

Effect of Backbone Structure on the Thermoelectric Properties of Donor-acceptor Conjugated Polymers

Luhai Wang, Chengjun Pan*, Ansheng Liang, Xiaoyan Zhou, Wenqiao Zhou, Tao Wan, and Lei Wang*

Shenzhen Key Laboratory of Polymer Science and Technology, College of Materials Science and Engineering, Shenzhen University, Shenzhen 518060, China

Email: pancj@szu.edu.cn; wl@szu.edu.cn

Supporting information

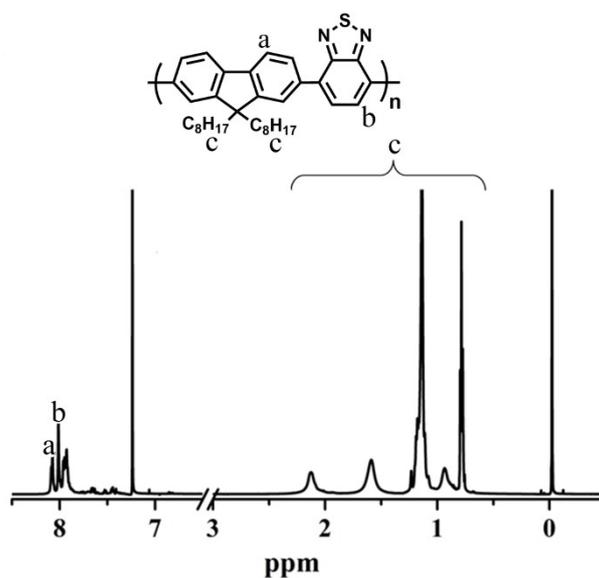


Fig. S1. ¹H NMR spectrum of F8BT.

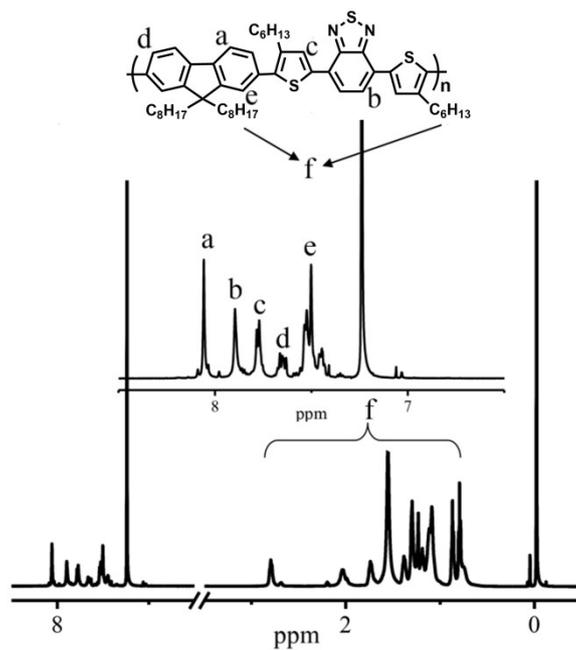


Fig. S2. ^1H NMR spectrum of F8TBT.

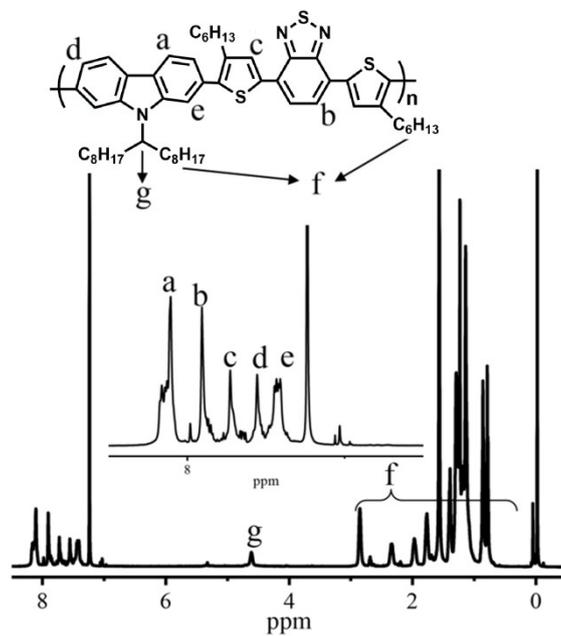


Fig. S3. ^1H NMR spectrum of C8TBT.

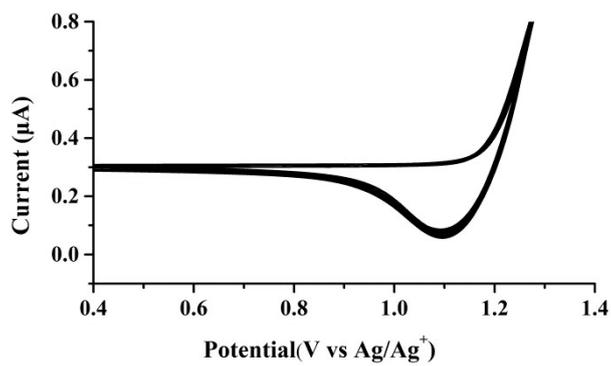


Fig. S4. Successive CV curves of F8BT.

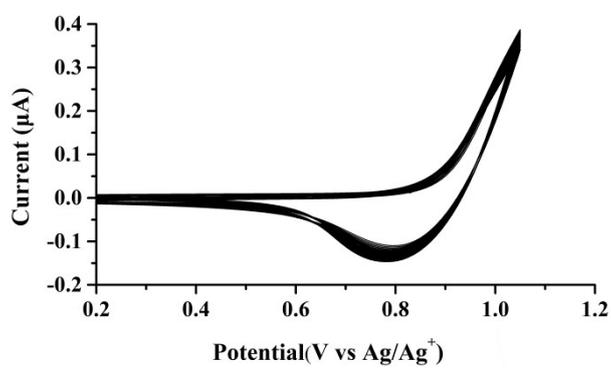


Fig. S5. Successive CV curves of F8TBT.

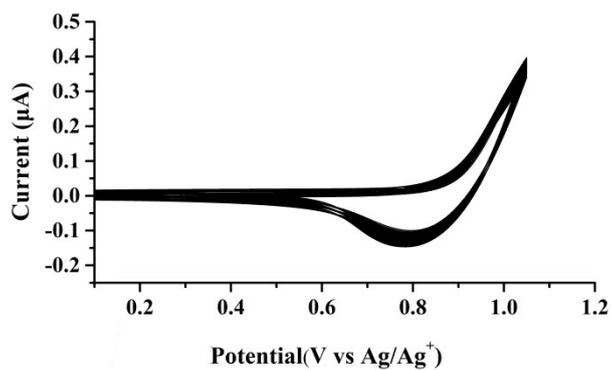


Fig. S6. Successive CV curves of C8TBT.

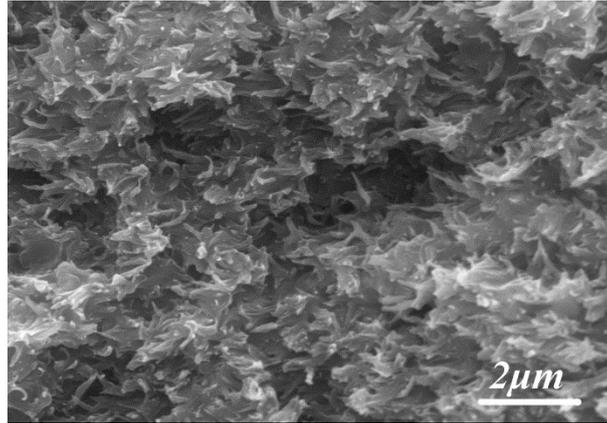


Fig. S7. High-magnification cross-sectional SEM image of **F8BT**.

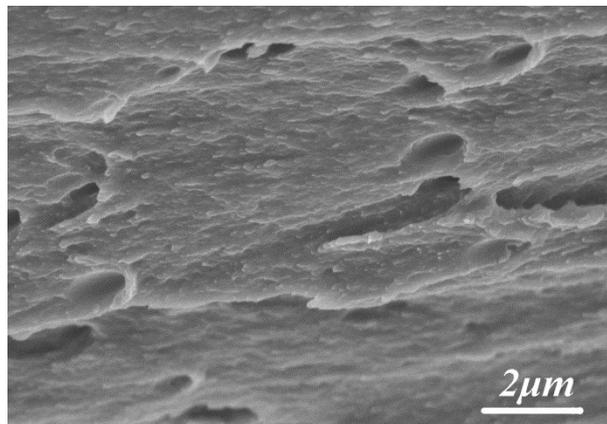


Fig. S8. High-magnification cross-sectional SEM image of **F8TBT**.

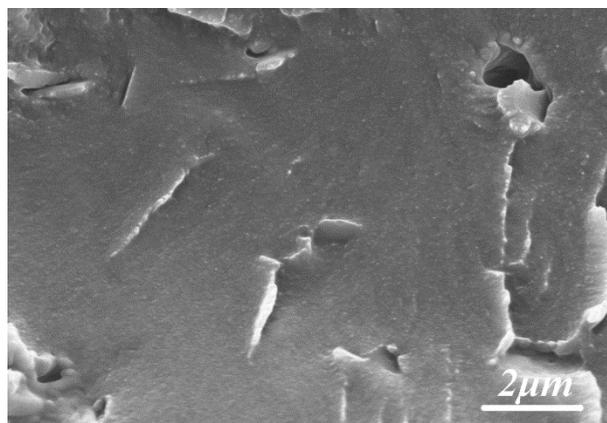


Fig. S9. High-magnification cross-sectional SEM image of **C8TBT**.

Table S1. Thermoelectric performance of some reported organic conjugated polymers

Conjugated polymers	Dopant	$S(\mu V/K)$	$\sigma(S/cm)$	$PF(\mu W/mK^{-2})$	Ref.
P(NDIOD-T2)	N-DMBI	-850	0.008	0.6	1
P3HT	FTS	27.7 ± 0.1	60 ± 9	10 ± 3	2
PBTTT-C ₁₄	F ₄ TCNQ	3.51 ± 0.05	60 ± 9	1.3 ± 0.4	2
FBDPPV	N-DMBI	-215	6	28	3
CPE-C3-K	self-doped	200 ± 18	0.0048 ± 0.004	0.19	4
C8TBT	FeCl ₃	335	1.17	13.11	This work

References

1. R. A. Schlitz, F. G. Brunetti, A. M. Glauddell, P. L. Miller, M. A. Brady, C. J. Takacs, C. J. Hawker and M. L. Chabinyc, *Advanced Materials*, 2014, **26**, 2825-2830.
2. A. M. Glauddell, J. E. Cochran, S. N. Patel and M. L. Chabinyc, *Advanced Energy Materials*, 2015, **5**, 1401072.
3. K. Shi, F. J. Zhang, C. A. Di, T. W. Yan, Y. Zou, X. Zhou, D. B. Zhu, J. Y. Wang and J. Pei, *Journal Of the American Chemical Society*, 2015, **137**, 6979-6982.
4. C. K. Mai, R. A. Schlitz, G. M. Su, D. Spitzer, X. J. Wang, S. L. Fronk, D. G. Cahill, M. L. Chabinyc and G. C. Bazan, *Journal Of the American Chemical Society*, 2014, **136**, 13478-13481.