O₂ Activating Molecules Inspired by Enzymes and Solid Catalysts

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Cu\textsuperscript{II}–O–Cu\textsuperscript{II} cores have recently been proposed as the potential active species responsible for the challenging oxidation of methane to methanol realized at the surface of a Cu-grafted zeolithe\textsuperscript{[1]} as well as in the active center of the copper-enzyme pMMO.\textsuperscript{[2]} The first part of the talk will deal with the synthesis and O₂ reactivity of coordination compounds containing such units, spanned by dinucleating polydentate N-donor ligands. Polydentate siloxides were employed to prepare reactive models for metal-containing silica materials, which will be in the focus of the second part of the presentation. A disilanol and a novel tripodal trisilanol were investigated as a ligand precursor in combination with chromium(II) and iron(II), which in case of iron led to rarely observed square-planar high-spin FeO\textsubscript{4} configurations.\textsuperscript{[4]} The complexes were found to readily react with O₂ and in case of chromium a Lewis-acid stabilized O₂ adduct was isolated.\textsuperscript{[5]}

References:


