

## Summery

Continuing our fruitful collaboration, the objective of the project is to establish – by a collaboration between a synthetic chemistry group and an experimental physics group – a detailed link between the structure of the photovoltaic active molecules and the electro-optical properties of solar cells made from them. The interdisciplinary re-search focuses on the influence which changes in the molecule structure have on molecular stacking, absorption and transport properties of the layers, and the charge carrier and exciton dynamics at the D-A heterointerface. As model system, oligothio-phene derivatives have been chosen building on results of a previous collaboration, because they allow for systematic variations of their structural and electro-optical properties. The investigations so far focused on materials with variations of the length of the thiophene backbone combined with variations of the alkyl side chains. Based on these results further oligothiophenes will be specifically designed, synthesised and characterised in evaporated pristine films and blends with C60, as well as in complete p-i-n solar cells. Using the results from the systematically varied and novel oligothio-phene derivatives, a better understanding of the elementary processes in small-molecule organic photovoltaics is expected, supporting more directed research to-wards devices with higher efficiency.