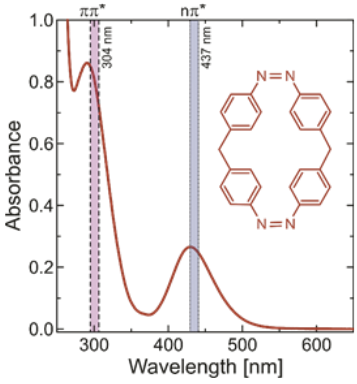
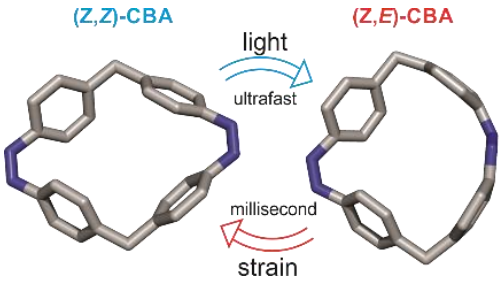
GOETHE UNIVERSITÄT FRANKFURT AM MAIN

MASTER APPRENTICESHIP (PRAKTIKUM)

(POTENTIAL EXTENSION INTO A MASTER THESIS)

SPECTROSCOPIC INVESTIGATION OF PHOTOSWITCHES

AK WACHTVEITL

Supervisor	***Dr. Chavdar Slavov*** AK Wachtveitl, Institute of Physical and Theoretical Chemistry chslavov@theochem.uni-frankfurt.de
Topic	The operation of molecular photoswitches is based on reversible transformation of the switching molecule between states of different physicochemical properties (e.g. geometrical structure, dipole moment, absorption spectrum, redox potential, etc). The utilization of light as a trigger allows easy manipulation which, combined with the instantaneous property change of the molecule, makes photoswitches extremely attractive for application in chemical science and technology. Azobenzene (AB) derivatives represent an important family of molecular photoswitches. Recently, they have been used as building blocks in larger aggregates to form photoresponsive materials where multiple AB operate cooperatively. The cooperative effects between individual photoswitches are of great interest for optimizing the operation of multiphotochromic structures and materials.  Example of a model multi-AB system to study strain effects in molecular rings  Illustration of molecular strain accumulated in the ring structure after isomerization of one of the AB molecules.
Working project	Within the practicum spectroscopic characterization of multi-AB derivatives will be carried out. This include determination of thermal relaxation rates after forward isomerization and determination of the quantum yields of the photoswitching reactions. Successful completion of the project could potentially be extended into a Master thesis work.
Starting date	Available at the earliest convenience.
Application	***Please send an email with one paragraph motivation.***