

High Spin and Photomagnetic High Spin Molecules

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As part of our research activities devoted to molecular magnetism, we are interested in synthesising polynuclear compounds showing both large spin ground state and anisotropy. For this purpose, polycyanometalate precursors have been used successfully, with an effective control of the chemistry, which consist to firstly prepare polydentate ligands and their corresponding mononuclear complexes with varied metallic centre such as Mn^{II}, Ni^{II}, Co^{II}, Cu^{II}, before synthesising polynuclear compounds with tunable geometry. Thus, bi-, tri-, tetra-, hexa- and heptanuclear species have been obtained in this way with a spin state value ranging from 3/2 to 27/2.

The step by step rational synthesis allows us to synthesize as well hetero-trimetallic complexes such as CrNi₂Mn₄ (S=13/2) and several polynuclear species obtained from octacyanometalate precursors, for instance WCu₆, WNi₆ and WMn₆ and the corresponding molybdenum species.

This part of the work devoted to octacyanometalate chemistry paves the way of photomagnetic Single Molecule Magnets. We already succeeded in getting the first photomagnetic high spin molecule !

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