Electronic Supplementary Information

Syntheses, Crystal Structures and Magnetic Properties of Two Low-dimensional Cyano-bridged Cr^{III}-$Mn^{II/III}$ Assemblies

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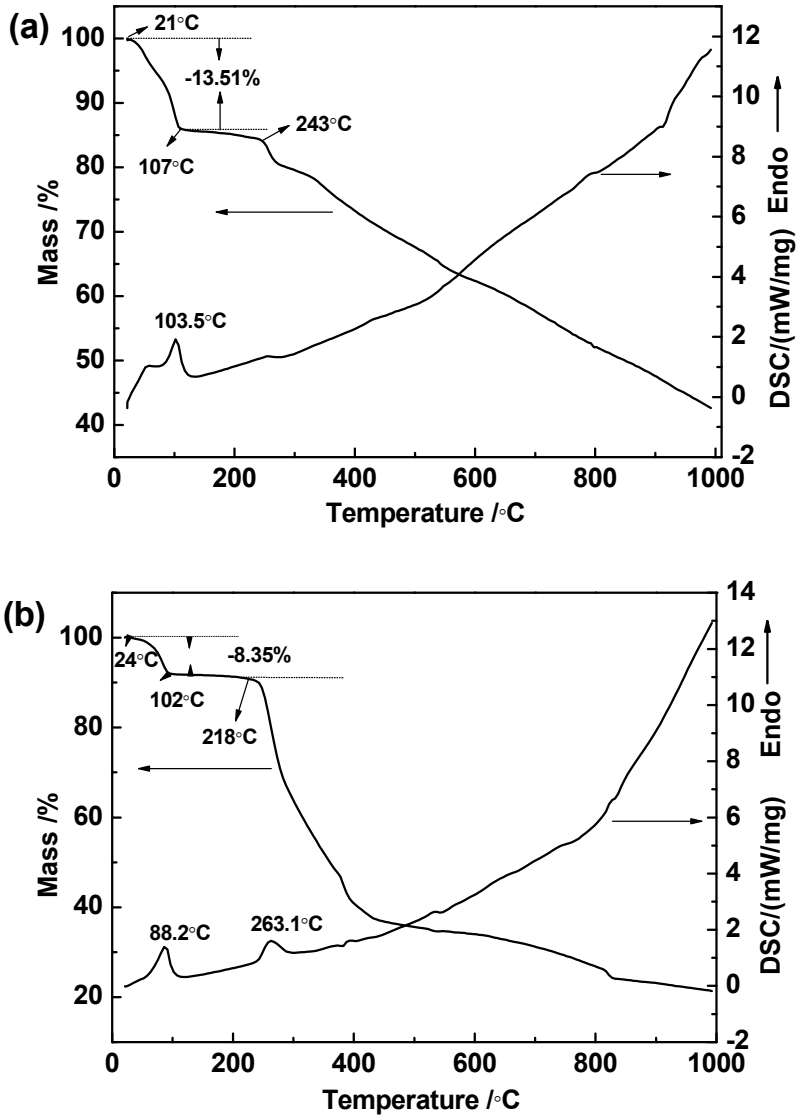

Fig. S1 TG-DSC curves of complexes of **1** (a) and **2** (b).

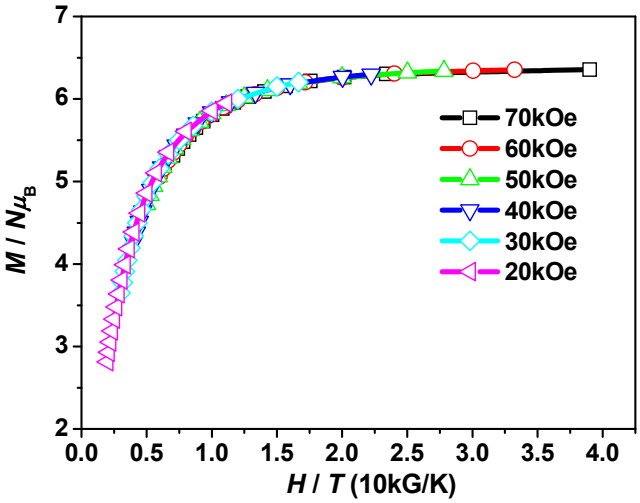

Fig. S2 Plots of reduced magnetization *vs.* *H*/*T* in 1.8-10 K for complex **2**.

Table S1 Selected bond lengths and angles for **1**

Bond distances(Å)			
Mn3-O1	1.876(2)	Mn1-N13	1.988(3)
Mn3-O2	1.870(2)	Cr1-C18	2.068(3)
Mn3-N1	1.994(3)	Cr1-C19	2.047(3)
Mn3-N2	1.975(2)	Cr1-C20	2.098(3)
Mn3-N3	2.312(3)	Cr1-C18B	2.068(3)
Mn3-N14	2.359(3)	Cr1-C19B	2.047(3)
Mn2-N10	1.975(3)	Cr1-C20B	2.098(3)
Mn2-O4	1.870(2)	Cr2-C23	2.069(4)
Mn2-O5	2.256(2)	Cr2-C21A	2.080(3)
Mn2-O3	1.880(2)	Cr2-C22	2.053(3)
Mn2-N9	1.973(3)	Cr2-C21	2.080(3)
Mn2-O6	2.305(2)	Cr2-C22A	2.053(3)
Mn1-O8	1.884(2)	Cr2-C23A	2.069(4)
Mn1-O7	1.875(2)	N4-C19	1.165(4)
Mn1-O10	2.316(2)	N7-C22	1.168(4)
Mn1-N6	1.967(3)	N8-C23	1.118(5)
Mn1-O9	2.257(2)	N14-C21	1.131(4)
Bond angle(°)			
O1-Mn3-O2	92.27(10)	O7-Mn1-N6	173.24(11)
O-Mn-N1	92.82(12)	O7-Mn1-N13	92.06(11)
O1-Mn3-N2	174.90(11)	O10-Mn1-N13	93.21(10)
O1-Mn3-N3	92.01(11)	O9-Mn1-N6	91.71(10)
O1-Mn3-N14	94.72(9)	O8-Mn1-N6	91.32(11)
O2-Mn3-N1	174.90(12)	O8-Mn1-N13	173.11(11)
O2-Mn3-N2	92.80(11)	C18-Cr1-C18B	180.00
O2-Mn3-N3	94.08(10)	C18-Cr1-C20	88.12(12)
O2-Mn3-N14	93.00(10)	C19-Cr1-C19B	180.00
N1-Mn3-N2	82.10(12)	C19-Cr1-C20	89.95(13)
N1-Mn3-N3	85.88(11)	C20-Cr1-C20B	180.00
N1-Mn3-N14	86.44(11)	C19B-Cr1-C20B	89.95(13)
N2-Mn3-N3	87.15(11)	C21-Cr2-C23	89.74(13)
N2-Mn3-N14	85.50(10)	C22-Cr2-C22A	180.00
N3-Mn3-N14	170.02(10)	C22-Cr2-C23A	91.92(14)
O3-Mn2-N9	91.82(11)	C21-Cr2-C21A	180.00
O3-Mn2-N10	172.09(11)	C22-Cr2-C23	88.08(14)
O4-Mn2-O5	92.96(9)	C23-Cr2-C23A	180.00
O4-Mn2-O6	88.83(9)	Cr2-C21-N14	175.7(3)
O4-Mn2-N9	173.73(11)	Cr2 -C22-N7	177.9(3)
O4-Mn2-N10	92.90(11)	Cr2-C23-N8	179.5(3)
Cr1-C20-N5	177.1(3)	Cr1-C18-N3	173.3(3)
Cr1-C19-N4	177.6(3)		

Table S2 Hydrogen-bond geometry (Å, °) for **1**

D-H···A	D-H	H···A	D···A	D-H···A
O5--H5B..O14	0.8500	2.1100	2.762(4)	133.00
O6--H6A..N5	0.8500	2.0700	2.780(4)	140.00
O9--H9C..O12	0.9700	2.2300	2.741(5)	111.00
O10--H10A..N7	0.8500	1.9700	2.805(3)	168.00
O12--H12B..O14	0.8500	2.3800	2.752(5)	107.00
O12--H12-D..O14	0.8500	2.3700	2.752(5)	108.00
O13--H13C..O14	0.8500	2.1300	2.829(7)	140.00
O14--H14A..O12	0.8500	2.4400	2.752(5)	102.00
O14--H14D..O13	0.8500	1.9800	2.829(7)	180.00

Symmetry transformations used to generate equivalent atoms: A = *–x*, 1*–y*, *–z*; B = *–x*, 1*–y*,1*–z*

Table S3 Selected bond lengths and angles for **2**

Bond distances(Å)			
Mn1-Cl1	2.472(5)	Cr1-C22	2.041(5)
Mn1-O1	2.113(14)	Cr1-C23	2.017(6)
Mn1-N1	2.177(4)	Cr1-C21A	2.091(4)
Mn1-N2	2.249(4)	Cr1-C22A	2.041(5)
Mn1-N3	2.224(4)	Cr1-C23A	2.017(5)
Mn1-N4	2.290(4)	N5-C21	1.195(5)
Mn1-N5	2.113(3)	N6-C22	1.170(7)
Cr1-C21	2.091(4)	N7-C23	1.186(7)
Bond angles(°)			
Cl1-Mn1-N1	93.49(16)	C21-Cr1-C22	95.31(17)
Cl1-Mn1-N2	97.49(17)	C21-Cr1-C23	91.0(2)
Cl1-Mn1-N3	93.58(16)	C21-Cr1-C21A	174.09(17)
Cl1-Mn1-N4	166.08(17)	C21-Cr1-C22A	88.94(17)
Cl1-Mn1-N5	95.43(15)	C21-Cr1-C23A	84.8(2)
O1-Mn1-N1	102.3(4)	C22-Cr1-C23	91.7(2)
O1-Mn1-N2	97.5(4)	C21A-Cr1-C22	88.94(17)
O1-Mn1-N3	95.2(4)	C22-Cr1-C23A	179.7(2)
O1-Mn1-N4	165.2(4)	C21A-Cr1-C23	84.8(2)
O1-Mn1-N5	86.2(3)	C22A-Cr1-C23	179.74(19)
N1-Mn1-N2	72.20(16)	C23-Cr1-C23A	88.6(2)
N1-Mn1-N3	96.22(15)	C21A-Cr1-C22A	95.31(17)
N2-Mn1-N3	164.38(17)	Cr1-C21-N5	177.0(4)
N2-Mn1-N4	96.02(16)	Cr1-C22-N6	173.0(4)
N3-Mn1-N4	72.53(15)	Cr1-C23-N7	177.9(5)
N4-Mn1-N5	86.63(13)	Mn1-N5-C21	146.6(3)

Symmetry transformations used to generate equivalent atoms: A = *–x*, 2*–y*, *z*