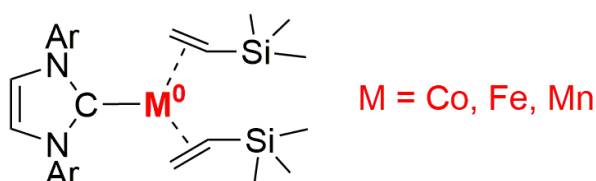


Recent Advance in the Chemistry of Low-Coordinate Low-Valent Transition-Metal Complexes

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Keywords: Carbene; Cobalt; Iron; Low Valent; Open-Shell

The knowledge on the formation, structure, and reactivity of low-coordinate 3d metal species forms the basis for the development of new 3d metal-catalyzed organic transformations and also disclosing the mysterious mechanisms of enzymatic catalysis and “single-atom” catalysis.¹⁻³ Aiming to deepen our knowledge on this type of reactive metal species, we have been working on the chemistry of low-coordinate zero-valent cobalt, iron and manganese complexes with N-heterocyclic carbene (NHC) and olefin ligation for years. This ligand set is found effective in stabilizing three-coordinate cobalt(0), iron(0), and manganese(0) complexes in the forms of (NHC)M(olefin)₂. In this presentation, the synthesis, electronic structure, and reactivity of the three-coordinate zero-valent metal complexes will be discussed.⁴



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