

Supporting Information

Extending π -Conjugation System with Benzene: An Effective Method to Improve the Properties of Benzodithiophene-Based Polymer for Highly Efficient Organic Solar Cells

Jiuxing Wang,^{†‡} Manjun Xiao,^{†§} Weichao Chen,[†] Meng Qiu,[†] Zhengkun Du,[†] Weiguo Zhu,[§] Shuguang Wen,[†] Ning Wang,[†] and Renqiang Yang^{*,†,//}

[†]CAS Key Laboratory of Bio-based Materials, Qingdao Institute of Bioenergy and Bioprocess Technology, Chinese Academy of Sciences, Qingdao 266101, China

[‡]University of Chinese Academy of Sciences, Beijing 100049, China

[§]College of Chemistry, Key Lab of Environment-Friendly Chemistry and Application of the Ministry of Education, Xiangtan University, Xiangtan 411105, China

^{//}State Key Laboratory of Luminescent Materials and Devices, South China University of Technology, Guangzhou 510641, China

E-mail: yangrq@qibebt.ac.cn.

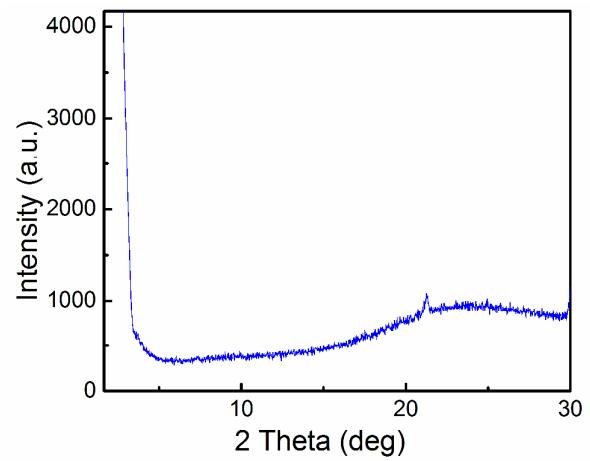


Figure S1. XRD spectrum of PBDTBzT-DTffBT as film.

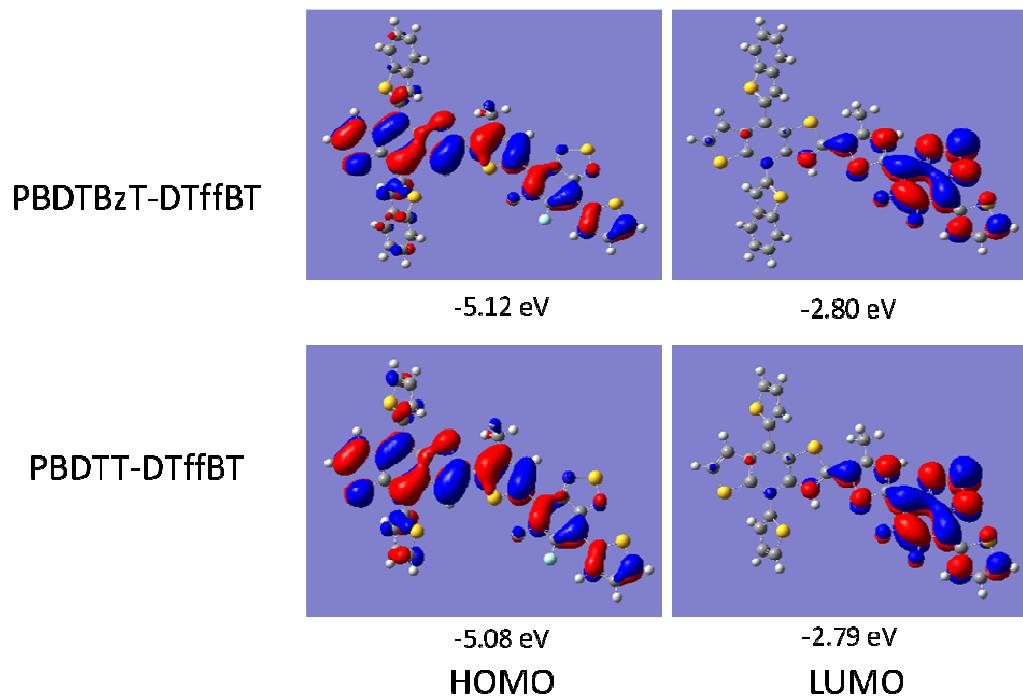


Figure S2. The energies and distributions of the frontier molecular orbitals of the polymers.¹

Table S1. Photovoltaic properties of the PSCs with different D/A ratios under AM 1.5G illumination (100 mW/cm²).

Polymer	D/A ratio	V _{oc} (V)	J _{sc} (mA/cm ²)	FF (%)	PCE _{max} (PCE _{ave}) ^a (%)
PBDBzT-DTffBT (With 1% DIO)	2:1	0.90	12.10	57.11	6.22 (5.95)
	1.5:1	0.90	12.93	62.73	7.30 (7.16)
	1:1	0.88	11.90	65.81	6.89 (6.84)
	1:2	0.88	9.14	64.47	5.19 (5.00)
PBDTT-DTffBT (Without DIO)	1.5:1	0.96	10.00	40.07	3.85 (3.76)
	1:1	0.94	9.83	57.91	5.35 (5.32)
	1:1.5	0.93	8.37	57.57	4.48 (4.39)

^aThe average PCE is obtained from 5 devices.

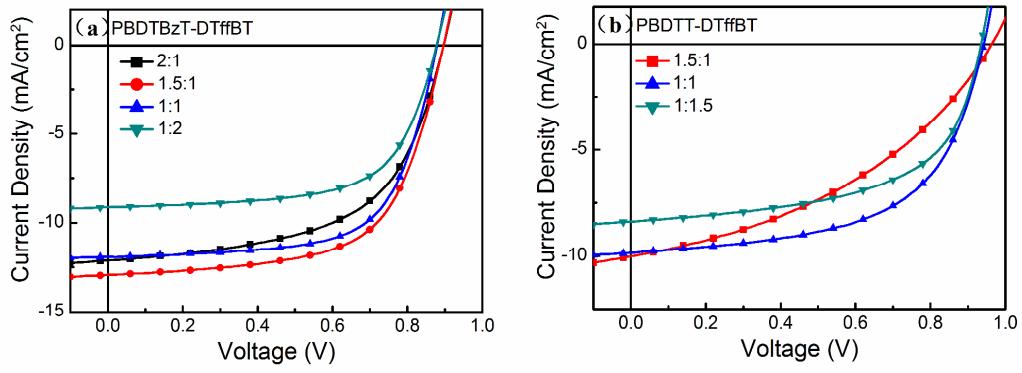


Figure S3. J - V curves of the PSCs based on (a) PBDBzT-DTffBT and (b) PBDTT-DTffBT with different D/A ratios.

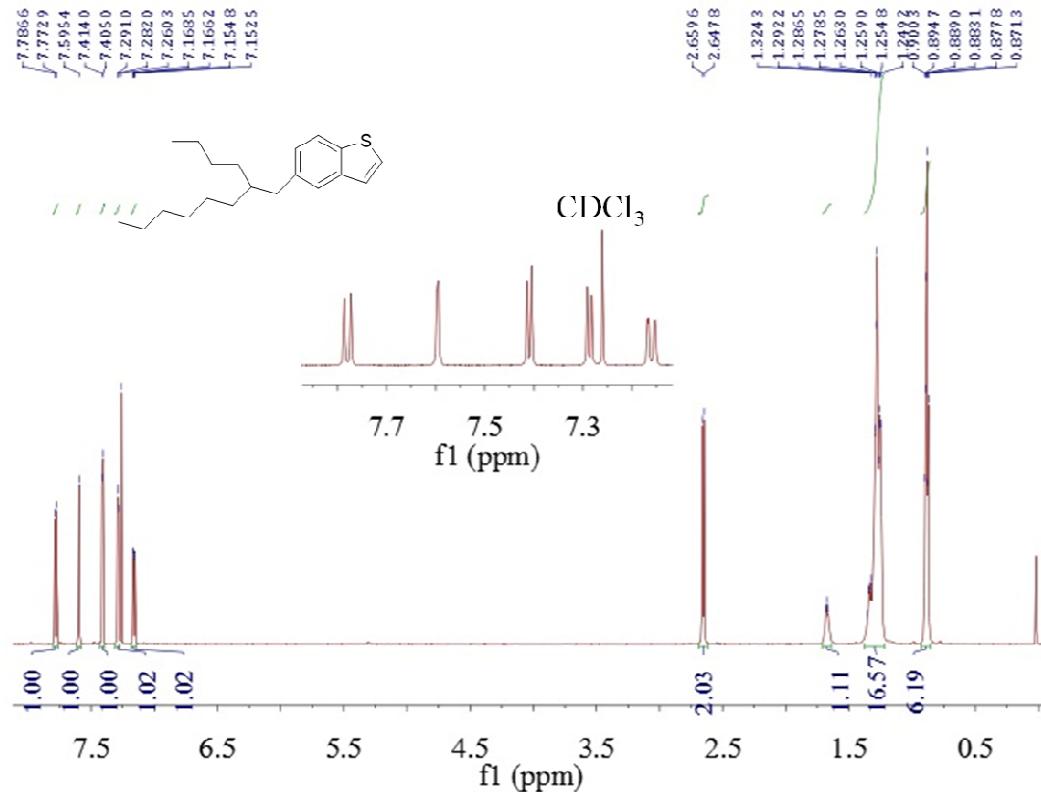


Figure S4. ^1H NMR spectrum of compound 2.

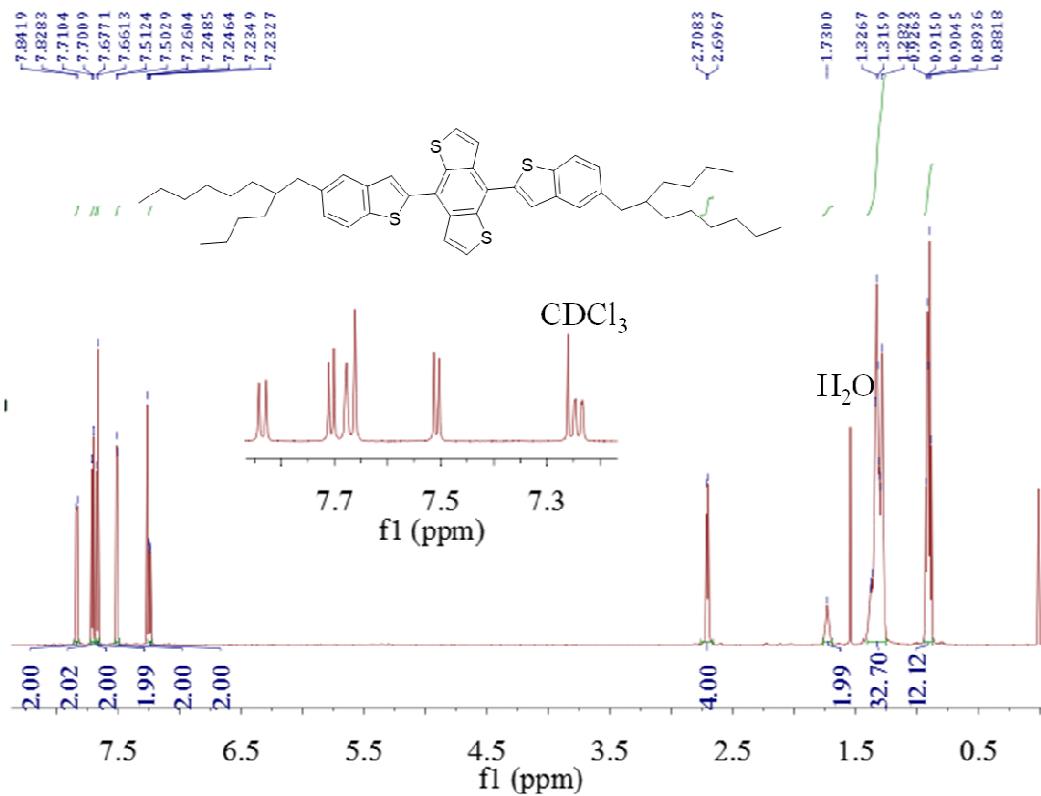


Figure S5. ^1H NMR spectrum of compound 3.

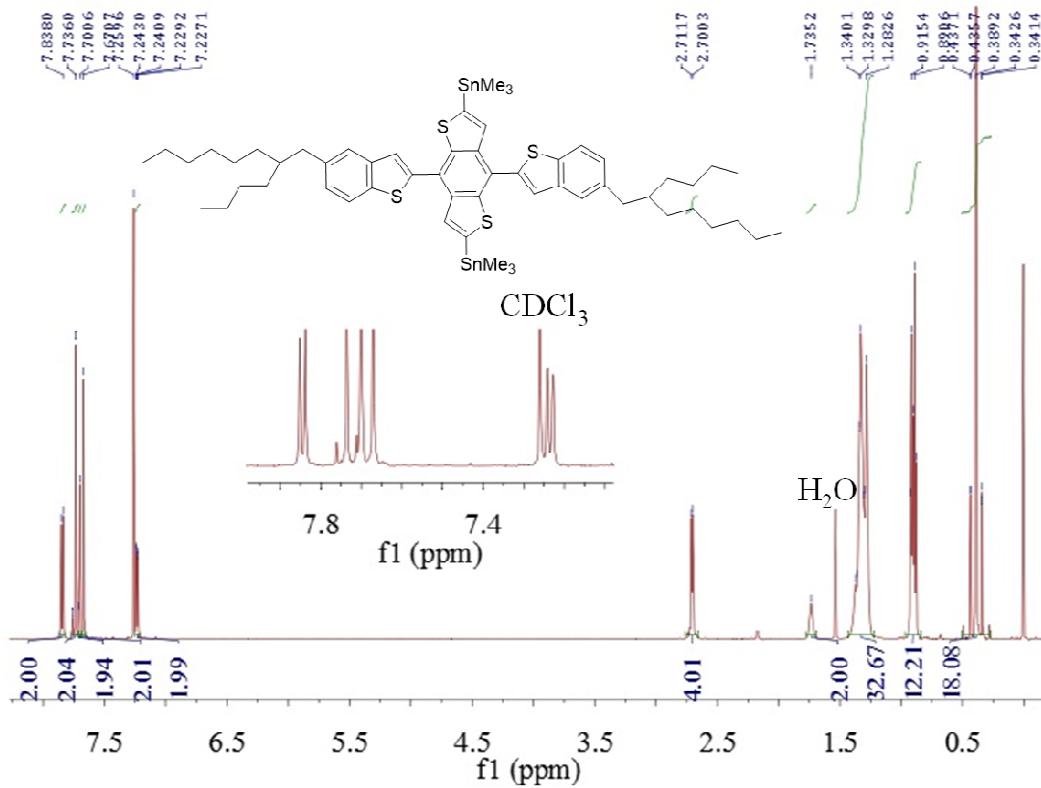


Figure S6. ^1H NMR spectrum of BDTBzT.

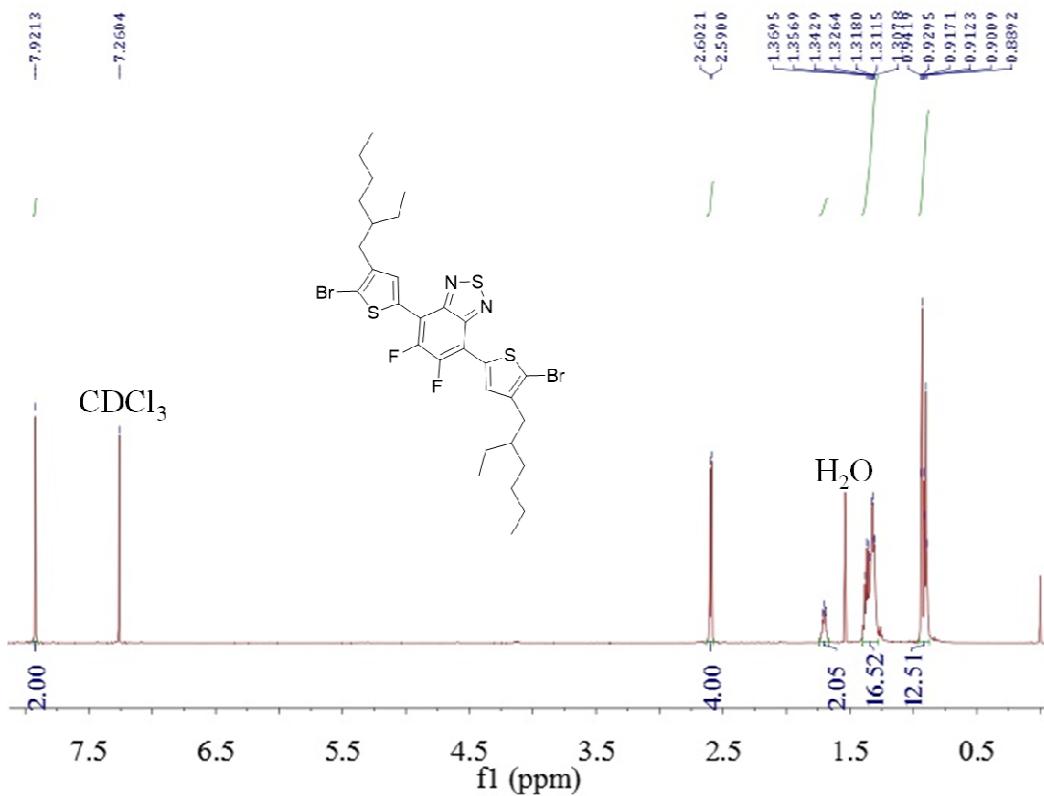


Figure S7. ^1H NMR spectrum of DTffBT.

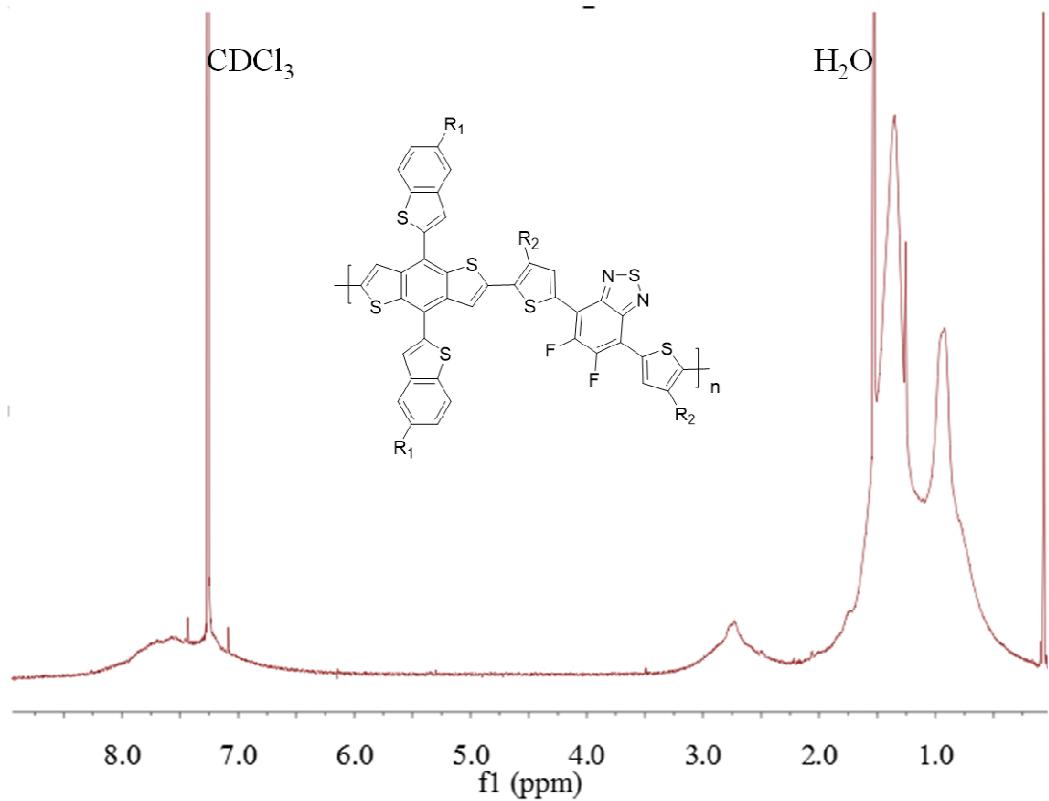


Figure S8. ^1H NMR spectrum of polymer PBDTBzT-DTffBT.

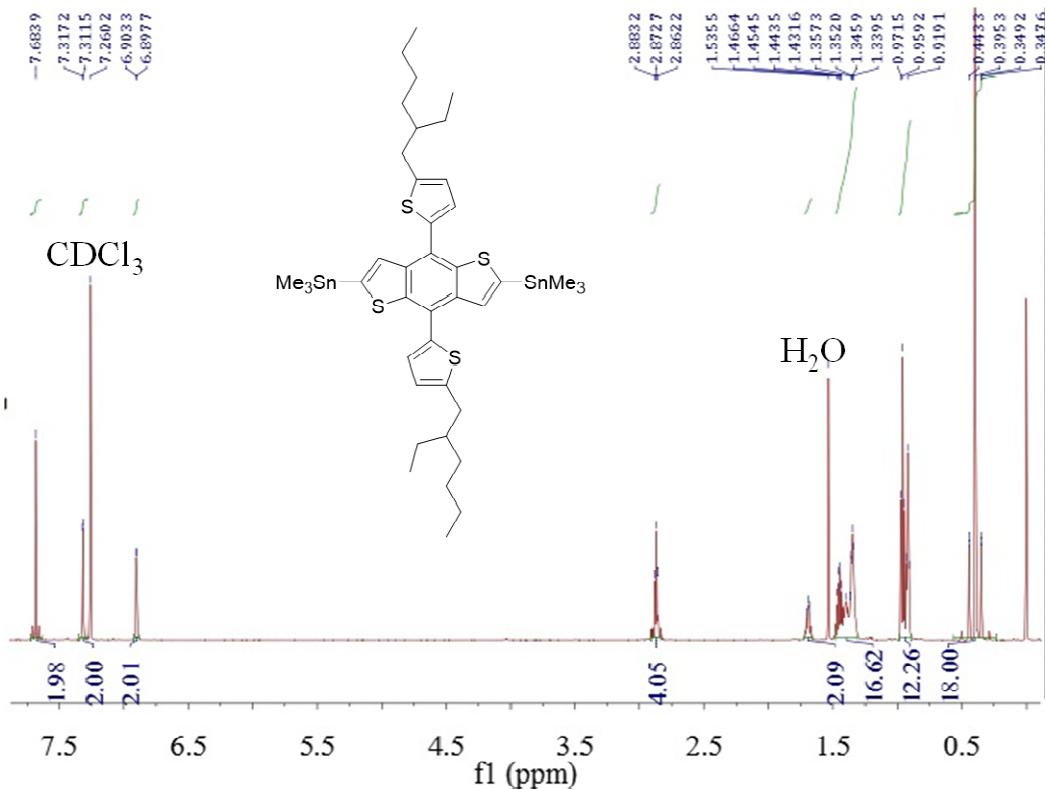


Figure S9. ^1H NMR spectrum of BDTT.

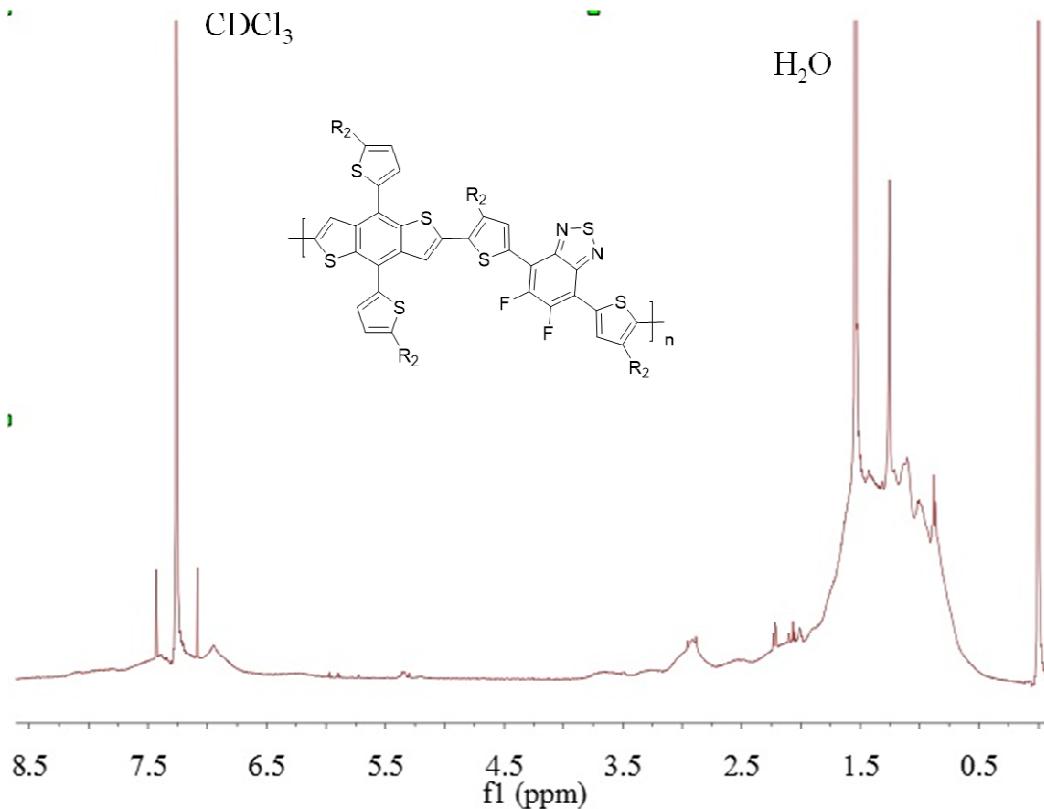


Figure S10. ^1H NMR spectrum of polymer PBDTT-DTffBT.

References

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