

SUPPORTING INFORMATION

Figure S1. Plot of $\chi_M T$ vs temperature for a dried, microcrystalline sample of complex $5 \cdot \frac{1}{2} \text{CH}_2\text{Cl}_2 \cdot 4\text{H}_2\text{O}$. χ_M is the DC molar magnetic susceptibility measured in a 1 kG field.

Figure S2. Plot of $\chi_M T$ vs temperature for a dried, microcrystalline sample of complex $6 \cdot \text{HO}_2\text{CPe}^t$. χ_M is the DC molar magnetic susceptibility measured in a 1 kG field.

Figure S3. Plot of $\chi_M' T$ vs temperature for complex $7 \cdot 2\text{H}_2\text{O}$ in the 2.0-30.0 K range from AC magnetic susceptibility measurements (Δ), and including the DC $\chi_M T$ data ($\bullet$) for this temperature range. The AC data were measured with a 3.5 G AC field oscillating at 997 Hz.

Figure S4. Plot of $\chi_M T$ vs temperature for a dried, microcrystalline sample of complex $8 \cdot \frac{1}{2} \text{MeNO}_2$. χ_M is the DC molar magnetic susceptibility measured in a 1 kG field.

Figure S5. Plot of $\chi_M' T$ vs temperature for complex $8 \cdot \frac{1}{2} \text{MeNO}_2$ in the 2.0-30.0 K range from AC magnetic susceptibility measurements (Δ), and including the DC $\chi_M T$ data ($\bullet$) for this temperature range. The AC data were measured with a 3.5 G AC field oscillating at 997 Hz.

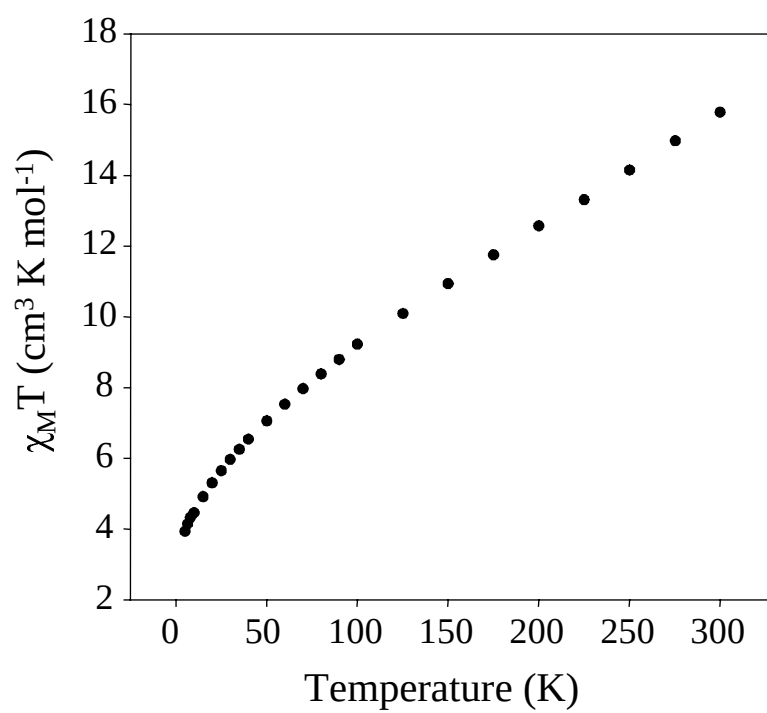


Figure S1

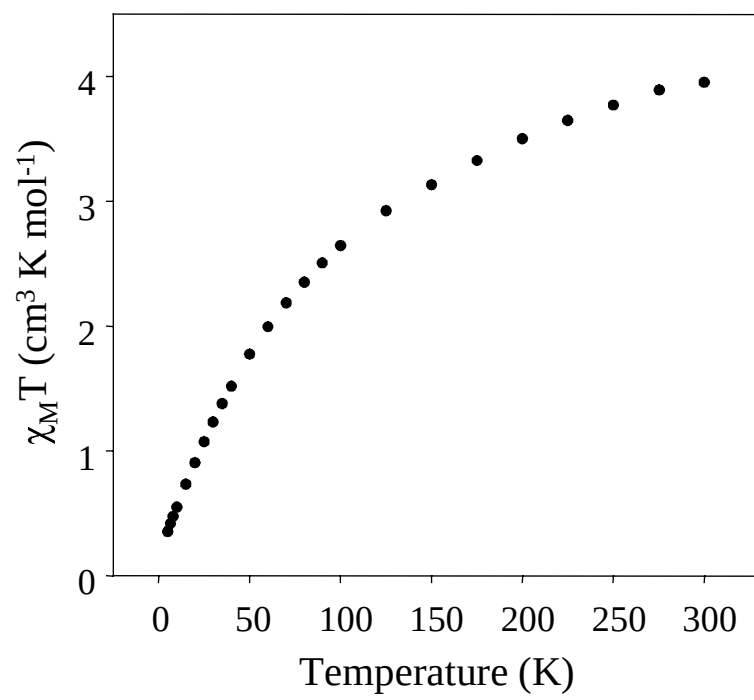


Figure S2

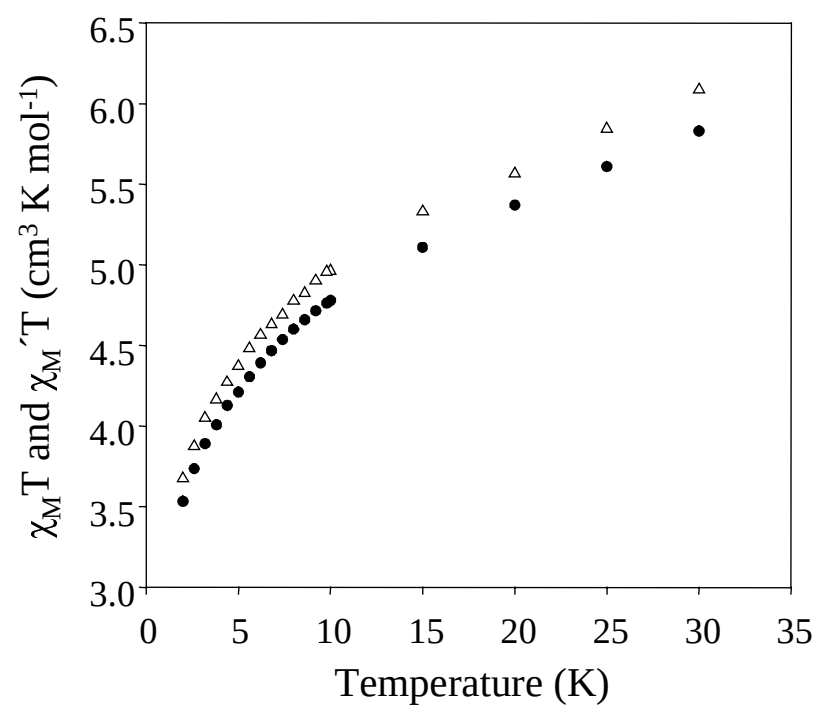


Figure S3

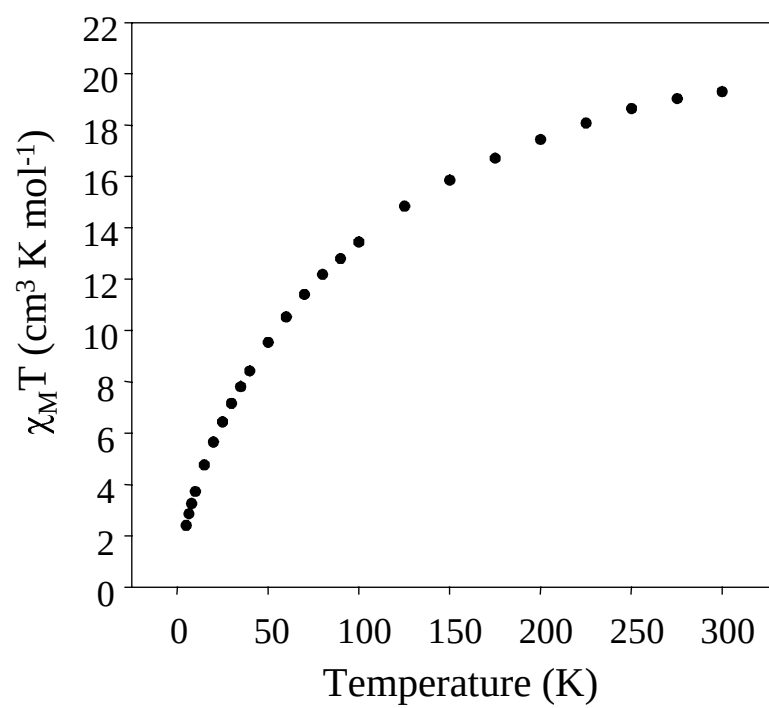


Figure S4

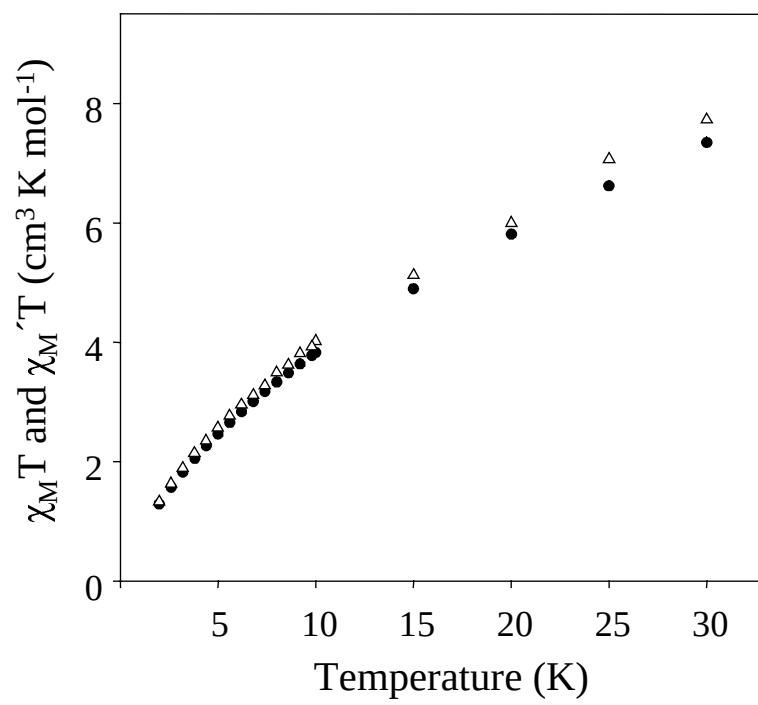


Figure S5

Table S1. Bond Distances (Å) and Angles (deg) for Complex **4**

Mn(1)-O(10)	1.870(4)	Mn(6)-O(9)	1.893(4)
Mn(1)-O(11)	1.879(4)	Mn(6)-O(91)	1.964(5)
Mn(1)-O(1)	1.913(4)	Mn(6)-O(71)	1.972(5)
Mn(1)-O(110)	1.913(5)	Mn(6)-O(140)	2.150(6)
Mn(1)-O(2)	1.921(4)	Mn(6)-O(101)	2.168(6)
Mn(1)-O(3)	1.940(4)	Mn(7)-O(10)	1.898(4)
Mn(1)-Mn(7)	2.7873(14)	Mn(7)-O(11)	1.916(4)
Mn(1)-Mn(4)	2.8263(14)	Mn(7)-O(41)	1.942(5)
Mn(1)-Mn(2)	2.8399(14)	Mn(7)-O(90)	1.956(5)
Mn(1)-Mn(3)	2.9656(14)	Mn(7)-O(100)	2.153(6)
Mn(2)-O(12)	1.860(4)	Mn(7)-O(111)	2.162(5)
Mn(2)-O(5)	1.883(4)	Mn(8)-O(12)	1.870(4)
Mn(2)-O(4)	1.908(4)	Mn(8)-O(11)	1.904(4)
Mn(2)-O(2)	1.912(4)	Mn(8)-O(40)	1.930(5)
Mn(2)-O(81)	1.930(5)	Mn(8)-O(51)	1.988(5)
Mn(2)-O(1)	1.934(4)	Mn(8)-O(150)	2.156(6)
Mn(2)-Mn(9)	2.7914(15)	Mn(8)-O(13)	2.239(6)
Mn(2)-Mn(3)	2.8348(16)	Mn(9)-O(5)	1.897(5)
Mn(2)-Mn(4)	2.9421(14)	Mn(9)-O(12)	1.898(4)
Mn(3)-O(6)	1.869(4)	Mn(9)-O(61)	1.930(5)
Mn(3)-O(7)	1.894(4)	Mn(9)-O(50)	1.960(6)
Mn(3)-O(4)	1.898(5)	Mn(9)-O(151)	2.160(6)
Mn(3)-O(3)	1.914(4)	Mn(9)-O(80)	2.191(7)
Mn(3)-O(2)	1.939(4)	Mn(10)-O(6)	1.877(5)
Mn(3)-O(130)	1.940(5)	Mn(10)-O(5)	1.886(5)
Mn(3)-Mn(11)	2.7920(15)	Mn(10)-O(60)	1.949(6)
Mn(3)-Mn(4)	2.8265(15)	Mn(10)-O(120)	1.970(6)
Mn(4)-O(8)	1.869(4)	Mn(10)-O(170)	2.138(6)
Mn(4)-O(9)	1.873(4)	Mn(10)-O(14)	2.241(6)
Mn(4)-O(3)	1.901(5)	Mn(11)-O(6)	1.885(4)
Mn(4)-O(1)	1.903(4)	Mn(11)-O(7)	1.915(5)
Mn(4)-O(160)	1.918(5)	Mn(11)-O(30)	1.941(5)
Mn(4)-O(4)	1.939(4)	Mn(11)-O(121)	1.951(5)
Mn(4)-Mn(5)	2.7699(15)	Mn(11)-O(171)	2.156(6)
Mn(5)-O(9)	1.886(4)	Mn(11)-O(131)	2.162(6)
Mn(5)-O(8)	1.903(4)	Mn(12)-O(7)	1.872(5)
Mn(5)-O(70)	1.931(5)	Mn(12)-O(8)	1.873(5)
Mn(5)-O(21)	1.951(5)	Mn(12)-O(31)	1.969(5)
Mn(5)-O(141)	2.165(6)	Mn(12)-O(20)	1.978(5)
Mn(5)-O(161)	2.214(6)	Mn(12)-O(15)	2.208(6)
Mn(6)-O(10)	1.886(4)	Mn(12)-O(16)	2.211(5)
O(13)-C(12)	1.404(11)	O(15)-C(15)	1.41(3)
O(14)-C(13)	1.393(13)	O(15)-C(14)	1.447(18)

O(16)-C(16)	1.443(10)	O(12)-Mn(2)-O(5)	84.44(19)
O(10)-Mn(1)-O(11)	84.97(19)	O(12)-Mn(2)-O(4)	173.72(19)
O(10)-Mn(1)-O(1)	92.67(19)	O(5)-Mn(2)-O(4)	100.78(19)
O(11)-Mn(1)-O(1)	88.85(19)	O(12)-Mn(2)-O(2)	92.87(18)
O(10)-Mn(1)-O(110)	92.8(2)	O(5)-Mn(2)-O(2)	89.07(19)
O(11)-Mn(1)-O(110)	92.61(19)	O(4)-Mn(2)-O(2)	83.79(18)
O(1)-Mn(1)-O(110)	174.5(2)	O(12)-Mn(2)-O(81)	93.4(2)
O(10)-Mn(1)-O(2)	173.97(18)	O(5)-Mn(2)-O(81)	91.4(2)
O(11)-Mn(1)-O(2)	99.82(18)	O(4)-Mn(2)-O(81)	90.0(2)
O(1)-Mn(1)-O(2)	83.82(18)	O(2)-Mn(2)-O(81)	173.8(2)
O(110)-Mn(1)-O(2)	90.67(19)	O(12)-Mn(2)-O(1)	94.32(18)
O(10)-Mn(1)-O(3)	95.38(18)	O(5)-Mn(2)-O(1)	172.4(2)
O(11)-Mn(1)-O(3)	172.1(2)	O(4)-Mn(2)-O(1)	80.04(18)
O(1)-Mn(1)-O(3)	83.22(18)	O(2)-Mn(2)-O(1)	83.52(18)
O(110)-Mn(1)-O(3)	95.28(19)	O(81)-Mn(2)-O(1)	96.1(2)
O(2)-Mn(1)-O(3)	79.37(17)	O(12)-Mn(2)-Mn(9)	42.54(14)
O(10)-Mn(1)-Mn(7)	42.67(13)	O(5)-Mn(2)-Mn(9)	42.58(14)
O(11)-Mn(1)-Mn(7)	43.27(13)	O(4)-Mn(2)-Mn(9)	143.09(14)
O(1)-Mn(1)-Mn(7)	98.17(14)	O(2)-Mn(2)-Mn(9)	97.28(13)
O(110)-Mn(1)-Mn(7)	86.53(14)	O(81)-Mn(2)-Mn(9)	87.25(17)
O(2)-Mn(1)-Mn(7)	142.64(13)	O(1)-Mn(2)-Mn(9)	136.85(13)
O(3)-Mn(1)-Mn(7)	137.99(13)	O(12)-Mn(2)-Mn(3)	135.65(14)
O(10)-Mn(1)-Mn(4)	88.42(13)	O(5)-Mn(2)-Mn(3)	89.99(15)
O(11)-Mn(1)-Mn(4)	130.11(14)	O(4)-Mn(2)-Mn(3)	41.72(14)
O(1)-Mn(1)-Mn(4)	42.09(13)	O(2)-Mn(2)-Mn(3)	42.96(12)
O(110)-Mn(1)-Mn(4)	137.14(14)	O(81)-Mn(2)-Mn(3)	130.80(17)
O(2)-Mn(1)-Mn(4)	85.69(12)	O(1)-Mn(2)-Mn(3)	85.67(14)
O(3)-Mn(1)-Mn(4)	42.09(13)	Mn(9)-Mn(2)-Mn(3)	123.54(5)
Mn(7)-Mn(1)-Mn(4)	120.44(5)	O(12)-Mn(2)-Mn(1)	87.88(14)
O(10)-Mn(1)-Mn(2)	135.11(15)	O(5)-Mn(2)-Mn(1)	130.30(15)
O(11)-Mn(1)-Mn(2)	88.93(14)	O(4)-Mn(2)-Mn(1)	86.08(13)
O(1)-Mn(1)-Mn(2)	42.69(13)	O(2)-Mn(2)-Mn(1)	42.33(12)
O(110)-Mn(1)-Mn(2)	131.96(14)	O(81)-Mn(2)-Mn(1)	138.12(16)
O(2)-Mn(1)-Mn(2)	42.07(13)	O(1)-Mn(2)-Mn(1)	42.13(13)
O(3)-Mn(1)-Mn(2)	85.23(13)	Mn(9)-Mn(2)-Mn(1)	119.20(5)
Mn(7)-Mn(1)-Mn(2)	123.64(5)	Mn(3)-Mn(2)-Mn(1)	63.01(4)
Mn(4)-Mn(1)-Mn(2)	62.56(3)	O(12)-Mn(2)-Mn(4)	133.86(14)
O(10)-Mn(1)-Mn(3)	134.72(13)	O(5)-Mn(2)-Mn(4)	140.93(15)
O(11)-Mn(1)-Mn(3)	139.45(14)	O(4)-Mn(2)-Mn(4)	40.50(13)
O(1)-Mn(1)-Mn(3)	82.37(14)	O(2)-Mn(2)-Mn(4)	82.60(12)
O(110)-Mn(1)-Mn(3)	93.08(14)	O(81)-Mn(2)-Mn(4)	93.15(17)
O(2)-Mn(1)-Mn(3)	40.02(12)	O(1)-Mn(2)-Mn(4)	39.56(12)
O(3)-Mn(1)-Mn(3)	39.36(12)	Mn(9)-Mn(2)-Mn(4)	176.41(5)
Mn(7)-Mn(1)-Mn(3)	177.28(5)	Mn(3)-Mn(2)-Mn(4)	58.55(4)
Mn(4)-Mn(1)-Mn(3)	58.36(4)	Mn(1)-Mn(2)-Mn(4)	58.49(3)
Mn(2)-Mn(1)-Mn(3)	58.41(4)	O(6)-Mn(3)-O(7)	84.80(19)

O(6)-Mn(3)-O(4)	90.8(2)	O(9)-Mn(4)-O(3)	91.14(19)
O(7)-Mn(3)-O(4)	87.3(2)	O(8)-Mn(4)-O(1)	173.2(2)
O(6)-Mn(3)-O(3)	172.4(2)	O(9)-Mn(4)-O(1)	98.03(19)
O(7)-Mn(3)-O(3)	100.65(19)	O(3)-Mn(4)-O(1)	84.54(18)
O(4)-Mn(3)-O(3)	84.20(19)	O(8)-Mn(4)-O(160)	93.2(2)
O(6)-Mn(3)-O(2)	94.16(18)	O(9)-Mn(4)-O(160)	90.8(2)
O(7)-Mn(3)-O(2)	170.5(2)	O(3)-Mn(4)-O(160)	176.7(2)
O(4)-Mn(3)-O(2)	83.33(18)	O(1)-Mn(4)-O(160)	92.6(2)
O(3)-Mn(3)-O(2)	79.59(17)	O(8)-Mn(4)-O(4)	95.95(19)
O(6)-Mn(3)-O(130)	92.3(2)	O(9)-Mn(4)-O(4)	174.38(19)
O(7)-Mn(3)-O(130)	90.3(2)	O(3)-Mn(4)-O(4)	83.44(18)
O(4)-Mn(3)-O(130)	175.9(2)	O(1)-Mn(4)-O(4)	80.02(18)
O(3)-Mn(3)-O(130)	93.0(2)	O(160)-Mn(4)-O(4)	94.6(2)
O(2)-Mn(3)-O(130)	99.1(2)	O(8)-Mn(4)-Mn(5)	43.22(14)
O(6)-Mn(3)-Mn(11)	42.16(13)	O(9)-Mn(4)-Mn(5)	42.73(13)
O(7)-Mn(3)-Mn(11)	43.16(14)	O(3)-Mn(4)-Mn(5)	95.54(13)
O(4)-Mn(3)-Mn(11)	94.00(13)	O(1)-Mn(4)-Mn(5)	140.74(14)
O(3)-Mn(3)-Mn(11)	143.76(13)	O(160)-Mn(4)-Mn(5)	87.68(16)
O(2)-Mn(3)-Mn(11)	136.30(13)	O(4)-Mn(4)-Mn(5)	139.13(13)
O(130)-Mn(3)-Mn(11)	86.50(16)	O(8)-Mn(4)-Mn(1)	132.34(15)
O(6)-Mn(3)-Mn(4)	133.78(16)	O(9)-Mn(4)-Mn(1)	89.13(13)
O(7)-Mn(3)-Mn(4)	88.58(15)	O(3)-Mn(4)-Mn(1)	43.16(13)
O(4)-Mn(3)-Mn(4)	43.12(13)	O(1)-Mn(4)-Mn(1)	42.35(13)
O(3)-Mn(3)-Mn(4)	42.01(13)	O(160)-Mn(4)-Mn(1)	134.22(17)
O(2)-Mn(3)-Mn(4)	85.37(13)	O(4)-Mn(4)-Mn(1)	85.90(12)
O(130)-Mn(3)-Mn(4)	133.51(16)	Mn(5)-Mn(4)-Mn(1)	120.59(5)
Mn(11)-Mn(3)-Mn(4)	121.34(5)	O(8)-Mn(4)-Mn(3)	86.89(14)
O(6)-Mn(3)-Mn(2)	86.61(15)	O(9)-Mn(4)-Mn(3)	132.89(15)
O(7)-Mn(3)-Mn(2)	128.33(16)	O(3)-Mn(4)-Mn(3)	42.36(13)
O(4)-Mn(3)-Mn(2)	41.99(13)	O(1)-Mn(4)-Mn(3)	86.46(14)
O(3)-Mn(3)-Mn(2)	85.85(14)	O(160)-Mn(4)-Mn(3)	136.06(18)
O(2)-Mn(3)-Mn(2)	42.23(13)	O(4)-Mn(4)-Mn(3)	41.99(13)
O(130)-Mn(3)-Mn(2)	140.95(16)	Mn(5)-Mn(4)-Mn(3)	119.39(5)
Mn(11)-Mn(3)-Mn(2)	116.43(5)	Mn(1)-Mn(4)-Mn(3)	63.29(4)
Mn(4)-Mn(3)-Mn(2)	62.62(4)	O(8)-Mn(4)-Mn(2)	135.53(14)
O(6)-Mn(3)-Mn(1)	133.68(14)	O(9)-Mn(4)-Mn(2)	138.21(14)
O(7)-Mn(3)-Mn(1)	140.07(14)	O(3)-Mn(4)-Mn(2)	83.04(13)
O(4)-Mn(3)-Mn(1)	82.69(13)	O(1)-Mn(4)-Mn(2)	40.31(13)
O(3)-Mn(3)-Mn(1)	40.02(12)	O(160)-Mn(4)-Mn(2)	93.75(16)
O(2)-Mn(3)-Mn(1)	39.59(12)	O(4)-Mn(4)-Mn(2)	39.72(13)
O(130)-Mn(3)-Mn(1)	97.08(16)	Mn(5)-Mn(4)-Mn(2)	178.22(6)
Mn(11)-Mn(3)-Mn(1)	174.88(5)	Mn(1)-Mn(4)-Mn(2)	58.95(3)
Mn(4)-Mn(3)-Mn(1)	58.35(3)	Mn(3)-Mn(4)-Mn(2)	58.83(4)
Mn(2)-Mn(3)-Mn(1)	58.58(3)	O(9)-Mn(5)-O(8)	84.16(18)
O(8)-Mn(4)-O(9)	85.47(19)	O(9)-Mn(5)-O(70)	95.7(2)
O(8)-Mn(4)-O(3)	89.6(2)	O(8)-Mn(5)-O(70)	174.9(2)

O(9)-Mn(5)-O(21)	175.8(2)	O(90)-Mn(7)-O(111)	87.0(2)
O(8)-Mn(5)-O(21)	94.0(2)	O(100)-Mn(7)-O(111)	174.6(2)
O(70)-Mn(5)-O(21)	85.9(2)	O(10)-Mn(7)-Mn(1)	41.89(13)
O(9)-Mn(5)-O(141)	95.3(2)	O(11)-Mn(7)-Mn(1)	42.22(13)
O(8)-Mn(5)-O(141)	93.8(2)	O(41)-Mn(7)-Mn(1)	136.06(16)
O(70)-Mn(5)-O(141)	91.2(2)	O(90)-Mn(7)-Mn(1)	134.35(15)
O(21)-Mn(5)-O(141)	88.6(2)	O(100)-Mn(7)-Mn(1)	106.61(15)
O(9)-Mn(5)-O(161)	85.0(2)	O(111)-Mn(7)-Mn(1)	78.59(13)
O(8)-Mn(5)-O(161)	84.6(2)	O(12)-Mn(8)-O(11)	93.68(19)
O(70)-Mn(5)-O(161)	90.3(2)	O(12)-Mn(8)-O(40)	173.8(2)
O(21)-Mn(5)-O(161)	91.2(2)	O(11)-Mn(8)-O(40)	92.2(2)
O(141)-Mn(5)-O(161)	178.4(2)	O(12)-Mn(8)-O(51)	91.1(2)
O(9)-Mn(5)-Mn(4)	42.37(13)	O(11)-Mn(8)-O(51)	171.8(2)
O(8)-Mn(5)-Mn(4)	42.26(13)	O(40)-Mn(8)-O(51)	82.8(2)
O(70)-Mn(5)-Mn(4)	136.71(17)	O(12)-Mn(8)-O(150)	95.4(2)
O(21)-Mn(5)-Mn(4)	135.19(16)	O(11)-Mn(8)-O(150)	99.6(2)
O(141)-Mn(5)-Mn(4)	101.07(15)	O(40)-Mn(8)-O(150)	85.4(2)
O(161)-Mn(5)-Mn(4)	78.03(14)	O(51)-Mn(8)-O(150)	86.6(2)
O(10)-Mn(6)-O(9)	93.67(18)	O(12)-Mn(8)-O(13)	92.1(2)
O(10)-Mn(6)-O(91)	91.5(2)	O(11)-Mn(8)-O(13)	92.8(2)
O(9)-Mn(6)-O(91)	172.5(2)	O(40)-Mn(8)-O(13)	85.8(2)
O(10)-Mn(6)-O(71)	174.3(2)	O(51)-Mn(8)-O(13)	80.4(2)
O(9)-Mn(6)-O(71)	91.5(2)	O(150)-Mn(8)-O(13)	165.1(2)
O(91)-Mn(6)-O(71)	83.6(2)	O(5)-Mn(9)-O(12)	83.05(19)
O(10)-Mn(6)-O(140)	95.0(2)	O(5)-Mn(9)-O(61)	95.3(2)
O(9)-Mn(6)-O(140)	92.2(2)	O(12)-Mn(9)-O(61)	177.4(2)
O(91)-Mn(6)-O(140)	82.0(2)	O(5)-Mn(9)-O(50)	172.6(3)
O(71)-Mn(6)-O(140)	87.2(2)	O(12)-Mn(9)-O(50)	95.8(2)
O(10)-Mn(6)-O(101)	95.7(2)	O(61)-Mn(9)-O(50)	85.6(2)
O(9)-Mn(6)-O(101)	97.6(2)	O(5)-Mn(9)-O(151)	98.8(2)
O(91)-Mn(6)-O(101)	87.3(2)	O(12)-Mn(9)-O(151)	93.3(2)
O(71)-Mn(6)-O(101)	81.3(2)	O(61)-Mn(9)-O(151)	88.9(3)
O(140)-Mn(6)-O(101)	165.1(2)	O(50)-Mn(9)-O(151)	88.5(2)
O(10)-Mn(7)-O(11)	83.18(18)	O(5)-Mn(9)-O(80)	84.9(2)
O(10)-Mn(7)-O(41)	177.2(2)	O(12)-Mn(9)-O(80)	86.9(2)
O(11)-Mn(7)-O(41)	95.2(2)	O(61)-Mn(9)-O(80)	91.0(3)
O(10)-Mn(7)-O(90)	95.02(19)	O(50)-Mn(9)-O(80)	87.7(3)
O(11)-Mn(7)-O(90)	172.6(2)	O(151)-Mn(9)-O(80)	176.3(2)
O(41)-Mn(7)-O(90)	86.3(2)	O(5)-Mn(9)-Mn(2)	42.20(14)
O(10)-Mn(7)-O(100)	95.5(2)	O(12)-Mn(9)-Mn(2)	41.51(13)
O(11)-Mn(7)-O(100)	99.0(2)	O(61)-Mn(9)-Mn(2)	136.52(19)
O(41)-Mn(7)-O(100)	87.0(2)	O(50)-Mn(9)-Mn(2)	135.19(18)
O(90)-Mn(7)-O(100)	88.4(2)	O(151)-Mn(9)-Mn(2)	103.83(14)
O(10)-Mn(7)-O(111)	87.53(19)	O(80)-Mn(9)-Mn(2)	78.75(18)
O(11)-Mn(7)-O(111)	85.74(19)	O(6)-Mn(10)-O(5)	93.86(19)
O(41)-Mn(7)-O(111)	90.1(2)	O(6)-Mn(10)-O(60)	174.7(3)

O(5)-Mn(10)-O(60)	91.4(2)	O(8)-Mn(12)-O(16)	93.0(2)
O(6)-Mn(10)-O(120)	90.8(2)	O(31)-Mn(12)-O(16)	85.2(2)
O(5)-Mn(10)-O(120)	172.3(2)	O(20)-Mn(12)-O(16)	86.9(2)
O(60)-Mn(10)-O(120)	83.9(3)	O(15)-Mn(12)-O(16)	168.9(2)
O(6)-Mn(10)-O(170)	94.1(2)	Mn(4)-O(1)-Mn(1)	95.6(2)
O(5)-Mn(10)-O(170)	97.8(2)	Mn(4)-O(1)-Mn(2)	100.1(2)
O(60)-Mn(10)-O(170)	85.0(3)	Mn(1)-O(1)-Mn(2)	95.18(19)
O(120)-Mn(10)-O(170)	88.0(3)	Mn(2)-O(2)-Mn(1)	95.61(19)
O(6)-Mn(10)-O(14)	92.9(2)	Mn(2)-O(2)-Mn(3)	94.81(18)
O(5)-Mn(10)-O(14)	92.2(2)	Mn(1)-O(2)-Mn(3)	100.39(18)
O(60)-Mn(10)-O(14)	87.1(3)	Mn(4)-O(3)-Mn(3)	95.63(19)
O(120)-Mn(10)-O(14)	81.5(3)	Mn(4)-O(3)-Mn(1)	94.8(2)
O(170)-Mn(10)-O(14)	167.4(2)	Mn(3)-O(3)-Mn(1)	100.62(19)
O(6)-Mn(11)-O(7)	83.78(18)	Mn(3)-O(4)-Mn(2)	96.29(18)
O(6)-Mn(11)-O(30)	177.9(2)	Mn(3)-O(4)-Mn(4)	94.89(19)
O(7)-Mn(11)-O(30)	94.7(2)	Mn(2)-O(4)-Mn(4)	99.8(2)
O(6)-Mn(11)-O(121)	95.6(2)	Mn(2)-O(5)-Mn(10)	131.8(3)
O(7)-Mn(11)-O(121)	173.0(3)	Mn(2)-O(5)-Mn(9)	95.2(2)
O(30)-Mn(11)-O(121)	85.7(2)	Mn(10)-O(5)-Mn(9)	127.8(2)
O(6)-Mn(11)-O(171)	94.0(2)	Mn(3)-O(6)-Mn(10)	135.5(3)
O(7)-Mn(11)-O(171)	97.3(2)	Mn(3)-O(6)-Mn(11)	96.1(2)
O(30)-Mn(11)-O(171)	87.5(2)	Mn(10)-O(6)-Mn(11)	123.1(2)
O(121)-Mn(11)-O(171)	89.7(3)	Mn(12)-O(7)-Mn(3)	132.8(3)
O(6)-Mn(11)-O(131)	86.2(2)	Mn(12)-O(7)-Mn(11)	127.7(2)
O(7)-Mn(11)-O(131)	84.6(2)	Mn(3)-O(7)-Mn(11)	94.3(2)
O(30)-Mn(11)-O(131)	92.3(3)	Mn(4)-O(8)-Mn(12)	134.4(2)
O(121)-Mn(11)-O(131)	88.4(3)	Mn(4)-O(8)-Mn(5)	94.5(2)
O(171)-Mn(11)-O(131)	178.1(2)	Mn(12)-O(8)-Mn(5)	128.8(2)
O(6)-Mn(11)-Mn(3)	41.74(13)	Mn(4)-O(9)-Mn(5)	94.9(2)
O(7)-Mn(11)-Mn(3)	42.56(13)	Mn(4)-O(9)-Mn(6)	133.4(2)
O(30)-Mn(11)-Mn(3)	136.56(17)	Mn(5)-O(9)-Mn(6)	123.8(2)
O(121)-Mn(11)-Mn(3)	135.53(17)	Mn(1)-O(10)-Mn(6)	134.5(2)
O(171)-Mn(11)-Mn(3)	102.77(15)	Mn(1)-O(10)-Mn(7)	95.44(19)
O(131)-Mn(11)-Mn(3)	78.70(16)	Mn(6)-O(10)-Mn(7)	123.1(2)
O(7)-Mn(12)-O(8)	93.25(19)	Mn(1)-O(11)-Mn(8)	132.8(2)
O(7)-Mn(12)-O(31)	91.8(2)	Mn(1)-O(11)-Mn(7)	94.51(19)
O(8)-Mn(12)-O(31)	174.8(2)	Mn(8)-O(11)-Mn(7)	127.3(2)
O(7)-Mn(12)-O(20)	175.3(2)	Mn(2)-O(12)-Mn(8)	135.2(2)
O(8)-Mn(12)-O(20)	91.3(2)	Mn(2)-O(12)-Mn(9)	95.9(2)
O(31)-Mn(12)-O(20)	83.7(2)	Mn(8)-O(12)-Mn(9)	123.6(2)
O(7)-Mn(12)-O(15)	93.5(2)	C(12)-O(13)-Mn(8)	122.1(5)
O(8)-Mn(12)-O(15)	94.6(2)	C(13)-O(14)-Mn(10)	120.2(5)
O(31)-Mn(12)-O(15)	86.5(2)	C(15)-O(15)-Mn(12)	120.8(13)
O(20)-Mn(12)-O(15)	84.9(2)	C(14)-O(15)-Mn(12)	120.7(8)
O(7)-Mn(12)-O(16)	94.2(2)	C(16)-O(16)-Mn(12)	123.8(6)

Table S2. Bond Distances (Å) and Angles (deg) for Complex 5

Mn(1)-O(3)	1.838(3)	Mn(4)-O(40)	1.963(4)
Mn(1)-O(1)	1.934(3)	Mn(4)-O(31)	1.966(4)
Mn(1)-O(100)	1.997(3)	Mn(4)-O(121)	2.216(4)
Mn(1)-O(81)	2.055(4)	Mn(4)-O(71)	2.231(4)
Mn(1)-O(130)	2.088(3)	Mn(5)-O(3)	1.850(3)
Mn(1)-O(91)	2.152(4)	Mn(5)-O(41)	1.931(4)
Mn(2)-O(4)	1.856(3)	Mn(5)-O(101)	1.956(4)
Mn(2)-O(130)	1.913(3)	Mn(5)-O(60)	2.017(4)
Mn(2)-O(2)	1.948(4)	Mn(5)-O(131)	2.128(3)
Mn(2)-O(20)	1.996(4)	Mn(5)-O(50)	2.176(4)
Mn(2)-O(10)	2.173(4)	Mn(6)-O(51)	1.903(4)
Mn(2)-O(70)	2.211(4)	Mn(6)-O(80)	1.923(4)
Mn(3)-O(21)	1.935(4)	Mn(6)-O(61)	1.955(4)
Mn(3)-O(30)	1.947(4)	Mn(6)-O(90)	1.981(4)
Mn(3)-O(120)	1.947(4)	Mn(6)-O(3)	2.065(3)
Mn(3)-O(11)	1.982(4)	Mn(6)-O(141)	2.323(4)
Mn(3)-O(4)	2.015(3)	O(130)-C(131)	1.410(6)
Mn(3)-O(110)	2.277(5)	O(131)-C(131)	1.398(6)
Mn(4)-O(4)	1.866(3)	C(131)-H(13d)	0.9900
Mn(4)-O(131)	1.903(3)	C(131)-H(13e)	0.9900
O(3)-Mn(1)-O(1)	175.89(15)	O(2)-Mn(2)-O(10)	89.01(17)
O(3)-Mn(1)-O(100)	93.33(14)	O(20)-Mn(2)-O(10)	86.55(16)
O(1)-Mn(1)-O(100)	88.39(15)	O(4)-Mn(2)-O(70)	92.69(15)
O(3)-Mn(1)-O(81)	91.54(15)	O(130)-Mn(2)-O(70)	102.01(15)
O(1)-Mn(1)-O(81)	86.21(15)	O(2)-Mn(2)-O(70)	84.12(17)
O(100)-Mn(1)-O(81)	170.20(15)	O(20)-Mn(2)-O(70)	81.93(16)
O(3)-Mn(1)-O(130)	94.06(14)	O(10)-Mn(2)-O(70)	167.04(16)
O(1)-Mn(1)-O(130)	89.24(14)	O(21)-Mn(3)-O(30)	87.83(17)
O(100)-Mn(1)-O(130)	101.42(14)	O(21)-Mn(3)-O(120)	172.06(16)
O(81)-Mn(1)-O(130)	86.70(14)	O(30)-Mn(3)-O(120)	91.99(17)
O(3)-Mn(1)-O(91)	91.66(14)	O(21)-Mn(3)-O(11)	89.50(16)
O(1)-Mn(1)-O(91)	84.77(14)	O(30)-Mn(3)-O(11)	161.36(16)
O(100)-Mn(1)-O(91)	85.01(14)	O(120)-Mn(3)-O(11)	88.14(16)
O(81)-Mn(1)-O(91)	86.35(14)	O(21)-Mn(3)-O(4)	92.06(15)
O(130)-Mn(1)-O(91)	171.11(14)	O(30)-Mn(3)-O(4)	96.78(15)
O(4)-Mn(2)-O(130)	92.94(14)	O(120)-Mn(3)-O(4)	95.84(15)
O(4)-Mn(2)-O(2)	176.41(17)	O(11)-Mn(3)-O(4)	101.75(15)
O(130)-Mn(2)-O(2)	89.34(15)	O(21)-Mn(3)-O(110)	85.53(16)
O(4)-Mn(2)-O(20)	92.86(15)	O(30)-Mn(3)-O(110)	80.71(17)
O(130)-Mn(2)-O(20)	172.82(15)	O(120)-Mn(3)-O(110)	86.61(16)
O(2)-Mn(2)-O(20)	85.07(15)	O(11)-Mn(3)-O(110)	80.69(17)
O(4)-Mn(2)-O(10)	93.80(16)	O(4)-Mn(3)-O(110)	176.58(15)
O(130)-Mn(2)-O(10)	88.84(15)	O(4)-Mn(4)-O(131)	92.74(14)

O(4)-Mn(4)-O(40)	177.90(15)	O(80)-Mn(6)-O(61)	88.67(17)
O(131)-Mn(4)-O(40)	89.37(15)	O(51)-Mn(6)-O(90)	87.87(16)
O(4)-Mn(4)-O(31)	93.38(15)	O(80)-Mn(6)-O(90)	90.36(17)
O(131)-Mn(4)-O(31)	172.99(16)	O(61)-Mn(6)-O(90)	162.29(16)
O(40)-Mn(4)-O(31)	84.52(16)	O(51)-Mn(6)-O(3)	96.08(15)
O(4)-Mn(4)-O(121)	90.71(14)	O(80)-Mn(6)-O(3)	91.95(15)
O(131)-Mn(4)-O(121)	89.13(14)	O(61)-Mn(6)-O(3)	95.61(14)
O(40)-Mn(4)-O(121)	89.29(15)	O(90)-Mn(6)-O(3)	102.09(14)
O(31)-Mn(4)-O(121)	87.38(15)	O(51)-Mn(6)-O(141)	87.89(17)
O(4)-Mn(4)-O(71)	90.98(14)	O(80)-Mn(6)-O(141)	84.13(17)
O(131)-Mn(4)-O(71)	99.62(14)	O(61)-Mn(6)-O(141)	78.89(15)
O(40)-Mn(4)-O(71)	88.71(15)	O(90)-Mn(6)-O(141)	83.42(15)
O(31)-Mn(4)-O(71)	83.70(15)	O(3)-Mn(6)-O(141)	173.29(15)
O(121)-Mn(4)-O(71)	171.00(14)	Mn(1)-O(3)-Mn(5)	123.77(17)
O(3)-Mn(5)-O(41)	177.89(15)	Mn(1)-O(3)-Mn(6)	117.95(16)
O(3)-Mn(5)-O(101)	93.50(15)	Mn(5)-O(3)-Mn(6)	118.14(16)
O(41)-Mn(5)-O(101)	85.88(16)	Mn(2)-O(4)-Mn(4)	124.19(17)
O(3)-Mn(5)-O(60)	93.31(15)	Mn(2)-O(4)-Mn(3)	117.25(16)
O(41)-Mn(5)-O(60)	87.12(16)	Mn(4)-O(4)-Mn(3)	118.56(17)
O(101)-Mn(5)-O(60)	171.21(16)	C(131)-O(130)-Mn(2)	113.9(3)
O(3)-Mn(5)-O(131)	93.12(13)	C(131)-O(130)-Mn(1)	115.0(3)
O(41)-Mn(5)-O(131)	88.97(14)	Mn(2)-O(130)-Mn(1)	126.61(17)
O(101)-Mn(5)-O(131)	99.79(14)	C(131)-O(131)-Mn(4)	117.3(3)
O(60)-Mn(5)-O(131)	85.38(14)	C(131)-O(131)-Mn(5)	111.9(3)
O(3)-Mn(5)-O(50)	92.11(14)	Mn(4)-O(131)-Mn(5)	126.40(17)
O(41)-Mn(5)-O(50)	85.80(15)	O(131)-C(131)-O(130)	109.4(4)
O(101)-Mn(5)-O(50)	88.39(15)	O(131)-C(131)-H(13d)	109.8
O(60)-Mn(5)-O(50)	85.80(15)	O(130)-C(131)-H(13d)	109.8
O(131)-Mn(5)-O(50)	169.99(14)	O(131)-C(131)-H(13e)	109.8
O(51)-Mn(6)-O(80)	171.97(17)	O(130)-C(131)-H(13e)	109.8
O(51)-Mn(6)-O(61)	90.63(17)	H(13d)-C(131)-H(13e)	108.2

Table S3. Bond Distances (Å) and Angles (deg) for Complex **6**

Mn(1)-O(1)	1.885(3)	Mn(4)-O(15)	1.943(4)
Mn(1)-O(9)	1.933(4)	Mn(4)-O(11)	2.081(5)
Mn(1)-O(7)	2.111(7)	Mn(4)-Mn(6)	3.1767(10)
Mn(1)-O(5)	2.425(7)	Mn(5)-O(3)	1.865(3)
Mn(1)-Mn(2)	2.8126(14)	Mn(5)-O(2)	1.882(4)
Mn(2)-O(1)	1.900(3)	Mn(5)-O(13)	1.923(4)
Mn(2)-O(2)	1.906(4)	Mn(5)-O(17)	1.975(4)
Mn(2)-O(8)	2.192(6)	Mn(5)-O(12)	2.041(5)
Mn(2)-Mn(3)	2.8313(15)	Mn(6)-O(4)	1.849(2)
Mn(3)-O(2)	1.868(4)	Mn(6)-O(3)	1.885(3)
Mn(3)-O(14)	1.936(5)	Mn(6)-O(19)	1.928(4)
Mn(3)-O(20)	2.245(6)	Mn(6)-O(16)	1.969(4)
Mn(3)-O(21)	2.261(10)	Mn(6)-O(18)	2.155(4)
Mn(4)-O(1)	1.861(3)	Mn(6)-O(6)	2.321(4)
Mn(4)-O(3)	1.882(3)	O(5)-C(1)	1.274(8)
Mn(4)-O(10)	1.934(4)	O(6)-C(1)	1.303(5)
O(1)-Mn(1)-O(1a)	81.4(2)	O(2)-Mn(3)-O(14a)	177.7(3)
O(1)-Mn(1)-O(9)	95.16(15)	O(2)-Mn(3)-O(14)	96.0(2)
O(1)-Mn(1)-O(9a)	172.72(18)	O(14)-Mn(3)-O(14a)	84.6(3)
O(9)-Mn(1)-O(9a)	87.5(2)	O(2)-Mn(3)-O(20)	90.74(17)
O(1)-Mn(1)-O(7)	94.74(19)	O(14)-Mn(3)-O(20)	91.4(2)
O(9)-Mn(1)-O(7)	91.9(2)	O(2)-Mn(3)-O(21)	91.0(3)
O(1)-Mn(1)-O(5)	90.38(15)	O(14)-Mn(3)-O(21)	86.9(3)
O(9)-Mn(1)-O(5)	83.20(18)	O(20)-Mn(3)-O(21)	177.7(3)
O(7)-Mn(1)-O(5)	173.2(2)	O(2)-Mn(3)-Mn(2)	41.89(11)
O(1)-Mn(1)-Mn(2)	42.22(10)	O(14)-Mn(3)-Mn(2)	137.07(17)
O(9)-Mn(1)-Mn(2)	136.14(12)	O(20)-Mn(3)-Mn(2)	96.19(15)
O(7)-Mn(1)-Mn(2)	83.9(2)	O(21)-Mn(3)-Mn(2)	86.1(3)
O(5)-Mn(1)-Mn(2)	102.85(14)	O(1)-Mn(4)-O(3)	90.49(14)
O(1)-Mn(2)-O(1a)	80.6(2)	O(1)-Mn(4)-O(10)	93.93(16)
O(1)-Mn(2)-O(2a)	175.19(18)	O(3)-Mn(4)-O(10)	169.19(19)
O(1)-Mn(2)-O(2)	98.88(15)	O(1)-Mn(4)-O(15)	168.4(2)
O(2)-Mn(2)-O(2a)	81.2(2)	O(3)-Mn(4)-O(15)	89.98(15)
O(1)-Mn(2)-O(8)	92.72(18)	O(10)-Mn(4)-O(15)	83.72(17)
O(2)-Mn(2)-O(8)	92.08(19)	O(1)-Mn(4)-O(11)	99.1(2)
O(1)-Mn(2)-Mn(1)	41.80(10)	O(3)-Mn(4)-O(11)	99.88(16)
O(2)-Mn(2)-Mn(1)	139.04(11)	O(10)-Mn(4)-O(11)	89.16(19)
O(8)-Mn(2)-Mn(1)	81.40(18)	O(15)-Mn(4)-O(11)	92.2(2)
O(1)-Mn(2)-Mn(3)	139.68(10)	O(1)-Mn(4)-Mn(6)	98.50(10)
O(2)-Mn(2)-Mn(3)	40.87(11)	O(3)-Mn(4)-Mn(6)	32.52(11)
O(8)-Mn(2)-Mn(3)	87.72(18)	O(10)-Mn(4)-Mn(6)	136.78(15)
Mn(1)-Mn(2)-Mn(3)	169.12(5)	O(15)-Mn(4)-Mn(6)	75.99(12)
O(2)-Mn(3)-O(2a)	83.3(2)	O(11)-Mn(4)-Mn(6)	128.80(13)

O(3)-Mn(5)-O(2)	90.94(16)	O(16)-Mn(6)-O(6)	83.19(16)
O(3)-Mn(5)-O(13)	172.4(2)	O(18)-Mn(6)-O(6)	173.50(17)
O(2)-Mn(5)-O(13)	92.3(2)	O(4)-Mn(6)-Mn(4)	102.71(16)
O(3)-Mn(5)-O(17)	90.89(18)	O(3)-Mn(6)-Mn(4)	32.46(10)
O(2)-Mn(5)-O(17)	159.4(2)	O(19)-Mn(6)-Mn(4)	143.06(14)
O(13)-Mn(5)-O(17)	83.7(2)	O(16)-Mn(6)-Mn(4)	76.41(11)
O(3)-Mn(5)-O(12)	99.57(18)	O(18)-Mn(6)-Mn(4)	121.44(12)
O(2)-Mn(5)-O(12)	105.5(2)	O(6)-Mn(6)-Mn(4)	52.55(12)
O(13)-Mn(5)-O(12)	86.1(2)	Mn(4)-O(1)-Mn(1)	126.33(19)
O(17)-Mn(5)-O(12)	94.5(2)	Mn(4)-O(1)-Mn(2)	129.48(16)
O(4)-Mn(6)-O(3)	93.14(18)	Mn(1)-O(1)-Mn(2)	95.98(15)
O(4)-Mn(6)-O(19)	94.4(2)	Mn(3)-O(2)-Mn(5)	121.8(2)
O(3)-Mn(6)-O(19)	172.31(18)	Mn(3)-O(2)-Mn(2)	97.24(16)
O(4)-Mn(6)-O(16)	173.7(2)	Mn(5)-O(2)-Mn(2)	128.2(2)
O(3)-Mn(6)-O(16)	89.27(17)	Mn(5)-O(3)-Mn(4)	123.00(19)
O(19)-Mn(6)-O(16)	83.08(19)	Mn(5)-O(3)-Mn(6)	121.98(17)
O(4)-Mn(6)-O(18)	92.7(2)	Mn(4)-O(3)-Mn(6)	115.02(17)
O(3)-Mn(6)-O(18)	91.57(16)	Mn(6)-O(4)-Mn(6a)	126.4(3)
O(19)-Mn(6)-O(18)	89.68(19)	C(1)-O(5)-Mn(1)	118.6(5)
O(16)-Mn(6)-O(18)	93.04(17)	C(1)-O(6)-Mn(6)	133.5(3)
O(4)-Mn(6)-O(6)	91.35(18)	O(5)-C(1)-O(6)	118.0(3)
O(3)-Mn(6)-O(6)	83.12(15)	O(6)-C(1)-O(6a)	118.3(5)
O(19)-Mn(6)-O(6)	95.10(18)		

Table S4. Bond Distances (Å) and Angles (deg) for Complex 7

Mn(1)-O(1a)	1.8537(18)	Mn(2)-O(1)	2.0906(18)
Mn(1)-O(1)	1.8560(18)	Mn(2)-O(5)	2.1201(19)
Mn(1)-O(2)	1.957(2)	Mn(2)-O(3)	2.184(2)
Mn(1)-O(6a)	1.965(2)	Mn(2)-O(7)	2.212(2)
Mn(1)-O(4)	2.089(2)	Mn(2)-N(1)	2.259(2)
Mn(1)-Mn(1a)	2.7755(8)	Mn(2)-N(2)	2.281(2)
O(1a)-Mn(1)-O(1)	83.13(8)	O(5)-Mn(2)-O(3)	91.87(8)
O(1a)-Mn(1)-O(2)	159.64(9)	O(1)-Mn(2)-O(7)	89.56(7)
O(1)-Mn(1)-O(2)	92.51(9)	O(5)-Mn(2)-O(7)	94.47(8)
O(1a)-Mn(1)-O(6a)	94.04(9)	O(3)-Mn(2)-O(7)	173.39(8)
O(1)-Mn(1)-O(6a)	169.43(9)	O(1)-Mn(2)-N(1)	165.17(8)
O(2)-Mn(1)-O(6a)	86.62(10)	O(5)-Mn(2)-N(1)	88.97(8)
O(1a)-Mn(1)-O(4)	103.54(9)	O(3)-Mn(2)-N(1)	94.81(8)
O(1)-Mn(1)-O(4)	102.84(8)	O(7)-Mn(2)-N(1)	87.18(8)
O(2)-Mn(1)-O(4)	96.82(10)	O(1)-Mn(2)-N(2)	93.62(8)
O(6a)-Mn(1)-O(4)	87.72(10)	O(5)-Mn(2)-N(2)	160.42(9)
O(1a)-Mn(1)-Mn(1a)	41.60(5)	O(3)-Mn(2)-N(2)	86.07(9)
O(1)-Mn(1)-Mn(1a)	41.54(5)	O(7)-Mn(2)-N(2)	88.57(9)
O(2)-Mn(1)-Mn(1a)	130.95(8)	N(1)-Mn(2)-N(2)	71.84(9)
O(6a)-Mn(1)-Mn(1a)	134.78(7)	Mn(1a)-O(1)-Mn(1)	96.87(8)
O(4)-Mn(1)-Mn(1a)	107.76(7)	Mn(1a)-O(1)-Mn(2)	122.80(10)
O(1)-Mn(2)-O(5)	105.72(8)	Mn(1)-O(1)-Mn(2)	111.95(9)
O(1)-Mn(2)-O(3)	86.93(7)		

