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The mischievous properties of Ln(III) complexes: switching the luminescence for unexpected reasons

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Previous works of our team were dedicated to the design and the study of lanthanide complexes with high-brightness due to the sensitization by tailor-made charge-transfer antennas, enabling tridimensional functional imaging through two-photon excitation.^[1] More recently, we used this expertise in the ongoing effort to harness the unmatched Circularly Polarized Luminescence (CPL) properties of chiral lanthanide emitters, thanks to the development of state-of-the-art fast-CPL apparatus.^[2]

Through these years, we have learned, sometimes the hard way, that changes in the emission of a Ln complex should not always be viewed solely through the lens of the molecular chemist, seeking a direct structure-property relationship. Indeed, essential principles of photophysics or simple optical artefacts may be overlooked and can sometimes explain some intriguing phenomena. This will be illustrated with a few recent instances we encounter over the past years.

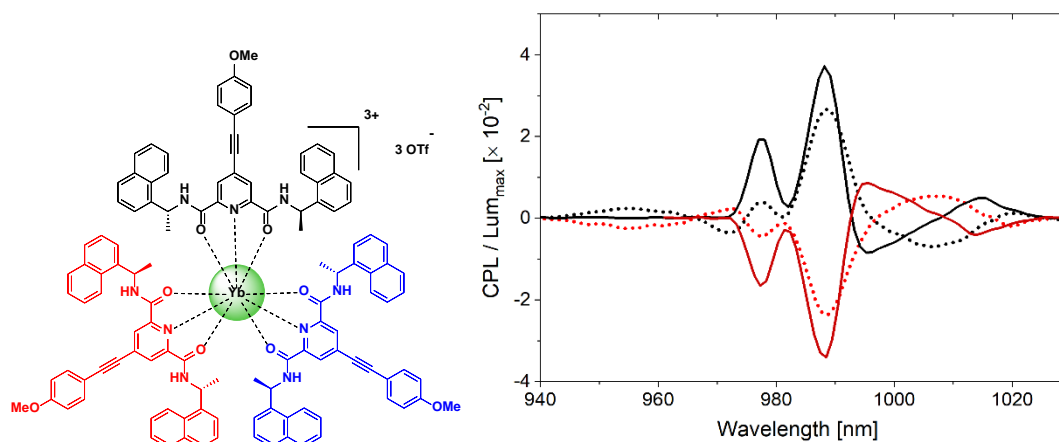


Figure: structure of a chiral Yb-complex and related CPL measured at 300 K (solid line) and 4 K (dotted line) on both enantiomers.

References

- [1] A. T. Bui, A. Grichine, A. Duperray, P. Lidon, F. Riobé, C. Andraud and O. Maury, *J. Am. Chem. Soc.*, **2017**, *139*, 7693 and attached correction.
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