

Emissive Properties of Helicene Carbon Nano hoops

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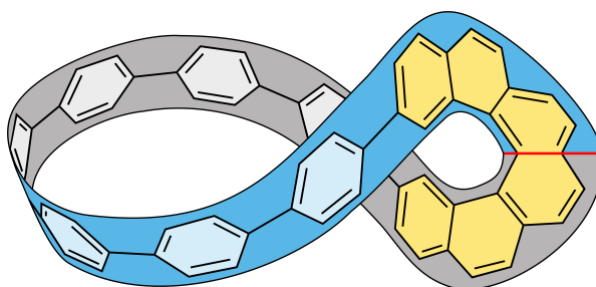
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Helicenes are polyaromatic hydrocarbons consisting of *ortho*-fused benzene rings which adopt a helical screw-like shape.[1] They display strong chiroptical properties and circularly polarized luminescence although with a low quantum yield. Substantial synthetic modification of the helicene backbone is required in order to improve their emissive properties.[2]

On the other hand, cyclo-paraphenylenes ([*n*]CPPs) have been proven to have favorable luminescence properties, such as visible-light fluorescence with a high quantum yield, which is often preserved even in solid state.[3,4] However, the absence of chirality in CPPs prevent them to display circularly polarized luminescence. This could be circumvented by introducing a chiral unit to the structure of CPPs.[5]

In this contribution, the design and synthesis of helicene carbon nano hoops as chiral emitters that combine helicene scaffolds and [*n*]CPPs will be discussed.[6] The structure of the nano hoops was studied by single crystal X-ray diffraction, 1D and 2D nuclear magnetic resonance, and mass spectrometry and the photophysical properties investigated by absorption and emission spectroscopies. Helicene carbon nano hoops possess emission properties similar to symmetry-broken [*n*]CPPs. We have managed to obtain an enantiomerically pure sample of a helicene carbon nano hoop and study circularly polarized luminescence. Lastly, we discovered that helicene carbon nano hoops adopt Möbius topology in the solid state and in solution.



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