Towards Mixed 3d/4f-Metal Molecular Complexes with Interesting Magnetic and Optical Properties

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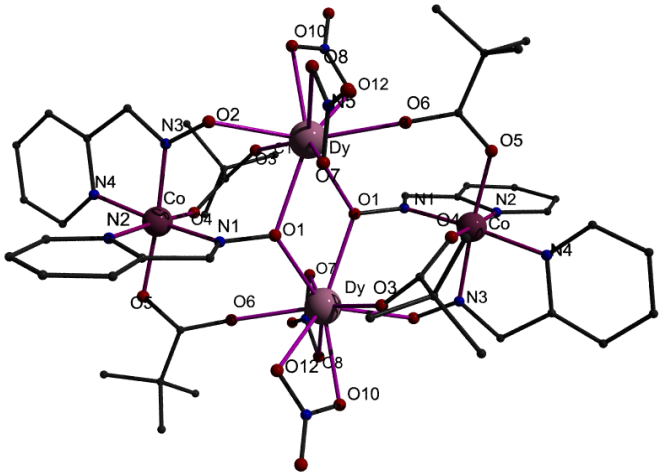
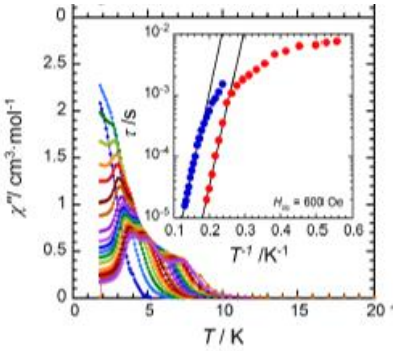
Dinuclear and polynuclear $M^{II \text{ or } III}/Ln^{III}$ complexes, where $M^{II \text{ or } III}$ are paramagnetic or diamagnetic 3d-metal ions and Ln^{III} is a trivalent lanthanide ion, occupy a unique place among mixed-metal molecular materials, giving rise, for example, to alternatives to homometallic 3d-metal Single-Molecule Magnets (SMMs) and magnetic refrigerants, as well as to complexes with interesting optical properties [1]. From a synthetic inorganic chemistry viewpoint, methods must be developed to combine 3d- and 4f-metal ions within dinuclear or polynuclear molecules. We shall present "one-pot" procedures involving a mixture of appropriate 3d- and 4f-metal starting materials and 2-pyridyloximate ligands possessing distinct functionalities, or "pockets", for preferential bonding of the 3d- and 4f-metal ions. The magnetic and luminescence properties of representative complexes will be briefly discussed.





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[1] L.R. Piquer, E.C. Sañudo, *Dalton Trans.*, **2015**, *44*, 8771 (Perspective).