

Synthesis and Investigation of a chiral Nanodoublehoop

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In recent years, cycloparaphenylenes (CPPs) and their derivatives have attracted significant attention due to their diverse optical and supramolecular properties and potential applications.^[1] Dibenzo[*a,e*]pentalenes (DBPs) exhibit a narrow HOMO-LUMO gap and demonstrate ambipolar electrochemical behavior, making them particularly attractive for organic devices.^[2] Consequently, combining CPPs with DBP provides further insights into the structure-property-relationship behavior of bent antiaromatics.^[4]

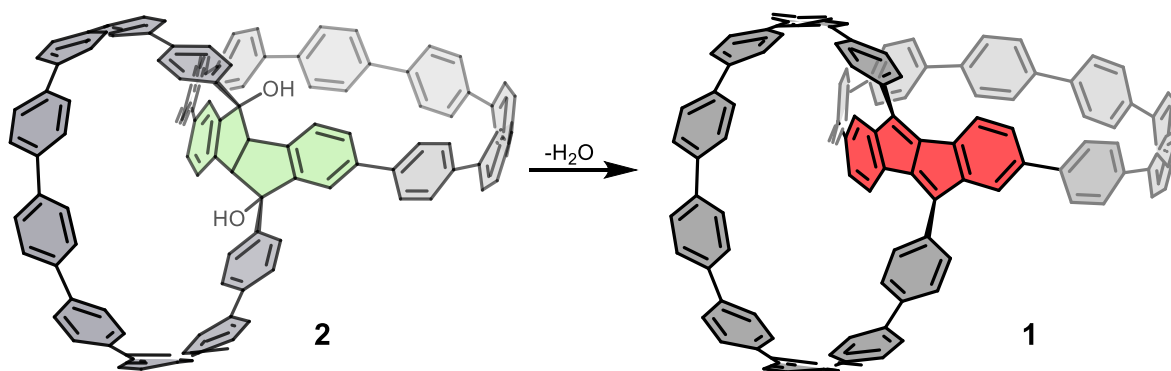


Figure 1: Synthesis of DBP based double hoop from fluorescent precursor.

We herein present the synthesis of a novel chiral double-hoop **1** along with its fluorescent precursor **2**. The connection of the CPP parts via both the 5- and 6-membered rings is established. Sequential ring strain introduction facilitated the incorporation of the CPP segments. Additionally, enantiomeric separation of the fluorescent diol precursor was achieved, followed by the measurement of circular dichroism and circularly polarized luminescence spectra. This analysis offers valuable insights into the chiroptical properties and optoelectronic behavior of chiral double-hoops.

References:

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