# A DEEP CAVITAND RECEPTOR FUNCTIONALIZED WITH FE(II) AND MN(II) AMINOPYRIDINE COMPLEXES FOR BIOINSPIRED OXIDATION CATALYSIS.

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The mimicry of enzymatic catalysis with artificial systems has been a long standing goal of synthetic supramolecular chemistry.[1][2] It is now widely accepted that, in order to rival the proficiency of enzymes, an artificial system must be built so that it defines a confined space where the substrate is isolated from bulk medium and exposed to direct contact with appropriate functional groups, a distinct feature of proteins and enzymes. Following this idea, we have developed a deep cavitand receptor functionalized with a bis(pyridyl)dipyrrolidine tetradentate ligand.[3][4] Binding of divalent metal ions (M^{2+} = Mn^{2+}, Fe^{2+} and Zn^{2+}) at the tetradentate ligand results in the formation of cavitand complexes $1 \cdot M(OTf)_2$. The complexes $1 \cdot M(OTf)_2$ (M = Fe(II) and Mn(II)) catalyze selective hydroxylation of aliphatic C-H bonds and epoxidation of olefins with hydrogen peroxide, exhibiting selectivity patterns consistent with the implication of high valent metal-oxo species. Furthermore, $1 \cdot Fe(OTf)_2$ reacts with IO_4^- to form an oxoiron(IV) complex $[1 \cdot Fe(O)]^{2+}$, without decomposition of the supramolecular container.

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$1 \cdot M(OTf)_2$
(M = Fe^{2+}, Mn^{2+})
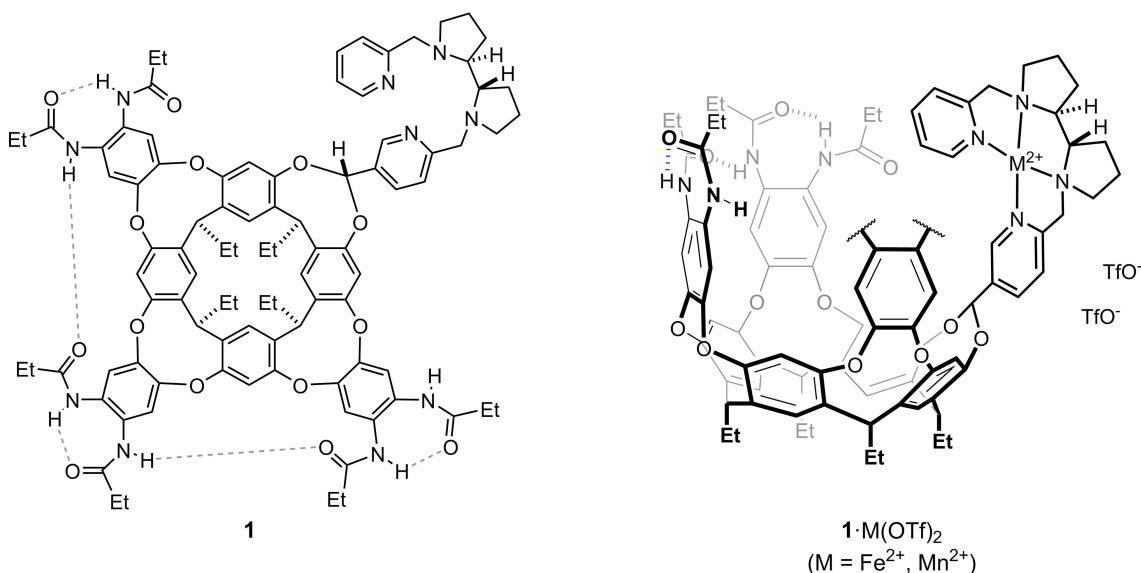
References
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