

## *Supplementary Information*

# **Bodipy-Backboned Polymers as Electron Donor for Bulk Heterojunction Solar cells**

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**Materials.** Patterned Indium tin oxide (ITO) coated glass substrates were purchased from Thin Film Devices Inc. Poly(3,4-ethylenedioxythiophene):poly(styrenesulfonate) (PEDOT:PSS) (Baytron-PH) was purchased from H. C. Starck. The synthesis and characterization of BODIPY polymers were reported in reference 4.

**Devices Fabrication and Measurement.** ITO glass substrates were cleaned using the following sequential steps: sonication in soap solution; rinsing with deionized water; sonication in warm acetone, and isopropanol for 10 min each; and drying under a stream of nitrogen. Finally, the substrates were treated with UV ozone for 20 min. A filtered dispersion of PEDOT:PSS in water (Baytron-PH) was spincoated at 4000 rpm for 40 s to produce a 40 nm thick layer, followed by baking at 140 °C for 10 min in ambient. Solution processing of the films was performed in an inert atmosphere (Argon) glove box. The Al cathode was evaporated through a shadow mask to produce an active area of 0.03 cm<sup>2</sup>. After evaporation, a part of the organic layer was removed to allow contact with the ITO, and then conductive silver paste was painted to the area in order to produce the electrical contact. All devices properties were measured at room temperature in an argon atmosphere under AM 1.5 G solar illumination at 100 mWcm<sup>-2</sup> (1 sun) using a Thermal-Oriel 300W solar simulator with filter. External quantum efficiency (EQE) values were obtained with a monochromator and calibrated with a silicon photodiode. The current density-voltage (*J-V*) characteristics were recorded in a Keithly 236 SMU. Absorption spectra were recorded in a Cary 50 UV-vis spectrometer. Film thickness measurements were performed using a Dektak 150 surface profiler. Tapping mode atomic force microscopy (AFM) measurements on the blend films were carried out on a Veeco Multimode V atomic force microscope. Cyclic voltammetry (CV) measurements were carried out using a Solartron 1285 potentiostat under the control of CorrWare II software to determine the HOMO and LUMO levels of these polymers. Polymer films were dipcoated from chloroform solutions on a Pt working electrode 2 mm in diameter. CV curves were measured under a nitrogen atmosphere using solutions in CH<sub>3</sub>CN containing 0.1 M Bu<sub>4</sub>NPF<sub>6</sub> with a Pt wire as the counter electrode and Ag wire as the reference

electrode. The CV curves are provided in Fig. S1. The potentials were calibrated with respect to the ferrocene/ferrocene<sup>+</sup> (Fc/Fc<sup>+</sup>) potential.

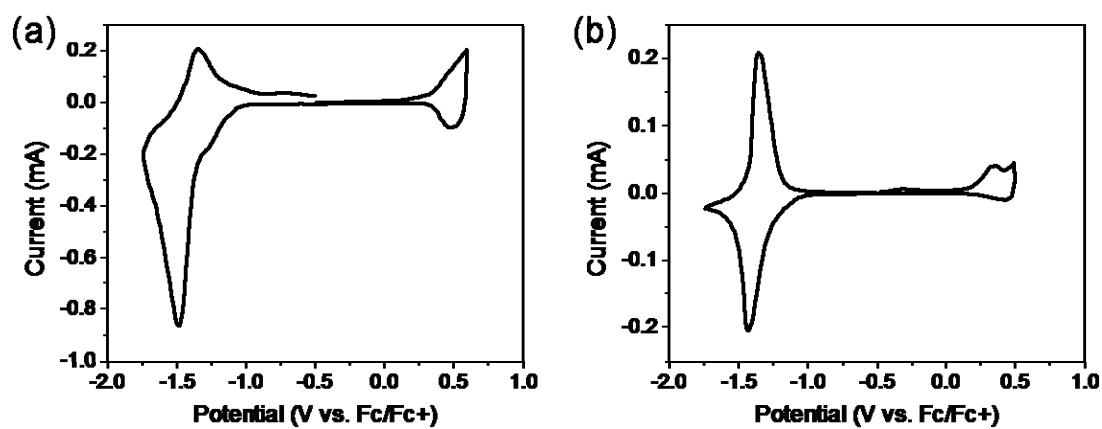


Fig. S1. CV curves of (a) pBodipy and (b) pBodipy-T.