Supporting Information

Ladder-Type Nonacyclic Indacenodithieno[3,2-b]indole for High Efficient Organic Field-Effect Transistors and Organic Photovoltaics

Baomin Zhao,[a] Cenqi Yan,[b] Zheng Wang,[a] Hongyan Huang,[a] Yueming Hu,[a] Pei Cheng,[b] Mingdong Yi,[a] Chengting Huang,[a] Xiaowei Zhan,[b,*] Wei Huang[a,*]

[a] Key Laboratory for Organic Electronics and Information Displays & Institute of Advanced Materials (IAM), Jiangsu National Synergetic Innovation Center for Advanced Materials (SICAM), Nanjing University of Posts & Telecommunications, 9 Wenyuan Road, Nanjing 210023, China.

[b] Department of Materials Science and Engineering, College of Engineering, Peking University, Beijing 100871, China.

*Email - iambmzhao@njupt.edu.cn; iamwhuang@njupt.edu.cn

xwzhan@pku.edu.cn

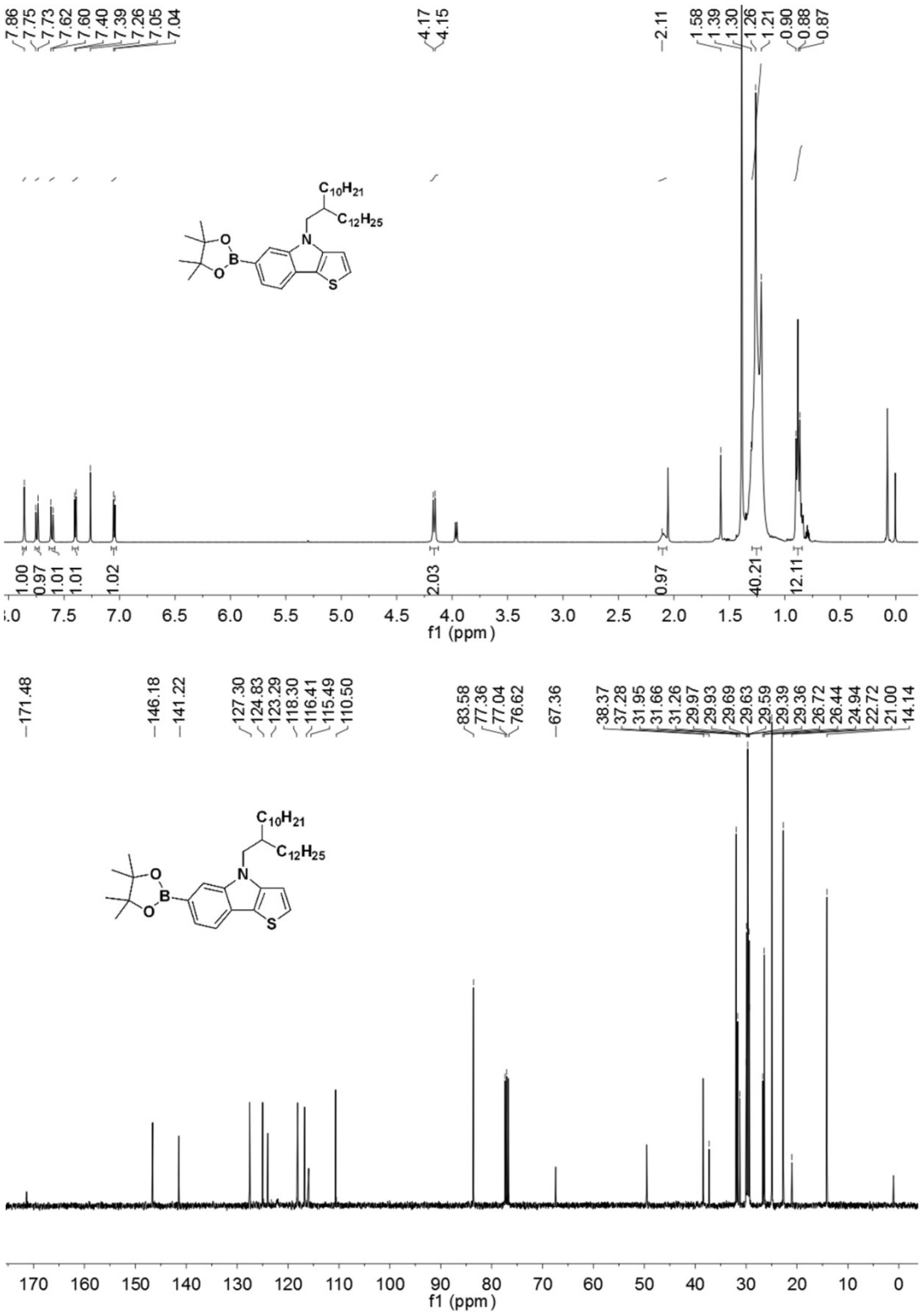

Figure S1. ^{1}H and ^{13}C NMR spectra of 4-(2-decyltetradecyl)-6-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)-4H-thieno[3,2-b]indole (1)

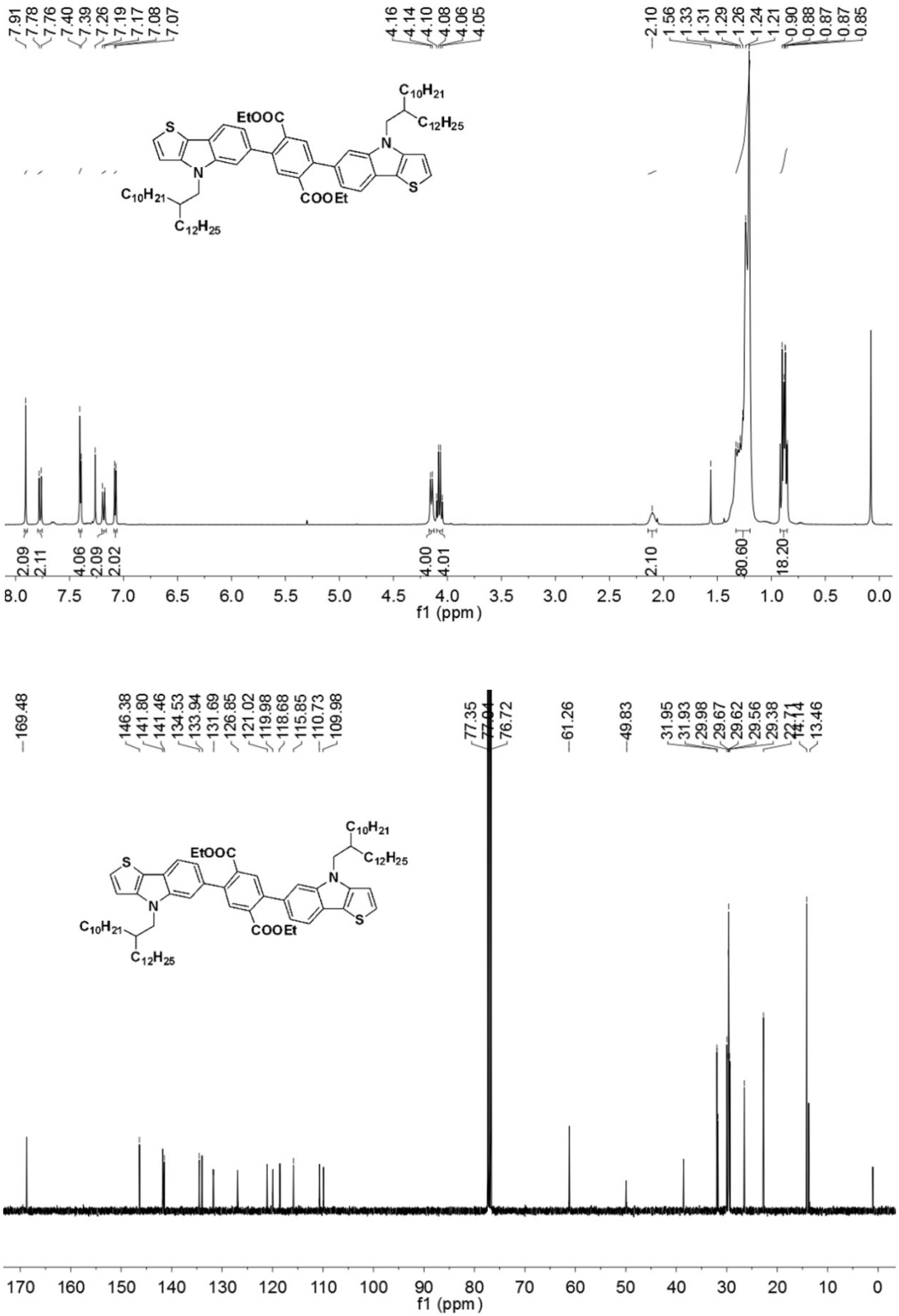

Figure S2. ^{1}H and ^{13}C NMR spectra of diethyl 2,5-bis(4-(2-decyltetradecyl)-4H-thieno[3,2-b]indol-6-yl)terephthalate (2)

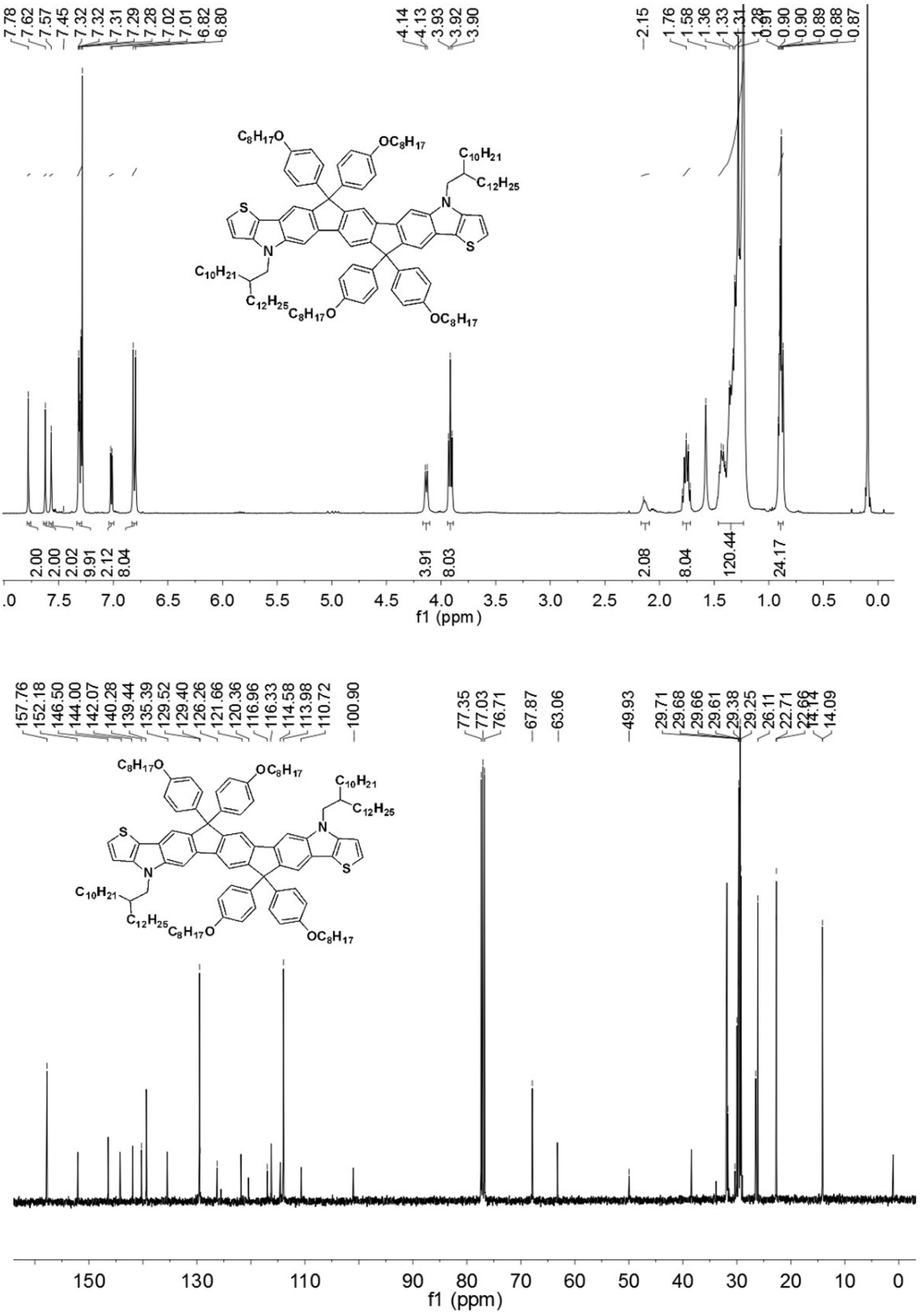

Figure S3. ^{1}H and ^{13}C NMR spectra of Monomer TIBDP

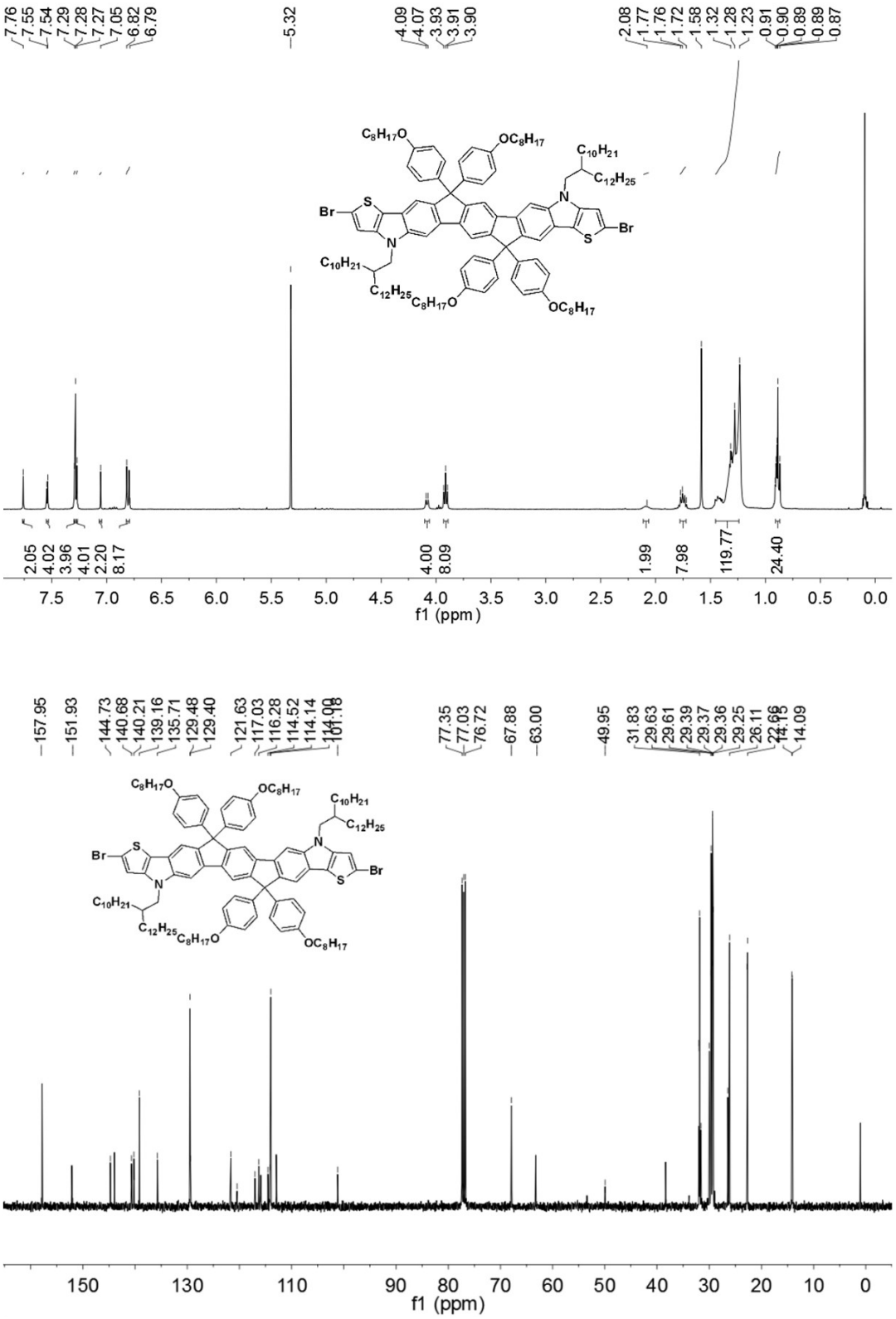

Figure S4. ^{1}H and ^{13}C NMR spectra of TIBDP-Br

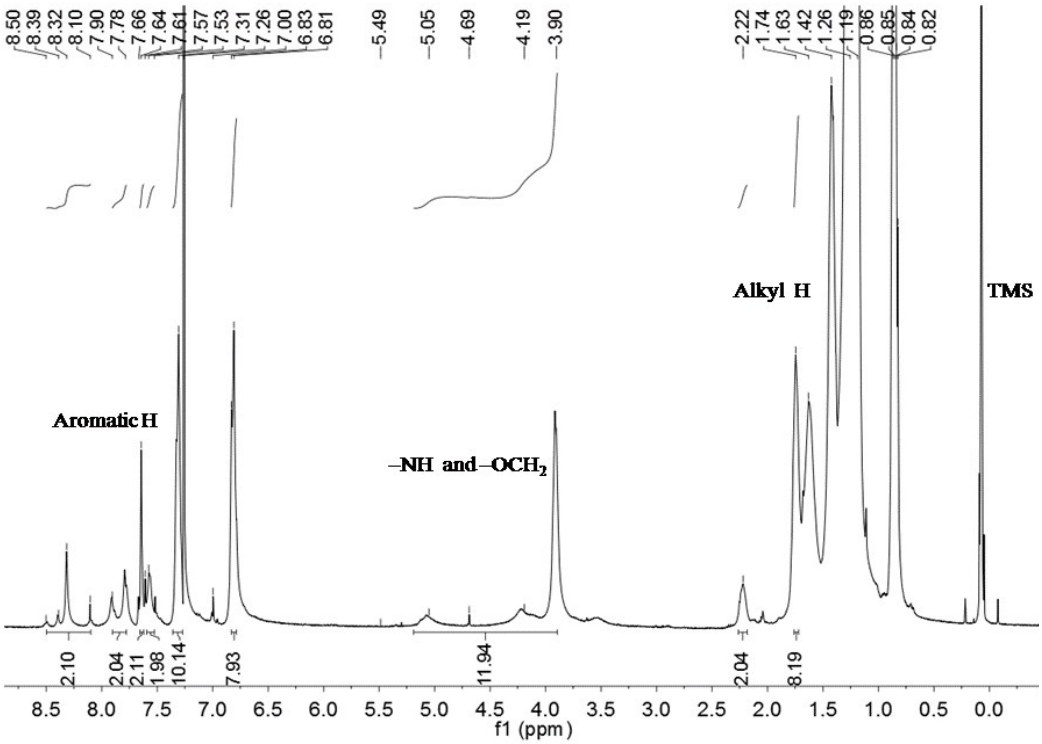

Figure S5. ^{1}H NMR spectra of the copolymer PTIBDP-BT in $CHCl_3$-d_8

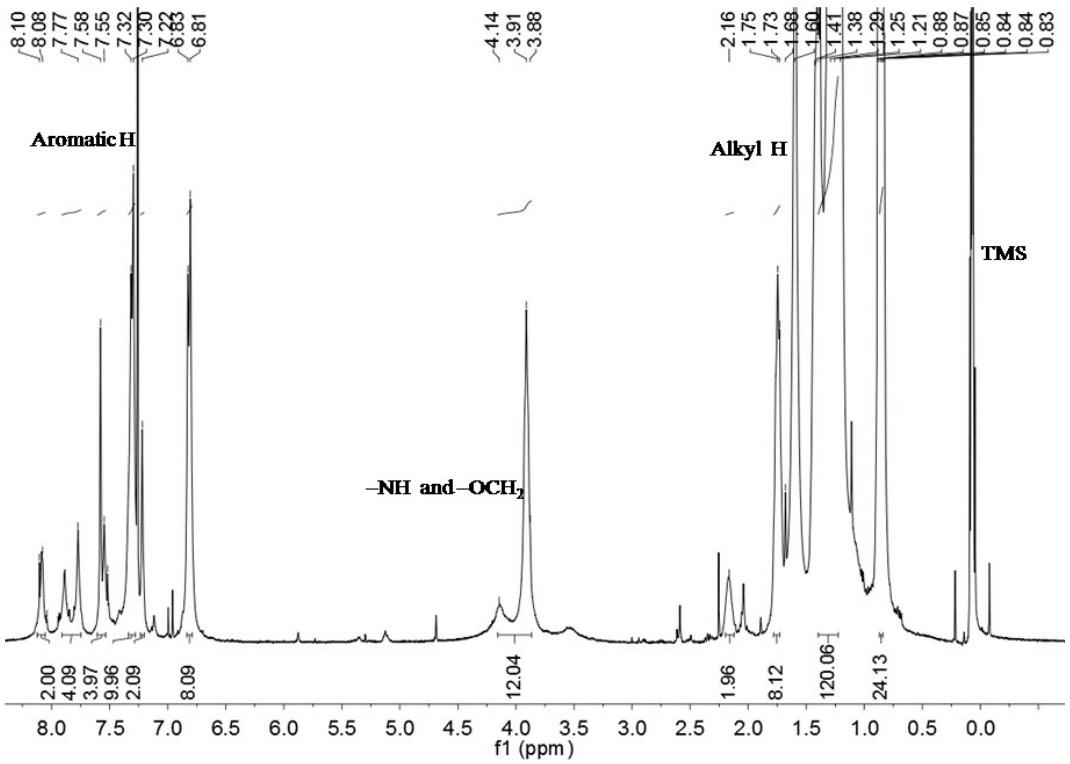

Figure S6. ^{1}H NMR spectra of the copolymer PTIBDP-DTBT in $CHCl_3$-d_8

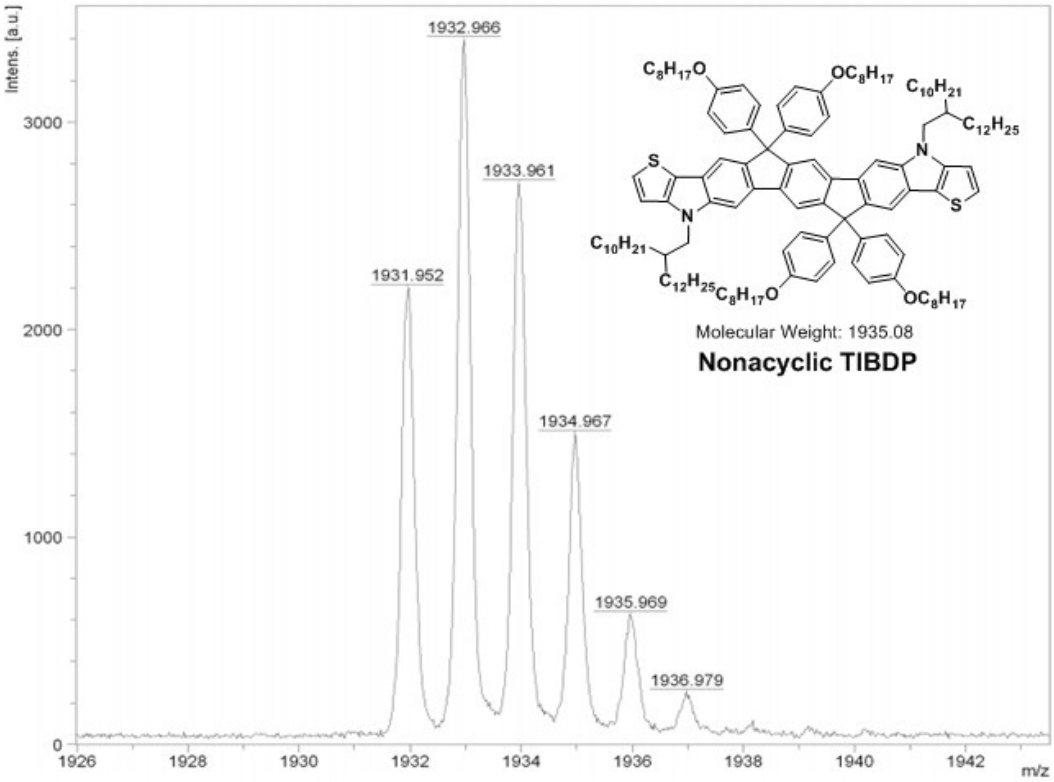

Figure S7. MS spectrum of **TIBDP**

SCLC measurement

The SCLC mobility of the polymer:$PC_{71}BM$ blends were measured with the same device geometry as their PSC devices (ITO/PEDOT:PSS/Polymer:$PC_{71}BM$/Ca/Al), whereas the active layer were PIDTI-BT:PC71BM (1:2, w/w) and PIDTI-DTBT:PC71BM (1:3, w/w) with thermal annealing at 130 °C for 10 min.

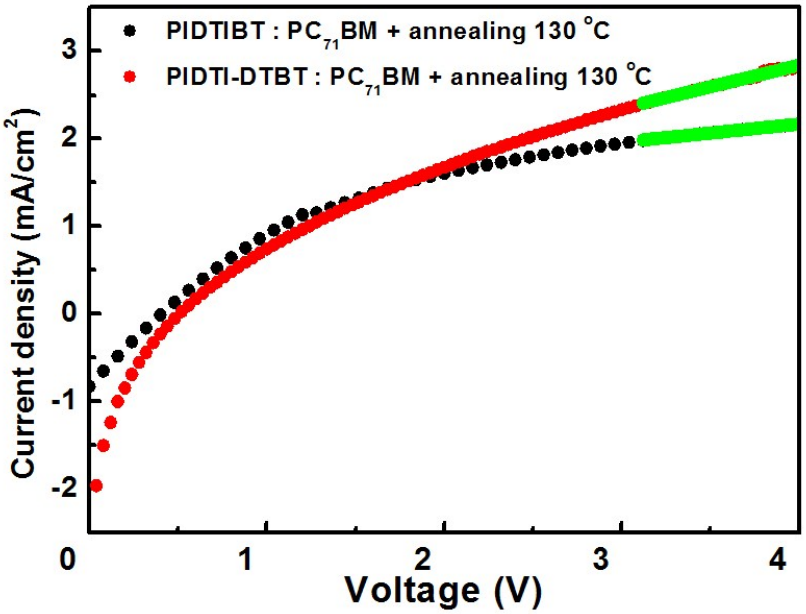

Figure S8. Hole mobility for blend films of PIDTI-BT:$PC_{71}BM$ (1:2, w/w) and PIDTI-DTBT:$PC_{71}BM$ (1:3, w/w) with the thermal annealing at 130 °C.