Supporting Information

Facile preparation of TiO_X film as interface material for efficient inverted polymer solar cells

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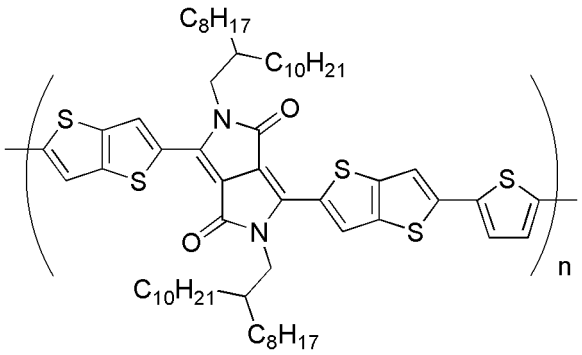
1. Low bandgap polymer and device fabrication

Scheme S1 shows the structure of low bandgap polymer **P1**, which was obtained from Shenzhen (China) Derthon Optoelectronic Materials Science & Technology Co., LTD. The molecular weight (Mw) is 87600 and the polydispersity index (PDI) is 3.65.

Inverted polymer solar cell was fabricated with polymer **P1** by spin-coating of a 1:2 polymer:$PC_{71}BM$ mixture in a 4:1 chloroform/o-dichlorobenzene solution onto an ITO:α-TiO_X substrate, followed by evaporation of MoO_3 (5 nm)/Ag (100 nm) as an anode. The concentration of **P1** and the thickness of active layer are the same with Ref. 1.



Scheme S1. The molecular structure of P1.

2. Photovoltaic performance of the PSC

Figure S1 shows the photovoltaic performance of the inverted PSC based on **P1**:$PC_{71}BM$. The PCE 4.99% is obtained, with an improved short circuit current density (J_{SC}) of 16.09 mA/cm^2, an open circuit voltage (V_{OC}) of 0.547 V and a fill factor (FF) of 56.8%. One can observe that its J_{SC} was improved compared to the data of Ref. 1 (15.0 mA/cm^2). The improved J_{SC} is consistent with the results obtained from the devices based on P3HT and fullerenes system.

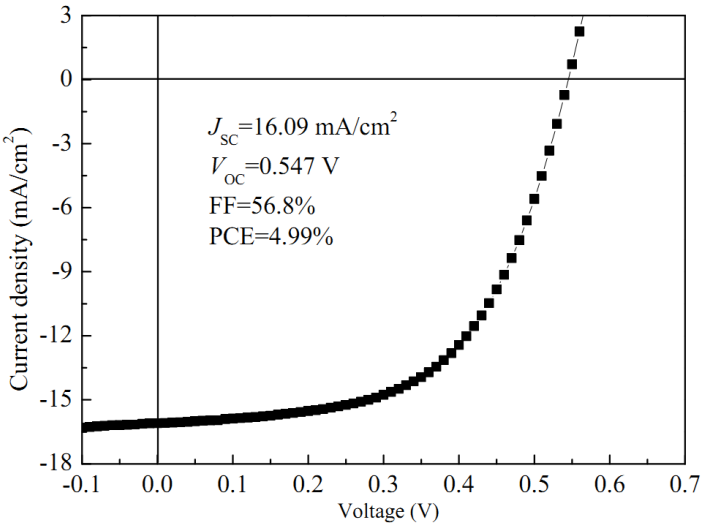


Figure S1. Photovoltaic performance of inverted polymer solar cell based on **P1**:$PC_{71}BM$ system.

Reference

1. H. Bronstein, Z. Chen, R. S. Ashraf, W. Zhang, J. Du, J. R. Durrant, P. S. Tuladhar, K. Song, S. E. Watkins, Y. Geerts, M. M. Wienk, R. A. J. Janssen, T. Anthopoulos, H. Sirringhaus, M. Heeney, I. McCulloch, *J. Am. Chem. Soc*. 2011, **133**, 3272–3275.