

# The Chemist's Interactions

Seminars @ the Chemistry Department



Friday, 2<sup>nd</sup> July 2021

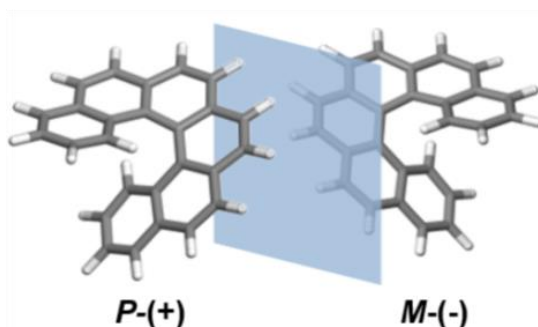
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### Multifunctional helicene derivatives: photophysics and chiroptics

*Ortho*-fused aromatic rings form helically shaped chiral molecules such as carbo[6]helicenes, that wind in a left-handed (*M*) or a right-handed (*P*) manner.<sup>1</sup> The helical topology combined with extended  $\pi$ -conjugation provide helicenes with peculiar properties such as huge chiroptical properties (high optical rotation values and strong electronic circular dichroism) and appealing photophysics such as circularly polarized luminescence (CPL). These properties make such molecules interesting for applications in molecular materials science (Circularly Polarized OLEDs, chiroptical switches, etc.). The molecular engineering of helicenes using organometallic and heteroaromatic chemistries offers a simple way to tune the chiroptical and photophysical properties of these helically shaped  $\pi$ -ligand. I will present a set of representative examples that have interests for optoelectronic applications.<sup>2</sup>



1) a) C. -F. Chen, Y. Shen, *Helicenes Chemistry: From Synthesis to Applications*. Springer, Berlin, **2017**; b) M. Gingras, *Chem. Soc. Rev.* **2013**, 42, 1051; c) K. Dhbaibi, L. Favereau, J. Crassous *Chem. Rev.* **2019**, 119, 8846.

2) a) N. Hellou, M. Srebro-Hooper, L. Favereau, F. Zinna, E. Caytan, L. Toupet, V. Dorcet, M. Jean, N. Vanthuyne, J. A. G. Williams, L. Di Bari, J. Autschbach, J. Crassous, *Angew. Chem. Int. Ed.* **2017**, 56, 8236; b) K. Dhbaibi, L. Favereau, M. Srebro-Hooper, M. Jean, N. Vanthuyne, F. Zinna, B. Jamoussi, L. Di Bari, J. Autschbach, J. Crassous, *Chem. Sci.* **2018**, 9, 735; c) K. Dhbaibi, L. Favereau, M. Srebro-Hooper, C. Quinton, N. Vanthuyne, L. Arricq, T. Roisnel, B. Jamoussi, C. Poriel, C. Cabanetos, J. Autschbach, J. Crassous, *Chem. Sci.* **2020**, 11, 567; d) E. S. Gauthier, L. Abella, N. Hellou, B. Darquié, E. Caytan, T. Roisnel, N. Vanthuyne, L. Favereau, M. Srebro-Hooper, J. A. G. Williams, J. Autschbach, J. Crassous, *Angew. Chem. Int. Ed.* **2020**, 59, 8394; e) K. Dhbaibi, L. Abella, S. Meunier-Della-Gatta, T. Roisnel, N. Vanthuyne, B. Jamoussi, G. Pieters, B. Racine, E. Quesnel, J. Autschbach, J. Crassous, L. Favereau, *Chem. Sci.* **2021**, 12, 5522.



The Virtual Seminar Series will be broadcast with the Zoom software.

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