

METAL-RADICAL COMPLEXES IN MOLECULAR MAGNETISM. NEW SYNTHETIC APPROACHES

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Metal-radical complexes are largely employed to construct molecular magnetic materials: Single Molecule/Chain Magnets (SMM/SCM) [1]. Probably the richest family of paramagnetic ligands are the nitronyl-nitroxide radicals (NIT): they are very robust and can be functionalized with other coordinating groups, previously attached to the starting aldehydes, thus facilitating the formation of complexes with various nuclearities and spin topologies. We have developed new families of nitronyl-nitroxide ligands, which are able to generate, in a rational way, various heterospin complexes: 2p-3d; 2p-4f, 2p-3d-4f. Some of our complexes show SMM behavior, resulted from a unique synergy between three different spin carriers. We also show that heterobispin 2p-3d and 2p-4f complexes can act as molecular spin qubits.

[1] See, for example: (a) D. Luneau, *Eur. J. Inorg. Chem.* **2020**, 597; (b) S. Demir, I.-R. Jeon, J. R. Long, T. D. Harris, *Coord. Chem. Rev.* **2015**, 289-290, 149; (c) M. G. F. Vaz, M. Andruh, *Coord. Chem. Rev.*, **2021**, 427, 213611.