

Project Summary 2

An integrated approach towards highly efficient single and multijunction bulk-heterojunction solar cells based on functionalized oligothiophenes

The objective of this interdisciplinary research project is to develop solution processed small molecule organic solar cells, with the overall aim of developing new strategies and insights to improve power conversion efficiencies.

We will focus on three interrelated subprojects:

- (1) Developing of new, pure, well defined, organic semiconductors that can be solution processed and will improve the performance of this type of organic solar cells.
- (2) Rational design of donor-acceptor morphologies via virtual materials design based on stochastic modeling of experimentally determined 2D and 3D morphologies.
- (3) Improved use of photon energy in solution processed single and multijunction device architectures.

The proposal is an extension of a successful and productive cooperation between three groups in the last 4 years supported by SPP 1355 program that has resulted in advances and new insights in the area of organic, polymer, and hybrid solar cells. In our view our consortium is well equipped to make significant progress in each of the proposed activities and reach synergy to further advance the state of the art.