

Fully conjugated block copolymers for high-performance organic photovoltaics

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Fully conjugated donor-acceptor block copolymers enable to tune donor/acceptor interfaces and adopt the mesoscale structure within the active layer of organic photovoltaic devices. Those can serve as a useful platform to understand the relationship between chemical structure, nanoscale morphology, and photovoltaic performance. However, the synthesis of fully conjugated block copolymers remains a challenge. In this talk, synthetic approaches to develop fully conjugated block copolymers will be presented. At first, reaction conditions for synthesis of conjugated block copolymers will be optimized to minimize the amount of uncoupled homopolymers. Next, the relationship between self-assembly and photovoltaic performance of conjugated block copolymers will be presented. Lastly, a new synthetic approach will be presented to explore the full potential of donor-acceptor block copolymers. In result, those synthetic approaches allow to improve quality of materials, control morphology, and explore new chemical structures.