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Supporting Information for Improved Thin Film Morphology and Bulk-Heterojunction Solar Cell Performance through Systematic Tuning the Surface Energy of Conjugated Polymers

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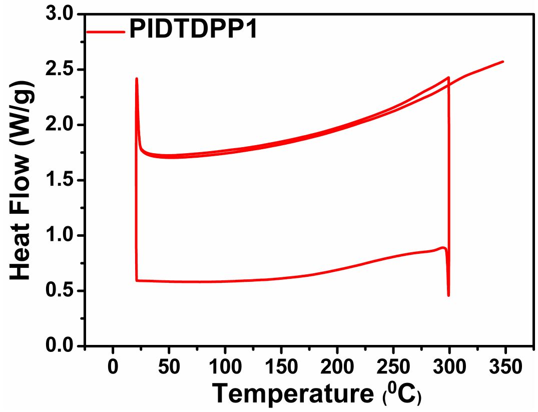

Figure S1.DSC thermogram of PIDTDPP1 with a scanning rate of 10 ^{o}C/min.

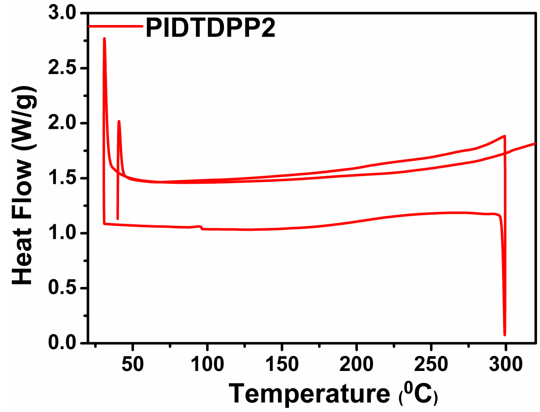

Figure S2.DSC thermogram of PIDTDPP2 with a scanning rate of 10 ^{o}C/min.

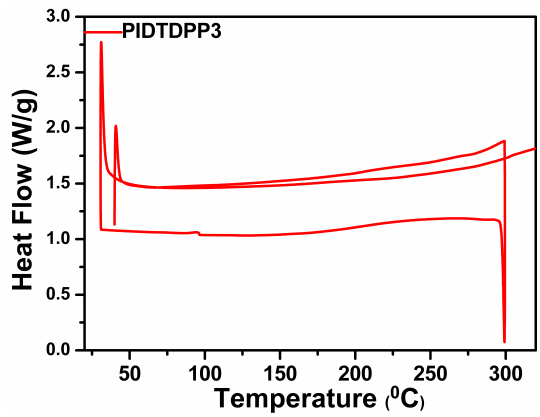

Figure S3.DSC thermogram of PIDTDPP3 with a scanning rate of 10 ^{o}C/min.

polymer	θ_{water} (^{o})	θ_2 (^{o})	γ^d [mN/m]	γ^p [mN/m]	γ^{tot} [mN/m]
PIDTDPP1	97.4	51.4	25.8	4.4	30.2
PIDTDPP2	93.5	47.4	26.0	5.9	31.9
PIDTDPP3	90.8	36.1	29.0	5.8	34.8
$PC_{71}BM$	90.1	54.0	27.3	7.0	34.3

Table S1. Measured contact angle values of various polymers and $PC_{71}BM$ films and the corresponding surface energy calculated using Wu model (harmonic mean).($\theta_2$was measured using dimethyl sulfoxide (DMSO) for polymers and ethylene glycol (MEG) for $PC_{71}BM$, respectively)

Methods for the calculation of surface energy:[1]

The surface energy was calculated from the measured contact angles using the following Wu model (harmonic mean) formula:

$$\gamma_{water}(1+\cos)\,\theta_{water} = \frac{4\gamma^d{}_{water}\gamma^d}{\gamma^d{}_{water}+\gamma^d} + \frac{4\gamma^p{}_{water}\gamma^p}{\gamma^p{}_{water}+\gamma^p}$$

$$\gamma_2(1+\cos)\,\theta_2 = \frac{4\gamma^d{}_2\gamma^d}{\gamma^d{}_2+\gamma^d} + \frac{4\gamma^p{}_2\gamma^p}{\gamma^p{}_2+\gamma^p}$$

$$\gamma^{tot}=\gamma^d+\gamma^p$$

γ^p :polar component; γ^d : dispersive component

1. X. Bulliard, S.-G. Ihn, S. Yun, Y. Kim, D. Choi, J.-Y. Choi, M. Kim, M. Sim, J.-H. Park, W. Choi and K. Cho, *Adv. Funct. Mater.*, 2010, 20, 4381.