XXI Brazilian Meeting on Inorganic Chemistry
X Brazilian Meeting on Rare Earths
III Workshop on Theoretical Bioinorganic Chemistry
Belo Horizonte, September 12 - 15th 2024

Exploring the synthesis of tri-substituted imidazoles as tools for synthesising magnetic molecules

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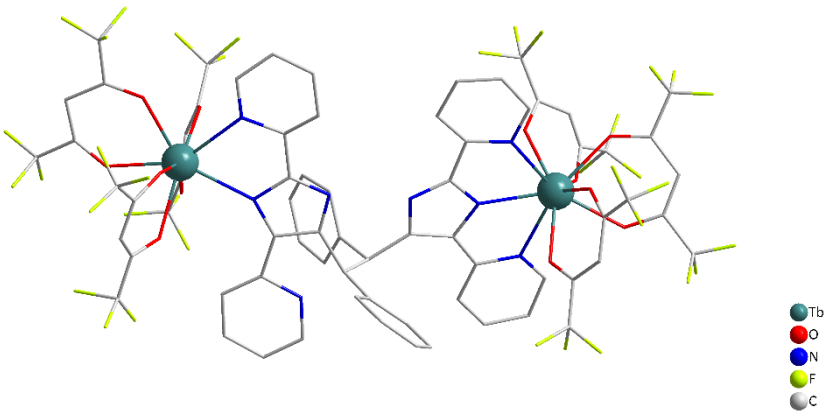
Thematic Area: Materials Chemistry

Keywords: rare earths, substituted imidazoles, polynuclear complexes

Lanthanide based coordination complexes are ideal candidates to behave as single molecule magnets, due to their intrinsic anisotropy and unquenched orbital angular momentum. Furthermore, they may exhibit interesting emission profiles, specially when combined with organic luminescent molecules. Bearing this in mind, by means of a previously reported highly efficient reaction methodology, [1] our research group developed a family of trisubstituted imidazoles which can behave as asymmetric polytopic ligands towards lanthanide ions.

In this work we present the synthesis and structural characterisation of a dinuclear terbium(III) complex with the novel dimeric ligand L = bis(benzyl-dipyridine-imidazole). This ligand was formed *in situ* from radical promoted dimerization of two monomeric units of (tert-butoxy-(phenyl)methyl)-dipyridine-imidazole in presence of $Tb(hfac)_3(H_2O)_3$ (with hfac = hexafluoroacetylacetonate). Single-crystal X-ray diffraction studies reveal that the structure is comprised by two non-equivalent terbium ions, in which the ligand adopts two different coordination modes towards the metal ions.



Perspective drawing of $[Tb_2(hfac)_6L]$

Acknowledgments: Comisión Sectorial de Investigación Científica, Uruguay

References

[1] Q. Wang *et al.*, Organic Letters, **21**, 9874 (2019).