Supporting Information

Diketopyrrolopyrrole Based Organic Semiconductors with Different Numbers of Thiophene Units: Symmetry Tuning Effect on Electronic Devices

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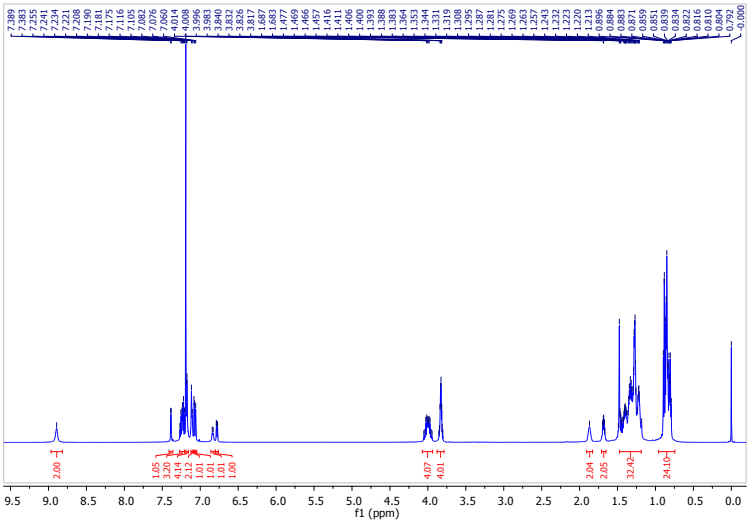

Figure S1. ^{1}H NMR spectrum of **DPP13T**.

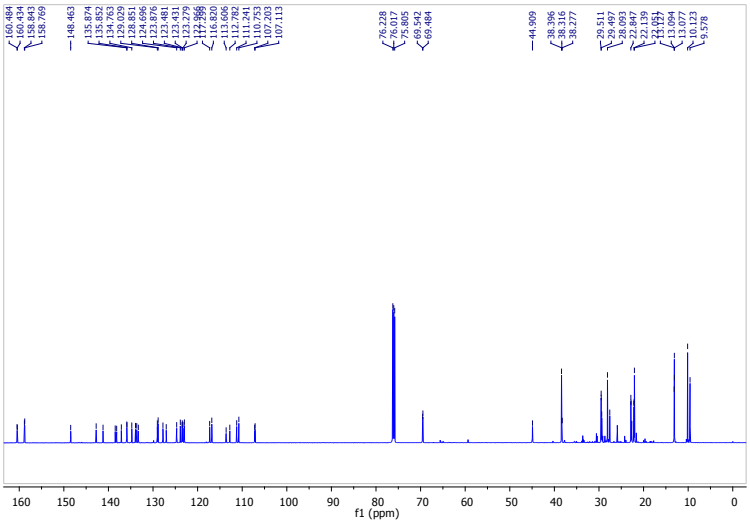

Figure S2. ^{13}C NMR spectrum of **DPP13T**.

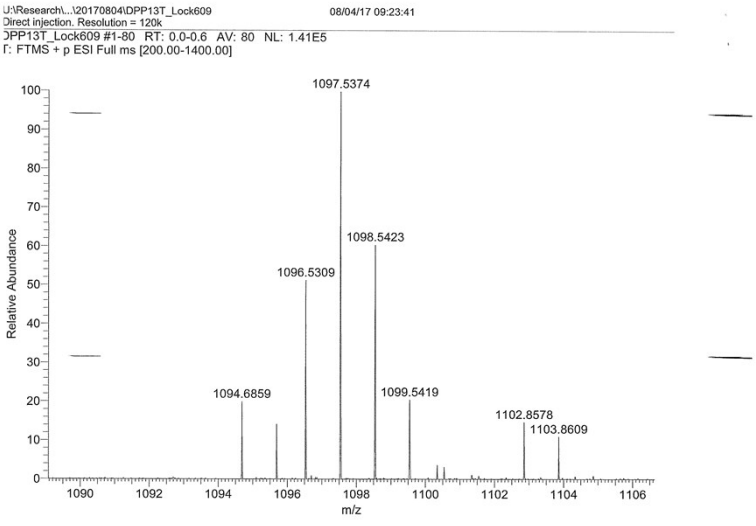

Figure S3. HRMS spectrum of **DPP13T**.

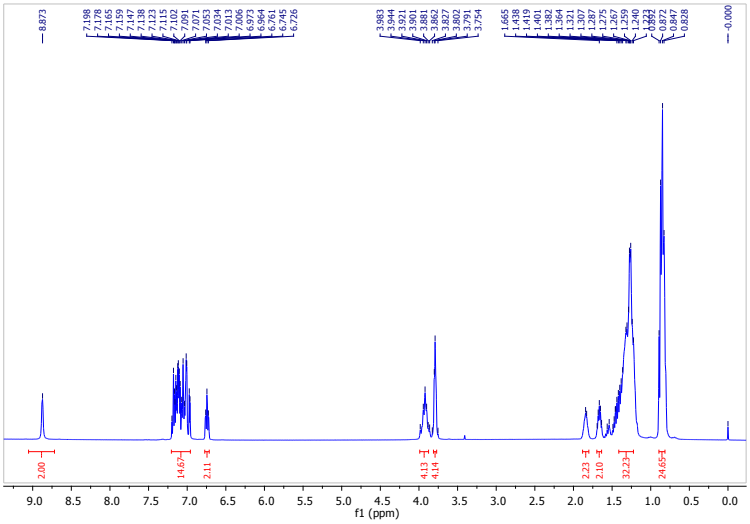

Figure S4. [1]H NMR spectrum of **DPP23T**.

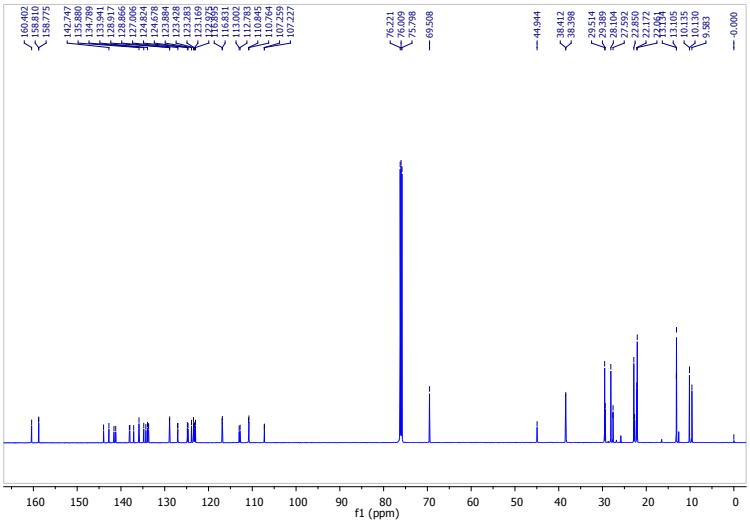

Figure S5. [13]C NMR spectrum of **DPP23T**.

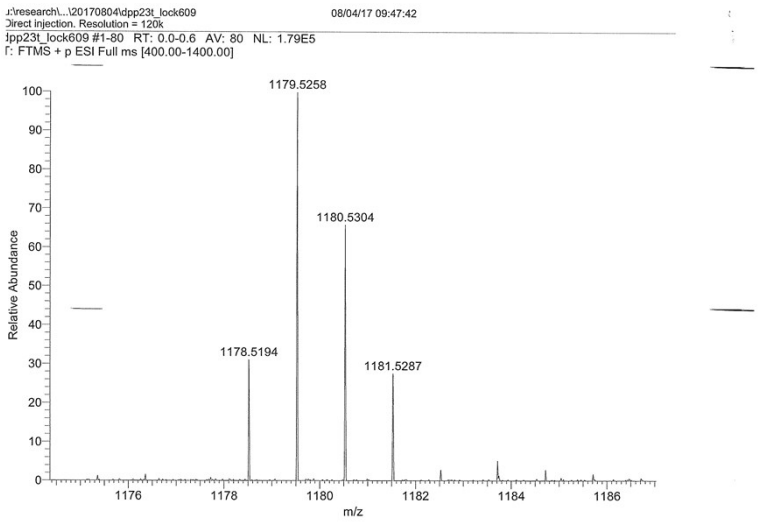

Figure S6. HRMS spectrum of **DPP23T**.

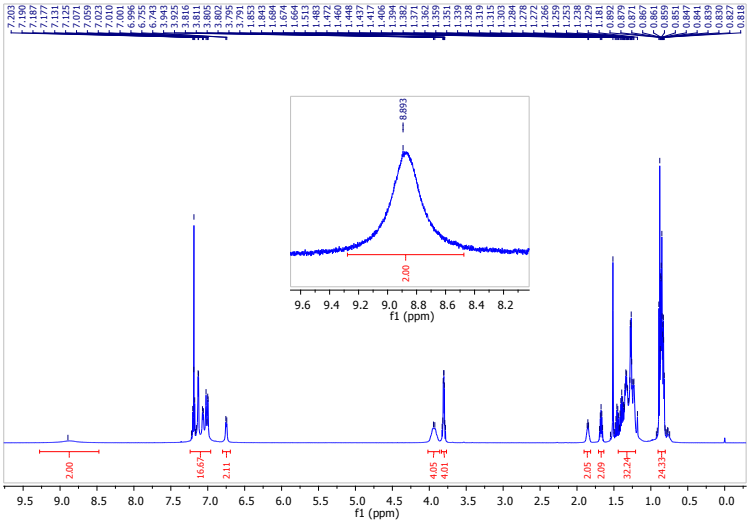

Figure S7. [1]H NMR spectrum of **DPP33T**.

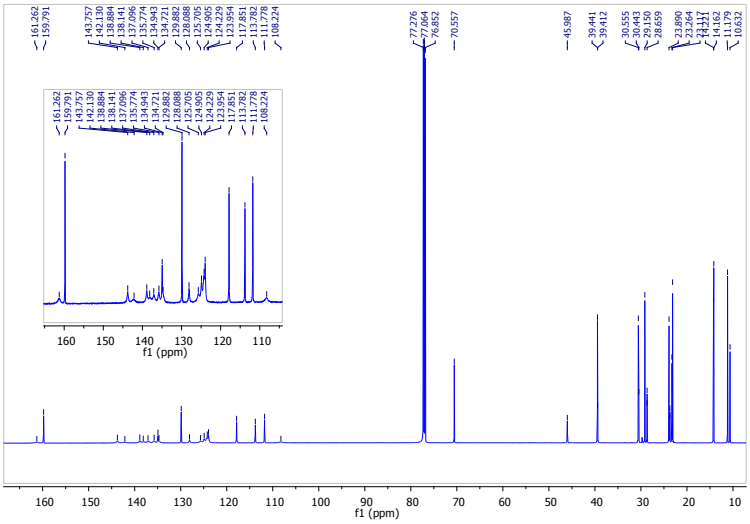

Figure S8. [13]C NMR spectrum of **DPP33T**.

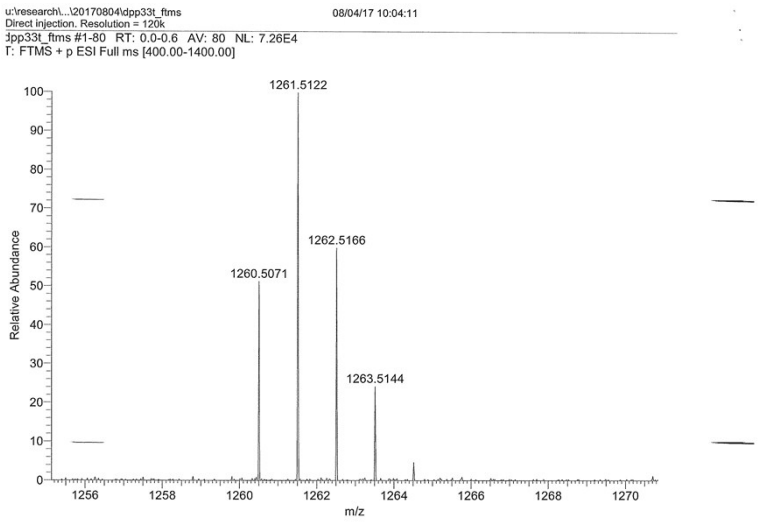

Figure S9. HRMS spectrum of **DPP33T**.

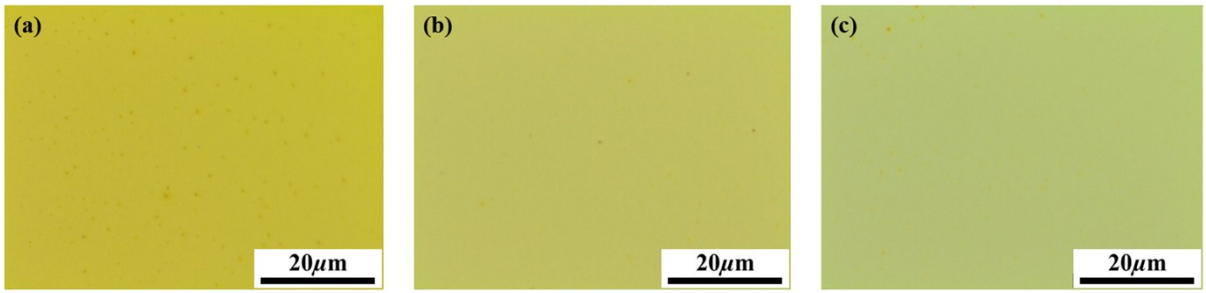

Figure S10. Optical microscope images of spin-coated **DPP13T** (a), **DPP23T** (b) and **DPP33T** (c) films.

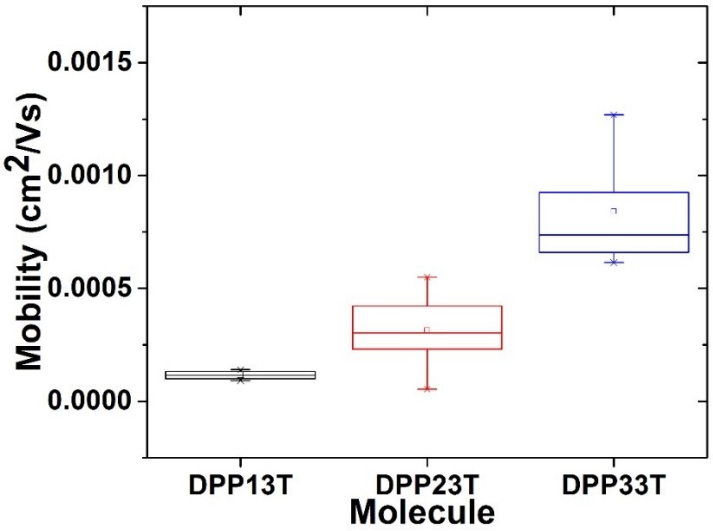

Figure S11. Mobility values for spin-coated **DPP13T**, **DPP23T** and **DPP33T** based bottom contact transistors.

Table S1 Comparison of OFET mobility for small molecules based on DPP.

Materials	Device Configuration	μ_e $cm^2\ V^{-1}\ s^{-1}$	μ_h $cm^2\ V^{-1}\ s^{-1}$	Ref.
DPP13T	BG/BC	---	1.18×10^{-4}	This study
DPP23T	BG/BC	---	4.67×10^{-4}	This study
DPP33T	BG/BC	---	1.11×10^{-3}	This study
LGC-D118	TG/BC	---	3.04	S1
LGC-D127	TG/BC	---	3.16	S2
DDPP-TTAR	BC/TG	---	9.1×10^{-2}	S3
Si1TDPP-EE-C6	BG/TC	5.1×10^{-4}	3.7×10^{-3}	S4
DPPa	BG/BC	---	5.91×10^{-3}	S5
DPPb	BG/BC	3.4×10^{-3}	---	S5
DPP-2T2P-2DCV	BG/TC	0.168	1.5×10^{-2}	S6
$Ph(DPPT_2)_2$	TG/BC	---	9.0×10^{-2}	S7
DPPTT-H	BG/TC	---	0.20	S8

Reference

S1 B. Lim, H. Sun, J. Lee and Y. Y. Noh, *Sci. Rep.*, 2017, **7**, 164.

S2 B. Lim, H. Sun and Y.-Y. Noh, *Dyes Pigm.*, 2017, **142**, 17.

S3 N. Zhou, S. Vegiraju, X. Yu, E. F. Manley, M. R. Butler, M. J. Leonardi, P. Guo, W. Zhao, Y. Hu and K. Prabakaran, *J. Mater. Chem. C*, 2015, **3**, 8932.

S4 M. J. Kim, M. Jung, W. Kang, G. An, H. Kim, H. J. Son, B. Kim and J. H. Cho, *J. Phys. Chem. C*, 2015, **119**, 16414.

S5 A. K. Palai, A. Kumar, K. Sim, J. Kwon, T. J. Shin, S. Jang, S. Cho, S.-U. Park and S. Pyo, *New J. Chem.*, 2016, **40**, 385.

S6 J. Bai, Y. Liu, S. Oh, W. Lei, B. Yin, S. Park and Y. Kan, *RSC Adv.,* 2015, **5**, 53412.

S7 S. Wang, J. Yang, K. Broch, J. Novák, X. Cao, J. Shaw, Y. Tao, Y. Hu and W. Huang, *RSC Adv.*, 2016, **6**, 57163.

S8 Y. Wang, Q. Huang, Z. Liu and H. Li, *RSC Adv.*, 2014, **4**, 29509.