

Development of Ambipolar Organic Field-Effect Transistors Based on Chalcogenophene Copolymers

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Donor-acceptor (D-A) conjugated polymers based on diketopyrrolopyrrole (DPP) have been utilized as backbones for high-performance organic field-effect transistors (OFETs). Herein, we report the effects of heterocyclic variation in the furan-flanked DPP copolymers with siloxane-terminated groups. Based on the three series of chalcogenophene copolymers (PFDPPF-Si with O atom, PFDPPT-Si with S atom, and PFDPPS-Si with Se atom), the optical/electrochemical properties, microstructural analyses, and charge transport characteristics would be discussed as a function of the different chalcogenophenes. The systematic characterization of heteroaromatics enables the design of conjugated copolymers, which provides a clear understanding of their structure-property behaviors on OFET characteristics.