Nature is the cure:
reactivity blueprints for bioinspired catalysis and chemistry

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The exquisite and unrivalled efficiency of biological systems relies on the use of reactivity-enhancing tools to perform chemical reactions.[1] Among these tools, redox cofactors situated near metalloenzymatic active sites provide electron storage and release to assist the neighboring metal center in performing the reactions.

Emulating such systems, the development of catalysts bearing redox-active ligands is a blossoming research field.[2] Our contributions to this field include transfer of CF_3 groups[3], stabilization of masked high-valent metallic oxidation states[4], and transfer of nitrene and carbene moieties by redox-active copper complexes ligands. From a broader point of view, our efforts aim at cross-fertilizing the field of bioinspired catalysis with other reactivity-enhancing strategies such as spin catalysis[5], entatic state reactivity[6] and ligand design[7,8].

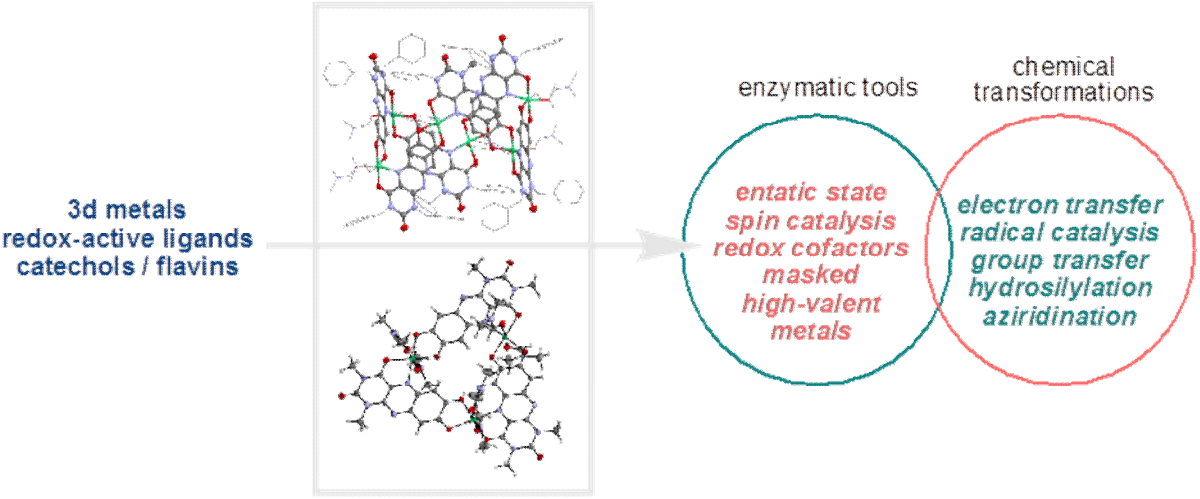

Figure 1. Combining bioinspired strategies for redox catalysis

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