Electronic supplementary information (ESI)

Three-dimensional lanthanide-silver heterometallic coordination polymers: syntheses, structures and properties†

Man-Sheng Chen,[a,b] Zhi Su,[a] Min Chen,[a] Shui-Sheng Chen,[a] Yi-Zhi Li,[a] and Wei-Yin Sun*[a]

[a] *Coordination Chemistry Institute, State Key Laboratory of Coordination Chemistry, School of Chemistry and Chemical Engineering, Nanjing National Laboratory of Microstructure, Nanjing University, Nanjing 210093, China. E-mail: sunwy@nju.edu.cn; Fax: +86 25 83314502*

[b] *Department of Chemistry and Materials Science, Hengyang Normal University, Hengyang 421008, China*

Table S1 Selected bond lengths (Å) and angles (°) for complexes **1-10**

1[a]			
Nd(1)-O(1)	2.514(4)	Nd(1)-O(8)#1	2.347(4)
Nd(1)-O(2)	2.501(3)	Nd(1)-O(9)#2	2.403(4)
Nd(1)-O(6)	2.558(4)	Nd(1)-O(3)#3	2.404(4)
Nd(1)-O(7)	2.531(4)	Nd(1)-O(4)#4	2.383(4)
Ag(1)-N(1)	2.154(5)	Ag(1)-N(3)#5	2.160(5)
O(8)#1-Nd(1)-O(4)#4	77.80(14)	O(9)#2-Nd(1)-O(3)#3	78.82(13)
O(8)#1-Nd(1)-O(9)#2	121.83(13)	O(9)#2-Nd(1)-O(2)	73.52(12)
O(8)#1-Nd(1)-O(3)#3	74.62(13)	O(9)#2-Nd(1)-O(1)	122.19(13)
O(8)#1-Nd(1)-O(2)	149.66(14)	O(9)#2-Nd(1)-O(7)	98.02(13)
O(8)#1-Nd(1)-O(1)	101.86(14)	O(9)#2-Nd(1)-O(6)	145.58(13)
O(8)#1-Nd(1)-O(7)	124.40(13)	O(3)#3-Nd(1)-O(2)	84.29(13)

O(8)#1-Nd(1)-O(6)	77.19(13)	O(3)#3-Nd(1)-O(1)	78.58(14)
O(4)#4-Nd(1)-O(9)#2	75.28(14)	O(3)#3-Nd(1)-O(7)	156.89(13)
O(4)#4-Nd(1)-O(3)#2	123.23(14)	O(3)#3-Nd(1)-O(6)	135.60(13)
O(4)#4-Nd(1)-O(2)	132.49(13)	O(2)-Nd(1)-O(1)	51.81(12)
O(4)#4-Nd(1)-O(1)	156.20(15)	O(2)-Nd(1)-O(7)	72.96(13)
O(4)#4-Nd(1)-O(7)	77.00(14)	O(2)-Nd(1)-O(6)	104.92(13)
O(4)#4-Nd(1)-O(6)	82.36(14)	O(1)-Nd(1)-O(7)	84.10(14)
O(7)-Nd(1)-O(6)	50.92(12)	O(1)-Nd(1)-O(6)	74.48(14)
N(1)-Ag(1)-N(3)#5	168.7(2)		

2[b]

Sm(1)-O(1)	2.515(4)	Sm(1)-O(8)#1	2.369(4)
Sm(1)-O(2)	2.493(4)	Sm(1)-O(9)#2	2.335(4)
Sm(1)-O(6)	2.484(4)	Sm(1)-O(3)#3	2.317(4)
Sm(1)-O(7)	2.467(4)	Sm(1)-O(4)#4	2.367(4)
Ag(1)-N(1)	2.155(5)	Ag(1)-N(3)#5	2.155(5)
O(8)#1-Sm(1)-O(4)#4	78.35(15)	O(9)#2-Sm(1)-O(3)#3	78.17(16)
O(8)#1-Sm(1)-O(9)#2	123.39(15)	O(9)#2-Sm(1)-O(2)	76.92(16)
O(8)#1-Sm(1)-O(3)#3	74.66(14)	O(9)#2-Sm(1)-O(1)	81.76(16)
O(8)#1-Sm(1)-O(2)	156.47(14)	O(9)#2-Sm(1)-O(7)	133.28(14)
O(8)#1-Sm(1)-O(1)	135.95(14)	O(9)#2-Sm(1)-O(6)	155.59(17)
O(8)#1-Sm(1)-O(7)	83.29(14)	O(3)#3-Sm(1)-O(2)	124.99(14)
O(8)#1-Sm(1)-O(6)	78.56(16)	O(3)#3-Sm(1)-O(1)	76.91(14)
O(4)#4-Sm(1)-O(9)#2	75.55(16)	O(3)#3-Sm(1)-O(7)	148.49(15)
O(4)#4-Sm(1)-O(3)#2	121.87(15)	O(3)#3-Sm(1)-O(6)	100.31(15)
O(4)#4-Sm(1)-O(2)	97.82(14)	O(2)-Sm(1)-O(1)	51.53(14)
O(4)#4-Sm(1)-O(1)	145.70(14)	O(2)-Sm(1)-O(7)	73.42(14)
O(4)#4-Sm(1)-O(7)	73.73(14)	O(2)-Sm(1)-O(6)	84.57(15)
O(4)#4-Sm(1)-O(6)	123.27(14)	O(1)-Sm(1)-O(7)	105.72(14)
O(7)-Sm(1)-O(6)	52.60(13)	O(1)-Sm(1)-O(6)	74.25(15)
N(1)-Ag(1)-N(3)#5	168.8(2)		

3[c]

Eu(1)-O(1)	2.524(4)	Eu(1)-O(8)#1	2.411(4)
Eu(1)-O(2)	2.560(4)	Eu(1)-O(9)#2	2.377(5)

Eu(1)-O(6)	2.506(4)	Eu(1)-O(3)#3	2.349(4)
Eu(1)-O(7)	2.511(4)	Eu(1)-O(4)#4	2.408(4)
Ag(1)-N(3)	2.165(5)	Ag(1)-N(1)#5	2.166(5)
O(8)#1-Eu(1)-O(4)#4	78.38(15)	O(9)#2-Eu(1)-O(3)#3	77.83(17)
O(8)#1-Eu(1)-O(9)#2	123.12(16)	O(9)#2-Eu(1)-O(2)	81.80(16)
O(8)#1-Eu(1)-O(3)#3	74.67(15)	O(9)#2-Eu(1)-O(1)	77.01(16)
O(8)#1-Eu(1)-O(2)	135.89(15)	O(9)#2-Eu(1)-O(7)	156.05(17)
O(8)#1-Eu(1)-O(1)	157.00(15)	O(9)#2-Eu(1)-O(6)	132.80(15)
O(8)#1-Eu(1)-O(7)	78.73(16)	O(3)#3-Eu(1)-O(2)	76.80(15)
O(8)#1-Eu(1)-O(6)	84.20(15)	O(3)#3-Eu(1)-O(1)	124.23(14)
O(4)#4-Eu(1)-O(9)#2	75.70(16)	O(3)#3-Eu(1)-O(7)	101.51(16)
O(4)#4-Eu(1)-O(3)#2	121.97(16)	O(3)#3-Eu(1)-O(6)	149.34(15)
O(4)#4-Eu(1)-O(2)	145.73(15)	O(2)-Eu(1)-O(1)	50.90(14)
O(4)#4-Eu(1)-O(1)	98.38(15)	O(2)-Eu(1)-O(7)	74.85(15)
O(4)#4-Eu(1)-O(7)	122.15(15)	O(2)-Eu(1)-O(6)	105.35(14)
O(4)#4-Eu(1)-O(6)	73.53(14)	O(1)-Eu(1)-O(7)	84.10(16)
O(7)-Eu(1)-O(6)	51.82(13)	O(1)-Eu(1)-O(6)	73.13(15)
N(3)-Ag(1)-N(1)#5	169.1(3)		

4[d]

Gd(1)-O(1)	2.508(4)	Gd(1)-O(8)#1	2.352(4)
Gd(1)-O(6)	2.443(4)	Gd(1)-O(3)#3	2.305(4)
Gd(1)-O(7)	2.470(4)	Gd(1)-O(4)#4	2.358(4)
Gd(1)-O(9)#2	2.330(4)	Gd(1)-O(2)	2.486(4)
Ag(1)-N(1)	2.151(5)	Ag(1)-N(3)#5	2.165(5)
O(8)#1-Gd(1)-O(4)#4	78.12(14)	O(9)#2-Gd(1)-O(3)#3	78.17(15)
O(8)#1-Gd(1)-O(9)#2	123.11(15)	O(9)#2-Gd(1)-O(2)	77.59(15)
O(8)#1-Gd(1)-O(3)#3	74.73(14)	O(9)#2-Gd(1)-O(1)	82.00(15)
O(8)#1-Gd(1)-O(2)	155.86(14)	O(9)#2-Gd(1)-O(7)	155.69(17)
O(8)#1-Gd(1)-O(1)	135.79(14)	O(9)#2-Gd(1)-O(6)	134.05(14)
O(8)#1-Gd(1)-O(7)	78.31(15)	O(3)#3-Gd(1)-O(2)	125.52(14)
O(8)#1-Gd(1)-O(6)	82.61(14)	O(3)#3-Gd(1)-O(1)	76.53(14)
O(4)#4-Gd(1)-O(9)#2	75.77(15)	O(3)#3-Gd(1)-O(7)	99.18(15)
O(4)#4-Gd(1)-O(3)#2	122.25(15)	O(3)#3-Gd(1)-O(6)	147.70(14)

O(4)#4-Gd(1)-O(2)	97.51(14)	O(2)-Gd(1)-O(1)	52.28(14)
O(4)#4-Gd(1)-O(1)	146.09(14)	O(2)-Gd(1)-O(7)	84.85(15)
O(4)#4-Gd(1)-O(7)	123.67(14)	O(2)-Gd(1)-O(6)	73.43(14)
O(4)#4-Gd(1)-O(6)	73.61(14)	O(1)-Gd(1)-O(7)	73.94(14)
O(7)-Gd(1)-O(6)	53.11(13)	O(1)-Gd(1)-O(6)	106.15(14)
N(1)-Ag(1)-N(3)#5	168.4(2)		

5[e]

Tb(1)-O(1)	2.471(4)	Tb(1)-O(8)#1	2.333(4)
Tb(1)-O(2)	2.495(5)	Tb(1)-O(9)#2	2.312(4)
Tb(1)-O(6)	2.425(4)	Tb(1)-O(3)#3	2.283(4)
Tb(1)-O(7)	2.454(4)	Tb(1)-O(4)#4	2.340(4)
Ag(1)-N(1)	2.149(5)	Ag(1)-N(3)#5	2.161(5)
O(8)#1-Tb(1)-O(4)#4	78.13(15)	O(9)#2-Tb(1)-O(3)#3	77.94(16)
O(8)#1-Tb(1)-O(9)#2	123.09(15)	O(9)#2-Tb(1)-O(2)	81.71(16)
O(8)#1-Tb(1)-O(3)#3	74.88(15)	O(9)#2-Tb(1)-O(1)	77.43(15)
O(8)#1-Tb(1)-O(2)	135.94(15)	O(9)#2-Tb(1)-O(7)	155.63(18)
O(8)#1-Tb(1)-O(1)	156.00(14)	O(9)#2-Tb(1)-O(6)	134.15(14)
O(8)#1-Tb(1)-O(7)	78.32(15)	O(3)#3-Tb(1)-O(2)	76.38(15)
O(8)#1-Tb(1)-O(6)	82.60(14)	O(3)#3-Tb(1)-O(1)	125.37(15)
O(4)#4-Tb(1)-O(9)#2	75.76(15)	O(3)#3-Tb(1)-O(7)	99.24(15)
O(4)#4-Tb(1)-O(3)#2	122.18(15)	O(3)#3-Tb(1)-O(6)	147.84(14)
O(4)#4-Tb(1)-O(2)	145.92(15)	O(2)-Tb(1)-O(1)	52.32(15)
O(4)#4-Tb(1)-O(1)	97.41(15)	O(2)-Tb(1)-O(7)	74.16(15)
O(4)#4-Tb(1)-O(7)	123.81(14)	O(2)-Tb(1)-O(6)	106.32(14)
O(4)#4-Tb(1)-O(6)	73.71(14)	O(1)-Tb(1)-O(7)	85.06(15)
O(7)-Tb(1)-O(6)	53.14(14)	O(1)-Tb(1)-O(6)	73.56(14)
N(1)-Ag(1)-N(3)#5	168.0(2)		

6[f]

La(1)-O(1)	2.519(3)	La(1)-O(8)#1	2.511(3)
La(1)-O(1W)	2.600(3)	La(1)-O(9)#1	2.701(3)
La(1)-O(6)	2.508(3)	La(1)-O(3)#2	2.524(3)
La(1)-O(7)#3	2.472(2)	La(1)-O(4)#2	2.698(2)
La(1)-O(4)#4	2.567(2)	Ag(1)-O(9)#5	2.322(3)

Ag(1)-N(3)	2.246(3)	Ag(1)-N(1)#6	2.236(4)
O(8)#1-La(1)-O(4)#4	114.09(8)	O(9)#1-La(1)-O(3)#2	75.20(9)
O(8)#1-La(1)-O(9)#1	49.85(8)	O(9)#1-La(1)-O(1)	69.20(9)
O(8)#1-La(1)-O(3)#2	122.38(9)	O(9)#1-La(1)-O(7)#3	147.44(8)
O(8)#1-La(1)-O(1)	77.01(9)	O(9)#1-La(1)-O(6)	72.68(8)
O(8)#1-La(1)-O(7)#3	142.09(9)	O(3)#2-La(1)-O(1)	67.36(8)
O(8)#1-La(1)-O(6)	76.56(9)	O(3)#2-La(1)-O(7)#3	77.73(10)
O(4)#4-La(1)-O(9)#1	141.71(8)	O(3)#2-La(1)-O(6)	105.52(9)
O(4)#4-La(1)-O(3)#2	120.36(8)	O(3)#2-La(1)-O(1W)	134.37(9)
O(4)#4-La(1)-O(1W)	82.92(8)	O(1)-La(1)-O(7)#3	83.91(9)
O(4)#4-La(1)-O(1)	147.80(9)	O(1)-La(1)-O(6)	141.78(9)
O(4)#4-La(1)-O(7)#3	68.99(8)	O(4)#2-La(1)-O(7)#3	79.38(8)
O(4)#4-La(1)-O(6)	69.44(8)	O(6)-La(1)-O(1W)	119.79(8)
O(7)#3-La(1)-O(6)	132.80(9)	O(8)#1-La(1)-O(1W)	67.65(8)
O(9)#1-La(1)-O(4)#2	96.32(8)	O(1)-La(1)-O(1W)	73.49(8)
O(7)#3-La(1)-O(1W)	75.67(8)	O(1W)-La(1)-O(4)#2	151.73(8)
O(6)-La(1)-O(4)#2	69.67(8)	O(4)#4-La(1)-O(4)#2	75.85(8)
O(8)#1-La(1)-O(4)#2	138.51(8)	O(3)#2-La(1)-O(4)#2	49.77(8)
O(1)-La(1)-O(4)#2	116.95(8)	N(1)#6-Ag(1)-O(9)#5	124.30(12)
O(1W)-La(1)-O(9)#1	111.87(8)	N(1)#6-Ag(1)-N(3)	121.39(14)
N(3)-Ag(1)-O(9)#5	106.76(12)		
7[g]			
Pr(1)-O(1)	2.468(3)	Pr(1)-O(2)#1	2.426(3)
Pr(1)-O(1W)	2.559(3)	Pr(1)-O(9)#2	2.481(3)
Pr(1)-O(6)	2.542(3)	Pr(1)-O(3)#3	2.669(3)
Pr(1)-O(7)#1	2.482(3)	Pr(1)-O(4)#3	2.473(3)
Pr(1)-O(6)#1	2.680(3)	Ag(1)-O(3)#4	2.315(3)
Ag(1)-N(3)	2.232(4)	Ag(1)-N(1)#5	2.239(4)
O(2)#1-Pr(1)-O(6)#1	78.84(9)	O(9)#2-Pr(1)-O(2)#1	83.47(10)
O(1)-Pr(1)-O(6)#1	69.89(9)	O(9)#2-Pr(1)-O(1)	141.80(10)
O(6)-Pr(1)-O(3)#3	141.11(9)	O(9)#2-Pr(1)-O(7)#1	67.42(10)
O(9)#2-Pr(1)-O(6)#1	117.34(9)	O(9)#2-Pr(1)-O(6)	147.41(10)
O(2)#1-Pr(1)-O(7)#1	78.32(11)	O(3)#3-Pr(1)-O(1)	71.93(10)

O(7)#1-Pr(1)-O(6)	121.53(9)	O(3)#3-Pr(1)-O(7)#1	74.34(10)
O(4)#3-Pr(1)-O(9)#2	77.60(10)	O(2)#1-Pr(1)-O(6)	69.52(9)
O(4)#3-Pr(1)-O(3)#3	50.46(9)	O(3)#3-Pr(1)-O(1W)	112.54(9)
O(4)#3-Pr(1)-O(1W)	67.56(10)	O(1)-Pr(1)-O(2)#1	133.19(10)
O(4)#3-Pr(1)-O(2)#1	142.14(10)	O(1)-Pr(1)-O(6)	69.65(10)
O(4)#3-Pr(1)-O(1)	76.10(10)	O(4)#3-Pr(1)-O(7)#1	122.15(10)
O(4)#3-Pr(1)-O(6)	112.94(9)	O(6)-Pr(1)-O(1W)	81.98(9)
O(7)#1-Pr(1)-O(1)	104.94(11)	O(7)#1-Pr(1)-O(1W)	135.17(10)
O(9)#2-Pr(1)-O(3)#3	70.00(10)	O(1)-Pr(1)-O(1W)	119.50(10)
O(2)#1-Pr(1)-O(1W)	75.81(10)	O(1W)-Pr(1)-O(6)#1	150.90(9)
O(6)#1-Pr(1)-O(4)#3	139.02(9)	O(3)#3-Pr(1)-O(6)#1	96.52(8)
O(7)#1-Pr(1)-O(6)#1	50.27(9)	O(3)#3-Pr(1)-O(2)#1	147.45(9)
O(6)-Pr(1)-O(6)#1	75.91(9)	N(1)#5-Ag(1)-N(3)	121.60(16)
O(1W)-Pr(1)-O(9)#2	73.74(9)	N(1)#5-Ag(1)-O(3)#4	106.71(13)
N(3)-Ag(1)-O(3)#4	124.05(13)		
8[h]			
Nd(1)-O(1)#1	2.445(3)	Nd(1)-O(2)#2	2.409(3)
Nd(1)-O(1W)	2.535(3)	Nd(1)-O(9)	2.465(3)
Nd(1)-O(6)#3	2.521(3)	Nd(1)-O(3)	2.650(3)
Nd(1)-O(7)#4	2.457(3)	Nd(1)-O(4)	2.453(3)
Nd(1)-O(6)#4	2.663(3)	Ag(1)-O(3)#5	2.309(3)
Ag(1)-N(3)	2.235(4)	Ag(1)-N(1)#6	2.243(4)
O(2)#2-Nd(1)-O(6)#3	69.70(9)	O(9)-Nd(1)-O(2)#2	83.60(10)
O(1)#1-Nd(1)-O(6)#3	69.88(9)	O(9)-Nd(1)-O(1)#1	141.36(10)
O(6)#3-Nd(1)-O(3)	140.93(9)	O(9)-Nd(1)-O(7)#4	67.47(9)
O(9)-Nd(1)-O(6)#4	117.52(9)	O(9)-Nd(1)-O(6)#3	147.51(10)
O(2)#2-Nd(1)-O(7)#4	78.19(11)	O(3)-Nd(1)-O(1)#1	71.50(9)
O(7)#4-Nd(1)-O(6)#3	121.74(9)	O(3)-Nd(1)-O(7)#4	74.17(10)
O(4)-Nd(1)-O(9)	77.38(10)	O(2)#2-Nd(1)-O(6)#4	78.80(9)
O(4)-Nd(1)-O(3)	50.68(9)	O(3)-Nd(1)-O(1W)	113.08(9)
O(4)-Nd(1)-O(1W)	67.75(9)	O(1)#1-Nd(1)-O(2)#2	133.54(9)
O(4)-Nd(1)-O(2)#2	142.20(10)	O(1)#1-Nd(1)-O(6)#4	70.07(9)
O(4)-Nd(1)-O(1)#1	75.81(10)	O(4)-Nd(1)-O(7)#4	122.11(10)

O(4)-Nd(1)-O(6)#3	112.81(9)	O(6)#3-Nd(1)-O(1W)	81.61(9)
O(7)#4-Nd(1)-O(1)#1	105.05(10)	O(7)#4-Nd(1)-O(1W)	135.20(10)
O(9)-Nd(1)-O(3)	70.02(10)	O(1)#1-Nd(1)-O(1W)	119.35(9)
O(2)#2-Nd(1)-O(1W)	75.74(10)	O(1W)-Nd(1)-O(6)#4	150.65(9)
O(6)#4-Nd(1)-O(4)	139.00(9)	O(3)-Nd(1)-O(6)#4	96.23(8)
O(7)#4-Nd(1)-O(6)#4	50.38(9)	O(3)-Nd(1)-O(2)#2	147.35(9)
O(6)#4-Nd(1)-O(6)#3	76.03(9)	N(1)#6-Ag(1)-N(3)	121.46(15)
O(1W)-Nd(1)-O(9)	73.92(9)	N(1)#6-Ag(1)-O(3)#5	106.23(13)
N(3)-Ag(1)-O(3)#5	124.61(12)		
9[i]			
Dy(1)-O(1)	2.358(5)	Dy(1)-O(8)#1	2.332(4)
Dy(1)-O(1W)	2.360(4)	Dy(1)-O(2)#2	2.302(4)
Dy(1)-O(6)	2.629(4)	Dy(1)-O(6)#2	2.365(4)
Dy(1)-O(7)	2.389(5)	Dy(1)-O(4)#3	2.296(5)
Ag(1)-O(3)#4	2.400(5)	Ag(1)-N(3)#5	2.189(6)
Ag(1)-N(1)	2.206(6)	Ag(1)-O(7)	2.645(3)
O(8)#1-Dy(1)-O(6)	114.39(15)	O(2)#2-Dy(1)-O(8)#1	74.31(16)
O(8)#1-Dy(1)-O(1W)	75.84(16)	O(4)#3-Dy(1)-O(1)	73.35(17)
O(8)#1-Dy(1)-O(1)	145.27(17)	O(1)-Dy(1)-O(7)	90.77(18)
O(8)#1-Dy(1)-O(7)	71.34(16)	O(4)#3-Dy(1)-O(6)	130.91(17)
O(8)#1-Dy(1)-O(6)#2	140.71(16)	O(2)#2-Dy(1)-O(1)	136.61(16)
O(4)#3-Dy(1)-O(2)#2	149.60(16)	O(2)#2-Dy(1)-O(6)	75.05(16)
O(4)#3-Dy(1)-O(8)#1	79.37(17)	O(1)-Dy(1)-O(6)#2	73.82(17)
O(4)#3-Dy(1)-O(1W)	77.39(17)	O(1)-Dy(1)-O(1W)	117.42(17)
O(2)#2-Dy(1)-O(7)	89.05(18)	O(1)-Dy(1)-O(6)	71.14(15)
O(4)#3-Dy(1)-O(7)	96.78(18)	O(6)#2-Dy(1)-O(1W)	80.23(16)
O(4)#3-Dy(1)-O(6)#2	124.98(18)	O(2)#2-Dy(1)-O(1W)	81.62(17)
O(2)#2-Dy(1)-O(6)#2	71.70(17)	O(1W)-Dy(1)-O(6)	150.14(16)
O(7)-Dy(1)-O(6)	51.66(15)	O(6)#2-Dy(1)-O(6)	74.95(16)
O(7)-Dy(1)-O(1W)	147.18(17)	N(1)-Ag(1)-O(3)#4	92.3(2)
O(6)#2-Dy(1)-O(7)	126.45(16)	N(1)-Ag(1)-N(3)#5	146.5(2)
N(3)#5-Ag(1)-O(3)#4	115.2(2)	N(1)-Ag(1)-O(7)	88.23(1)
N(3)#5-Ag(1)-O(7)	112.56(5)	O(3)#4-Ag(1)-O(7)	83.33(4)

10[j]			
Er(1)-O(4)	2.279(4)	Er(1)-O(8)#1	2.306(4)
Er(1)-O(1W)	2.324(4)	Er(1)-O(3)#2	2.312(4)
Er(1)-O(6)	2.355(4)	Er(1)-O(7)#2	2.333(4)
Er(1)-O(7)	2.628(4)	Er(1)-O(1)#3	2.265(4)
Ag(1)-O(2)#4	2.386(5)	Ag(1)-N(3)	2.189(5)
Ag(1)-N(1)#5	2.218(5)	Ag(1)-O(6)#6	2.643(2)
O(8)#1-Er(1)-O(4)	74.52(14)	O(4)-Er(1)-O(7)	74.45(13)
O(8)#1-Er(1)-O(1W)	75.97(14)	O(7)-Er(1)-O(1)#3	131.32(14)
O(8)#1-Er(1)-O(3)#2	145.14(15)	O(1)#3-Er(1)-O(7)#2	124.45(15)
O(8)#1-Er(1)-O(7)#2	141.56(14)	O(4)-Er(1)-O(6)	89.95(16)
O(8)#1-Er(1)-O(6)	71.69(14)	O(8)#1-Er(1)-O(7)	113.90(13)
O(1)#3-Er(1)-O(4)	149.88(15)	O(3)#2-Er(1)-O(7)	71.18(14)
O(1)#3-Er(1)-O(8)#1	79.54(15)	O(1)#3-Er(1)-O(6)	96.27(16)
O(4)-Er(1)-O(1W)	81.50(15)	O(1)#3-Er(1)-O(1W)	77.54(15)
O(4)-Er(1)-O(7)#2	72.17(14)	O(1W)-Er(1)-O(7)	149.71(14)
O(4)-Er(1)-O(3)#2	136.18(14)	O(3)#2-Er(1)-O(1W)	118.05(15)
O(1)#3-Er(1)-O(3)#2	73.52(15)	O(6)-Er(1)-O(7)	51.63(13)
O(3)#2-Er(1)-O(6)	89.51(16)	O(1W)-Er(1)-O(6)	147.66(14)
O(7)#2-Er(1)-O(6)	126.31(13)	O(7)#2-Er(1)-O(7)	74.72(14)
O(7)#2-Er(1)-O(1W)	80.62(14)	N(1)-Ag(1)-O(2)#4	92.33(19)
O(3)#2-Er(1)-O(7)#2	73.17(14)	N(1)#5-Ag(1)-N(3)	145.8(2)
N(3)-Ag(1)-O(2)#4	115.16(19)	N(1)-Ag(1)-O(6)#6	89.41(3)
N(3)-Ag(1)-O(6)#6	112.76(6)	O(2)#4-Ag(1)-O(6)#6	83.09(3)

[a]Symmetry transformations used to generate equivalent atoms: #1: 1-x, y, 3/2-z, #2: x, 1-y, -1/2+ z, #3: 1-x, 2-y, 1-z, #4: x, -1+y, z, #5: -x, 2-y, 1-z. [b]Symmetry transformations used to generate equivalent atoms: #1: x, 1-y, 1-z, #2: x, 1+y, z, #3: -x, y, 1/2-z, #4: x, 2-y, 1/2+z, #5: 1-x, 1-y, 1-z. [c]Symmetry transformations used to generate equivalent atoms: #1: -x, 2-y, 2-z, #2: x, -1+y, z, #3: -x, y, 3/2-z, #4: x, 1-y, 1/2+z, #5: 1-x, 2-y, 2-z. [d]Symmetry transformations used to generate equivalent atoms: #1: 1-x, 2-y, 1-z, #2: x, -1+y, z, #3: 1-x, y, 1/2-z, #4: x, 1-y, 1/2+z, #5: 2-x, 2-y, 1-z. [e]Symmetry transformations used to generate equivalent atoms: #1: 2-x ,2-y, -z, #2: x, -1+y, z, #3: 2-x, y, 1/2-z, #4: x, 1-y, -1/2+z, #5: 1-x,

2-y, -z. [f]Symmetry transformations used to generate equivalent atoms: #1: 2-x, 2-y, -z, #2: 1-x, 1-y, -z, #3: 2-x, 1-y, -z, #4: 1+x, y, z, 1+z, #5: x, y, 1+z, #6: 2+x, 1+y, 2+z. [g]Symmetry transformations used to generate equivalent atoms: #1: 1-x, 1-y, 1-z, #2: 1+x, y, z, #3: 1-x, -y, 1-z, #4: 1+x, 1+y, 1+z, #5: 1+x, 1+y, 2+z. [h]Symmetry transformations used to generate equivalent atoms: #1: 3-x, 1-y, 2-z, #2: x, -1+y, z, #3: 1+x, y, z, #4: 2-x, -y, 2-z, #5: 1-x, -y, 1-z, #6: 1-x, -y, -z. [i]Symmetry transformations used to generate equivalent atoms: #1: 2-x ,2-y, -z, #2: x, -1+y, z, #3: 2-x, y, 1/2-z, #4: x, 1-y, -1/2+z, #5: 1-x, 1-y, -1-z. [j]Symmetry transformations used to generate equivalent atoms: #1: -x, 2-y, 2-z, #2: 1-x, 2-y, 2-z, #3: x, 1+y, z, #4: 1+x, 1+y, -1+z, #5: 1+x, 1+y, -2+z, #6: 1+x, y, -1+z.

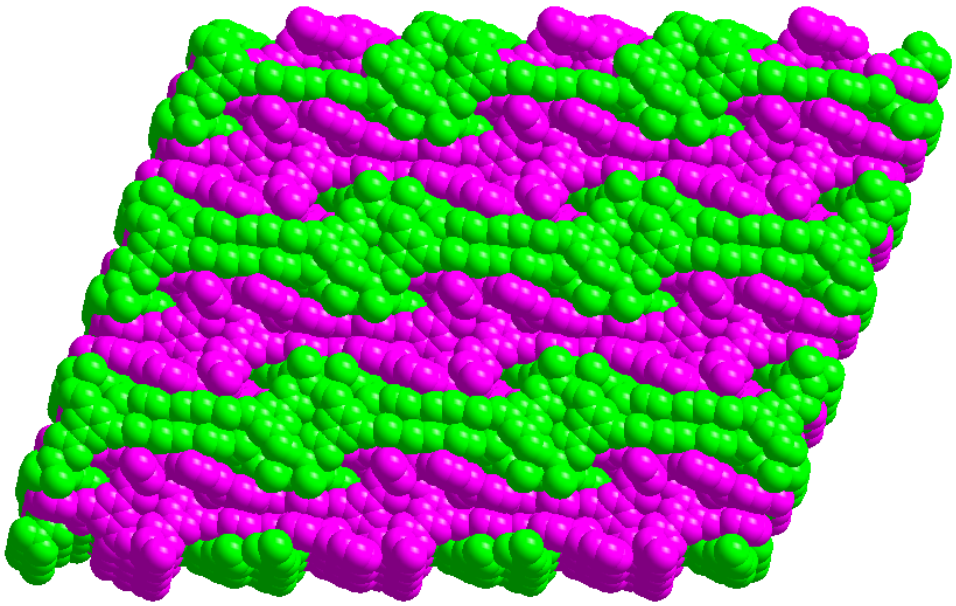


Figure S1. Space-filling representation of the two-fold interpenetrated net of **1** with free water molecules omitted for clarity.

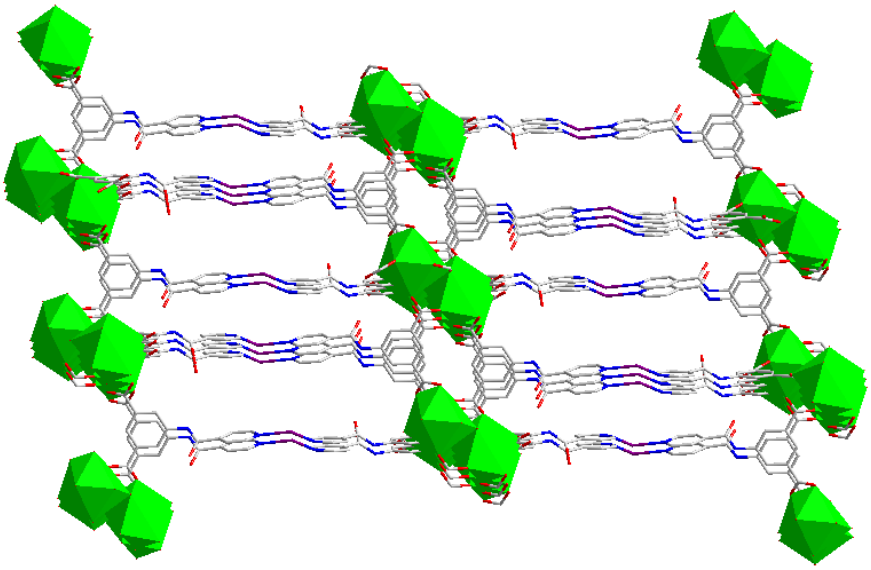


Figure S2. Perspective view of the 3D framework in **8** neglecting the coordination of Ag-O interactions.

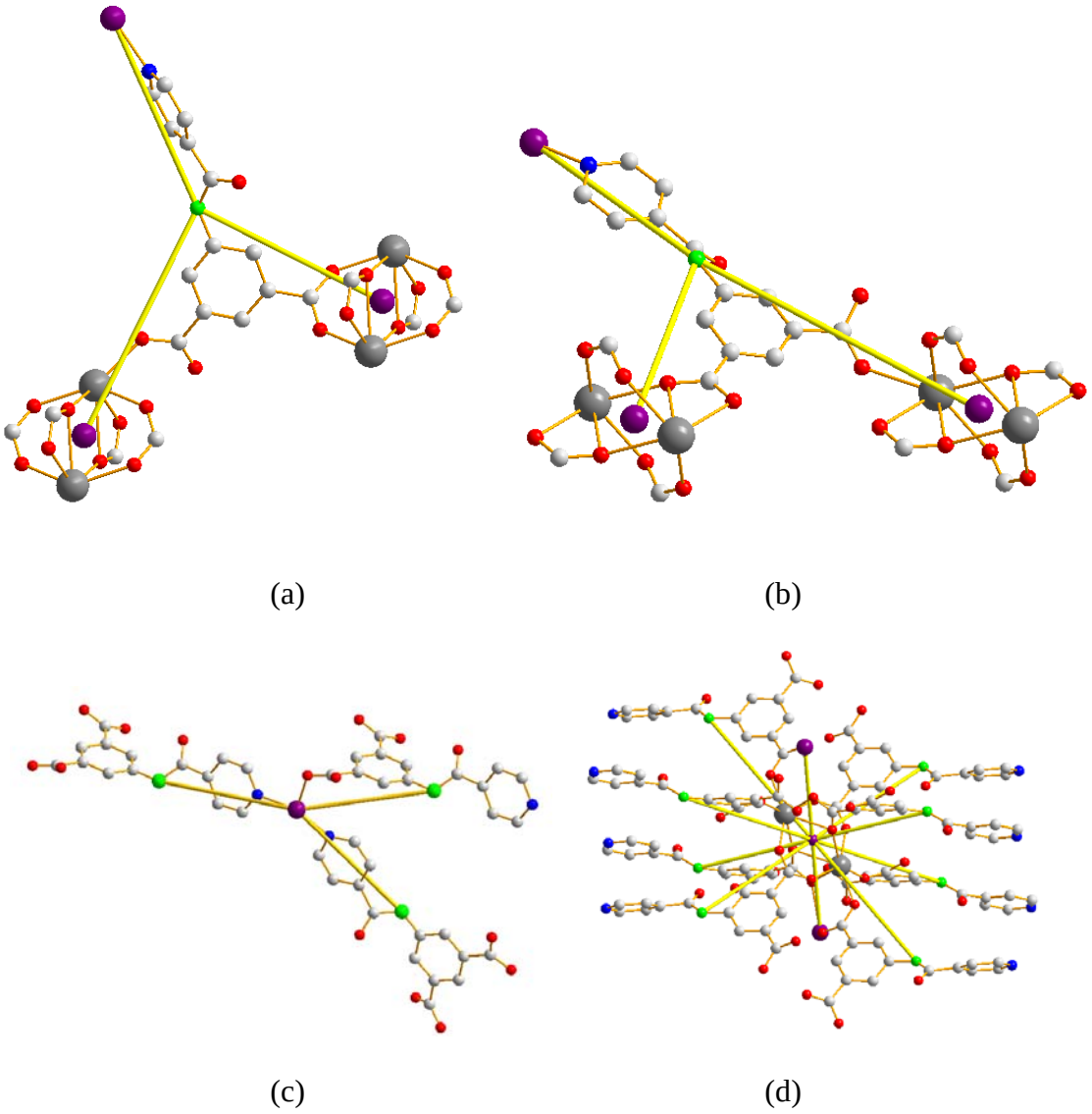


Figure S3. The four types of nodes in **8**: (a) and (b) three-connecting nodes of $INAIP^{2-}$ ligands, (c) three-connecting node of Ag(I) and (d) ten-connecting node of $[Nd_2]$ unit.

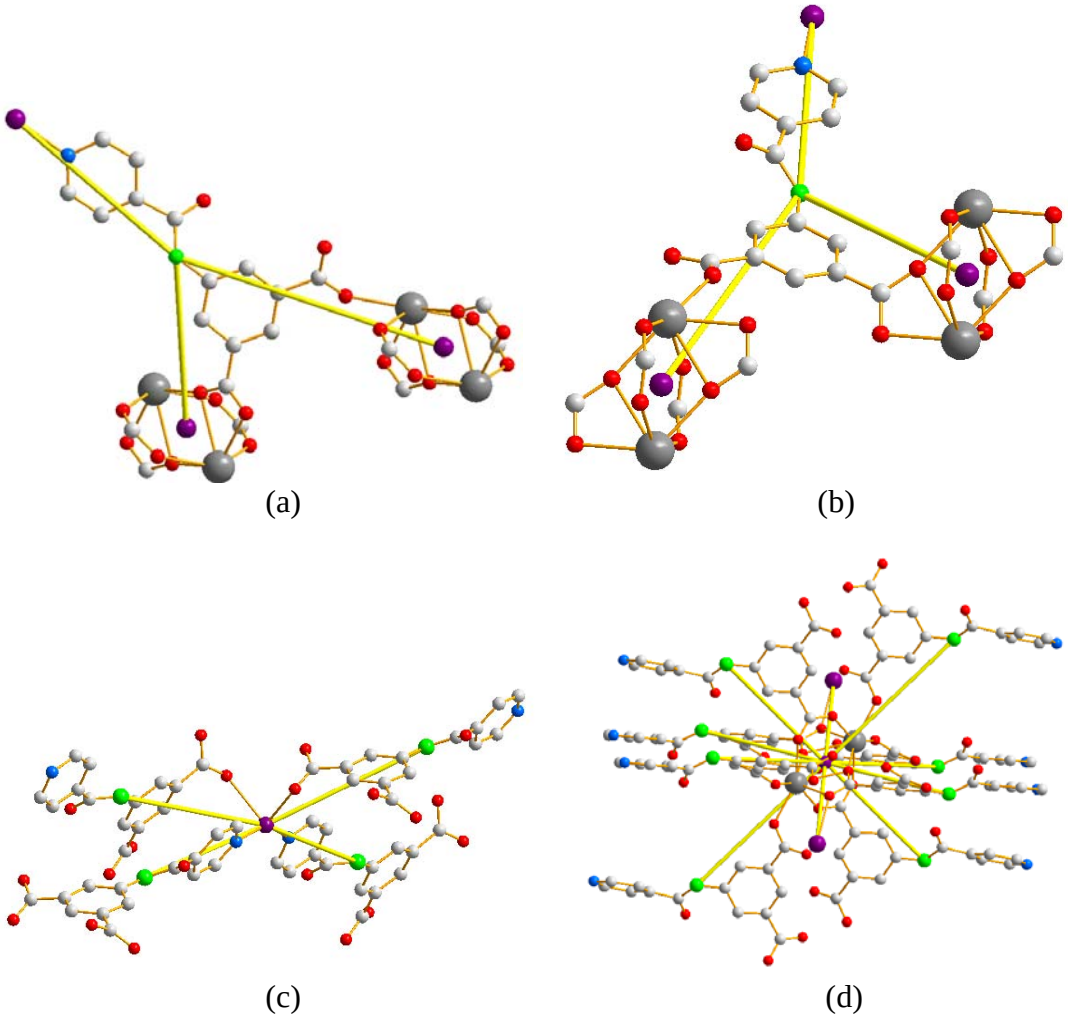
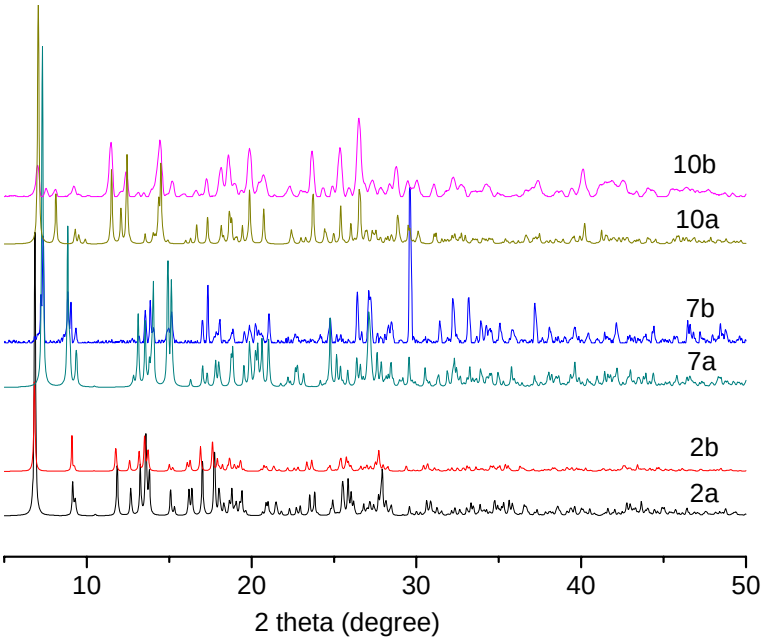
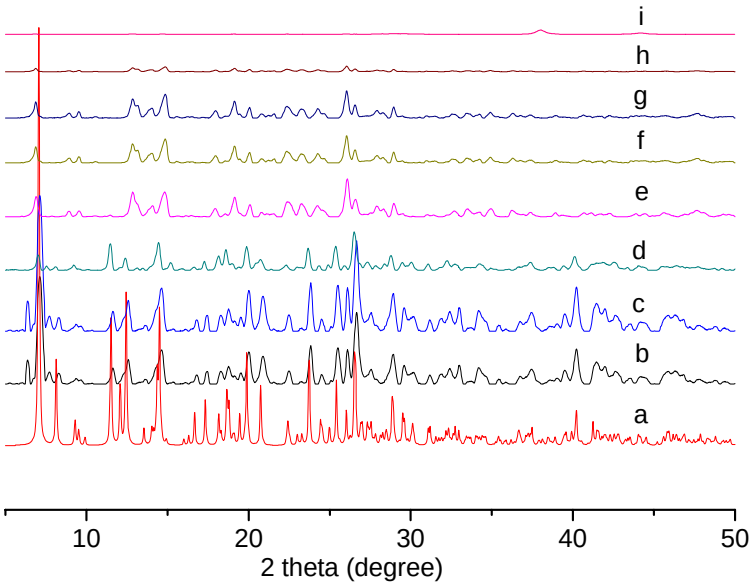


Figure S4. The four types of nodes in **9**: (a) and (b) three-connecting nodes of $INAIP^{2-}$ ligands, (c) four-connecting node of Ag(I) and (d) ten-connecting node of [Dy_2] unit.

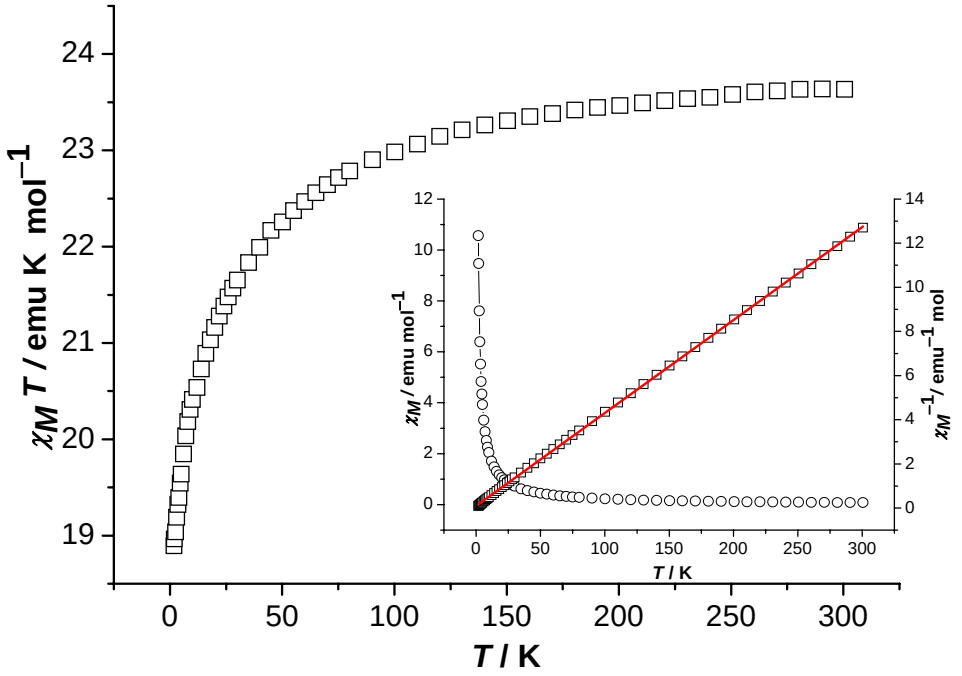


(a)

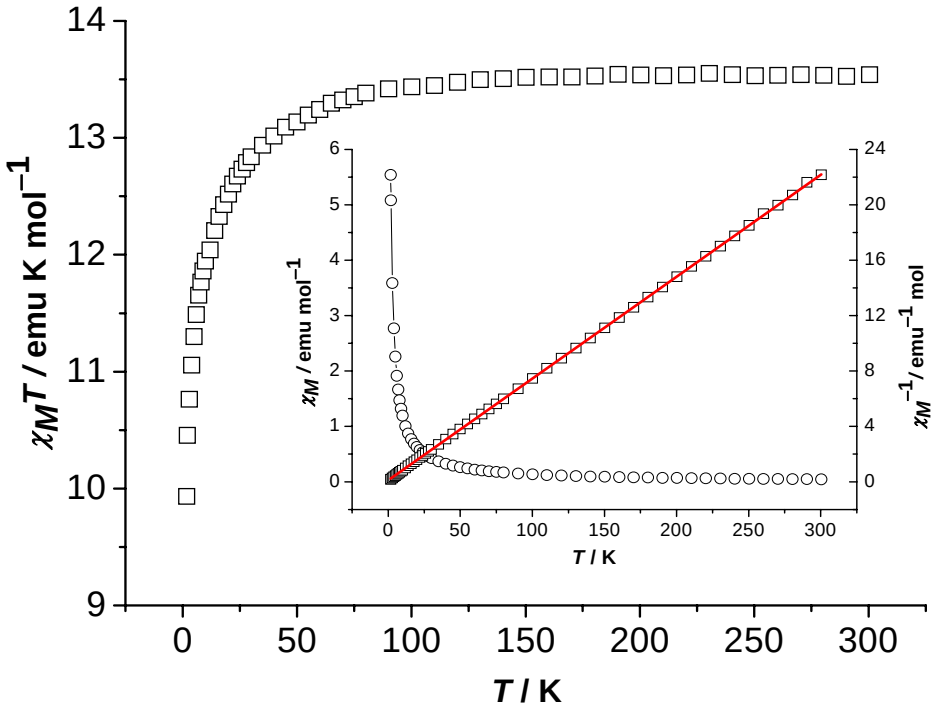


(b)

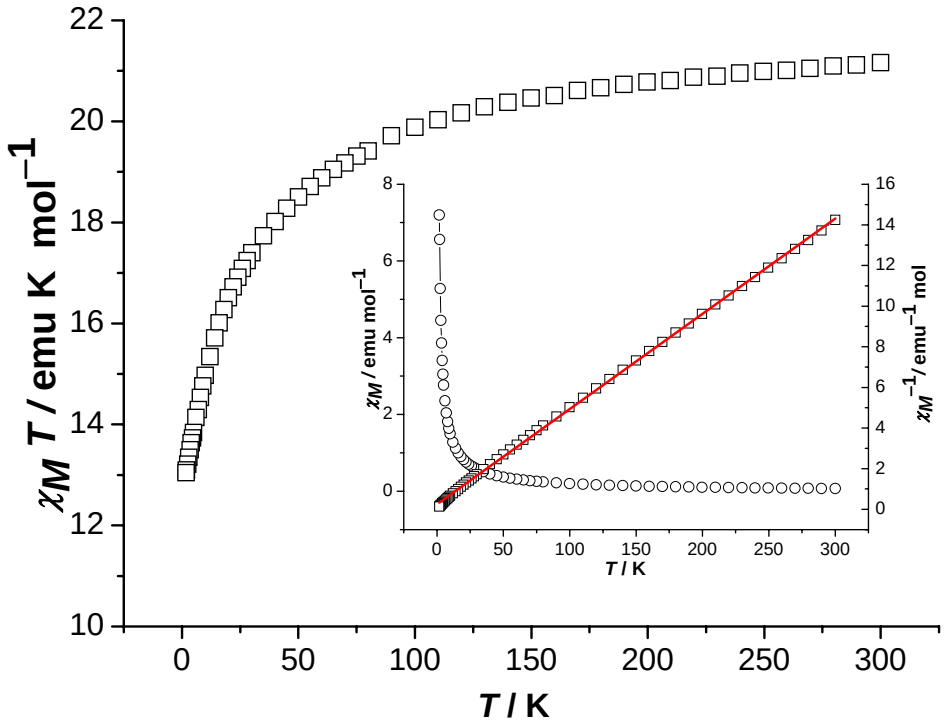
Figure S5. (a) XRPD patterns of **2, 7** and **10**: a – simulated; b – as-synthesized. (b) XRPD patterns of **9**: a-simulated; b-as-synthesized at room temperature and upon heating at c-160 °C; d-200 °C; e-280 °C; f- 300 °C; g-350 °C; h-390 °C; i-410 °C.


χM T / emu K mol−1
T / K
χM / emu mol−1
χM−1 / emu−1 mol

(a)


χMT / emu K mol−1
T / K
χM / emu mol−1
χM−1 / emu−1 mol

(b)



(c)

Figure S6. Temperature dependence of $\chi_M T$ and χ_M^{-1} for **5** (a), **9** (b) and **10** (c). The red solid line shows the Curie-Weiss fitting.