Macrocyclic *meta*-Phenylene Bridged Dimers of Squaraine Dyes and their Self-Assembly in Solution

J. Herpich, C. Lambert*

Julius-Maximilians-Universität Würzburg, Institut für Organische Chemie,
Am Hubland, Würzburg, Germany
*E-mail: christoph.lambert@uni-wuerzburg.de

Self-assembly phenomena give chemists the opportunity to build complex structures from small molecular units with possible new functionalities originating from the interactions of monomers within the aggregate.

In this work, a set of macrocyclic squaraine dimers **R-SQ$_2$** covalently bridged by *meta*-phenylene linkers carrying chiral substituents **R'** attached to the indolenine moieties were synthesised and characterised regarding their (chir)optical properties. The absorption spectra of the macrocycles show a pronounced hypsochromic shift (H-type) compared to those of the respective monomers. Self-assembly of the macrocycles in DMF or hexane to dimers is observed by concentration dependent absorption spectra. While the macrocycles are CD silent, their dimeric aggregates show pronounced CD signals suggesting a chiral twist-stacked aggregate structure.

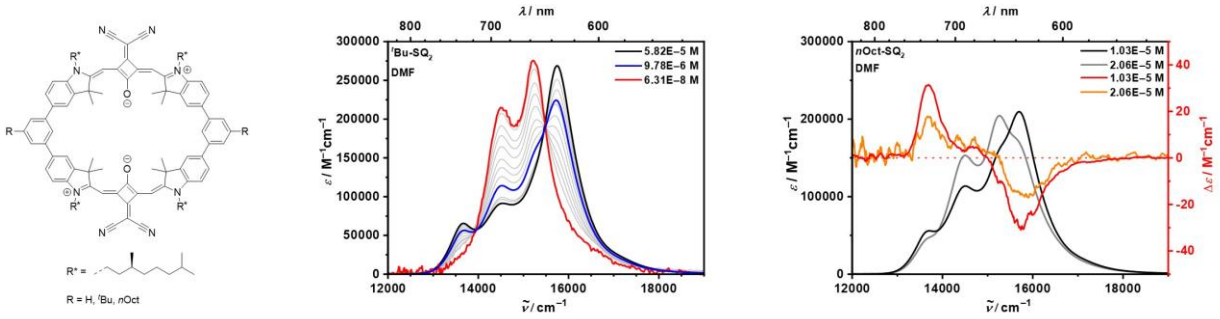

Figure 1: Left: Structure of **R-SQ$_2$**. Middle: Absorption spectra of ***t*Bu-SQ$_2$** in DMF at different concentrations. Right: Concentration dependent absorption and ECD spectra of ***n*Oct-SQ$_2$** in DMF.