

# Formation of an Iron(III) Oxo Cubane Core $\text{Fe}_4(\mu^4\text{-O})_4$ from $\text{FeCl}_3$ and the Unsymmetrical Tripodal Ligand $\text{N}[(\text{CH}_2\text{CH}_2\text{NH}_2)(\text{CH}_2\text{CH}_2\text{OH})(\text{CH}_2\text{CH}_2\text{CH}_2\text{OH})]$

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The coordination chemistry of the unsymmetric, aliphatic, tetradentate tripodal ligand  $\text{N}[(\text{CH}_2\text{CH}_2\text{NH}_2)(\text{CH}_2\text{CH}_2\text{OH})(\text{CH}_2\text{CH}_2\text{CH}_2\text{OH})]$  **H<sub>4</sub>-1** with iron chlorides was investigated. The disodium salt of the deprotonated ligand  $\text{Na}_2(\text{H}_2\text{-1})$  reacts with  $\text{FeCl}_3$  to yield a yellow precipitate which upon recrystallization from  $\text{DMSO}/\text{CH}_2\text{Cl}_2$  gives red crystals of the octanuclear iron(III) complex  $[\{\text{Fe}^{\text{III}}\text{Cl}(\text{H}_2\text{-1})\}_4\text{Fe}^{\text{III}}_4(\mu^4\text{-O})_4\text{Cl}_4] \cdot 4\text{CH}_2\text{Cl}_2$  containing a central  $\text{Fe}_4(\mu^4\text{-O})_4$  cubane core. Crystals of  $\mathbf{2} \cdot 4\text{DMF}$  were obtained by slow oxidation of the green iron(II) complex obtained from ferrous chloride and  $\text{Na}_2(\text{H}_2\text{-1})$  after recrystallization from DMF. The structure determination of  $\mathbf{2} \cdot 4\text{CH}_2\text{Cl}_2$  also revealed the presence of the iron(III) oxo cubane core. The core is surrounded by four iron atoms each coordinated by  $\eta^4\text{-(H}_2\text{-1)}^{2-}$  and  $\text{Cl}^-$  ligands.

*Key words:* Tripodal Ligand, Iron(III), Oxo Cubane, Crystal Structure