(3)-Gd(1)-O(1)	137.2(4)	N(2)#3-Cu(2)- Br(1)#4	103.7(3)
O(4)#2-Gd(1)-O(2)	133.3(3)	Br(1)-Cu(2)-Br(1)#4	105.43(10)
O(2)#3-Gd(1)-O(2)	66.6(4)	Br(2)#7-Cu(2)- Br(1)#4	108.30(10)
O(5)-Gd(1)-O(2)	81.3(3)	N(2)#3-Cu(2)- Cu(1)#4	120.1(2)
O(7W)-Gd(1)-O(2)	79.1(4)	Br(1)-Cu(2)- Cu(1)#4	114.41(11)
O(6)#1-Gd(1)-O(2)	134.4(3)	Br(2)#7-Cu(2)- Cu(1)#4	54.30(8)
O(3)-Gd(1)-O(2)	100.0(3)	Br(1)#4-Cu(2)- Cu(1)#4	54.05(8)
O(1)-Gd(1)-O(2)	52.9(3)	N(1)-Cu(1)-Br(2)#5	110.4(2)
O(4)#2-Gd(1)-O(4)	64.4(4)	N(1)-Cu(1)-Br(1)	109.5(2)
O(2)#3-Gd(1)-O(4)	112.9(3)	Br(2)#5-Cu(1)-Br(1)	116.64(11)
O(5)-Gd(1)-O(4)	133.5(3)	N(1)-Cu(1)-Br(2)	104.8(2)
O(7W)-Gd(1)-O(4)	74.5(3)	Br(2)#5-Cu(1)-Br(2)	113.76(10)
O(6)#1-Gd(1)-O(4)	72.4(3)	Br(1)-Cu(1)-Br(2)	100.77(11)
O(3)-Gd(1)-O(4)	51.1(3)	N(1)-Cu(1)-Cu(1)#5	123.4(3)

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**Compound 17<sup>le</sup>**

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Cu(1)-N(1)	2.009(10)	Tb(1)-O(3)#5	2.408(7)
Cu(1)-Br(2)#6	2.417(2)	Tb(1)-O(6)#5	2.416(7)
Cu(1)-Br(2)#1	2.630(2)	Tb(1)-O(3)#7	2.457(7)
Cu(1)-Cu(2)#1	2.794(2)	Tb(1)-O(4)#7	2.483(7)
Cu(2)-N(2)	2.013(10)	Tb(1)-O(2)#3	2.488(7)
Cu(2)-Br(1)#1	2.443(2)	Tb(1)-O(1)#3	2.569(7)

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Cu(2)-Cu(2)#1	2.736(4)	Tb(1)-C(16)#7	2.838(11)
Cu(2)-Cu(1)#1	2.794(2)	Tb(1)-C(8)#3	2.931(10)
Cu(2)#1-Br(1)- Cu(1)	68.46(7)	O(5)-Tb(1)-O(3)#5	76.4(3)
Cu(2)#1-Br(1)- Cu(2)	66.07(8)	O(1)-Tb(1)-O(6)#5	77.8(2)
Cu(1)-Br(1)-Cu(2)	105.44(8)	O(5)-Tb(1)-O(6)#5	66.9(2)
Cu(1)#2-Br(2)- Cu(2)	100.50(8)	O(3)#5-Tb(1)- O(6)#5	74.9(2)
Cu(1)#2-Br(2)- Cu(1)#1	74.69(8)	O(1)-Tb(1)-O(7W)	81.6(3)
Cu(2)-Br(2)- Cu(1)#1	66.23(6)	O(5)-Tb(1)-O(7W)	138.2(3)
N(1)-Cu(1)-Br(2)#6	124.0(3)	O(3)#5-Tb(1)- O(7W)	126.3(3)
N(1)-Cu(1)-Br(1)	109.1(3)	O(6)#5-Tb(1)- O(7W)	145.9(3)
Br(2)#6-Cu(1)-Br(1)	104.67(8)	O(1)-Tb(1)-O(3)#7	132.9(2)
N(1)-Cu(1)-Br(2)#1	104.4(3)	O(5)-Tb(1)-O(3)#7	80.9(2)
Br(2)#6-Cu(1)- Br(2)#1	105.31(8)	O(3)#5-Tb(1)- O(3)#7	66.3(3)
Br(1)-Cu(1)-Br(2)#1	108.64(7)	O(6)#5-Tb(1)- O(3)#7	134.3(2)
N(1)-Cu(1)-Cu(2)#1	121.7(3)	O(7W)-Tb(1)- O(3)#7	79.1(3)
Br(2)#6-Cu(1)- Cu(2)#1	114.22(8)	O(1)-Tb(1)-O(4)#7	80.1(2)
Br(1)-Cu(1)- Cu(2)#1	54.42(6)	O(5)-Tb(1)-O(4)#7	70.5(2)
Br(2)#1-Cu(1)- Cu(2)#1	54.28(6)	O(3)#5-Tb(1)- O(4)#7	113.5(2)
N(2)-Cu(2)-Br(1)#1	111.4(3)	O(6)#5-Tb(1)-	132.9(2)

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		O(4)#7	
N(2)-Cu(2)-Br(2)	109.0(3)	O(7W)-Tb(1)- O(4)#7	68.1(3)
Br(1)#1-Cu(2)-Br(2)	116.54(8)	O(3)#7-Tb(1)- O(4)#7	52.8(2)
N(2)-Cu(2)-Br(1)	104.3(3)	O(1)-Tb(1)-O(2)#3	115.3(2)
Br(1)#1-Cu(2)-Br(1)	113.93(8)	O(5)-Tb(1)-O(2)#3	145.4(3)
Br(2)-Cu(2)-Br(1)	100.44(8)	O(3)#5-Tb(1)- O(2)#3	72.7(2)
N(2)-Cu(2)-Cu(2)#1	124.0(3)	O(6)#5-Tb(1)- O(2)#3	90.0(3)
Br(1)#1-Cu(2)- Cu(2)#1	59.23(7)	O(7W)-Tb(1)- O(2)#3	74.7(3)
Br(2)-Cu(2)- Cu(2)#1	124.70(11)	O(3)#7-Tb(1)- O(2)#3	100.3(2)
Br(1)-Cu(2)- Cu(2)#1	54.70(7)	O(4)#7-Tb(1)- O(2)#3	137.0(3)
N(2)-Cu(2)-Cu(1)#1	128.7(3)	O(1)-Tb(1)-O(1)#3	64.5(3)
Br(1)#1-Cu(2)- Cu(1)#1	57.12(6)	O(5)-Tb(1)-O(1)#3	134.0(2)
Br(2)-Cu(2)- Cu(1)#1	59.49(6)	O(3)#5-Tb(1)- O(1)#3	113.6(2)
Br(1)-Cu(2)- Cu(1)#1	126.51(8)	O(6)#5-Tb(1)- O(1)#3	72.7(2)
Cu(2)#1-Cu(2)- Cu(1)#1	94.27(9)	O(7W)-Tb(1)- O(1)#3	74.0(2)
Tb(1)#5-O(3)- Tb(1)#4	113.7(3)	O(3)#7-Tb(1)- O(1)#3	145.1(2)
O(1)-Tb(1)-O(5)	85.8(2)	O(4)#7-Tb(1)- O(1)#3	131.1(2)
O(1)-Tb(1)-O(3)#5	151.6(2)	O(2)#3-Tb(1)- O(1)#3	51.4(2)

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Symmetry code for :

13-17:

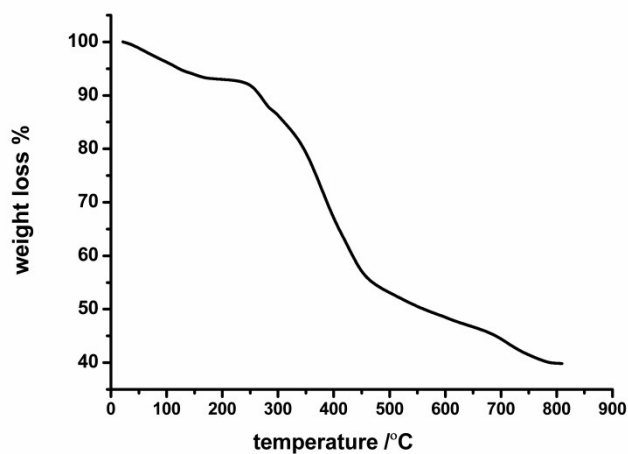
[a] #1 -x+1,-y+2,-z+2; #2 -x+1,-y+3,-z+2; #3 -x+3,-y+2,-z+1; #4 -x+2,-y+2,-z+1.

[b] #1 -x+2,-y+1,-z+1; #2 -x+2,-y,-z+1; #3 -x+2,-y,-z+2; #4 -x+1,-y,-z+2.

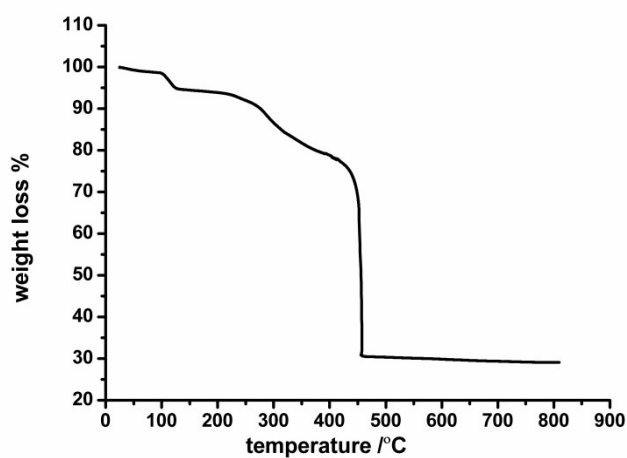
[c] #1 -x+1,-y,-z; #2 x-1,y,z+1; #3 -x+1,-y+1,-z+1; #4 -x,-y+1,-z+1; #5 -x+1,-y+1,-z;  
#6 x+1,y,z-1.

[d] #1 -x+1,-y+1,-z+1; #2 -x+1,-y,-z+1; #3 -x,-y+1,-z+1; #4 -x,-y+2,-z; #5 -x,-y+1,-z;  
#6 x,y-1,z; #7 x,y+1,z.

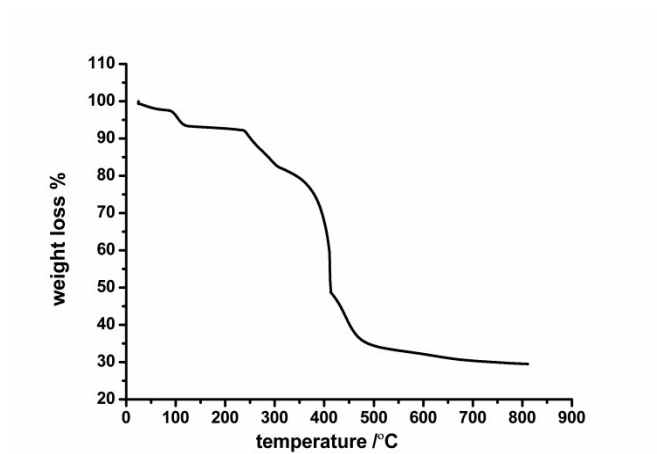
[e] #1 -x+2,-y+1,-z; #2 x,y+1,z; #3 -x+1,-y,-z+1; #4 x+1,y,z; #5 -x+1,-y+1,-z+1; #6  
x,y-1,z; #7 x-1,y,z.



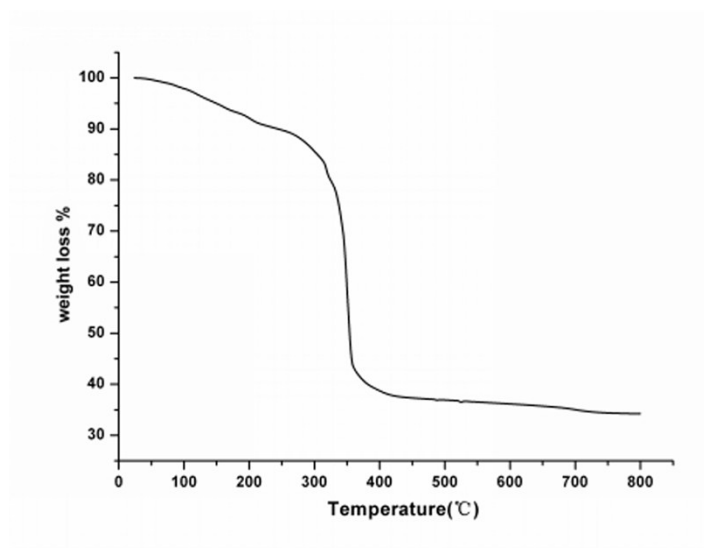
**Fig. S1.** The thermogravimetric analysis (TGA) curve of compounds **1**.



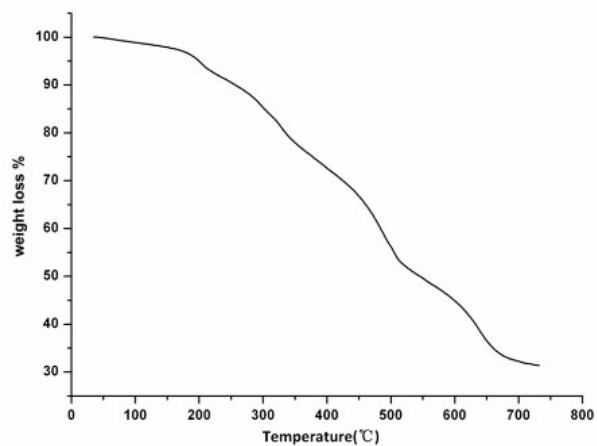
**Fig. S2.** The thermogravimetric analysis (TGA) curve of compounds **5**.



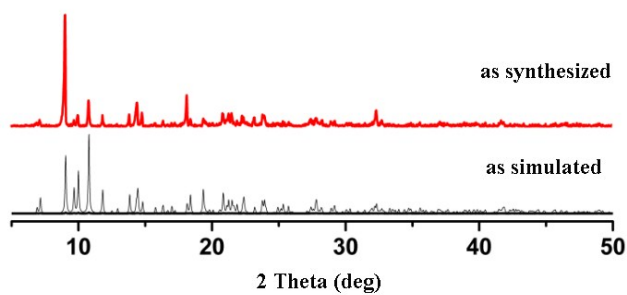
**Fig. S3.** The thermogravimetric analysis (TGA) curve of compounds **9**.



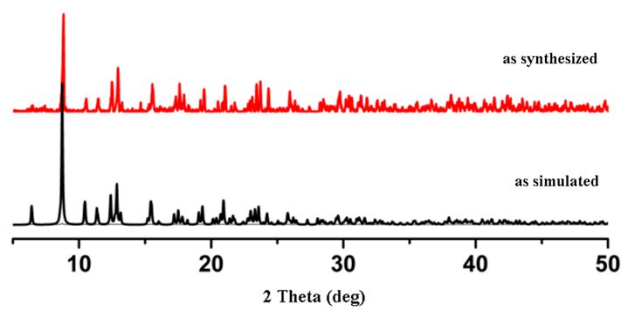
**Fig. S4.** The thermogravimetric analysis (TGA) curve of compounds **14**.



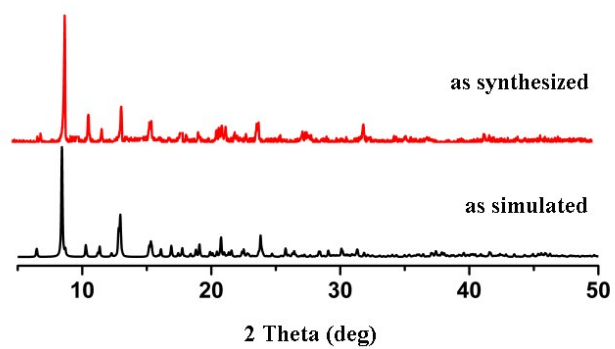
**Fig. S5.** The thermogravimetric analysis (TGA) curve of compounds **16**.



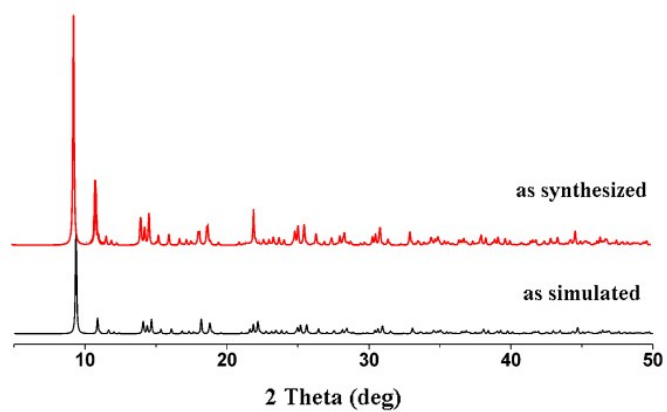
**Fig. S6** Powder X-ray diffraction measurements (PXRD) patterns for **1**.



**Fig. S7** Powder X-ray diffraction measurements (PXRD) patterns for **5**.

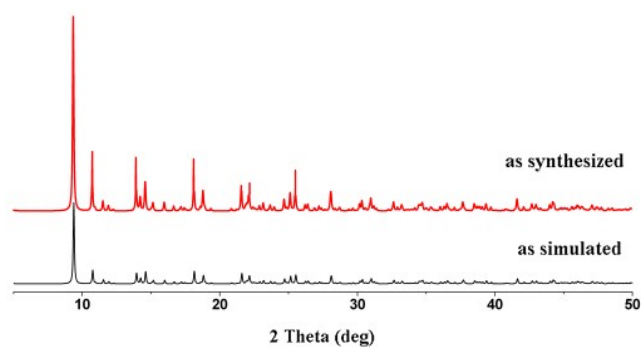


**Fig. S8** Powder X-ray diffraction measurements (PXRD) patterns for **9**.

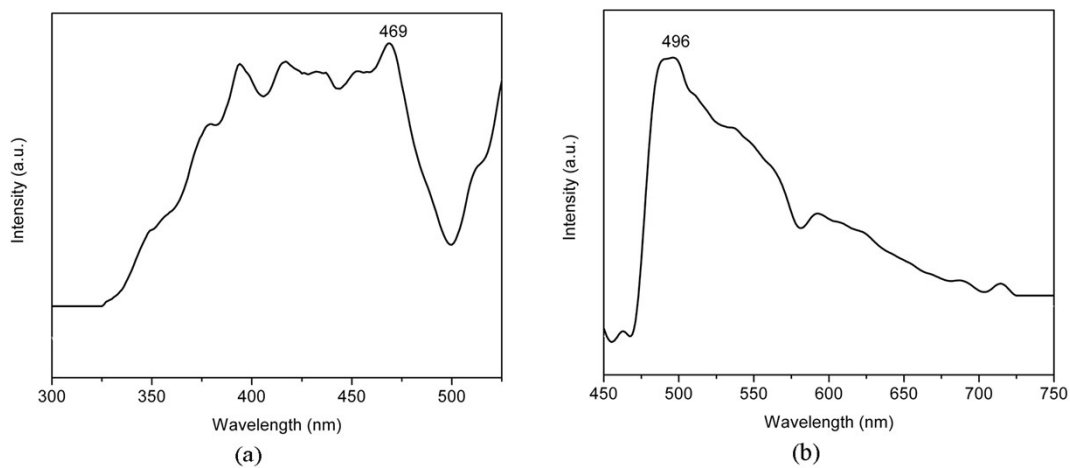


**Fig. S9** Powder X-ray diffraction measurements (PXRD) patterns for **14**.

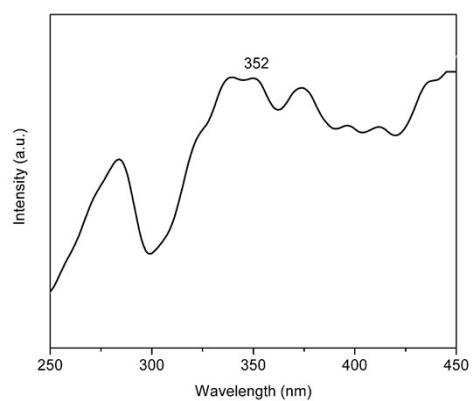




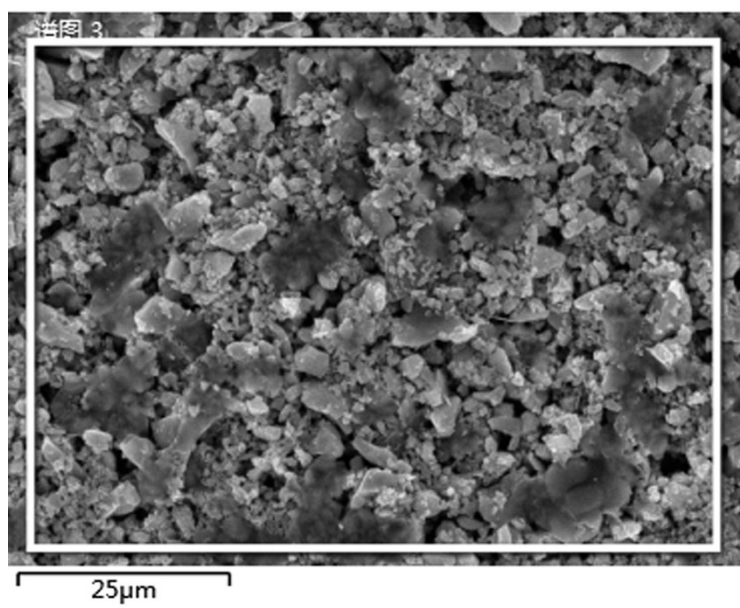
**Fig. S10** Powder X-ray diffraction measurements (PXRD) patterns for **16**.



**Fig. S11** (a) Solide-state excitation spectra of **12** at room temperature. (b) Solide-state excitation spectra of **15** at room temperature.



**Fig. S12** Solide-state excitation spectra of **4** at room temperature.



**Fig. S13** A typical TEM image of **15**.