

## Diketopyrrolopyrrole-based Random Terpolymers and Their Application in High-Performance Organic Transistors

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Many recent studies have demonstrated that both backbone and side chains constituting the semiconducting polymers have significant effects on the performance of the organic field-effect transistors (OFETs). Donor-acceptor (D-A) conjugated polymers based on diketopyrrolopyrrole (DPP) have frequently been utilized as backbones for high-performance OFETs. Our groups previously reported two  $\varepsilon$ -branched side chain substituted D-A polymers, PDPP-(E)-2-(2-(thiophen-2-yl)vinyl)thiophene (TVT) and PDPP-selenophene (SE), which exhibited different physical properties. In this work, random terpolymers composed of DPP-TVT and DPP-SE with various composition ratios of 1:0, 7:3, 5:5, 3:7, 2:8, 1:9 and 0:1 have been synthesized and investigated to evaluate their optical and electrical characteristics. This study will provide guidelines for the facile control of charge transport and solubility by changing the composition of terpolymers.