

Supporting Information

For

**1,1-bis[(di-4-tolylamino)phenyl]cyclohexane for Fast Response
Organic Photodetectors with High External Efficiency and Low
Leakage Current**

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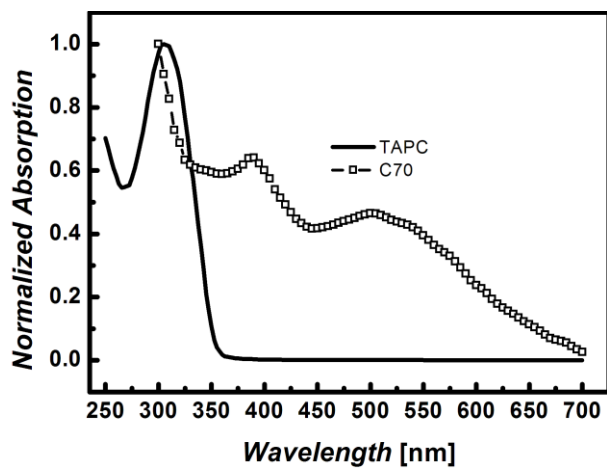
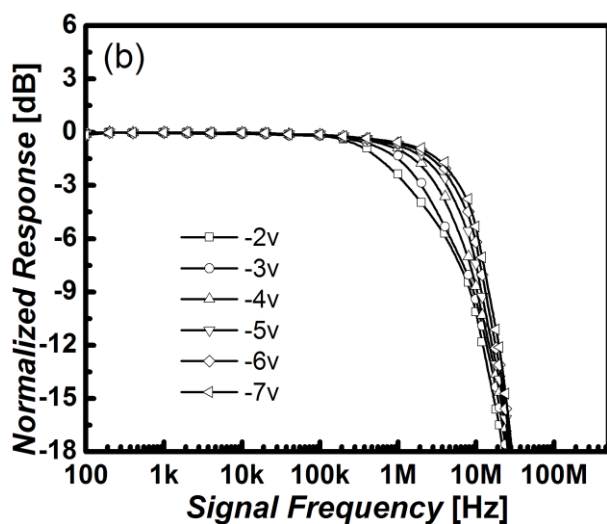
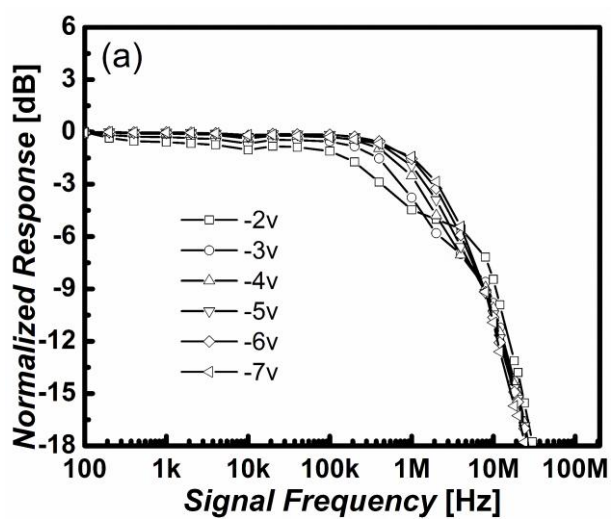


Figure S.1 Normalized absorption spectrum of TPAC and C70.



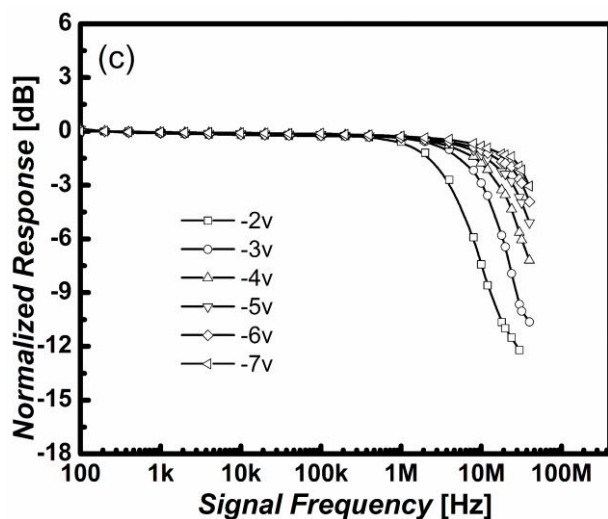


Figure S.2 Frequency response characteristics under different bias conditions and excitation by a 405nm laser. The device structure is ITO/ TAPC (40 nm) / TAPC: C70 (50 nm) / C70 (20 nm) / Al. The TAPC concentrations in figure (a), (b) and (c) are 15%, 30% and 45%, respectively.

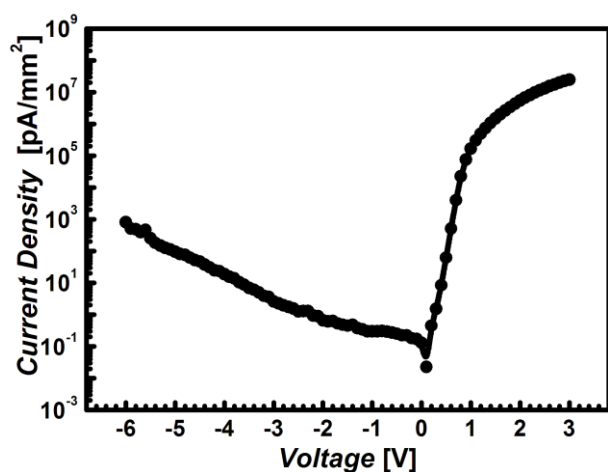
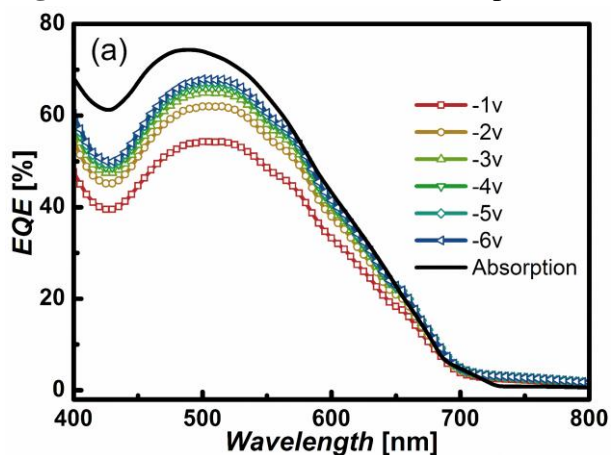


Figure S.3 J–V characteristic of the photodetector with 30% TAPC concentration at dark.



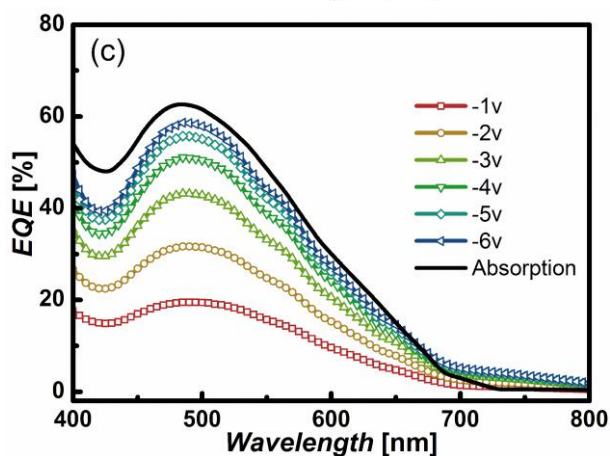
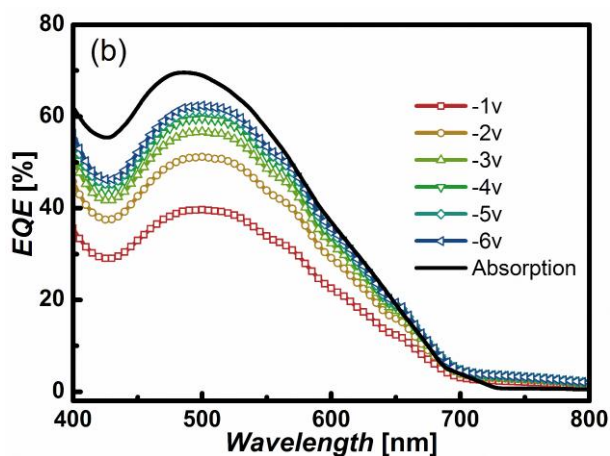


Figure S.4 EQE values of the photodetector under different reverse voltages and the absorption efficiency of the mixing layer calculated by transfer matrix method. The device structure is ITO / TAPC (40 nm) / TAPC: C70 (50 nm) / C70 (20 nm) / Al. The TAPC concentrations in figure (a), (b) and (c) are 15%, 30% and 45%, respectively. The solid line shows the absorption efficiency.

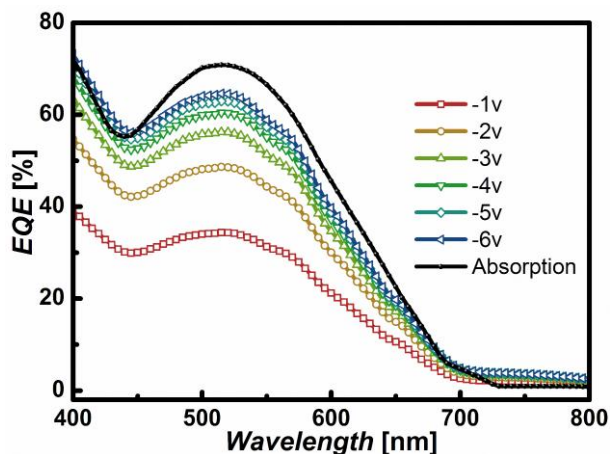


Figure S.5 EQE values of the photodetector under different reverse voltages and the absorption efficiency of the mixing layer calculated by transfer matrix method. The device structure is ITO / TAPC (40 nm) / TAPC: C70 (75 nm) / C70 (20 nm) / Al and the TAPC concentration is 30%.