# MOLECULAR DESIGN OF INTERFACIAL LAYERS BASED ON CONJUGATED POLYTHIOPHENES FOR POLYMER SOLAR CELLS

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In the past two decades, bulk heterojunction-organic photovoltaic devices (BHJ-OPVs) have emerged as attractive candidates for solar energy conversion due to their light-weight design and potential for low-cost high-throughput, solution-phase processibility. Interfacial engineering is a proven efficient approach to achieve OPVs with high power conversion efficiencies (PCEs). In this respect, conjugated polyelectrolytes (CPEs) (polymers with an extended π-conjugated backbone and ionic pendant groups) have emerged as promising materials for boosting the I-V characteristics of organic photovoltaics.[1,2] Nevertheless, clear guidelines with respect to the structure of high-performance interlayers are still lacking. Herein, we will describe the synthesis of polythiophene-based CPEs bearing different ionic side groups, counterions and having different topographies (homo- and block copolymers) aiming to elucidate the underlying mechanism for improved performance (Fig. 1).[3,4] We will outline how CPEs should be designed to optimize OPV device performance.

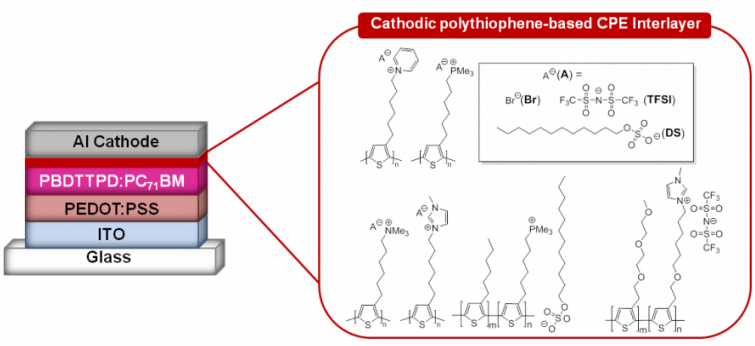


Fig. 1: Chemical structure of some polythiophene-based interfacial layer materials for OPVs.

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