Electronic Supplementary Information for:

Exploration of the Slow RelaxationBehaviour in the Manganese Phosphate Network†

Bo Li,[a,b] NingJiang,[c] Jumei Tian,[b] TingtingLi,[a] Guixiang Hou,[a] and Jingping Zhang*[b]

[a]*Hebei Provincial Key Laboratory of Inorganic Nonmetallic Materials, College of Materials Science and Engineering, Hebei United University, Tangshan 063009, Hebei, China.* [b]*Faculty of Chemistry, Northeast Normal University, Changchun 130024, China. e-mail: jpzhang@heuu.edu.cn.* [c]*College of Public Health, Hebei United University, Tangshan 063009, Hebei, China*

Contents：

1. Infrared Spectroscopy: The infrared spectroscopy (IR) on KBr pellets was performed on a Magna-IR 750 spectroscopy in the 4000–400 cm^{-1} region.

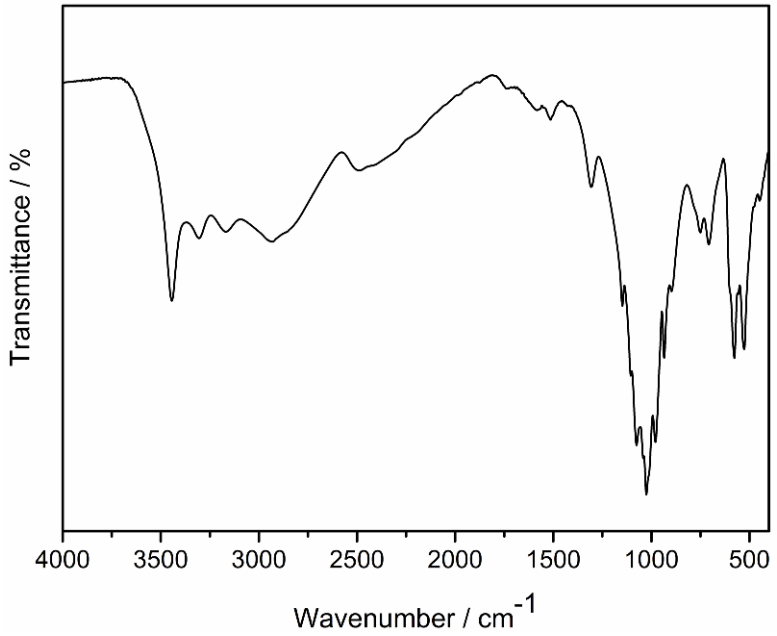

Fig. S1 The Infrared spectroscopy. The Infrared spectrum of **1**.

2. X Ray Crystallography: Single-crystal X-ray data sets were collected on an Oxford Diffraction Gemini R Ultra detector diffractometer using graphite monochromated Mo Kα radiation (λ = 0.71073 Å) for **1** at 298(2) K. Intense data were collected by ω scan technique. All data were obtained for Lorentz polarization effects. The diffraction patterns for the complex were indexed using CrysAlis software to obtain the unit cell parameters. The structures were solved with the direct methods (SHELXS-97) and refined on F^2 by full-matrix least-squares (SHELXL-97).[1]

Table S1. Selected bond distances (Å) for complex 1.

Mn(1)-O(9)	2.120(3)	Mn(2)-O(7)#4	Mn(2)-O(7)#4
Mn(1)-O(2)#1	2.133(2)	Mn(2)-O(1W)	Mn(2)-O(1W)
Mn(1)-O(5)	2.164(2)	Mn(2)-O(3)#1	Mn(2)-O(3)#1
Mn(1)-O(1)	2.200(2)	Mn(3)-O(6)#5	Mn(3)-O(6)#5
Mn(1)-O(3)#2	2.215(2)	Mn(3)-O(6)	Mn(3)-O(6)
Mn(1)-O(1W)#1	2.293(3)	Mn(3)-O(7)#6	Mn(3)-O(7)#6
Mn(2)-O(1)	2.151(2)	Mn(3)-O(7)#4	Mn(3)-O(7)#4
Mn(2)-O(2)#3	2.169(2)	Mn(3)-O(4)#3	Mn(3)-O(4)#3
Mn(2)-O(6)	2.178(2)	Mn(3)-O(4)#7	Mn(3)-O(4)#7

Symmetry transformations used to generate equivalent atoms: #1: -x+1/2,-y+1/2,-z+1; #2: x,-y,z-1/2; #3: x,-y+1,z-1/2; #4: x,-y+1,z+1/2; #5: -x,y,-z+1/2; #6: -x,-y+1,-z; #7: -x,-y+1,-z+1; #8: x,-y,z+1/2.

Table S2. Selected bond angles (°) for complex 1.

O(9)-Mn(1)-O(2)#1	165.03(10)	O(6)-Mn(2)-O(1W)	162.82(9)
O(9)-Mn(1)-O(5)	104.84(10)	O(7)#4-Mn(2)-O(1W)	87.99(9)
O(2)#1-Mn(1)-O(5)	85.71(9)	O(1)-Mn(2)-O(3)#1	88.00(8)
O(9)-Mn(1)-O(1)	91.45(9)	O(2)#3-Mn(2)-O(3)#1	78.18(8)
O(2)#1-Mn(1)-O(1)	98.60(9)	O(6)-Mn(2)-O(3)#1	121.70(9)
O(5)-Mn(1)-O(1)	93.39(9)	O(7)#4-Mn(2)-O(3)#1	157.02(8)
O(9)-Mn(1)-O(3)#2	87.53(9)	O(1W)-Mn(2)-O(3)#1	70.54(9)
O(2)#1-Mn(1)-O(3)#2	81.78(8)	O(6)#5-Mn(3)-O(6)	86.82(13)
O(5)-Mn(1)-O(3)#2	90.08(9)	O(6)#5-Mn(3)-O(7)#6	78.33(9)
O(1)-Mn(1)-O(3)#2	176.53(9)	O(6)-Mn(3)-O(7)#6	103.55(9)
O(9)-Mn(1)-O(1W)#1	87.40(10)	O(6)#5-Mn(3)-O(7)#4	103.55(9)
O(2)#1-Mn(1)-O(1W)#	80.14(10)	O(6)-Mn(3)-O(7)#4	78.33(9)
O(5)-Mn(1)-O(1W)#1	162.46(10)	O(7)#6-Mn(3)-O(7)#4	177.48(12)
O(1)-Mn(1)-O(1W)#1	98.91(9)	O(6)#5-Mn(3)-O(4)#3	168.25(9)
O(3)#2-Mn(1)-O(1W)#	77.74(9)	O(6)-Mn(3)-O(4)#3	89.23(9)
O(1)-Mn(2)-O(2)#3	160.37(9)	O(7)#6-Mn(3)-O(4)#3	91.87(9)
O(1)-Mn(2)-O(6)	93.75(10)	O(7)#4-Mn(3)-O(4)#3	86.46(9)
O(2)#3-Mn(2)-O(6)	82.03(9)	O(6)#5-Mn(3)-O(4)#7	89.23(9)
O(1)-Mn(2)-O(7)#4	103.82(9)	O(6)-Mn(3)-O(4)#7	168.25(9)
O(2)#3-Mn(2)-O(7)#4	94.05(9)	O(7)#6-Mn(3)-O(4)#7	86.46(9)
O(6)-Mn(2)-O(7)#4	77.74(9)	O(7)#4-Mn(3)-O(4)#7	91.87(9)
O(1)-Mn(2)-O(1W)	98.96(10)	O(4)#3-Mn(3)-O(4)#7	96.70(12)
O(2)#3-Mn(2)-O(1W)	89.59(10)		

Symmetry transformations used to generate equivalent atoms: #1: -x+1/2,-y+1/2,-z+1; #2: x,-y,z-1/2; #3: x,-y+1,z-1/2; #4: x,-y+1,z+1/2; #5: -x,y,-z+1/2; #6: -x,-y+1,-z; #7: -x,-y+1,-z+1; #8: x,-y,z+1/2.

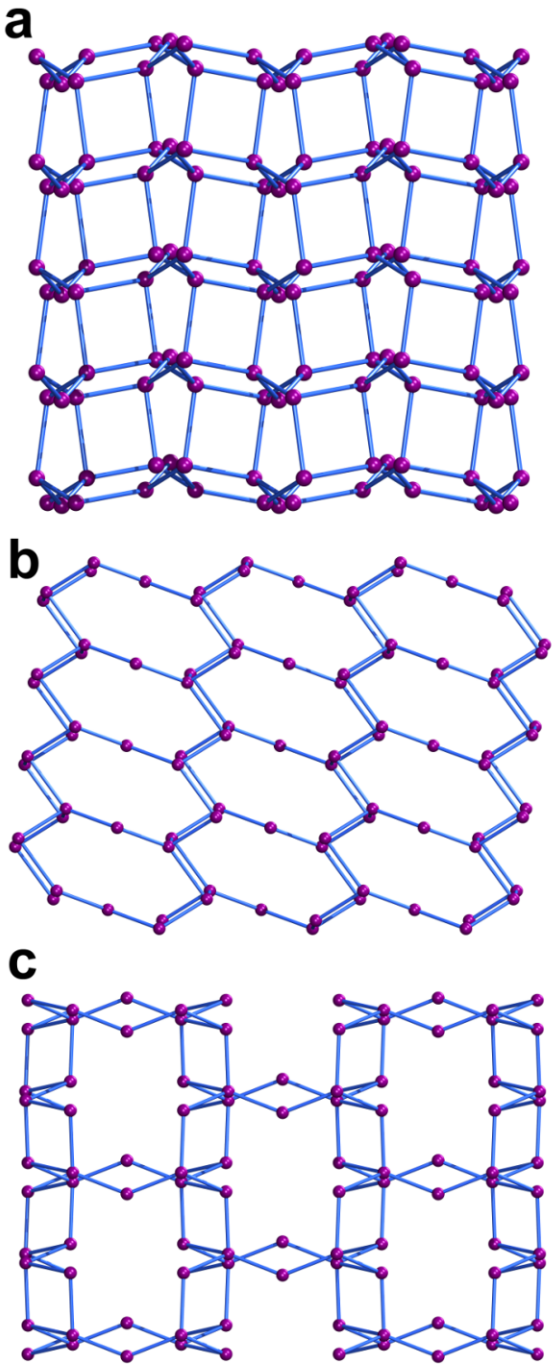

Fig. S2 Crystal structures of 1 viewed in different axes a (a), b (b) and c (c). The simplified polygon network topology of complex **1**, where only the metal-metal separation distances less than 3.70 Å are considered for clarity (violet balls are Mn ions; blue bonds represent the interactions).

3. Magnetism: The direct current (DC) and alternate current (AC) magnetic susceptibility measurements on polycrystalline sample of **1** were carried out with

Quantum Design SQUID MPMS XL-7 instruments.

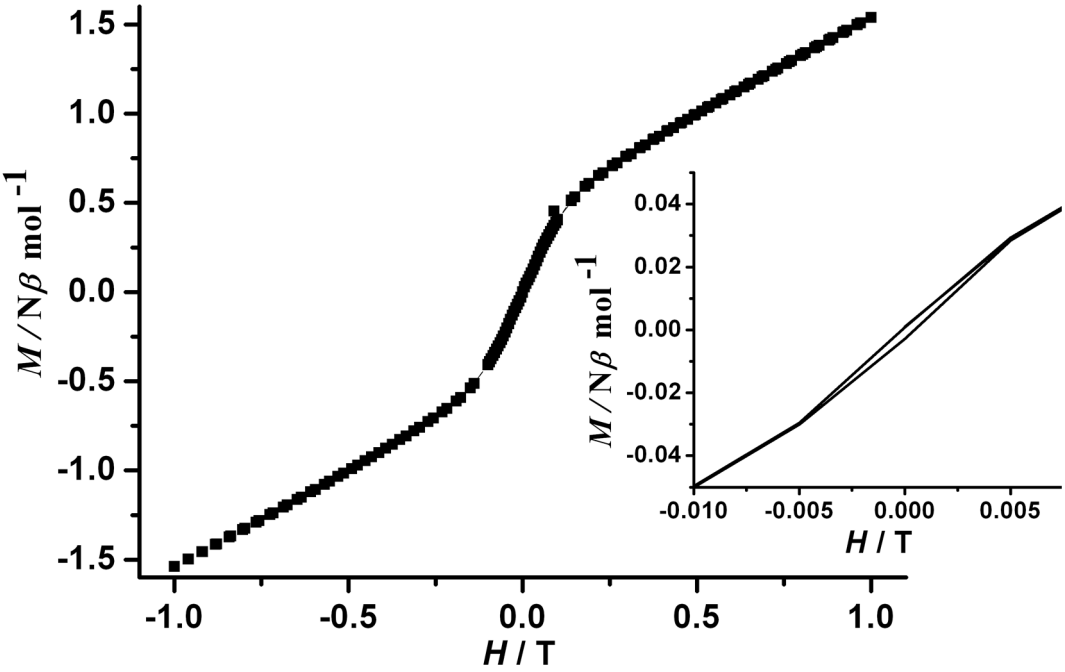

Fig. S3 The hysteresis loop at 2 K.

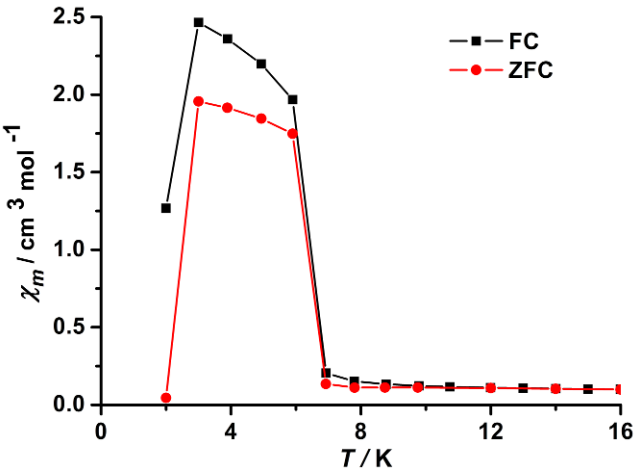

Fig. S4 FC and ZFC curves for **1** at 10 Oe.

References

1. G.M. Sheldrick, SHELXS97 and SHELXL97, University of Göttingen, Germany, 1997.