



"Naked" $[\text{Mn}_3\text{O}]^{7+}$ triangles: the effect of auxiliary ligands on magnetic exchange.

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The reaction between $\text{Mn}(\text{ClO}_4)_2 \cdot 6\text{H}_2\text{O}$, Et-saoH₂ (Et-saoH₂ = 2-hydroxypropiophenone oxime), NEt₄OH and $[\text{Ni}(\text{pao})_2(\text{py})_2]$ (paoH = 2-pyridylalldoxime) in MeOH forms the complex $[\text{MnIII}_3\text{O}(\text{Et-sao})_3(\text{HCO}_2)(\text{MeOH})_5]$ (1) in good yields. The reaction of $\text{MnCl}_2 \cdot 4\text{H}_2\text{O}$, Me-saoH₂ (Me-saoH₂ = 2-hydroxyphenylethanone oxime), NEt₄OH and dl-valine in MeOH gives the complex $[\text{MnIII}_3\text{O}(\text{Me-sao})_3(\text{MeOH})_5]\text{Cl}$ (2) in moderate yields. In both complexes the building block consists of a triangular $\{\text{MnIII}_3\text{O}(\text{R-sao})_3\}$ unit (R = Et, Me for 1 and 2, respectively). In the case of 2, the $[\text{Mn}_3]$ unit can be considered "naked" as there is no capping ligand present, whereas in the case of 1 a formate ion is terminally bonded to one metal centre. DC magnetic susceptibility measurements for 1 and 2 reveal the presence of both ferromagnetic and antiferromagnetic intramolecular interactions, depending on the Mn–N–O–Mn torsion angles within each cluster, leading to a ground state $S = 2$ for both complexes. Rationalization of this result is attempted by structural comparison of previously reported triangular $[\text{Mn}_3]$ oximate complexes on the basis of "flat" and "twisted" torsion angles and the effect of the auxiliary ligands.

Słowa kluczowe

manganese, oximes, magnetic properties, ligand effects

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