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Supplementary Material

Three 3d-4f Tetranuclear Complexes Based on 2,3,5-Trichlorobenzoic Acid: Syntheses, Structures and Magnetic Properties

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Table S1. Selected bond lengths (Å) and bond angles (°) for complex **1**

Co(1)-O(7)	2.008(4)	O(1)-Co(1)-N(1)	108.16(17)	O(3)-Dy(1)-O(5)	77.80(15)
Co(1)-O(9)	2.013(4)	O(7)-Co(1)-N(2)	169.86(18)	O(8)-Dy(1)-O(5)	73.94(15)
Co(1)-O(1)	2.065(4)	O(9)-Co(1)-N(2)	85.28(19)	O(2)-Dy(1)-O(5)	97.65(15)
Co(1)-N(1)	2.077(4)	O(1)-Co(1)-N(2)	85.16(19)	O(4)#1-Dy(1)-O(5)	123.98(13)
Co(1)-N(2)	2.118(5)	N(1)-Co(1)-N(2)	77.78(19)	O(6)#1-Dy(1)-O(5)	88.93(15)
Dy(1)-O(10)	2.251(4)	O(10)-Dy(1)-O(3)	117.48(15)	O(10)-Dy(1)-O(6)	145.15(13)
Dy(1)-O(3)	2.306(4)	O(10)-Dy(1)-O(8)	83.99(16)	O(3)-Dy(1)-O(6)	74.43(13)
Dy(1)-O(8)	2.312(4)	O(3)-Dy(1)-O(8)	138.98(15)	O(8)-Dy(1)-O(6)	108.64(14)
Dy(1)-O(2)	2.344(4)	O(10)-Dy(1)-O(2)	79.74(16)	O(2)-Dy(1)-O(6)	134.36(14)
Dy(1)-O(4)#1	2.362(4)	O(3)-Dy(1)-O(2)	75.03(16)	O(4)#1-Dy(1)-O(6)	70.43(13)
Dy(1)-O(6)#1	2.373(4)	O(8)-Dy(1)-O(2)	75.32(17)	O(6)#1-Dy(1)-O(6)	74.70(14)
Dy(1)-O(5)	2.449(4)	O(10)-Dy(1)-O(4)#1	82.17(15)	O(5)-Dy(1)-O(6)	51.91(12)
Dy(1)-O(6)	2.541(4)	O(3)-Dy(1)-O(4)#1	137.78(13)	O(7)-Co(1)-O(9)	100.47(19)
Dy(1)-Dy(1)#1	3.9077(15)	O(8)-Dy(1)-O(4)#1	75.75(16)	O(7)-Co(1)-O(1)	93.68(19)
O(4)-Dy(1)#1	2.362(4)	O(2)-Dy(1)-O(4)#1	147.19(15)	O(9)-Co(1)-O(1)	149.66(17)
O(6)-Dy(1)#1	2.373(4)	O(10)-Dy(1)-O(6)#1	78.35(14)	O(7)-Co(1)-N(1)	93.08(18)
		O(3)-Dy(1)-O(6)#1	72.24(14)	O(9)-Co(1)-N(1)	97.79(17)
		O(8)-Dy(1)-O(6)#1	148.77(15)	O(4)#1-Dy(1)-O(6)#1	76.48(14)
		O(2)-Dy(1)-O(6)#1	25.49(15)	O(10)-Dy(1)-O(5)	157.17(14)

Table S2. Selected bond lengths (Å) and bond angles (°) for complex **2**

Co(1)-O(8)	2.017(5)	O(8)-Co(1)-O(9)	100.5(2)	O(2)-Ho(1)-O(4)#1	146.50(17)
Ho(1)-O(5)	2.442(5)	O(8)-Co(1)-O(1)	93.8(2)	O(10)-Ho(1)-O(6)#1	78.18(17)
Co(1)-O(9)	2.030(5)	O(9)-Co(1)-O(1)	150.1(2)	O(3)-Ho(1)-O(6)#1	72.58(16)
Co(1)-O(1)	2.073(5)	O(8)-Co(1)-N(2)	93.5(2)	O(7)-Ho(1)-O(6)#1	148.70(17)
Co(1)-N(2)	2.075(6)	O(9)-Co(1)-N(2)	97.6(2)	O(2)-Ho(1)-O(5)	88.11(18)
Co(1)-N(1)	2.140(6)	O(1)-Co(1)-N(2)	107.7(2)	O(4)#1-Ho(1)-O(6)#1	76.11(16)
Ho(1)-O(10)	2.247(5)	O(8)-Co(1)-N(1)	169.7(2)	O(10)-Ho(1)-O(5)	157.33(17)
Ho(1)-O(3)	2.298(4)	O(9)-Co(1)-N(1)	85.3(2)	O(3)-Ho(1)-O(5)	77.85(18)
Ho(1)-O(7)	2.307(5)	O(1)-Co(1)-N(1)	84.9(2)	O(7)-Ho(1)-O(5)	73.46(19)
Ho(1)-O(2)	2.340(4)	N(2)-Co(1)-N(1)	77.3(2)	O(2)-Ho(1)-O(5)	88.11(18)
Ho(1)-O(4)#1	2.344(4)	O(10)-Ho(1)-O(3)	116.96(18)	O(4)#1-Ho(1)-O(5)	98.35(18)
Ho(1)-O(6)#1	2.366(5)	O(10)-Ho(1)-O(7)	84.74(19)	O(6)#1-Ho(1)-O(5)	124.05(16)
Ho(1)-O(6)	2.531(5)	O(3)-Ho(1)-O(7)	138.70(19)	O(10)-Ho(1)-O(6)	144.80(16)
Ho(1)-Ho(1)#1	3.9030(15)	O(10)-Ho(1)-O(2)	80.08(18)	O(3)-Ho(1)-O(6)	75.00(15)
O(4)-Ho(1)#1	2.344(4)	O(3)-Ho(1)-O(2)	75.13(17)	O(7)-Ho(1)-O(6)	108.16(17)
O(6)-Ho(1)#1	2.366(5)	O(7)-Ho(1)-O(2)	74.85(19)	O(2)-Ho(1)-O(6)	134.44(17)
		O(10)-Ho(1)-O(4)#1	81.81(18)	O(4)#1-Ho(1)-O(6)	70.60(15)
		O(3)-Ho(1)-O(4)#1	138.37(15)	O(6)#1-Ho(1)-O(6)	74.37(19)
		O(7)-Ho(1)-O(4)#1	75.62(18)	O(5)-Ho(1)-O(6)	52.37(15)

Table S3. Selected bond lengths (Å) and bond angles (°) for complex **3**

Co(1)-O(9)	2.011(4)	O(9)-Co(1)-O(2)	100.09(18)	O(8)-Er(1)-O(5)#1	144.75(16)
Co(1)-O(2)	2.018(4)	O(9)-Co(1)-N(2)	93.22(18)	O(1)-Er(1)-O(3)	77.99(14)
Co(1)-N(2)	2.074(4)	O(2)-Co(1)-N(2)	96.35(17)	O(10)-Er(1)-O(3)	147.95(16)
Co(1)-O(7)	2.080(4)	O(9)-Co(1)-O(7)	93.23(19)	O(6)-Er(1)-O(3)	72.48(15)
Co(1)-N(1)	2.118(5)	O(2)-Co(1)-O(7)	152.41(17)	O(8)-Er(1)-O(3)	127.54(16)
Er(1)-O(1)	2.234(4)	N(2)-Co(1)-O(7)	106.97(17)	O(5)#1-Er(1)-O(3)	76.08(14)
Er(1)-O(10)	2.267(4)	O(9)-Co(1)-N(1)	169.88(18)	O(1)-Er(1)-O(4)#1	157.81(14)
Er(1)-O(6)	2.273(4)	O(2)-Co(1)-N(1)	85.18(18)	O(10)-Er(1)-O(4)#1	73.87(15)
Er(1)-O(8)	2.327(4)	N(2)-Co(1)-N(1)	77.53(19)	O(6)-Er(1)-O(4)#1	77.42(15)
Er(1)-O(5)#1	2.336(4)	O(7)-Co(1)-N(1)	85.68(18)	O(8)-Er(1)-O(4)#1	87.40(14)
Er(1)-O(3)	2.341(4)	O(1)-Er(1)-O(10)	85.47(16)	O(5)#1-Er(1)-O(4)#1	99.94(15)
Er(1)-O(4)#1	2.432(4)	O(1)-Er(1)-O(6)	115.71(15)	O(3)-Er(1)-O(4)#1	124.04(13)
Er(1)-O(3)#1	2.488(4)	O(10)-Er(1)-O(6)	139.53(17)	O(1)-Er(1)-O(3)#1	144.83(14)
O(3)-Er(1)#1	2.488(4)	O(1)-Er(1)-O(8)	79.21(15)	O(10)-Er(1)-O(3)#1	107.19(14)
O(4)-Er(1)#1	2.432(4)	O(10)-Er(1)-O(8)	74.63(18)	O(6)-Er(1)-O(3)#1	75.87(13)
O(5)-Er(1)#1	2.336(4)	O(6)-Er(1)-O(8)	76.17(17)	O(8)-Er(1)-O(3)#1	135.39(14)
		O(1)-Er(1)-O(5)#1	81.81(15)	O(5)#1-Er(1)-O(3)#1	70.85(13)
		O(10)-Er(1)-O(5)#1	74.50(17)	O(3)-Er(1)-O(3)#1	74.34(14)
		O(6)-Er(1)-O(5)#1	139.07(14)	O(4)#1-Er(1)-O(3)#1	52.91(12)

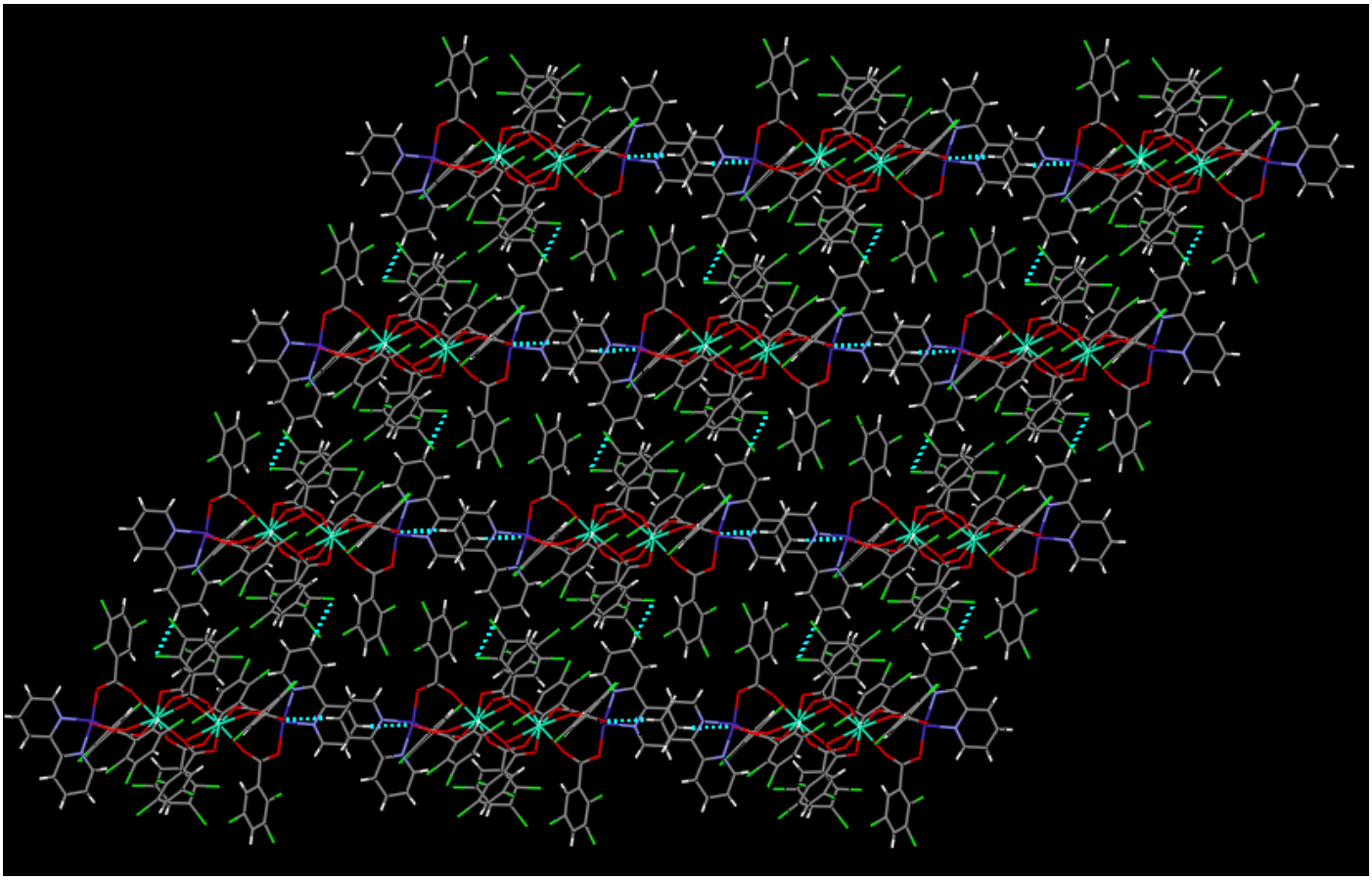

Fig. S1. View of the 2D supramolecular framework of **1** .