

# Chiroptical properties of axially chiral indolenine merocyanine dimers with varying acceptors

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Axially chiral indolenine based squaraine dyes were recently shown to exhibit pronounced electronic circular dichroism (ECD) signals ( $\Delta\epsilon$  up to ca  $1500 \text{ M}^{-1} \text{ cm}^{-1}$ ).<sup>1</sup> Based on these studies, merocyanine dimers with the same configuration determining axially chiral indolenine donor but with varying acceptor units were synthesised. Electro-optical absorption measurements revealed differences in the electronic structures of the dyes, where stronger electron-withdrawing acceptors led to a more cyanine-like character, while weaker acceptors resulted in a more polyene-like behavior. These properties had a significant influence on the ECD spectra, as the chiroptical quantities were enhanced in merocyanines at the cyanine limit compared to polyene-like compounds. This was traced back to the weaker spectral overlap of negative and positive signals in the ECD couplet for chromophores with narrow bandwidths.

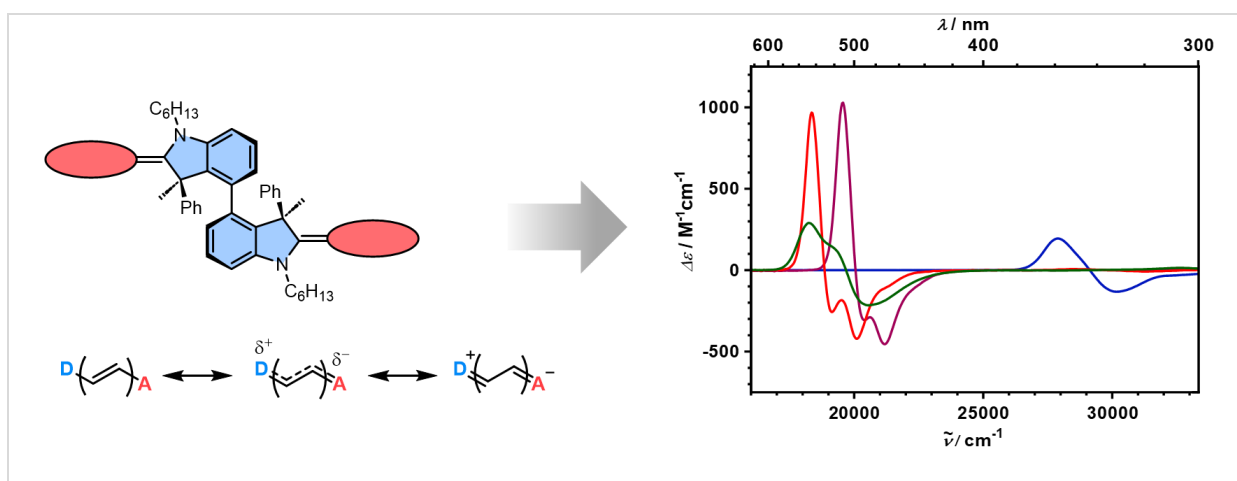


Figure 1: Axially chiral merocyanine dimers and their ECD spectra.

## References:

- [1] E. Freytag, M. Holzapfel, A. Swain, G. Bringmann, M. Stolte, F. Würthner, C. Lambert, *Chem. Sci.* **2022**, 13, 12229-12238.