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Molécules chirales à base d’hélicènes pour l’optoélectronique et la spintronique

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Chirality is a geometrical property that refers to objects that are non-superimposable mirror images. In chemistry, chirality can originate from different types of stereogenic elements (central, axial, planar) or may be inherent to the molecule (such as helical).[1] Understanding chiral structure-property relationships thus appears as an important topic across a broad range of disciplines. From this viewpoint, the interaction of a chiral molecule with light is of prime importance in many aspects. Since light can also be chiral in the form of circularly polarized (CP) light, its interaction with a chiral system can induce a chiroptical response in transmission (optical rotation), absorption (circular dichroism), or emission (circularly polarized luminescence), that is different for the two enantiomeric forms.[2]

Defined by Pasteur as molecular dissymmetry[3] and already recognized at that time of fundamental importance for life, chirality has recently been extended to the domain of molecular materials, providing them with innovative properties and many potential applications such as in cryptography, light-emitting devices, bio-imaging and spintronics.[4,5] I will present representative examples of helicene-based systems which display potential interest in optoelectronics and spintronics.[6]

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