Combining oxime-based [Mn_6] clusters with cyanometalates: 1D chains of [Mn_6] SMMs from [$M(CN_2)]^-$ (M= Au, Ag)

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Experimental Procedures

Solvents and reagents were used as received from commercial suppliers.

Synthesis of compound 1: $Mn(NO_3)_2{\cdot}4H_2O$ (125 mg, 0.5 mmol), 2-hydroxypropiophenone oxime (80 mg, 0.5 mmol), 3-ethynlpyridine (50 mg, 0.25 mmol) and $KAu(CN)_2$ (144 mg, 0.5 mmol) were dissolved in MeOH (20 ml). After 5 minutes of stirring LiOMe (37 mg, 1 mmol) was added, and the solution stirred for a further 1 h, before being filtered and allowed to stand. Black rod-like X-ray quality crystals were obtained after room temperature evaporation of the mother liquor over 4 days. Elemental analysis (%) calculated (found) for $C_{38}H_{39}AuMn_3N_6O_9$ (1085.23): C 42.03 (41.92), H 3.62 (3.49), N 7.74 (7.58).

Synthesis of compound 2: $Mn(NO_3)_2{\cdot}4H_2O$ (125 mg, 0.5 mmol), 2-hydroxyacetophenone Oxime (75 mg, 0.5 mmol), 3-ethynlpyridine (50 mg, 0.25mmol), $KAg(CN)_2$ (128 mg, 0.5 mmol), were dissolved in MeOH (20 ml). After 5 minutes of stirring LiOMe (37 mg, 1 mmol) was added, and the solution stirred for a further 1 h, before being filtered. The filtrate was collected and allowed to stand for 24 h before being filtered again. Black rod-like X-ray quality crystals were obtained after room temperature evaporation of the mother liquor over 4 days. Elemental analysis (%) calculated (found) for $C_{34}H_{30}AgMn_3N_6O_8$ (923.33): C 44.21 (44.14), H 3.28 (3.24), N 9.10 (9.01).

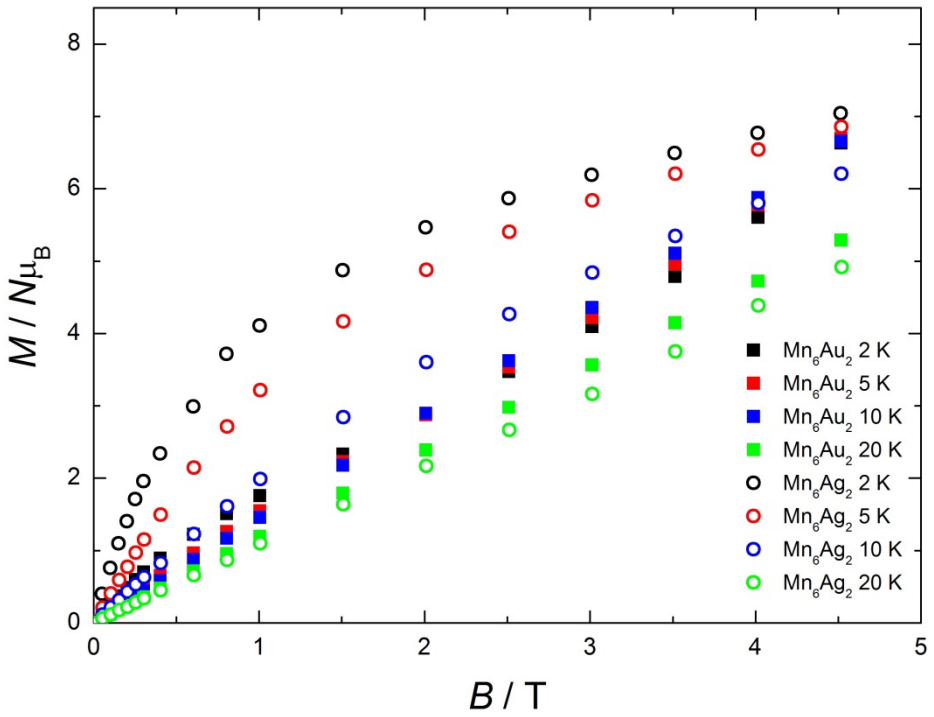

Figure S1. Plot of magnetisation versus field for **1** and **2** in the 2.0 to 20 K temperature range, in fields up to 5 T.

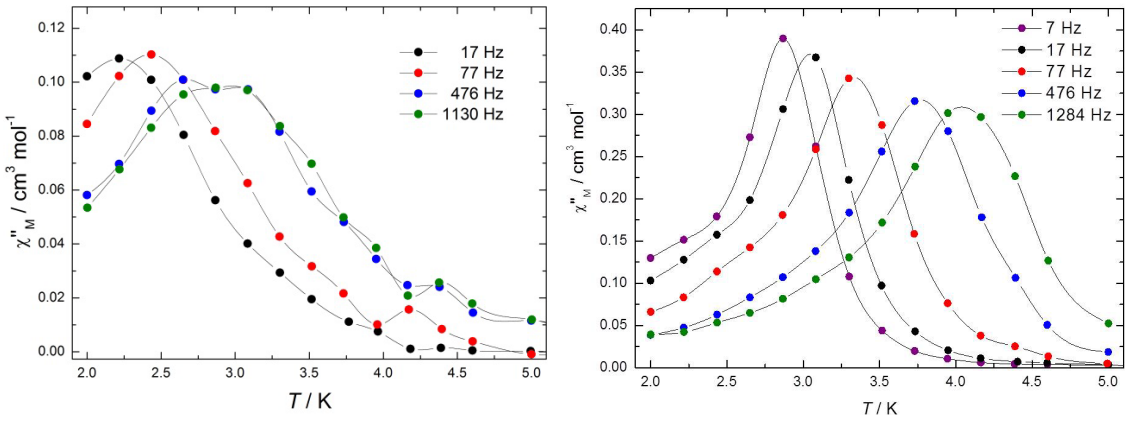

Figure S2. Plot of χ_M'' *vs. T* for compound compound **1** (left) and **2** (right) in the indicated temperature and frequency ranges.

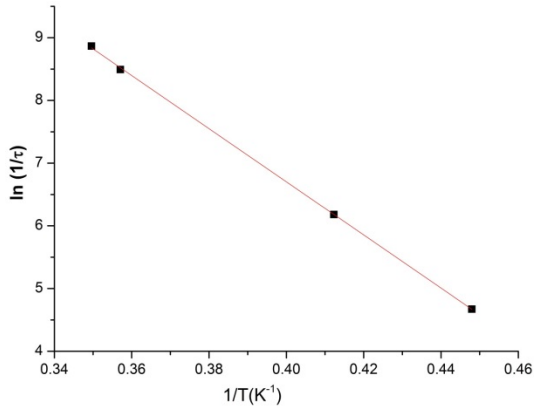

Figure S3. Arrhenius analysis of the ac susceptibility data for **1**; τ_o= 1.5 x 10^{-10} s and U_{eff} = 39.9 K.

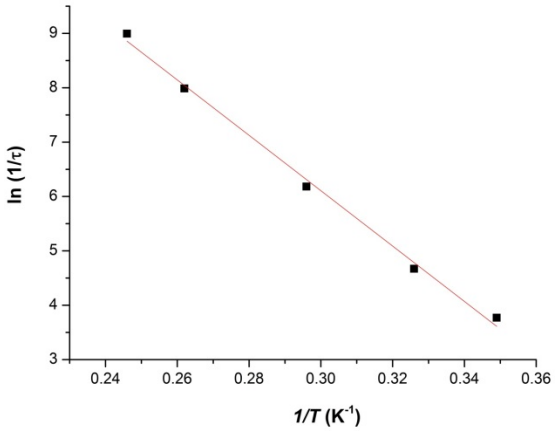

Figure S4. Arrhenius analysis of the ac susceptibility data for **2**; τ_o= 5.4 x10^{-10} s and U_{eff} = 50.7 K.

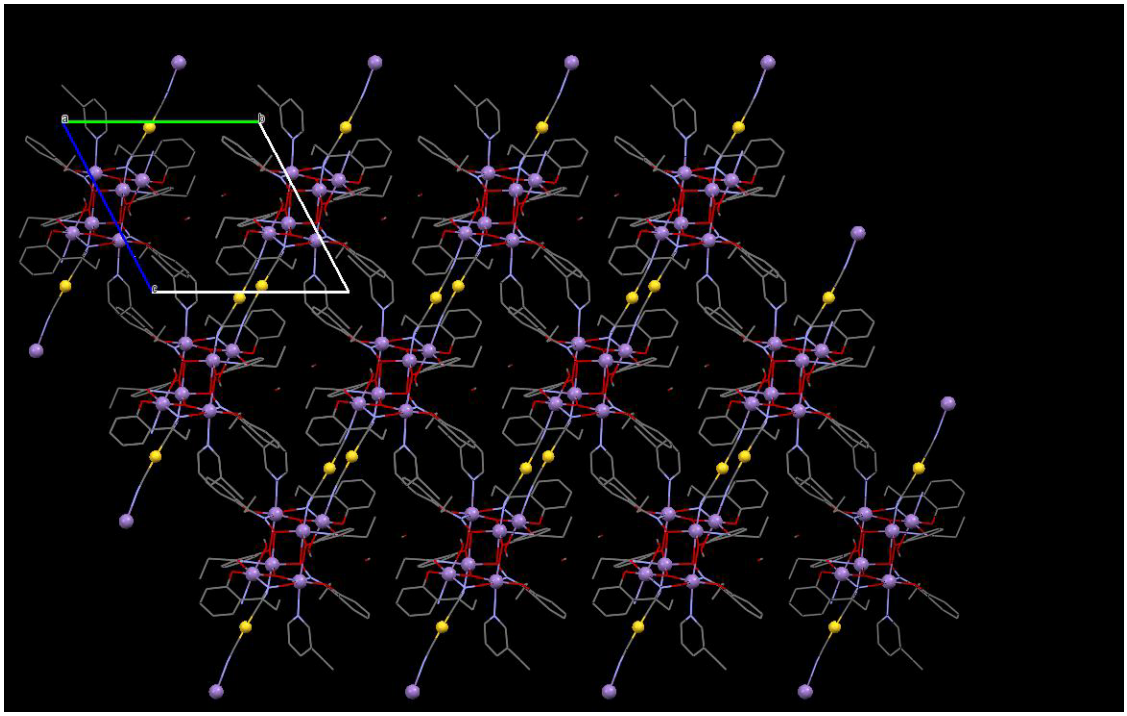

Figure S5. Packing of the chains of **1** in the crystal. H-atoms omitted for clarity.

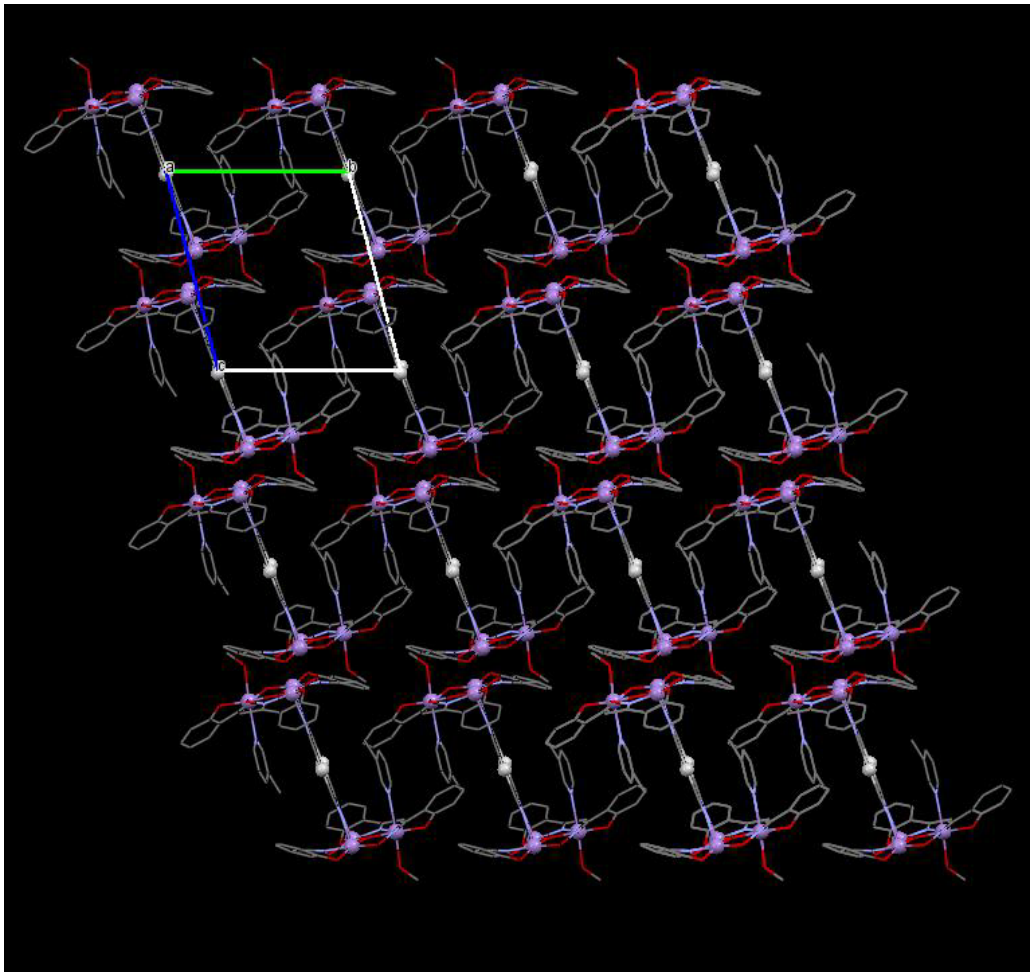

Figure S6. Packing of the chains of **2** in the crystal. H-atoms omitted for clarity.