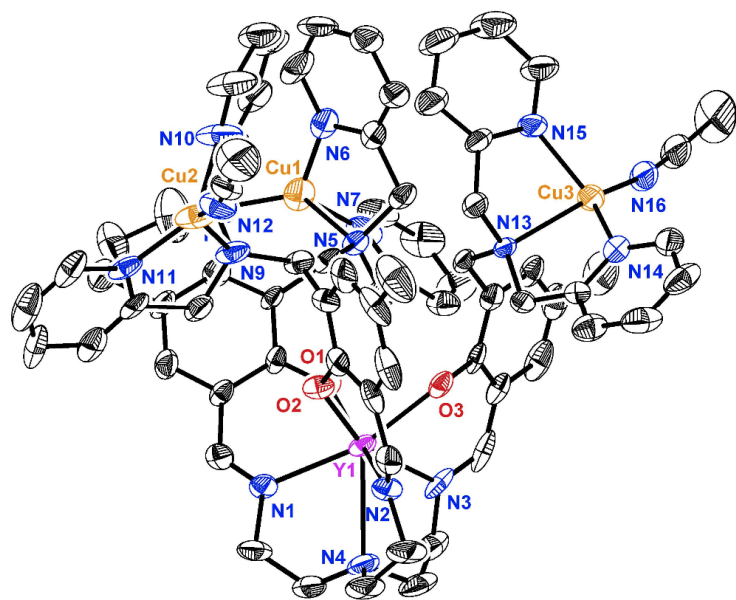


Metal-Templated Ligand Architectures for Trinuclear Chemistry: Tricopper Complexes and Their O₂ Reactivity

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Dioxygen reduction to water is of interest in fuel cell applications. To model the active site of tricopper oxygenases, a trinucleating framework was designed by templation of a heptadentate ligand around yttrium and lanthanides. The generated complexes orient three sets of two or three N-donors each for binding additional metal centers. Addition of three equivalents of copper(I) leads to the formation of a tricopper(I) species. Reaction with dioxygen at low temperatures generates a μ^3, μ^3 -dioxo-tricopper complex based on spectroscopic analysis. Characterization and reactivity studies related to dioxygen activation at tricopper cores were performed. Regeneration of the tricopper(I) species was accomplished upon reduction with thiophenol.



Monocopper variants do not display similar O₂ reactivity.

