

Chirality in lanthanide complexes

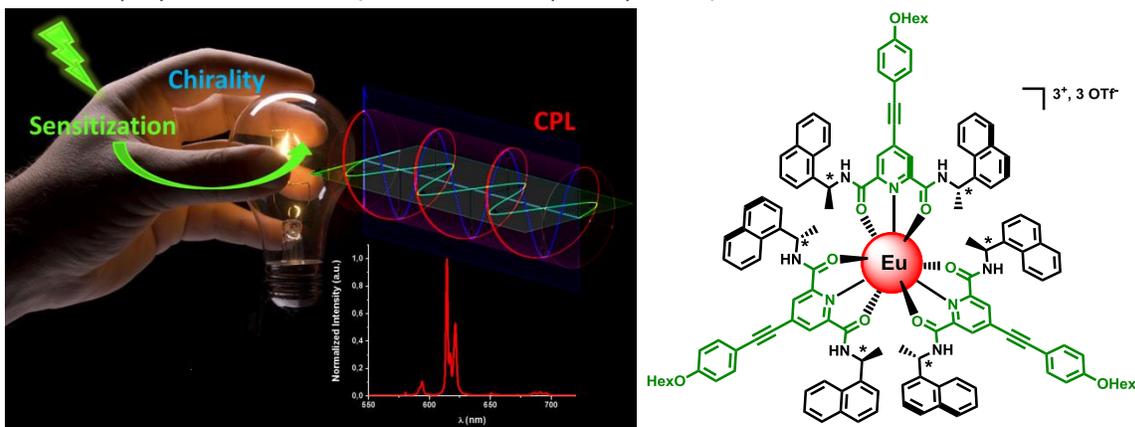
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Chirality is one of the most fundamental features of life and, since Pasteur early works, it has never stopped to fascinate scientists. The selective synthesis of a specific enantiomer and the controlled formation of chiral assemblies remain real challenges and some aspects of the interaction of these entities with their environment are still intriguing (biological activity, interaction with light...). For instance, the circularly polarised light (CPL) emitted by all luminescent chiral molecules has only recently drawn the attention while it could be used to probe the biological medium.¹

Our team is interested in the peculiar luminescence of lanthanide complexes (sharp bands covering the whole visible spectrum). In particular, our previous works were devoted to the design and the study of highly luminescent species through mono- or bi-photonic excitations.² Since lanthanides are the strongest CPL emitters, we recently prepared and study the luminescence of chiral complexes. We want now to push forward these researches developing new systems that will present an enhanced CPL response. Two strategies will be explored simultaneously: an optimization of the helical geometry of the chiral ligand around the rare-earth, and the study of supramolecular assemblies of complexes that are known to amplify chiral stimulus (helical fibres, liquid crystals...)³



This project requires a motivated student with a good knowledge in organic synthesis and a real interest for multidisciplinary subjects (chemistry, photophysics, materials...).

¹ J. P. Riehl, F. S. Richardson, *Chem. Rev.*, **1986**, 86, 1.

² J. W. Walton, A. Bourdolle, S. J. Butler, M. Soulie, M. Delbianco, B. K. McMahon, R. Pal, H. Puschnann, J. M. Zwier, L. Lamarque, O. Maury, C. Andraud, D. Parker, *Chem. Commun.*, **2013**, 49, 1600.

³ M. Liu, L. Zhang, T. Wang, *Chem. Rev.*, **2015**, 115, 7304.