

Open-shell Coordination Compounds based on Cyanide and Scorpionate Ligands

The work presented in this PhD dissertation focuses on the synthesis and the characterisation of octahedral iron(II) and iron(III) complexes coordinated by a tridentate ligand of the scorpionate family (fac- geometry) and three cyanide ligands. Their use as metalloligands in respect to partially blocked metal ions is studied. Because of their ambidentate character, cyanide ligands open the door to facile synthesis of heterobimetallic species. Moreover, these ligands are known to be efficient magnetic exchange interaction transmitter, thus favouring intramolecular electronic communication between the metal ions they are bridging. The functionalisation of scorpionate ligands allows control over the intrinsic electronic properties of the iron precursor complexes, thus allows to tune the properties of the obtained polynuclear species from the latter by self-assembly. In this PhD dissertation, a particular interest was taken in {FeCo} systems because of their potential ability to exhibit electronic bistability (photomagnetic properties or SMM/SCM behaviour). Cyanide-bridged {FeCo} systems are particularly suitable for the observation of thermally or light-induced electron rearrangements, as testified by the wide range of photomagnetic cyanide-bridged compounds in the literature.

Delphine Garnier, edited by Logos Verlag - Berlin, 2015, ISBN: 978-3-8325-4091-3