

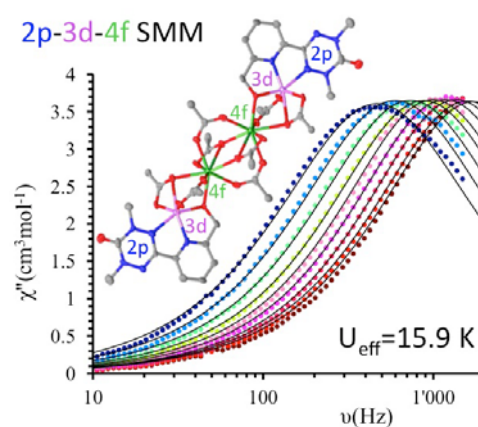
Metal-radical compounds: toward systems with high blocking temperature of the magnetization

Summary

Synthesis and study of molecule-based magnetic objects combining a strong exchange interaction and a high anisotropy towards single-molecule magnets allowing information storage on a single molecular object.

Detailed subject

Molecular magnetism goes all the way from the synthesis of new organic and coordination compounds to the study of their properties by miscellaneous physico-chemical methods. Verdazyl ligands form a versatile family of stable radicals. These various radicals may be associated with paramagnetic transition and lanthanide metal ions. We are developing the coordination of these ligands to ions with a high single-ion magnetic anisotropy (Co^{II} , Mn^{III} , Dy^{III} , Tb^{III} , ...). The target compounds are either discrete high-spin molecules or extended systems, in particular one-dimensional ones. Such objects are currently attracting significant interest because they allow to consider information storage on a single object, that is the ultimate step in the miniaturization of a bit of information. By the combination of a strong exchange interaction and a high anisotropy, the goal is to evidence this phenomenon at temperatures significantly higher than in the cases already described.



We have recently described the first verdazyl-based hetero-tri-spin exhibiting SMM properties. The work intend to perform chemical substitutions of both metal sites of this 2s-3d-4f cluster to unravel the mechanisms of its SMMs properties.

Publications linked to the theme

C. Train, L. Norel, M. Baumgarten, *Coord. Chem. Rev.*, 2009, 253, 2342-2351

G. Novitchi, S. Shova, Y. Lan, W. Wernsdorfer, C. Train, submitted

Background and skills expected

Synthesis of ligands and coordination compounds; NMR; IR. Taste for physical measurements

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