Development of Conjugated Polymeric Materials for Organic Devices

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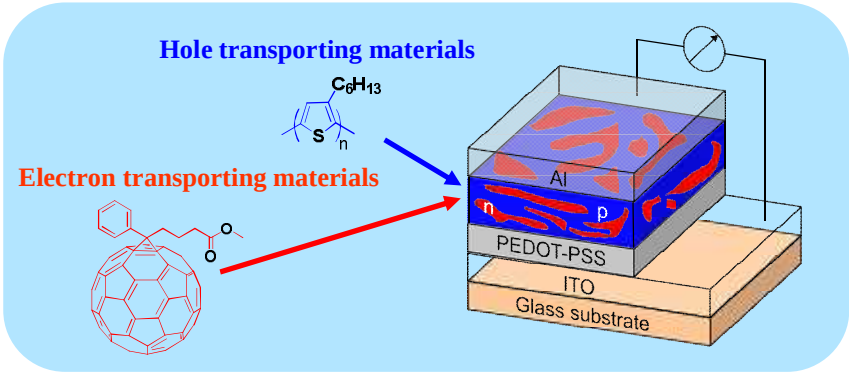
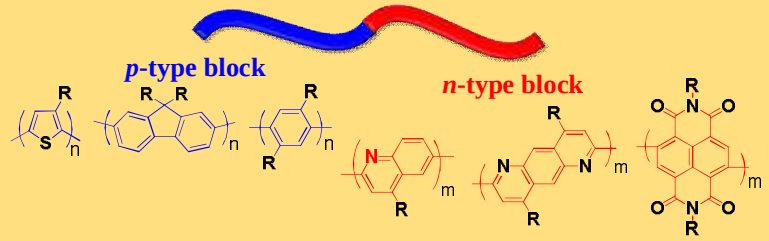
Bulkheterojunction (BHJ) type solar cells

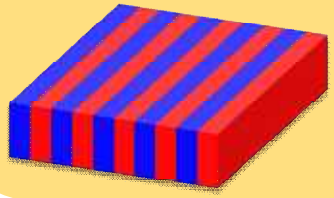


Proposal of this work

All conjugated donor-acceptor block copolymers



Efficient photoelectric conversion derived from well-defined nanostructure of block copolymers



High conversion

Content：

Lightweight and flexible optoelectrical devices based on organic semiconducting materials (e.g., organic field-effect transistors and photovoltaics) have been widely investigated as alternatives of silicon-based devices. As for photovoltaics, bulkheterojunction (BHJ)-type photovoltaics are a current mainstream of the research and development, in which the organic active layer is composed of hole and electron transporting materials. However, disorderly nanostructure of organic active layers in BHJ-type photovoltaics can lead to efficient photoelectric conversion process (i.e., diffusion of excitons and transportation of carriers) to prevent high conversion.

Herein, all conjugated donor-acceptor block copolymers are promising to overcome the drawbacks described above. The formation of well-defined nanostructure derived from block copolymers can provide efficient photoelectric conversion process to achieve high conversion. Furthermore, unlike the existing photovoltaics, all conjugated donor-acceptor block copolymers have a potential that the organic active layers can be fabricated by one component.

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Research Interest ： Polymer chemistry

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