

Electronic Supporting Information (ESI)

Incorporation of $M(H_2O)_6^{2+}$ between layers $\{M(H_2O)_2Ru_2(CO_3)_4Cl_2\}_n^{2n-}$ ($M = Zn, Mn$): syntheses, structures and magnetic properties

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Table S1. Selected bond angles (°) of complexes **1** and **2**

	1	2
Ru(1A)–Ru(1)–Cl(1)	176.22(6)	176.73(7)
Ru(2C)–Ru(2)–Cl(2)	177.75(7)	177.33(8)
Ru(1A)–Ru(1)–O(1)	88.91(10)	88.76(12)
Ru(1A)–Ru(1)–O(3)	90.76(10)	90.61(12)
Ru(2C)–Ru(2)–O(4)	89.17(10)	89.33(12)
Ru(2C)–Ru(2)–O(6)	90.06(11)	89.98(13)
M(1)–O(2)–C(1)	128.9(3)	129.5(4)
M(1)–O(5)–C(2)	128.9(3)	129.6(4)
O(2)–M(1)–O(5)	87.80(16)	87.48(19)
O(2)–M(1)–O(5D)	92.20(16)	92.52(19)
O(5)–M(1)–O(7)	94.54(14)	93.35(15)
O(5)–M(1)–O(7D)	85.46(14)	86.65(15)
O(2)–M(1)–O(7)	92.61(14)	90.97(16)
O(2)–M(1)–O(7D)	87.39(14)	89.03(16)
O(8)–M(2)–O(9)	88.14(16)	89.6(2)
O(8)–M(2)–O(9E)	91.86(16)	90.4(2)
O(8)–M(2)–O(10)	90.22(17)	87.7(2)
O(8)–M(2)–O(10E)	89.78(17)	92.3(2)
O(9)–M(2)–O(10)	90.43(16)	91.5(2)
O(9)–M(2)–O(10E)	89.57(16)	88.5(2)

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Symmetry codes: A, $-x + 1, -y + 1, -z + 2$; B, $x, -y + 1, z$; C, $-x + 2, -y + 1, -z + 2$; D, $-x + 3/2, -y + 3/2, -z + 2$; E, $-x + 1/2, -y + 1/2, -z + 1$.

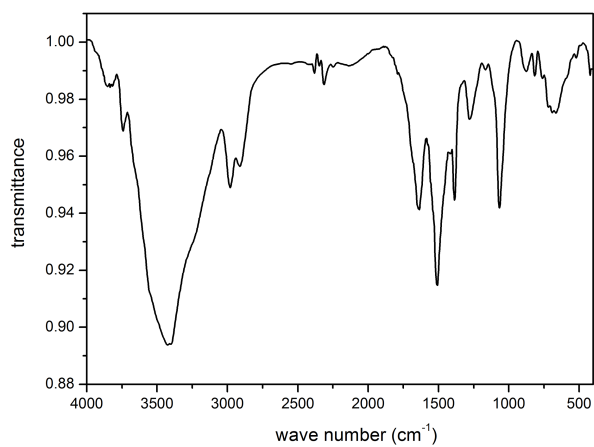


Fig. S1 IR spectra of complex **1**.

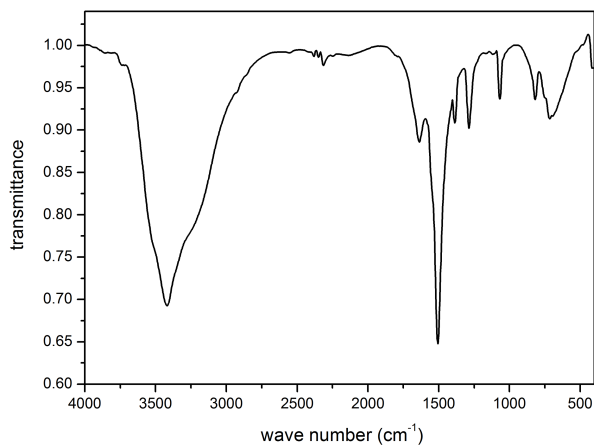


Fig S2. IR spectra of complex **2**.

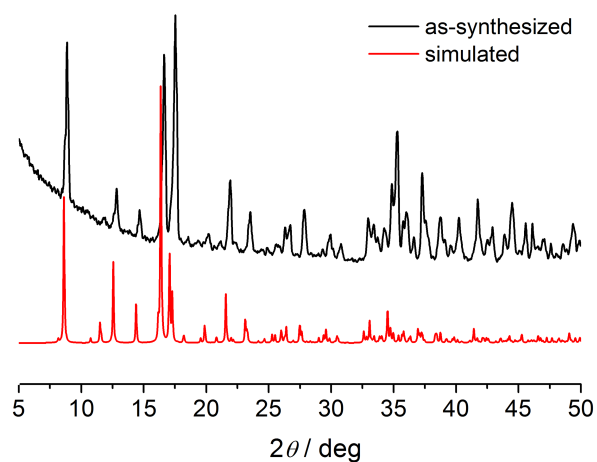


Fig. S3 Comparison of XRPD patterns of the simulated pattern from the single-crystal structure determination and as-synthesized product of **1**

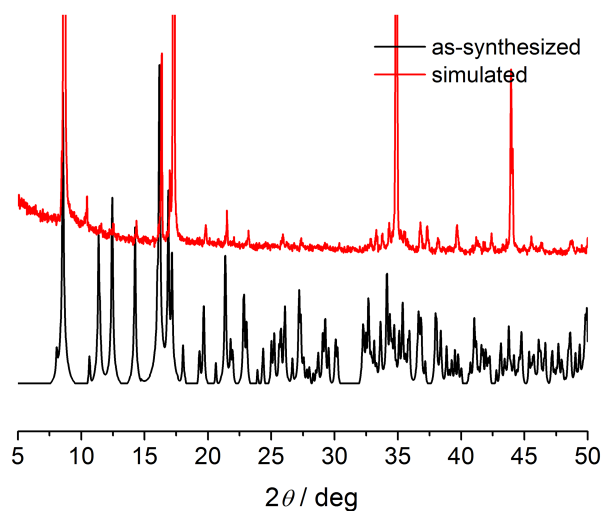


Fig. S4 Comparison of XRPD patterns of the simulated pattern from the single-crystal structure determination and as-synthesized product **2**.

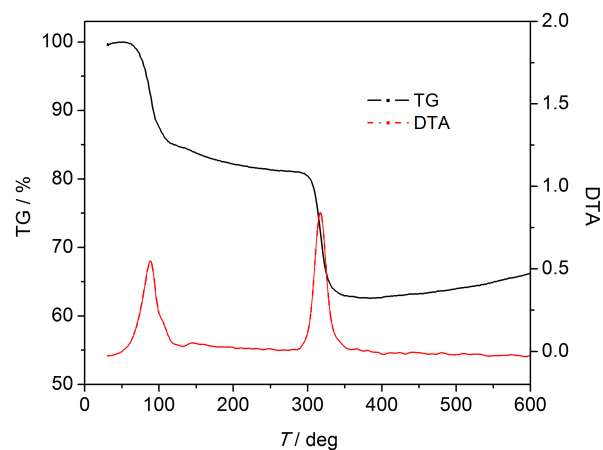


Fig. S5 TG and DTA curves of complex **1**

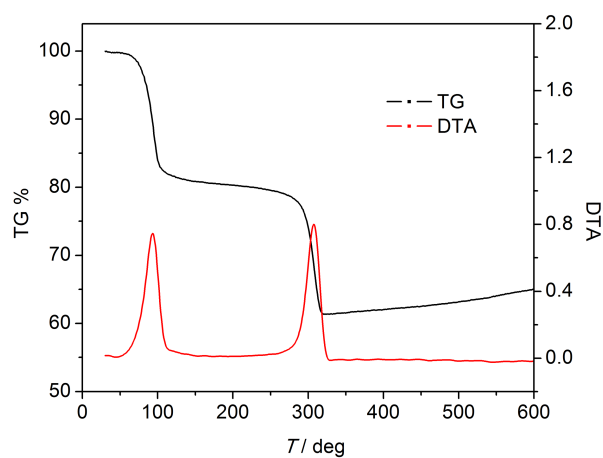


Fig. S6 TG and DTA curves of complex **2**

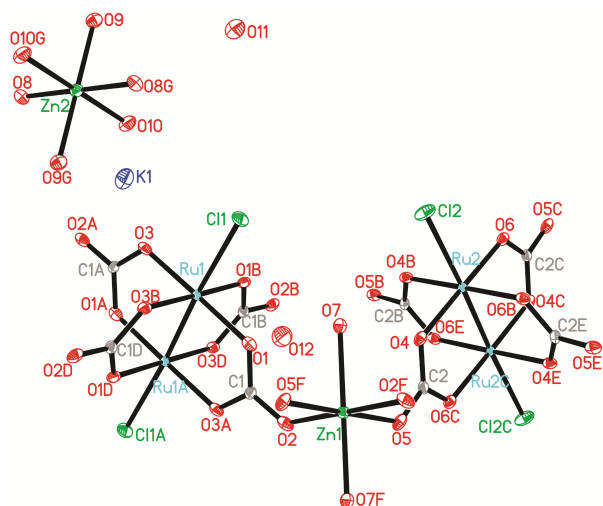


Fig. S7 ORTEP representation (30% thermal probability ellipsoids) of the crystal structure of **1**

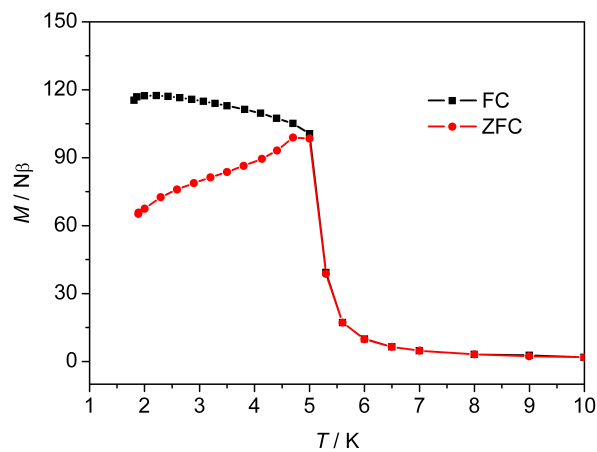


Fig 8. FC and ZFC vs *T* plots for **2**.