

Electronic Supplementary Information (ESI) for Dalton Trans.

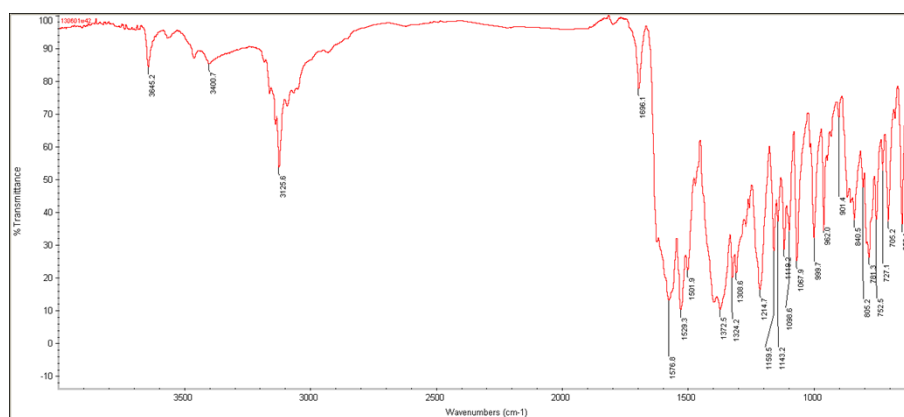
Structural Diversity and Magnetic Properties of Six Metal-Organic Polymers Based on Semirigid Tricarboxylate Ligand of 3,5-Bi(4-carboxyphenoxy)benzoic Acid

Liming Fan,^a Weiliu Fan,^a Weikuo Song,^b Liming Sun,^a Xian Zhao,^{*a} Xiutang Zhang^{*a,b}

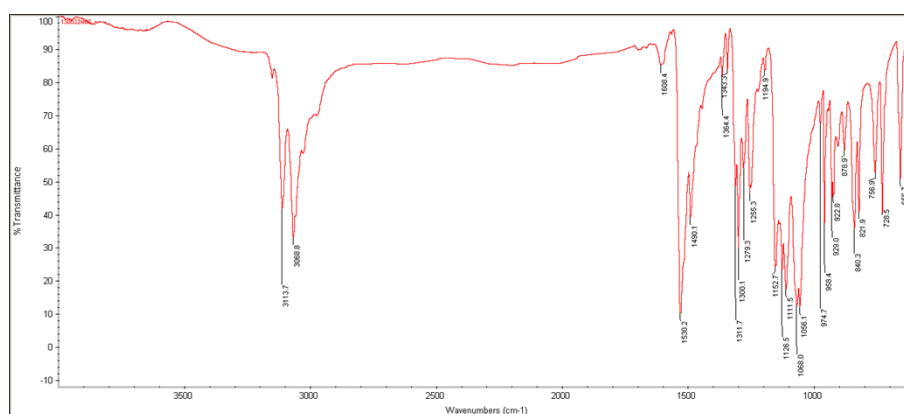
^a State Key Laboratory of Crystal Materials, Shandong University, Jinan 250100, China.

^b Advanced Material Institute of Research, College of Chemistry and Chemical Engineering, Qilu Normal University, Jinan, 250013, China.

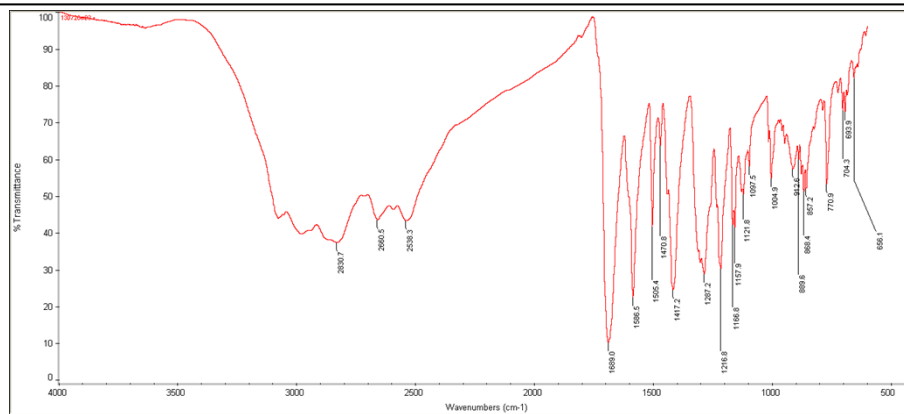
E-mail: xiutangzhang@163.com (X.Z.); zhaoxian@icm.sdu.edu.cn (X. Zhao).



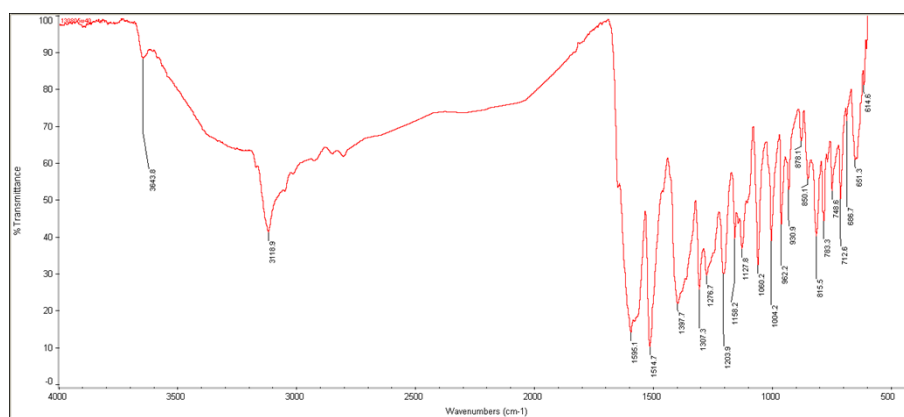
(1)



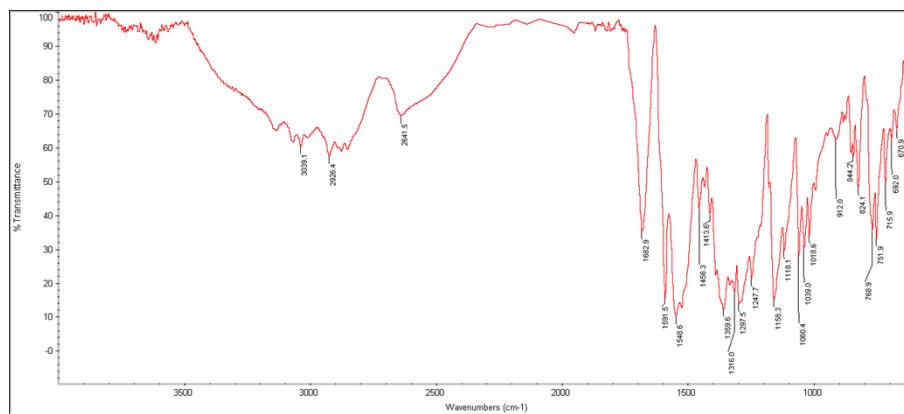
(2)



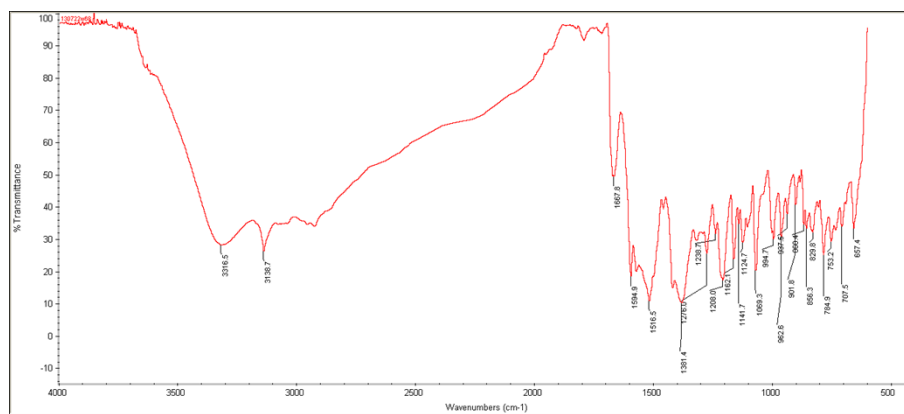
(3)



(4)



(5)



(6)

Figure S1. The IR spectras of complexes 1-6.

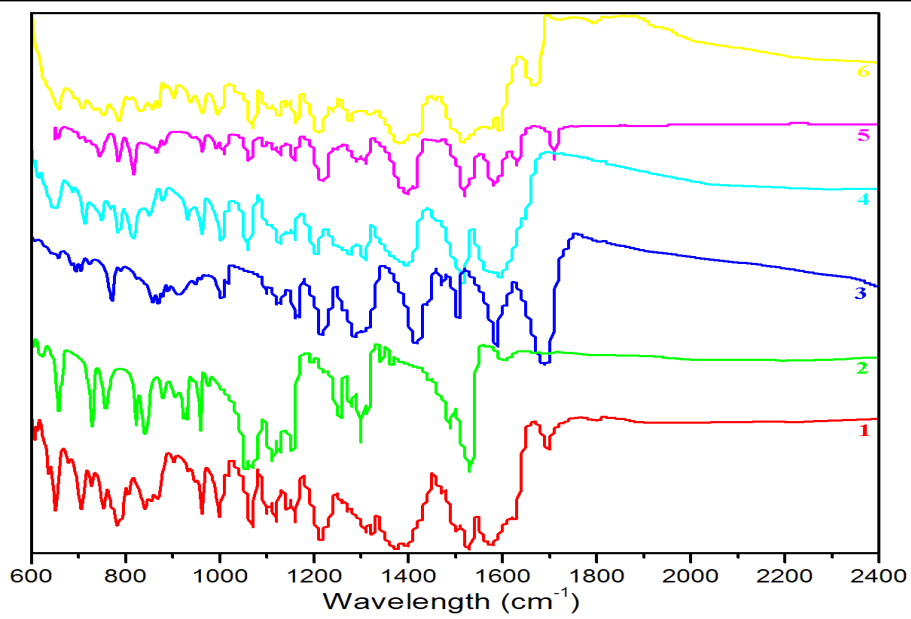


Figure S2. The infrared spectras comparisons of 1-6: displaying the positions of the peaks.

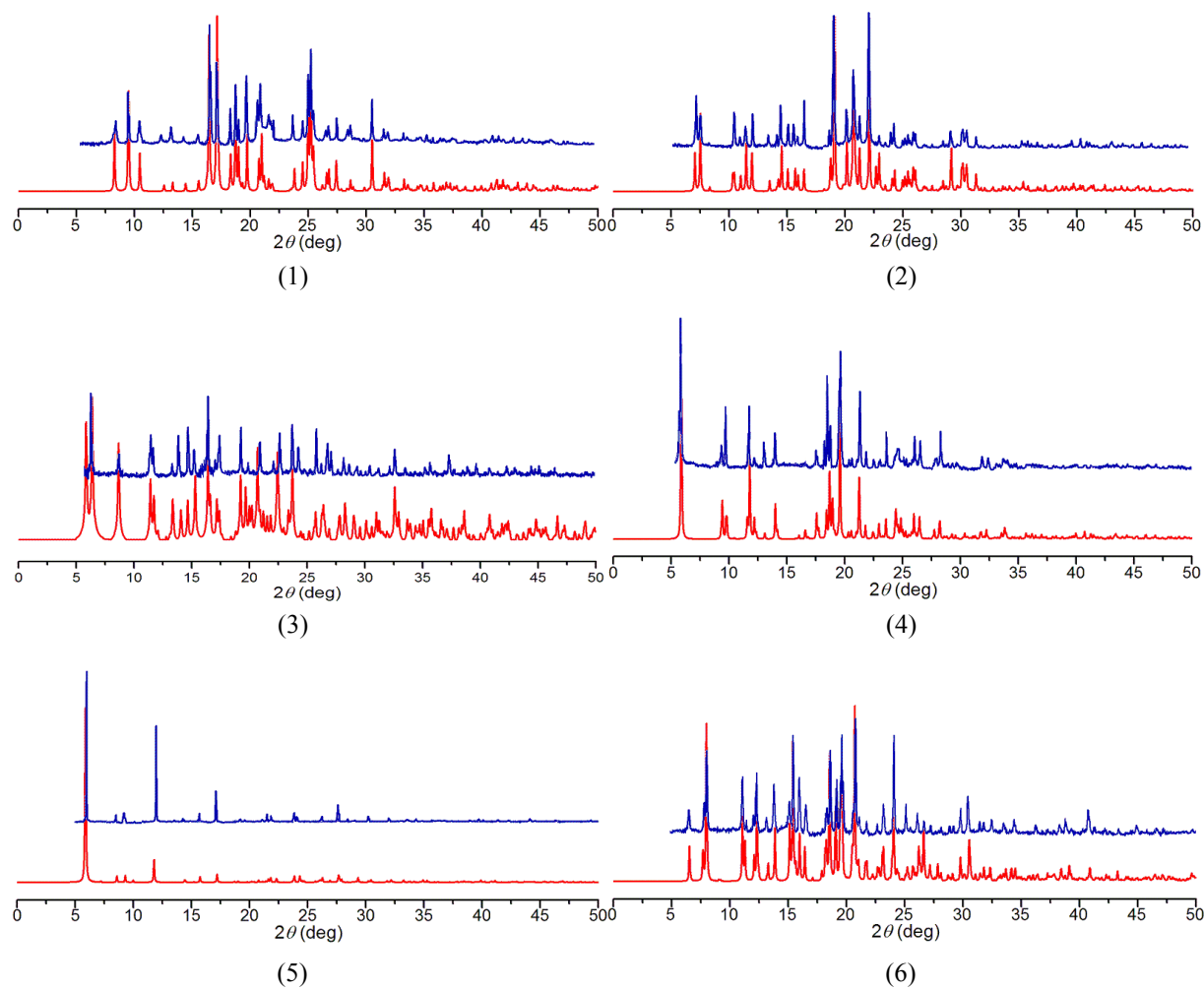


Figure S3. PXRD patterns of complexes 1-6. Red: calculated from the X-ray single-crystal data; Blue: observed for the as-synthesized solids.

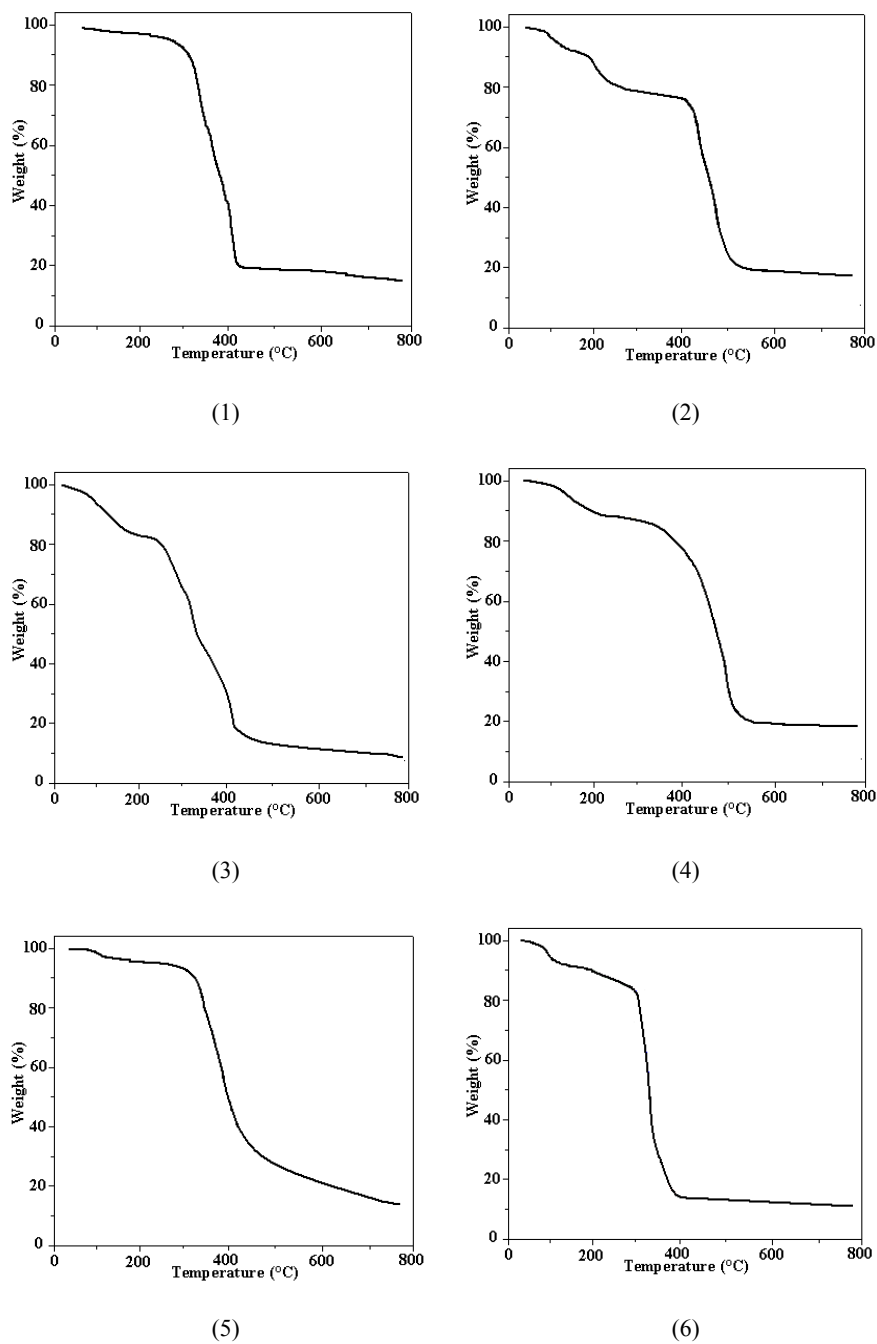


Figure S4. TGA curves for compounds 1–6.

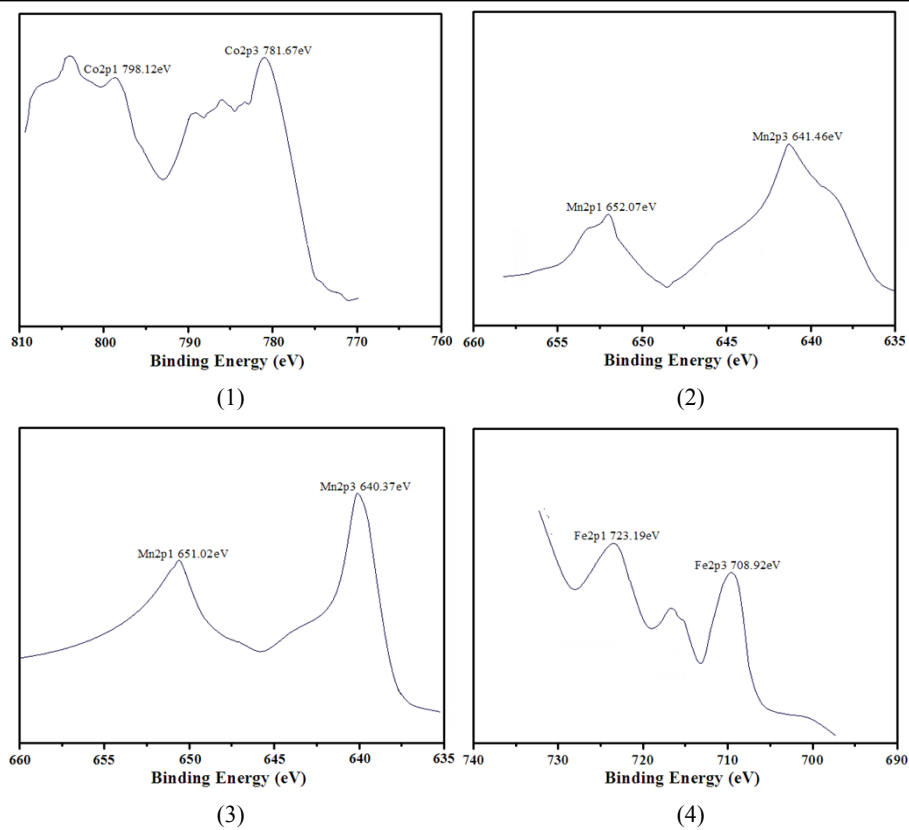


Figure S5. X-ray photoelectron (XPS) for compounds 1-4.

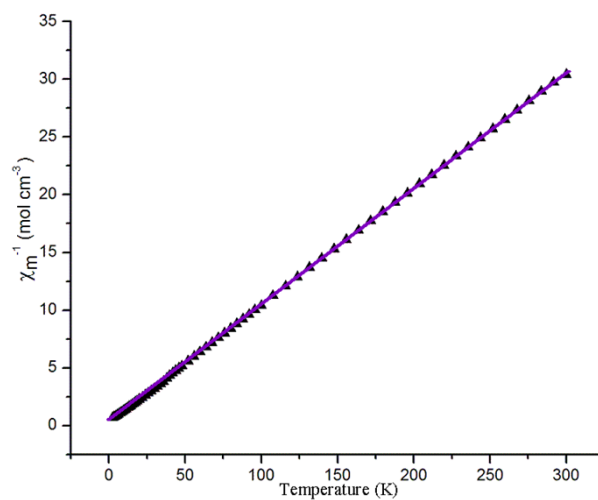


Figure S6. The temperature dependence of χ_M^{-1} of **2** under a static field of 1000 Oe.

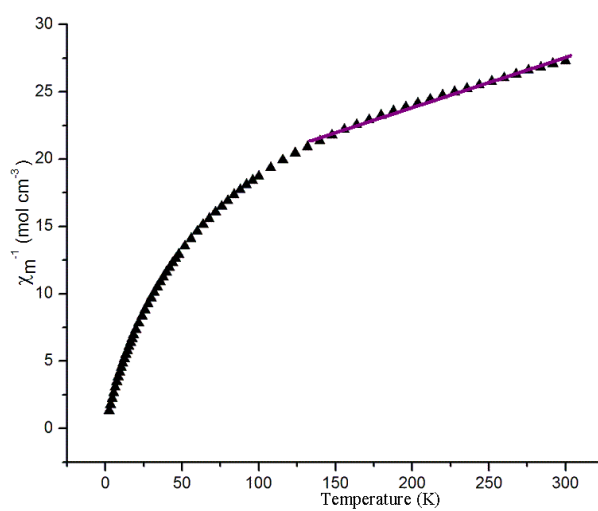


Figure S7. The temperature dependence of χ_M^{-1} of **4** under a static field of 1000 Oe.

Table S1 Selected bond lengths (Å) and angles (°) for **1 – 6**.

Complex 1							
Co(1)-N(1)	1.9959(17)	Co(1)-O(2)	1.9703(14)	Co(1)-O(7) ^{#1}	1.9794(14)	Co(1)-O(4) ^{#2}	
O(2)-Co(1)-O(7) ^{#1}	99.79(6)	O(2)-Co(1)-O(4) ^{#2}	124.07(6)	O(7) ^{#1} -Co(1)-O(4) ^{#2}	107.07(7)	O(2)-Co(1)-N(1)	
O(7) ^{#1} -Co(1)-N(1)	104.67(6)	O(4) ^{#2} -Co(1)-N(1)	107.78(6)				
Symmetry code: #1 -x+1, y-1/2, -z+3/2; #2 -x+1, y+1/2, -z+3/2.							
Complex 2							
Mn(1)-O(2W)	2.158(3)	Mn(1)-O(5) ^{#1}	2.160(2)	Mn(1)-N(1)	2.178(3)	Mn(1)-O(1)	2.195(2)
Mn(1)-O(1W)	2.219(3)	Mn(1)-O(3W)	2.268(2)	Mn(2)-O(6) ^{#1}	2.106(2)	Mn(2)-O(6) ^{#2}	2.106(2)
Mn(2)-O(8) ^{#3}	2.195(2)	Mn(2)-O(8) ^{#4}	2.195(2)	Mn(2)-O(3W)	2.267(2)	Mn(2)-O(3W) ^{#5}	2.267(2)
O(2W)-Mn(1)-O(5) ^{#1}	92.45(11)	O(2W)-Mn(1)-N(1)	167.34(11)	O(1W)-Mn(1)-O(3W)	177.57(9)	O(1)-Mn(1)-O(1W)	91.82(10)
N(1)-Mn(1)-O(1W)	84.27(11)	O(5) ^{#1} -Mn(1)-N(1)	86.81(10)	O(2W)-Mn(1)-O(1W)	83.21(10)	N(1)-Mn(1)-O(3W)	95.42(10)
O(1)-Mn(1)-O(3W)	85.81(8)	O(2W)-Mn(1)-O(1)	86.32(11)	O(5) ^{#1} -Mn(1)-O(1W)	95.18(10)	O(5) ^{#1} -Mn(1)-O(3W)	87.20(9)
N(1)-Mn(1)-O(1)	95.96(11)	O(5) ^{#1} -Mn(1)-O(1)	172.70(10)	O(2W)-Mn(1)-O(3W)	97.17(9)	O(8) ^{#4} -Mn(2)-O(3W)	85.09(8)
O(6) ^{#1} -Mn(2)-O(6) ^{#2}	180.00(14)	O(6) ^{#1} -Mn(2)-O(8) ^{#4}	88.31(10)	O(6) ^{#1} -Mn(2)-O(3W) ^{#5}	93.15(8)	O(6) ^{#1} -Mn(2)-O(3W)	86.85(8)
O(6) ^{#1} -Mn(2)-O(8) ^{#3}	91.69(10)	O(6) ^{#2} -Mn(2)-O(8) ^{#4}	91.69(10)	O(8) ^{#4} -Mn(2)-O(3W) ^{#5}	94.91(8)	O(6) ^{#2} -Mn(2)-O(3W)	93.15(8)
O(6) ^{#2} -Mn(2)-O(8) ^{#3}	88.31(10)	O(8) ^{#3} -Mn(2)-O(8) ^{#4}	180.00(13)	O(8) ^{#3} -Mn(2)-O(3W) ^{#5}	85.09(8)	O(8) ^{#3} -Mn(2)-O(3W)	94.91(8)
Symmetry codes: #1 x+1/2, -y+3/2, z-1/2; #2 -x+1/2, y-1/2, -z+1/2; #3 -x+1/2, y+1/2, -z+1/2; #4 x+1/2, -y+1/2, z-1/2; #5 -x+1, -y+1, -z.							
Complex 3							
Mn(1)-N(3)	2.1345(17)	Mn(1)-O(9)	2.0877(14)	Mn(1)-N(1)	2.2124(16)	O(9) ^{#3} -Mn(1)-O(9)	180.00(9)
O(9)-Mn(1)-N(3)	90.81(6)	O(9)-Mn(1)-N(3) ^{#3}	89.19(6)	N(3) ^{#3} -Mn(1)-N(3)	180.00(10)	N(3)-Mn(1)-N(1) ^{#3}	94.65(6)
O(9) ^{#3} -Mn(1)-N(1)	91.23(6)	O(9)-Mn(1)-N(1)	88.77(6)	N(3)-Mn(1)-N(1)	85.35(6)	N(1) ^{#3} -Mn(1)-N(1)	180.0
Symmetry codes: #3 -x+1, -y, -z+1.							
Complex 4							
Fe(1)-O(2)	2.052(2)	Fe(1)-O(1)	2.098(2)	Fe(1)-O(5)	2.170(2)	Fe(1)-N(1)	2.180(3)
Fe(1)-O(5) ^{#3}	2.290(2)	Fe(1)-O(3) ^{#1}	2.106(2)	O(2)-Fe(1)-O(1)	167.12(10)	O(1)-Fe(1)-O(3) ^{#1}	87.01(10)
O(2)-Fe(1)-O(5) ^{#3}	81.44(9)	O(1)-Fe(1)-N(1)	85.42(10)	O(2)-Fe(1)-O(3) ^{#1}	104.71(10)	O(2)-Fe(1)-O(5)	94.39(10)
O(1)-Fe(1)-O(5) ^{#3}	87.08(9)	O(3) ^{#1} -Fe(1)-N(1)	84.80(11)	O(3) ^{#1} -Fe(1)-O(5)	100.23(10)	O(1)-Fe(1)-O(5)	88.65(9)
O(3) ^{#1} -Fe(1)-O(5) ^{#3}	173.51(8)	O(5)-Fe(1)-N(1)	172.03(9)	O(2)-Fe(1)-N(1)	90.26(11)	N(1)-Fe(1)-O(5) ^{#3}	97.40(10)
O(5)-Fe(1)-O(5) ^{#3}	76.95(9)						
Symmetry code: #1 -x, y, -z+1/2; #3 -x+1/2, -y+1, z.							
Complex 5							
Ni(1)-O(15) ^{#3}	2.016(4)	Ni(1)-N(8) ^{#5}	2.058(5)	Ni(1)-O(9)	2.206(5)	Ni(3)-O(18) ^{#6}	2.041(7)
Ni(1)-O(16) ^{#4}	2.051(5)	Ni(1)-O(10)	2.161(4)	Ni(3)-O(18)	2.041(7)	Ni(3)-N(4) ^{#7}	2.070(6)
Ni(3)-N(4) ^{#8}	2.070(6)	Ni(3)-O(19) ^{#6}	2.073(12)	Ni(2)-O(5)	2.023(5)	Ni(2)-O(2)	2.211(6)
Ni(3)-O(19)	2.073(12)	Ni(2)-O(3)	2.012(5)	Ni(2)-O(2) ^{#9}	2.112(5)	Ni(2)-O(1)	2.212(8)
O(15) ^{#3} -Ni(1)-N(5)	91.6(2)	N(5)-Ni(1)-N(8) ^{#5}	176.0(2)	O(16) ^{#4} -Ni(1)-O(10)	95.45(19)	O(16) ^{#4} -Ni(1)-O(9)	154.16(19)
O(15) ^{#3} -Ni(1)-O(16) ^{#4}	110.0(2)	O(16) ^{#4} -Ni(1)-N(8) ^{#5}	84.3(2)	N(8) ^{#5} -Ni(1)-O(10)	90.6(2)	N(8) ^{#5} -Ni(1)-O(9)	87.34(19)
N(5)-Ni(1)-O(16) ^{#4}	92.1(2)	O(15) ^{#3} -Ni(1)-O(10)	154.25(19)	O(15) ^{#3} -Ni(1)-O(9)	94.08(17)	O(10)-Ni(1)-O(9)	60.17(16)
O(15) ^{#3} -Ni(1)-N(8) ^{#5}	88.1(2)	N(5)-Ni(1)-O(10)	91.42(19)	N(5)-Ni(1)-O(9)	96.6(2)	O(18)-Ni(3)-O(18) ^{#6}	180.000(3)
O(18)-Ni(3)-N(4) ^{#7}	88.8(3)	N(4) ^{#7} -Ni(3)-N(4) ^{#8}	180.000(2)	N(4) ^{#8} -Ni(3)-O(19)	95.3(4)	N(4) ^{#8} -Ni(3)-O(19) ^{#6}	84.7(4)
O(18) ^{#6} -Ni(3)-N(4) ^{#7}	91.2(3)	O(18)-Ni(3)-O(19)	70.6(4)	O(18)-Ni(3)-O(19) ^{#6}	109.4(4)	O(19)-Ni(3)-O(19) ^{#6}	180.000(3)
O(18)-Ni(3)-N(4) ^{#8}	91.2(3)	O(18) ^{#6} -Ni(3)-O(19)	109.4(4)	O(18) ^{#6} -Ni(3)-O(19) ^{#6}	70.6(4)	O(3)-Ni(2)-O(5)	176.8(3)
O(18) ^{#6} -Ni(3)-N(4) ^{#8}	88.8(3)	N(4) ^{#7} -Ni(3)-O(19)	84.7(4)	N(4) ^{#7} -Ni(3)-O(19) ^{#6}	95.3(4)	O(3)-Ni(2)-N(1)	91.1(2)
O(5)-Ni(2)-N(1)	90.0(2)	O(3)-Ni(2)-O(2)	90.2(3)	O(3)-Ni(2)-O(1)	88.4(3)	O(2) ^{#9} -Ni(2)-O(1)	88.8(3)
O(3)-Ni(2)-O(2) ^{#9}	89.1(2)	O(5)-Ni(2)-O(2)	92.6(3)	O(5)-Ni(2)-O(1)	88.6(3)	O(2)-Ni(2)-O(1)	171.1(3)
O(5)-Ni(2)-O(2) ^{#9}	89.8(2)	N(1)-Ni(2)-O(2)	95.8(3)	N(1)-Ni(2)-O(1)	93.1(4)	O(2) ^{#9} -Ni(2)-O(2)	82.4(2)
N(1)-Ni(2)-O(2) ^{#9}	178.1(3)						
Symmetry codes: #1 x+1, y+1, z-1; #2 x, y, z+1; #3 x+1, y-1, z-1; #4 -x+2, -y+1, -z+1; #5 x, y, z-1; #6 -x, -y+1, -z+3; #7 x-1, y-1, z+1; #8 -x+1, -y+2, -z+2; #9 -x+1, -y+1, -z+1.							
Complex 6							
Ni(1)-O(1)	2.0387(2)	Ni(1)-O(2W)	2.0701(18)	Ni(1)-N(5)	2.077(2)	Ni(1)-O(1W)	2.0966(18)
Ni(1)-N(1)	2.132(2)	Ni(1)-N(3)	2.134(2)	O(1)-Ni(1)-O(2W)	91.88(7)	O(1)-Ni(1)-N(5)	170.58(8)
O(2W)-Ni(1)-N(5)	97.54(8)	O(1)-Ni(1)-O(1W)	82.01(7)	O(2W)-Ni(1)-O(1W)	173.86(7)	N(5)-Ni(1)-O(1W)	88.57(8)
O(1)-Ni(1)-N(1)	88.66(8)	O(2W)-Ni(1)-N(1)	90.60(8)	N(5)-Ni(1)-N(1)	91.31(8)	O(1W)-Ni(1)-N(1)	88.73(8)
O(1)-Ni(1)-N(3)	88.97(8)	O(2W)-Ni(1)-N(3)	87.32(8)	N(5)-Ni(1)-N(3)	91.38(8)	N(1)-Ni(1)-N(3)	176.79(8)