Electronic Supplementary Information For

Influence of π -bridge dependent molecular configuration on the

optical and electrical characteristics for organic solar cells

Ting Wang,^{‡a} Liangliang Han,^{‡a} Huan Wei,^a Dangqiang Zhu,^a Xichang Bao,^a Shanlin Qiao,^a Weizhi Sun,^{*a} Weichao Chen,^{*a} Renqiang Yang^{*a,b}

^a CAS Key Laboratory of Bio-based Materials, Qingdao Institute of Bioenergy and Bioprocess Technology, Chinese Academy of Sciences, Qingdao 266101, China, Fax: +86-532-80662778. E-mails: sunwz@qibebt.ac.cn (W. S), chenwc@qibebt.ac.cn (W. C), yangrq@qibebt.ac.cn (R. Y)

^b Institute of Polymer Optoelectronic Materials and Devices, State Key Laboratory of Luminescent Materials and Devices, South China University of Technology, Guangzhou 510640, China.

‡ These authors contribute equally to this work.



Fig. S1. ¹H NMR spectra of DCATT-L in CDCl₃.



Fig. S2. ¹³C NMR spectra of DCATT-L in CDCl₃.



Fig. S3. ESI-Mass spectra of DCATT-L with the molecular formula of $C_{118}H_{152}N_2O_4S_{12}$.



Fig. S4. TGA curve of DCATT-L with a heating rate of 10 °C min⁻¹ under nitrogen atmosphere.



Fig. S5. Top views of the optimized geometries of the backbones of DCATT and DCATT-L with side chain replaced by methyl.



Fig. S6. UV-vis absorption spectra of blend films of DCATT-L:PC₆₁BM after thermal annealing (red); DCATT: $PC_{61}BM$ with treatment of DIO and annealing (black); and DCATT: $PC_{61}BM$ without any treatment (blue).



Fig. S7. J-V curves of vertical diodes with the device structure of ITO/PEDOT:PSS/DCATT-L/Au.