

Supporting Information

New Dithienyl-Diketopyrrolopyrrole-based Conjugated Molecules entailing Electron Withdrawing Moieties for Organic Ambipolar Semiconductors and Photovoltaic Materials

Chenmin Yu, Zitong Liu,* Yang Yang, Jingjing Yao, Zhengxu Cai, Hwei Luo, Guanxin Zhang,
Deqing Zhang*

Beijing National Laboratory for Molecular Sciences, Organic Solids Laboratory,
Institute of Chemistry, Chinese Academy of Sciences, Beijing 100190, China.

E-mail: dqzhang@iccas.ac.cn

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1. TGA and DSC Analysis

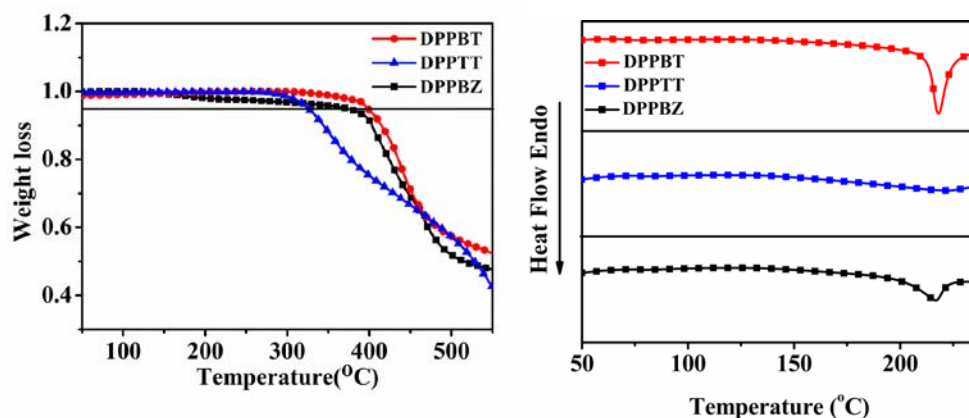


Figure S1. TGA (left) and DSC (right) curves of **DPPBT**, **DPPTT** and **DPPBZ** (heating rate: 10 °C/min. from 30 °C to 550 °C under nitrogen atmosphere).

2. UV-vis Absorption Spectra of DPPBZ

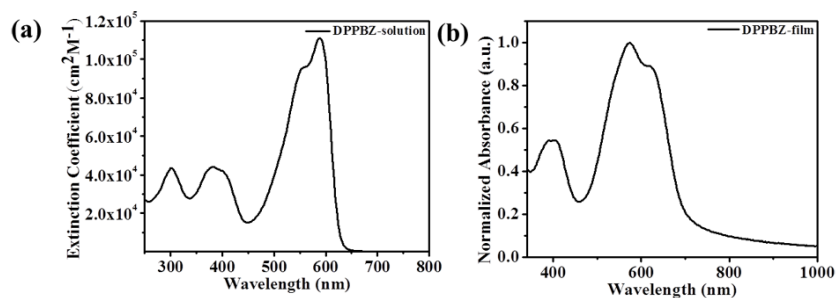
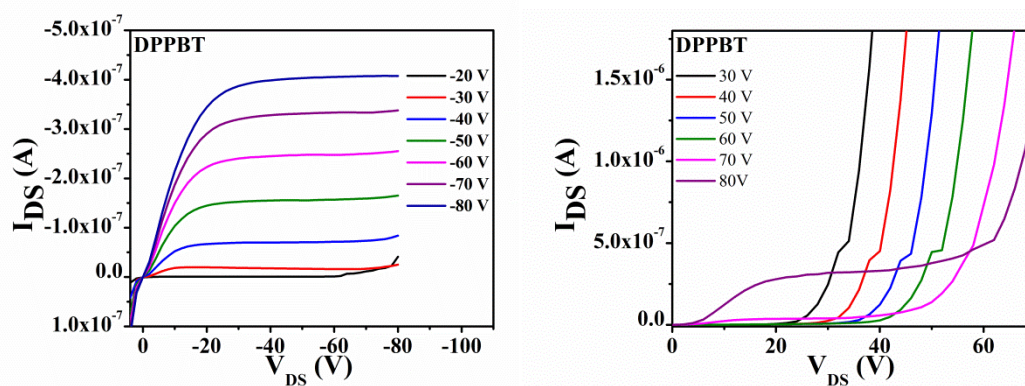


Figure S2. UV-vis absorption spectra of **DPPBZ** in CHCl_3 (1.0×10^{-5} M) solution (a) and its thin film (b).

3. Output Curves of OFETs based on DPPBT and DPPTT



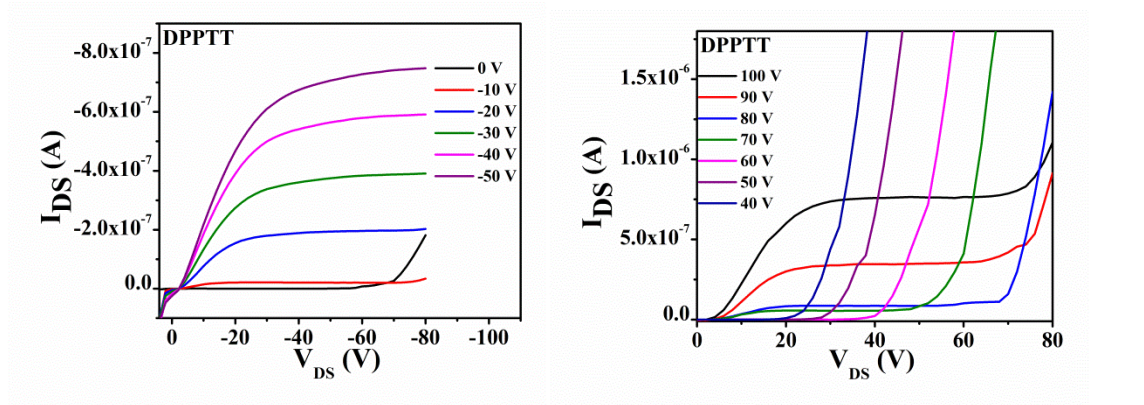


Figure S3. The output characteristics of OFETs based on **DPPBT** and **DPPTT** after thermal annealing at 100 °C.

4. Transfer and Output Curves of OFET based on DPPBZ

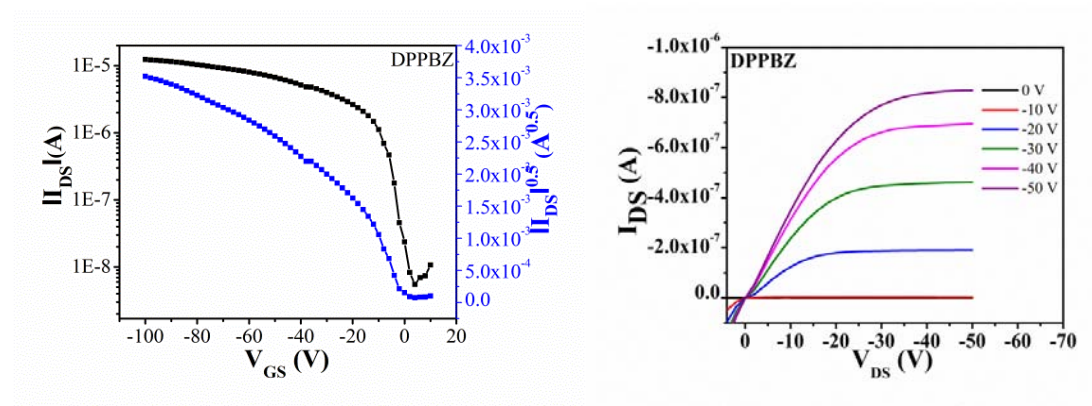
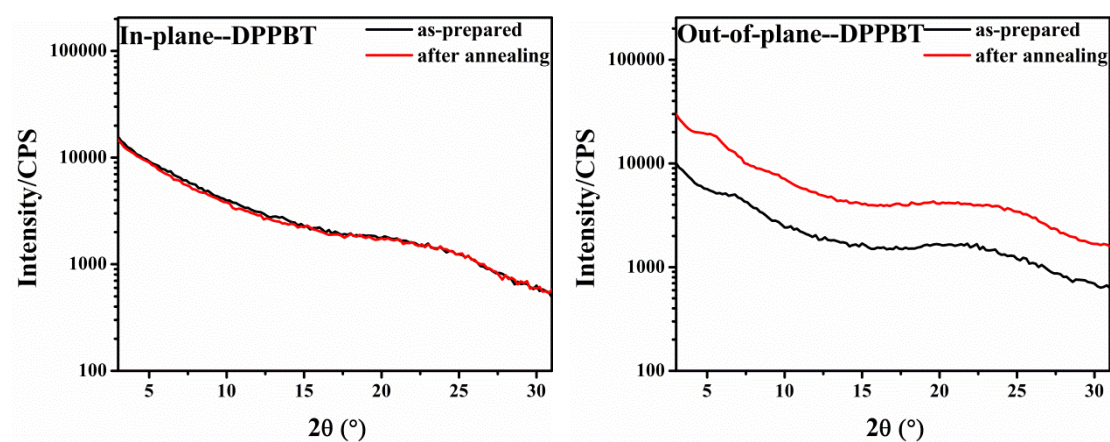


Figure S4. The transfer and output characteristics of OFET based on thin film of **DPPBZ** after thermal annealing at 100 °C. V_{DS} for transfer characteristic is -100 V, respectively.

5. XRD Patterns and AFM Height Images of OFETs



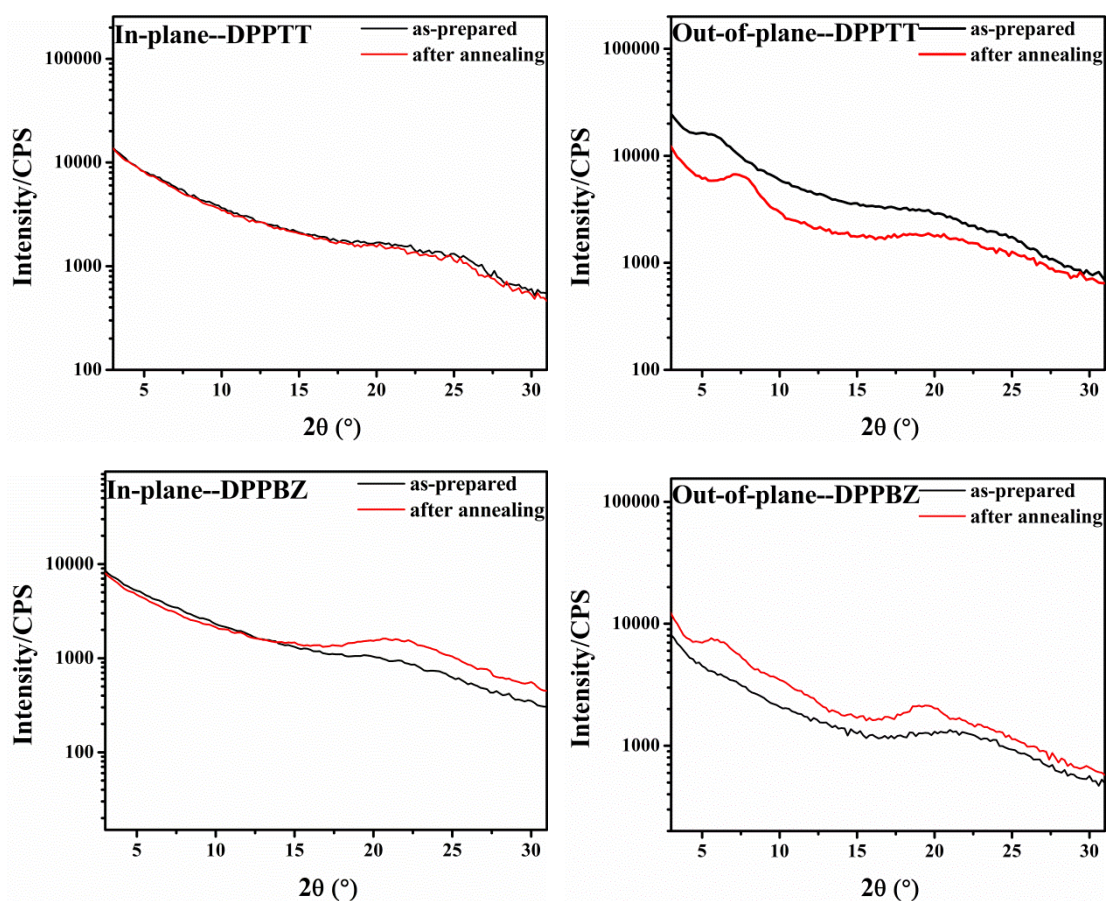


Figure S5. In-plane and out-of-plane XRD patterns of as-prepared thin films of DPPBT, DPPTT and DPPBZ and those after thermal annealing at 100 °C.

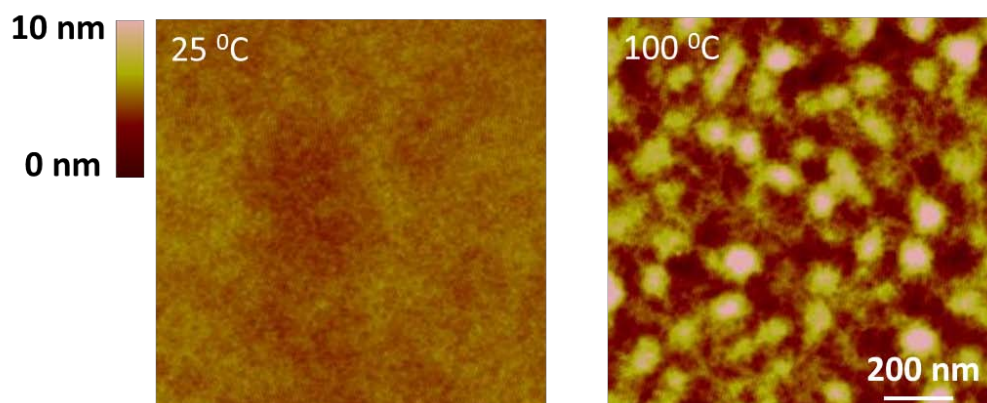


Figure S6. AFM height images ($2.0 \mu\text{m} \times 2.0 \mu\text{m}$) of as-prepared thin film of DPPBZ and that after annealing at 100 °C.

6. UV-vis Absorption Spectra of OPVs

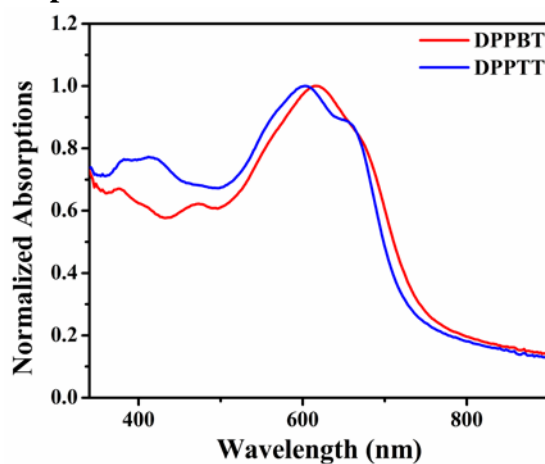


Figure S7. Normalized UV-vis absorption spectra of thin films of **DPPBT:PC₇₁BM** (w/w, 1:1) and **DPPTT:PC₇₁BM** (w/w, 1:1).

7. XRD patterns of OPVs

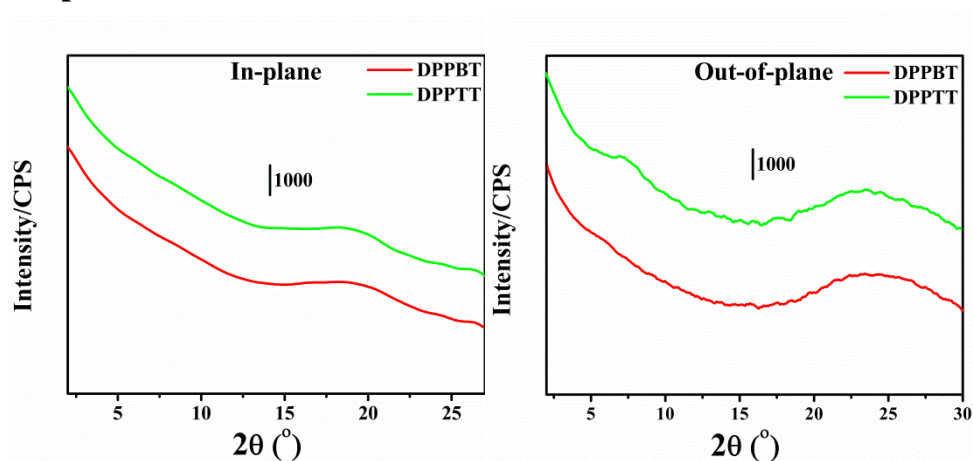
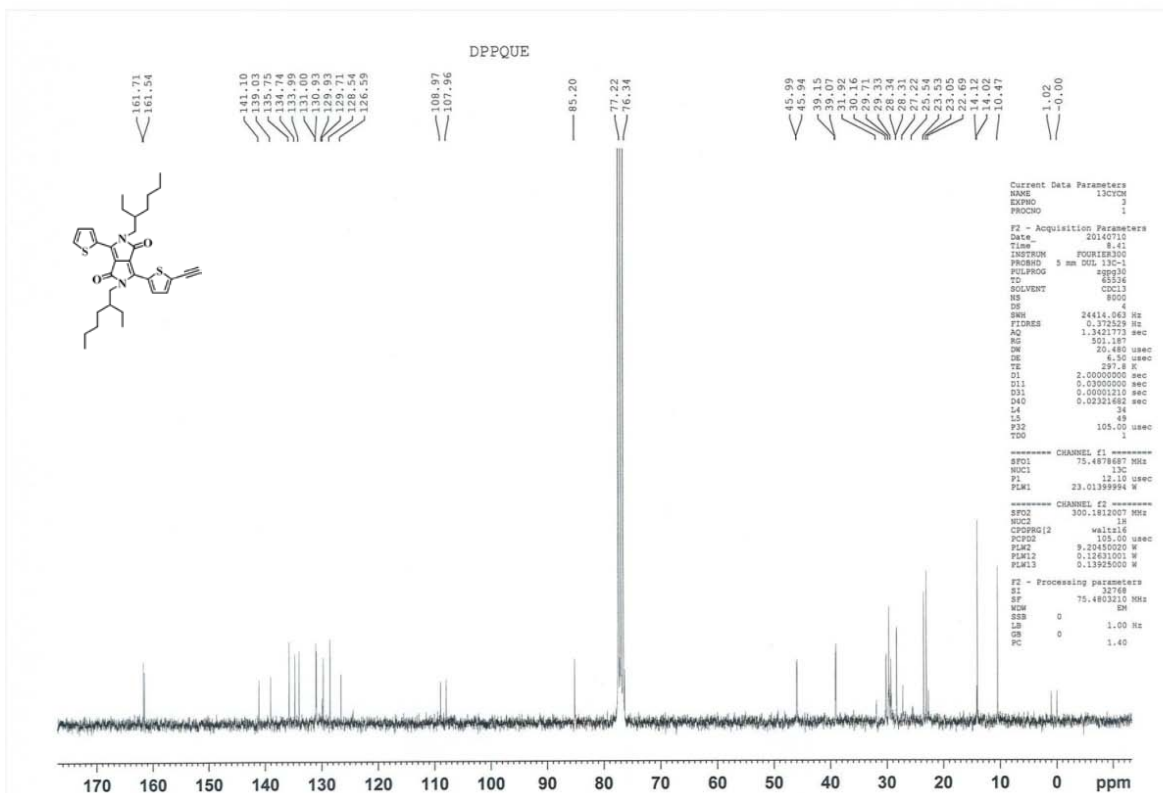
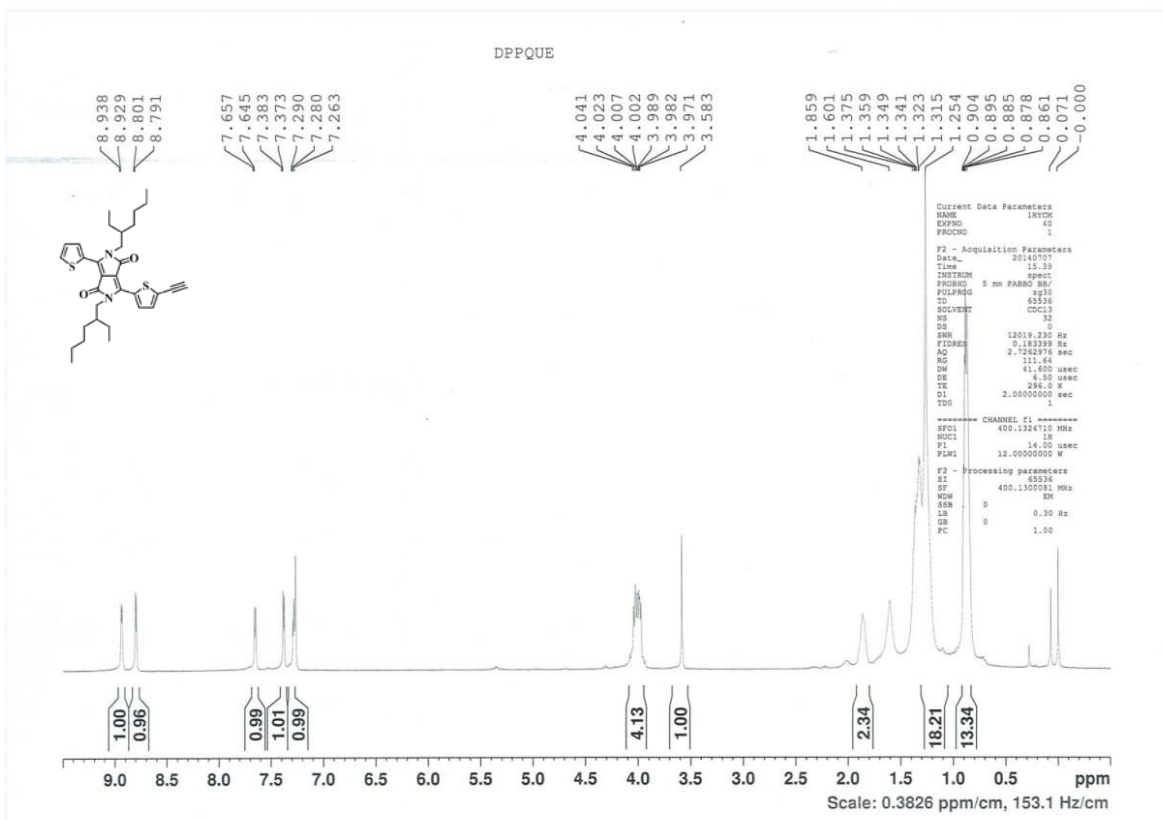
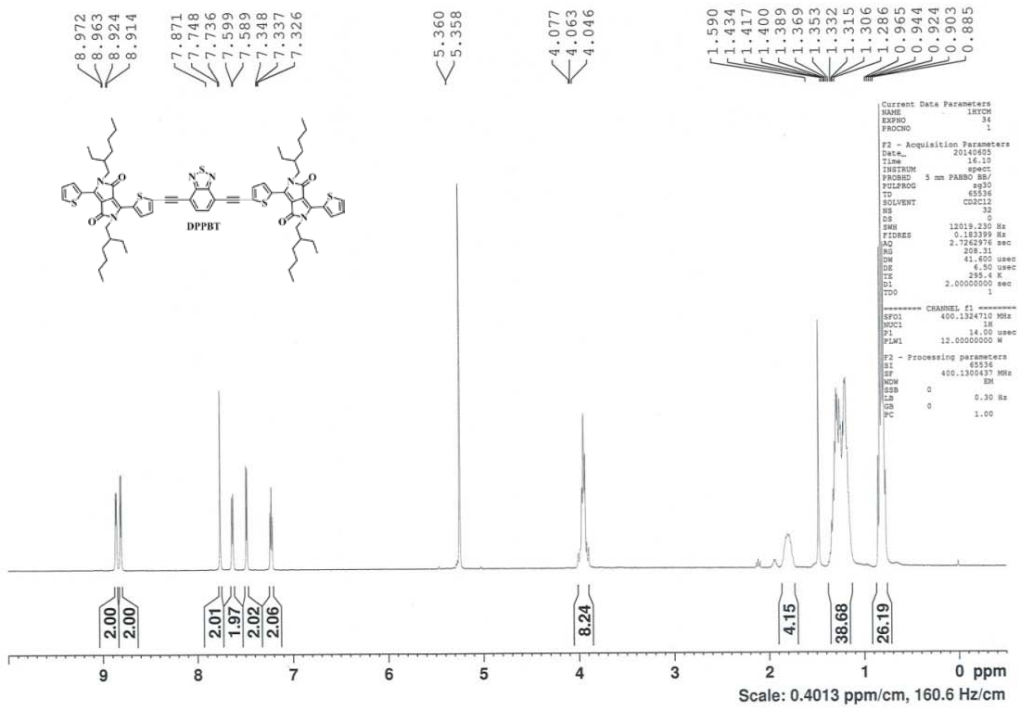
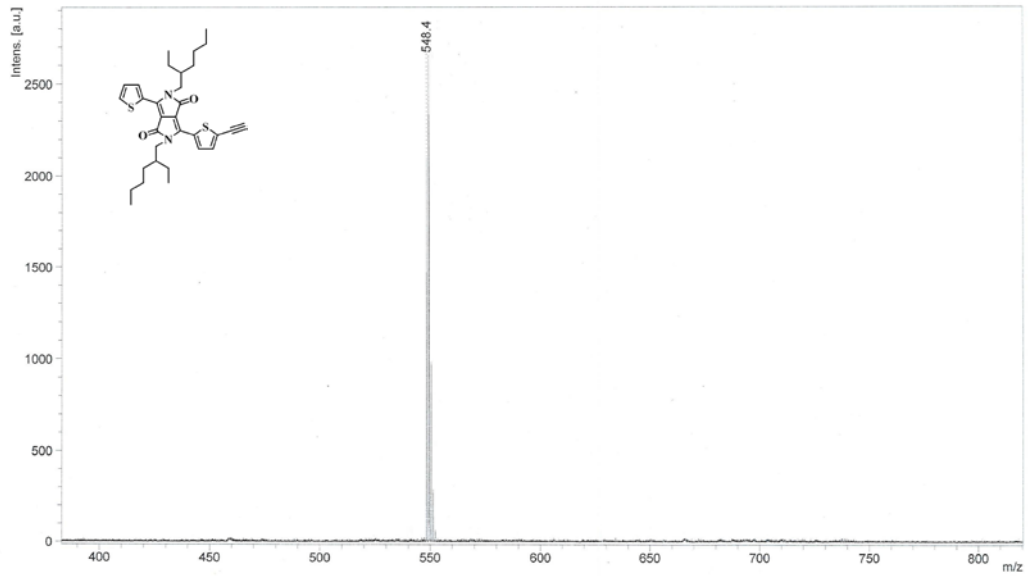


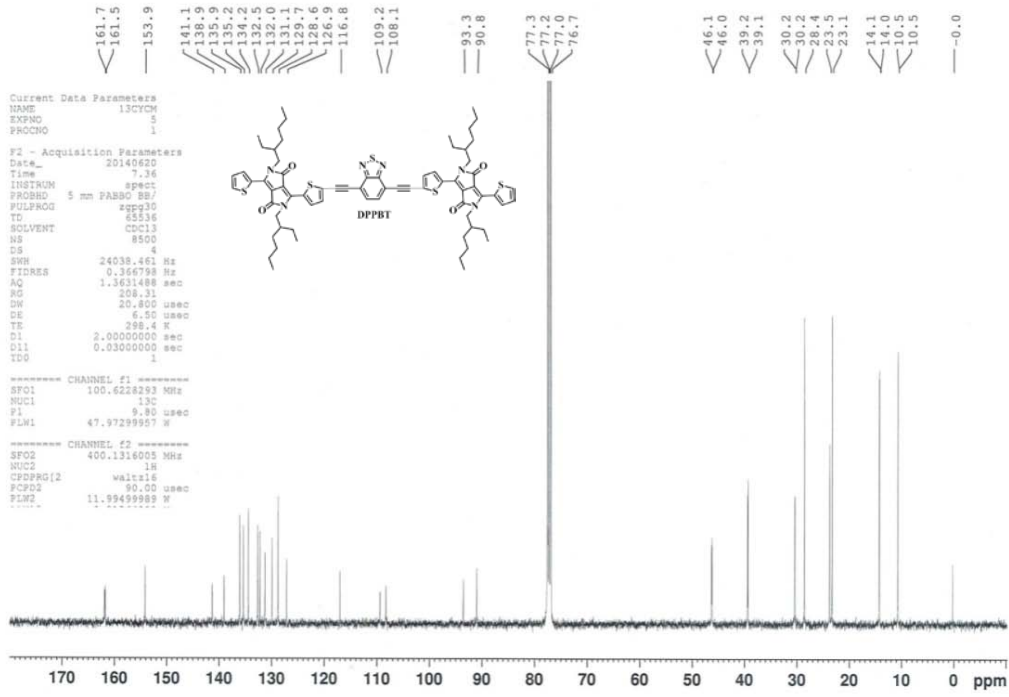
Figure S8. In-plane and out-of-plane XRD patterns of thin films of **DPPBT:PC₇₁BM** (w/w, 1:1) and **DPPTT:PC₇₁BM** (w/w, 1:1).

8. ¹H-NMR, ¹³C-NMR and TOF Spectra



MALDI-TOF,CCA,YU-2

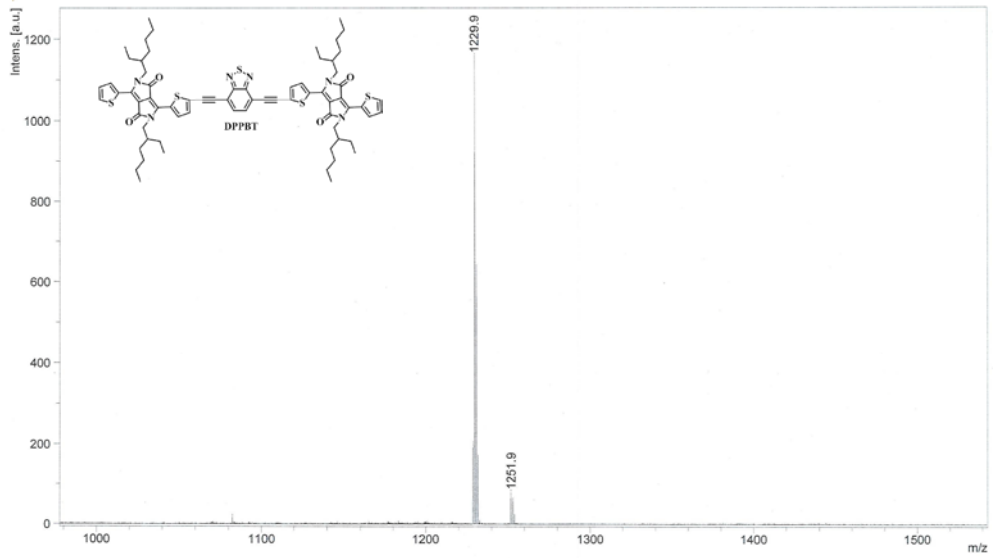


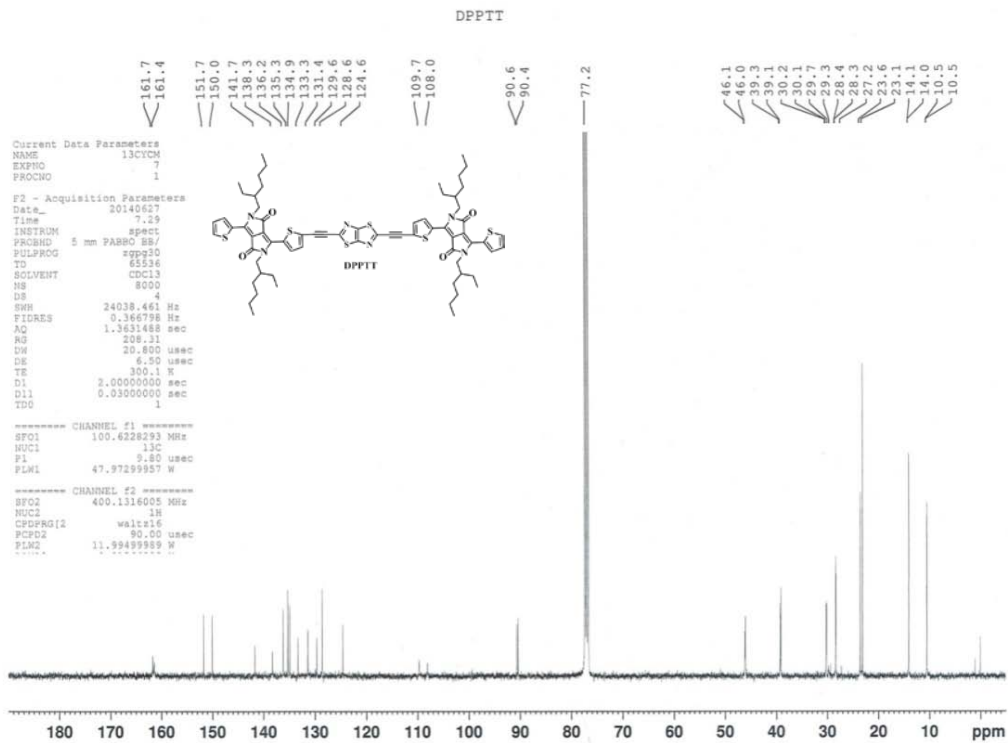
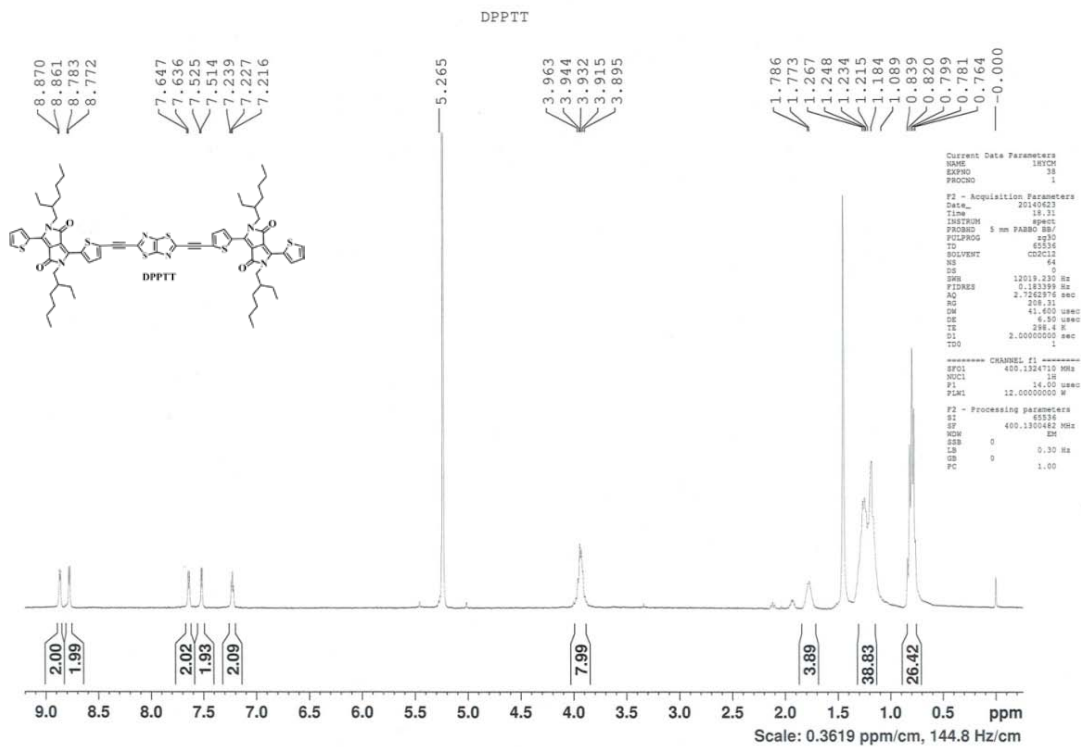


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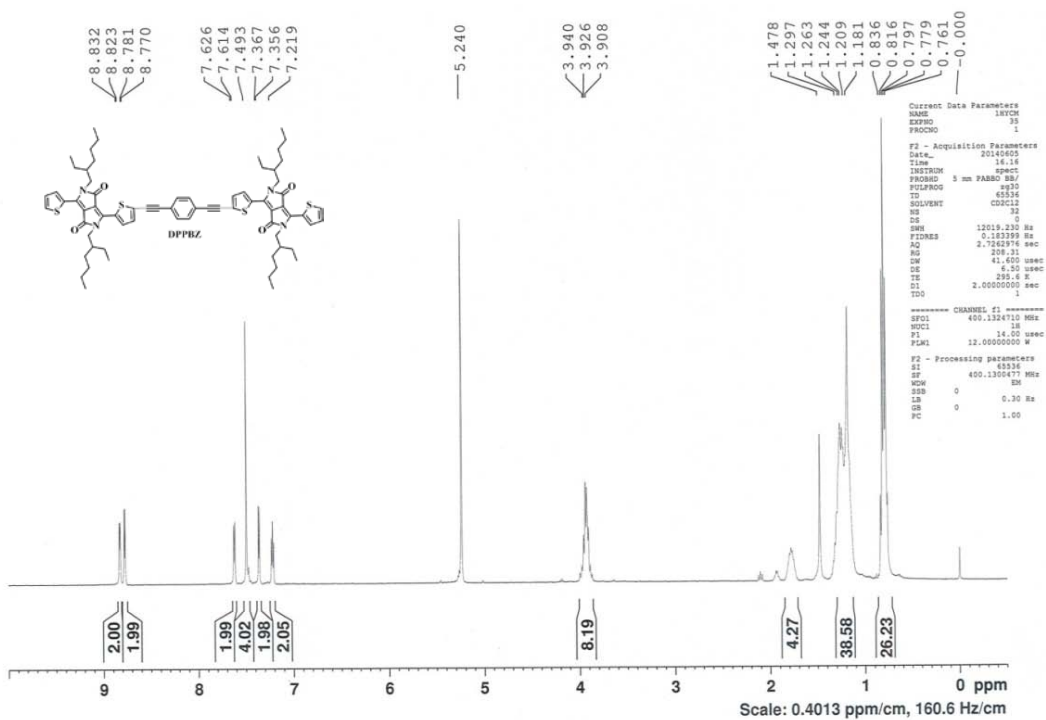
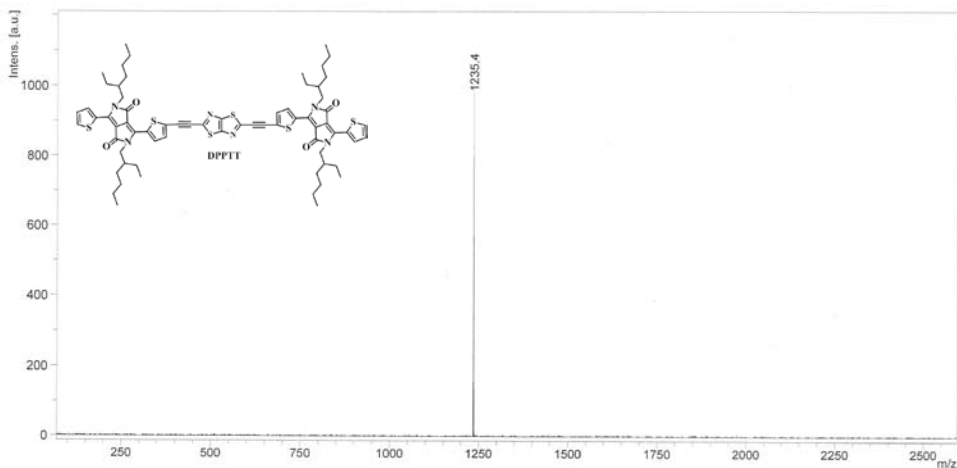
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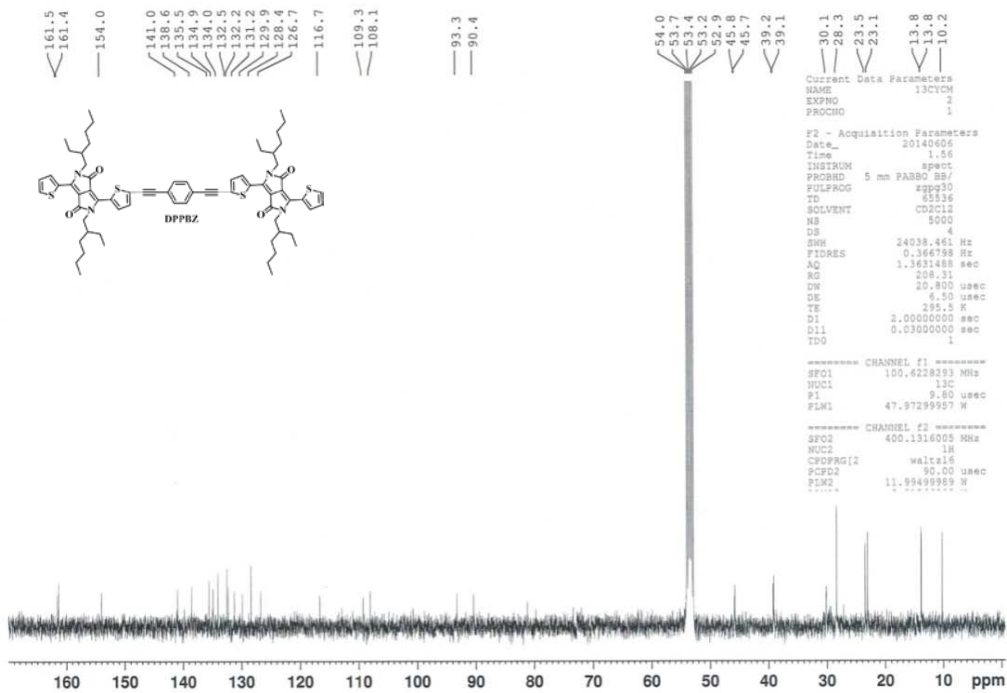
MALDI-TOF,CCA,BT





MALDI-TOF, CCA, YU-1, 2012, 10, 23





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MALDI-TOF, CCA, YUCM-1, 2012, 05, 14

