

ELECTRONIC SUPPORTING INFORMATION

A Mn₃₆Ni₄ ‘Loop-of-Loops-and-Supertetrahedra’ Aggregate Possessing a High $S_T = 26 \pm 1$ Spin Ground State

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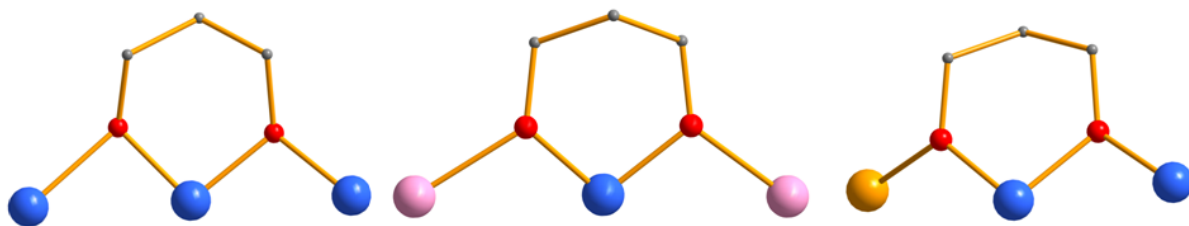


Fig. S1 The bridging modes displayed by the ligand pd^{2-} in complex **1**. Colour code: Mn^{III} , blue; Mn^{II} , lavender; Ni^{II} , orange; O, red; C, gray. H atoms are omitted.

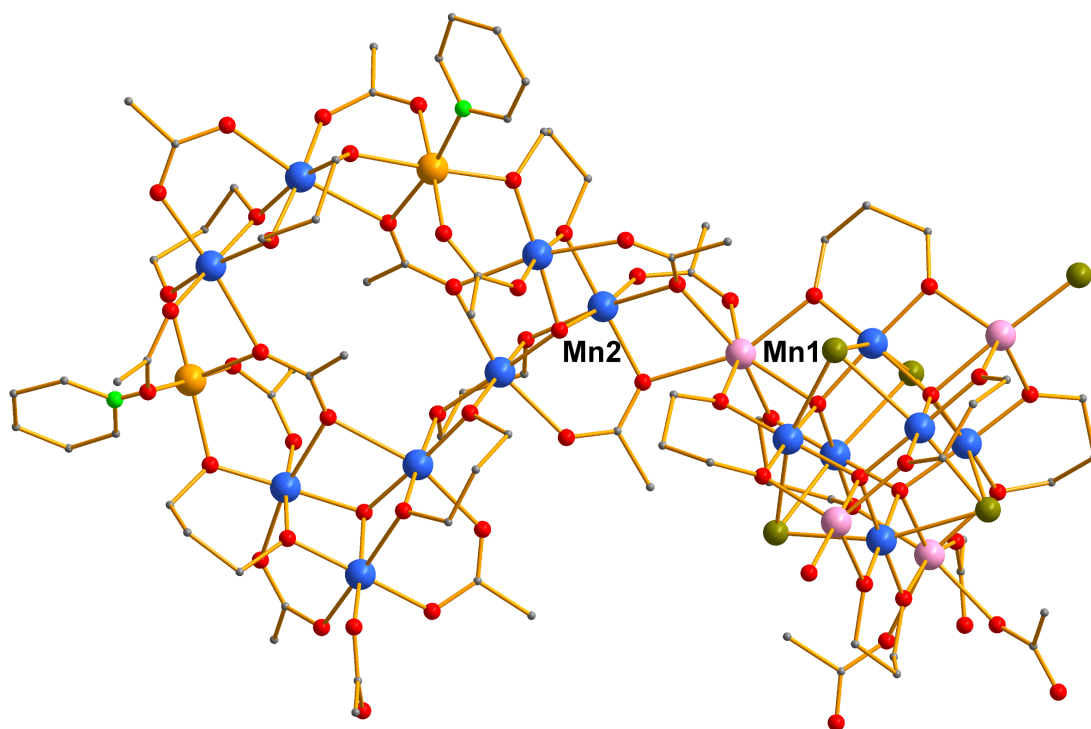


Fig. S2. Representation of a part of the molecular structure of **1** emphasising the connection of the loop and the supertetrahedral units through acetate bridging ligands. Colour code: Mn^{III} , blue; Mn^{II} , lavender; Ni^{II} , orange; O, red; N, light green; Cl, green; C, gray. H atoms are omitted.

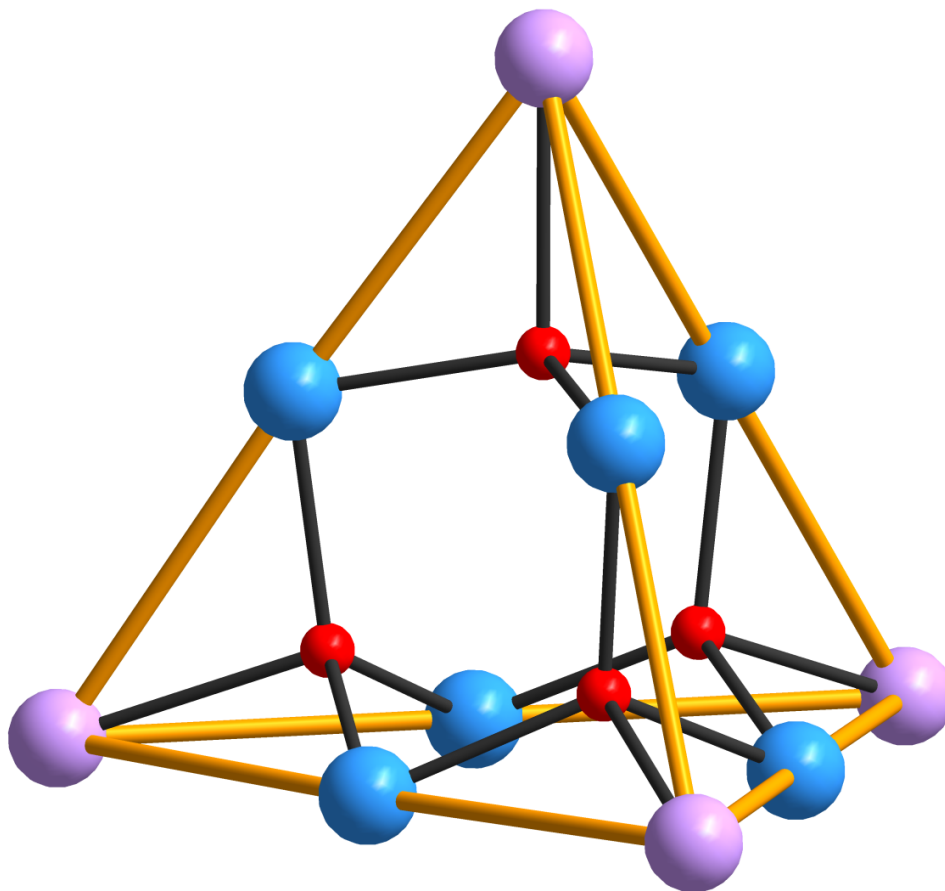


Fig. S3. Representation of the $[\text{Mn}^{\text{III}}_6\text{Mn}^{\text{II}}_4(\mu_4\text{-O})_4]^{18+}$ supertetrahedral core present in **1**. The gold lines connecting the metal ions are to emphasise the supertetrahedral topology. Colour code: Mn^{III} , blue; Mn^{II} , lavender; O, red.

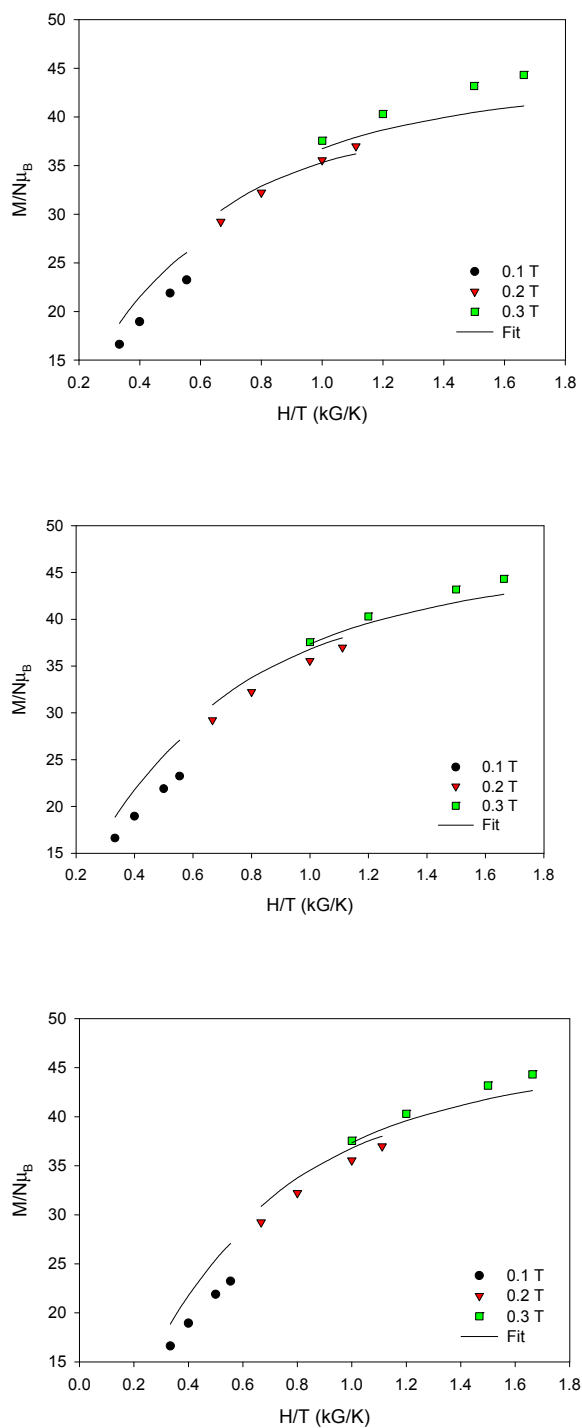


Fig. S4. Plots of reduced magnetisation ($M/N\mu_B$) vs H/T for complex **1** at the indicated fields for spin ground state values $S_T = 25$ (top), 26 (middle) and 27 (bottom). The solid lines are the fit of the data; see the text for the fitting parameters

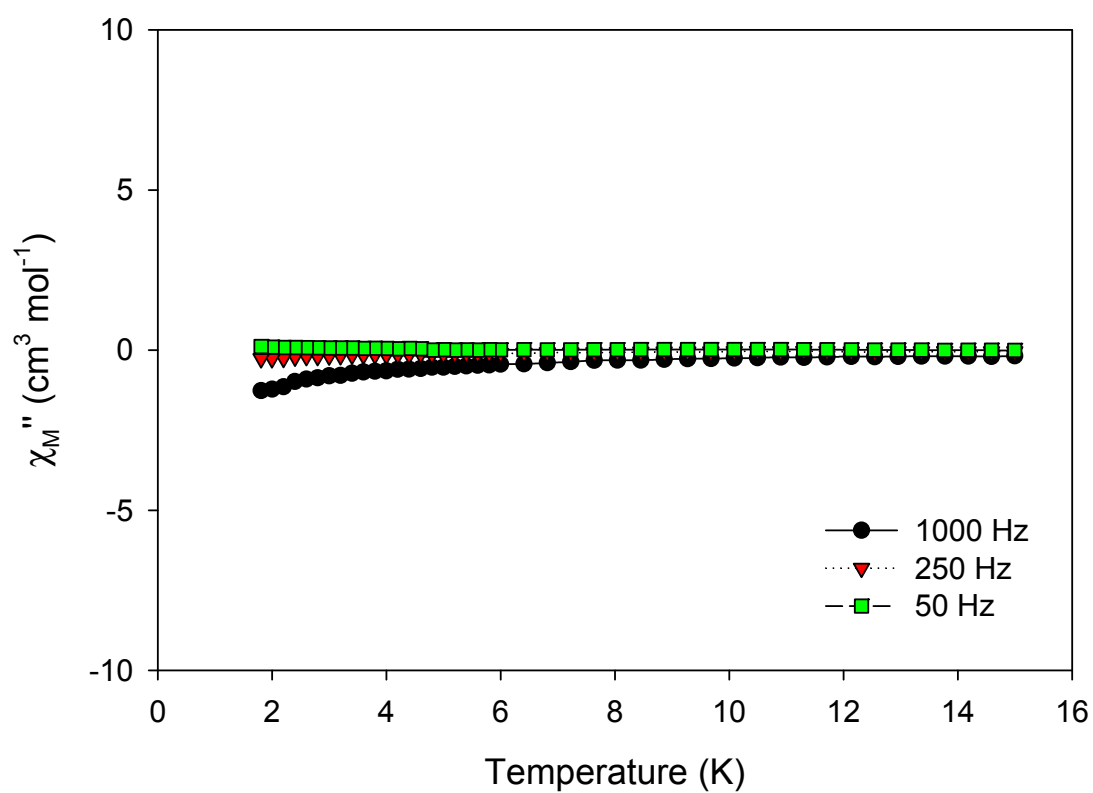


Fig. S5. Plot of χ_M'' versus T for a microcrystalline sample of complex **1** at the indicated frequencies

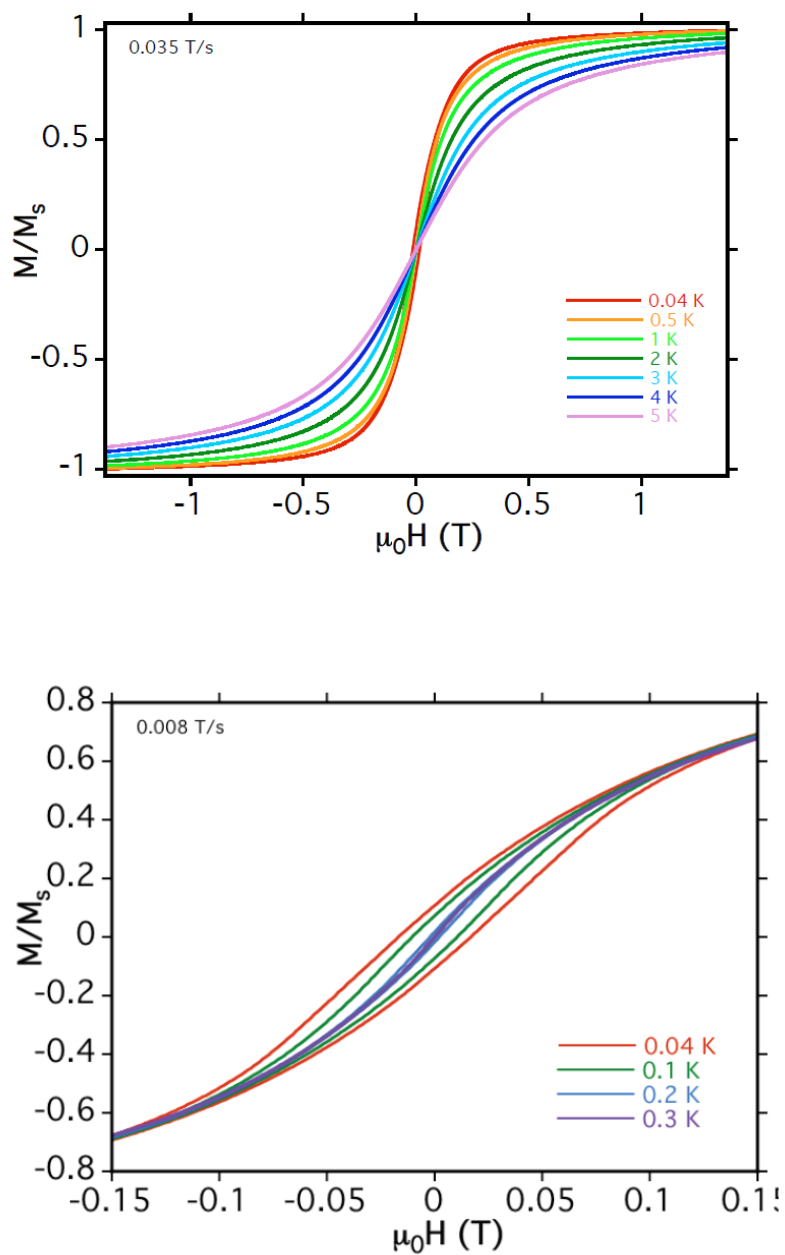


Fig. S6. Magnetisation (M) *versus* applied magnetic field ($\mu_0 H$) hysteresis loops for a single crystal of $1 \cdot 2\text{CH}_3\text{CN} \cdot 12.30\text{H}_2\text{O}$ at the indicated temperatures and a fixed field sweep rate of (top) 0.035 T/s and (bottom) 0.008 T/s . The magnetisation is normalized to its saturation value (M_s).