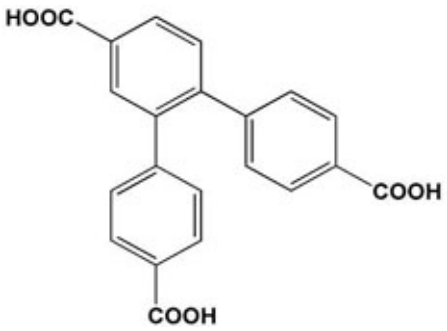
Supporting Information for the Manuscript:

Mn(II) Coordination Polymers Assembled from 8 or 9-Connected Trinuclear Secondary Building Units: Topology Analysis and Research of Magnetic Properties

Lu Liu, Xiaofeng Lv, Lin Zhang, Li'an Guo, Jie Wu, Hongwei Hou*, Yaoting Fan*

[a]The College of Chemistry and Molecular Engineering, Zhengzhou University, Zhengzhou 450052, P. R. China

Author for correspondence: Prof. Hongwei Hou, E-mail: houhongw@zzu.edu.cn



H_3L

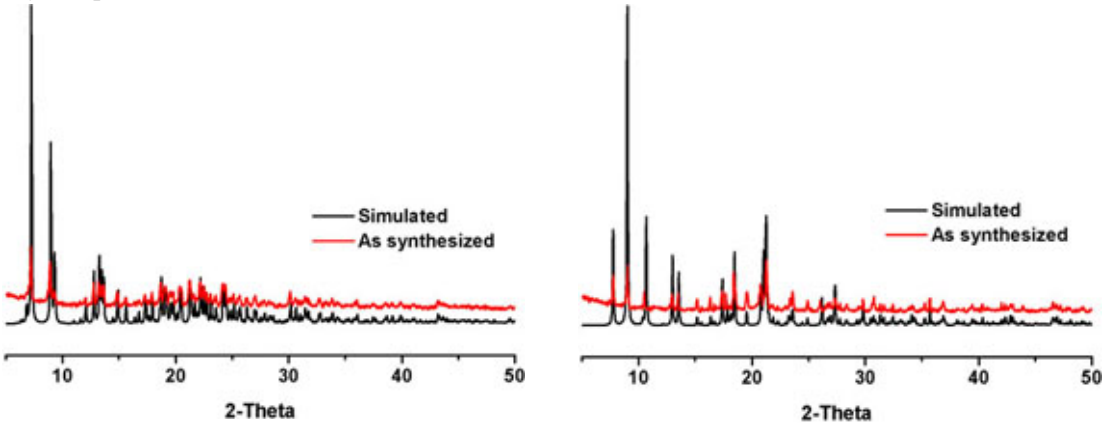
Scheme S1. Schematic Molecular Structures of H_3L

Table S1. Selected Bond Lengths (Å) and Bond Angles (deg) for 1 and 2[a]

Complex **1**					
Mn(1)-O(12)#1	2.067(6)	Mn(1)-O(3)	2.124(6)	Mn(1)-N(1)	2.228(7)
Mn(1)-O(1)	2.299(6)	Mn(1)-O(7)	2.298(6)	Mn(1)-O(2)	2.306(6)
Mn(2)-O(9)	2.095(6)	Mn(2)-O(4)	2.127(6)	Mn(2)-O(5)	2.145(6)
Mn(2)-O(2)	2.223(6)	Mn(2)-N(4)#2	2.268(8)	Mn(2)-O(7)	2.279(6)
Mn(3)-O(6)	2.025(6)	Mn(3)-O(11)	2.009(6)	Mn(3)-O(8)	2.028(6)
Mn(3)-O(10)	2.043(7)	O(12)#1-Mn(1)-O(3)	108.4(2)	O(12)#1-Mn(1)-N(1)	83.1(2)
O(3)-Mn(1)-N(1)	92.7(2)	O(12)#1-Mn(1)-O(1)	108.9(2)	O(3)-Mn(1)-O(1)	142.5(2)
N(1)-Mn(1)-O(1)	88.0(3)	O(12)#1-Mn(1)-O(7)	84.6(2)	O(3)-Mn(1)-O(7)	90.2(2)
N(1)-Mn(1)-O(7)	167.6(2)	O(1)-Mn(1)-O(7)	97.1(2)	O(12)#1-Mn(1)-O(2)	154.6(2)
O(3)-Mn(1)-O(2)	89.3(2)	N(1)-Mn(1)-O(2)	115.0(2)	O(1)-Mn(1)-O(2)	57.1(2)
O(7)-Mn(1)-O(2)	77.1(2)	O(9)-Mn(2)-O(4)	93.1(3)	O(9)-Mn(2)-O(5)	93.7(3)
O(4)-Mn(2)-O(5)	171.9(3)	O(9)-Mn(2)-O(2)	171.6(3)	O(4)-Mn(2)-O(2)	85.2(2)
O(5)-Mn(2)-O(2)	88.7(2)	O(9)-Mn(2)-N(4)#2	100.2(3)	O(4)-Mn(2)-N(4)#2	84.4(3)
O(5)-Mn(2)-N(4)#2	90.0(3)	O(2)-Mn(2)-N(4)#2	87.8(3)	O(9)-Mn(2)-O(7)	92.5(3)
O(4)-Mn(2)-O(7)	83.8(2)	O(5)-Mn(2)-O(7)	100.3(2)	O(2)-Mn(2)-O(7)	79.2(2)
N(4)#2-Mn(2)-O(7)	163.2(3)	O(6)-Mn(3)-O(11)	104.7(2)	O(6)-Mn(3)-O(8)	112.0(3)
O(11)-Mn(3)-O(8)	106.0(2)	O(6)-Mn(3)-O(10)	114.7(3)	O(11)-Mn(3)-O(10)	105.9(3)
O(8)-Mn(3)-O(10)	112.5(3)				
Complex **2**					
Mn(1)-O(4)#1	2.133(3)	Mn(1)-O(4)#2	2.133(3)	Mn(1)-O(2)	2.148(3)
Mn(1)-O(2)#3	2.148(3)	Mn(1)-O(5)#4	2.269(3)	Mn(1)-O(5)#5	2.269(3)
Mn(2)-O(6)#6	2.066(3)	Mn(2)-O(3)#1	2.089(3)	Mn(2)-N(1)	2.211(5)
Mn(2)-O(5)#4	2.233(3)	Mn(2)-O(1)	2.265(3)	Mn(2)-O(2)	2.269(3)
O(4)#1-Mn(1)-O(4)#2	180.0	O(4)#1-Mn(1)-O(2)	93.47(12)	O(4)#2-Mn(1)-O(2)	86.53(12)
O(4)#1-Mn(1)-O(2)#3	86.53(12)	O(4)#2-Mn(1)-O(2)#3	93.47(12)	O(2)-Mn(1)-O(2)#3	180.00(13)
O(4)#1-Mn(1)-O(5)#4	92.71(12)	O(4)#2-Mn(1)-O(5)#4	87.29(12)	O(2)-Mn(1)-O(5)#4	78.68(11)
O(2)#3-Mn(1)-O(5)#4	101.32(11)	O(4)#1-Mn(1)-O(5)#5	87.29(12)	O(4)#2-Mn(1)-O(5)#5	92.71(12)
O(2)-Mn(1)-O(5)#5	101.32(11)	O(2)#3-Mn(1)-O(5)#5	78.68(11)	O(5)#4-Mn(1)-O(5)#5	180.00(7)
O(6)#6-Mn(2)-O(3)#1	87.61(13)	O(6)#6-Mn(2)-N(1)	88.86(19)	O(3)#1-Mn(2)-N(1)	173.51(19)
O(6)#6-Mn(2)-O(5)#4	123.84(12)	O(3)#1-Mn(2)-O(5)#4	92.51(13)	N(1)-Mn(2)-O(5)#4	84.94(17)
O(6)#6-Mn(2)-O(1)	101.69(12)	O(3)#1-Mn(2)-O(1)	95.00(14)	N(1)-Mn(2)-O(1)	91.05(18)
O(5)#4-Mn(2)-O(1)	134.11(11)	O(6)#6-Mn(2)-O(2)	159.20(11)	O(3)#1-Mn(2)-O(2)	91.31(13)
N(1)-Mn(2)-O(2)	93.92(19)	O(5)#4-Mn(2)-O(2)	76.96(11)	O(1)-Mn(2)-O(2)	57.69(11)

[a] Symmetry transformations used to generate equivalent atoms in complex (**1**): #1 -x+3/2,y,z+1/2; #2 -x+2,-y+2,z-1/2. (**2**): #1 x+1,y-1,z; #2 -x+1,-y+2,-z; #3 -x+2,-y+1,-z; #4 x+1,y,z-1; #5 -x+1,-y+1,-z+1; #6 -x+2,-y+1,-z+1.

XRD Patterns. To confirm the phase purity of these complexes, the PXRD patterns were recorded for complexes **1** and **2**, and they were comparable to the corresponding simulated ones calculated from the single-crystal diffraction data (Figure. S1, Supporting Information), indicating a pure phase of each bulky sample.



Complex **1** Complex **2**

Figure S1. Experimental (red) and simulated (black) PXRD patterns of complexes **1** and **2**.

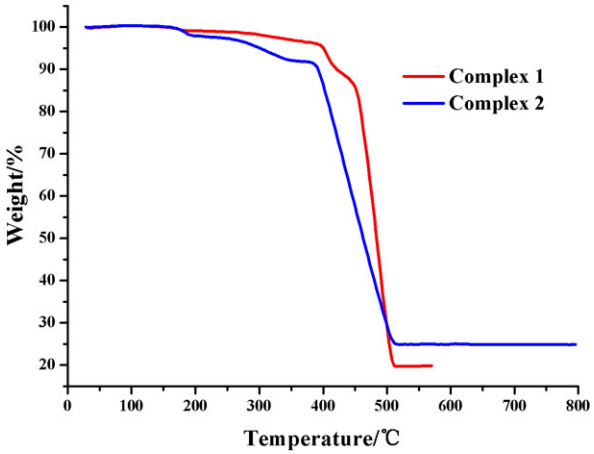


Figure S2. Thermogravimetric curve of complexes **1** and **2**.

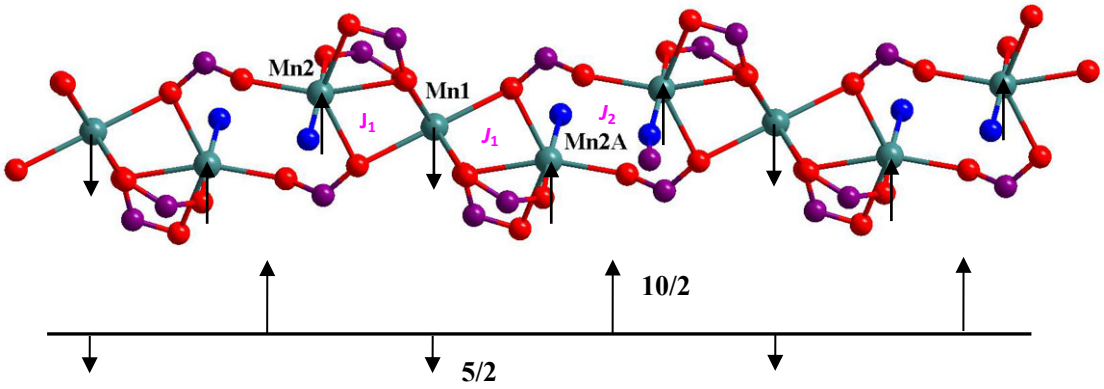


Chart S1. The magnetic exchange pathways with a $J_1J_1J_2$ repeating sequence in **2** (above); The spin topology of the ferromagnetic chain in **2** (down).