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Bio-inspired dicopper complexes: investigations of new relevant species in copper-based oxidation processes

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Copper-based metalloenzymes are widely distributed in Nature[1] and are capable of activating dioxygen in mild conditions to perform reactions such as oxygenation or oxidation of organic molecules. Inspired by the proposed copper-oxygen intermediates in biological systems, numerous features of Cu_2:O_2 adducts have been obtained so far, however, very few bio-inspired dicopper complexes can effectively oxidize strong C–H bonds.[2] Recently, new species with oxo core, hydroperoxo or superoxo have been characterized and among them, $Cu^{II}Cu^{III}$ mixed valent species have emerged as possible intermediates for activation of strong C-H bonds.[3]

In this context, we will present our results on the generation and characterization of these new high valent species and their relevance to react with inert C-H bonds.[4] In order to achieve this challenge, various compartmental ligands capable of bridging two copper ions in close proximity have been prepared and will be presented.

References

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