

Supporting Information

On the understandings of the energetic disorder, charge recombination and voltage Losses in all-polymer solar cells

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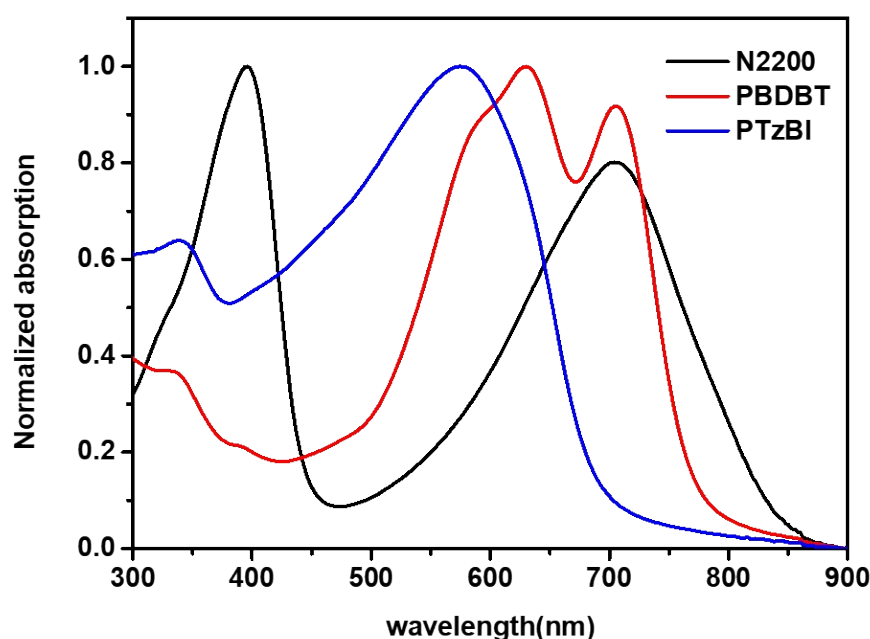


Fig. S1. Normalized absorption of neat PTzBI, PBDB-T and N2200 films.

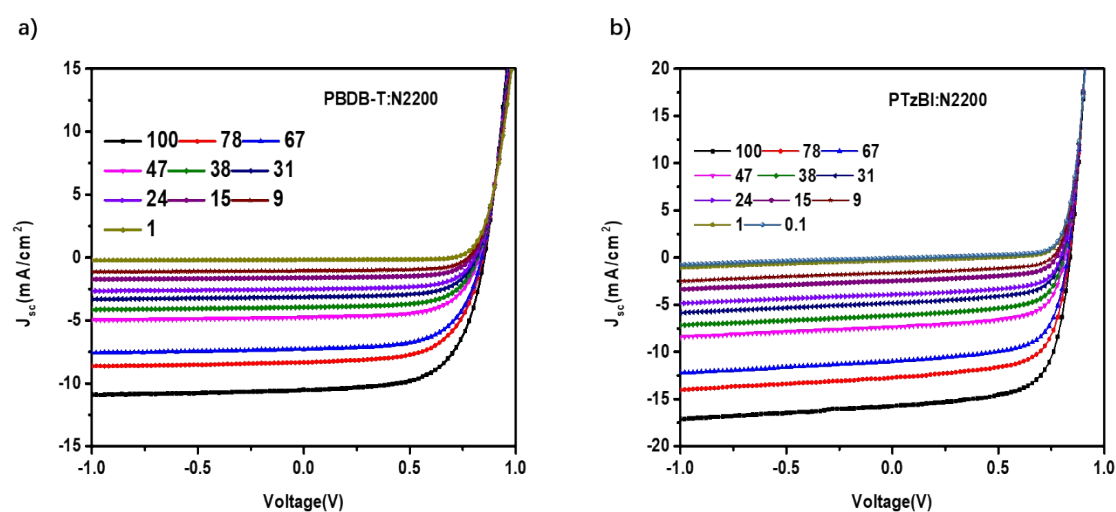


Fig. S2. Irradiation dependent J - V characteristics of all-PSCs based on active layers of (a) PBDB-T:N2200 and (b) PTzBI:N2200.

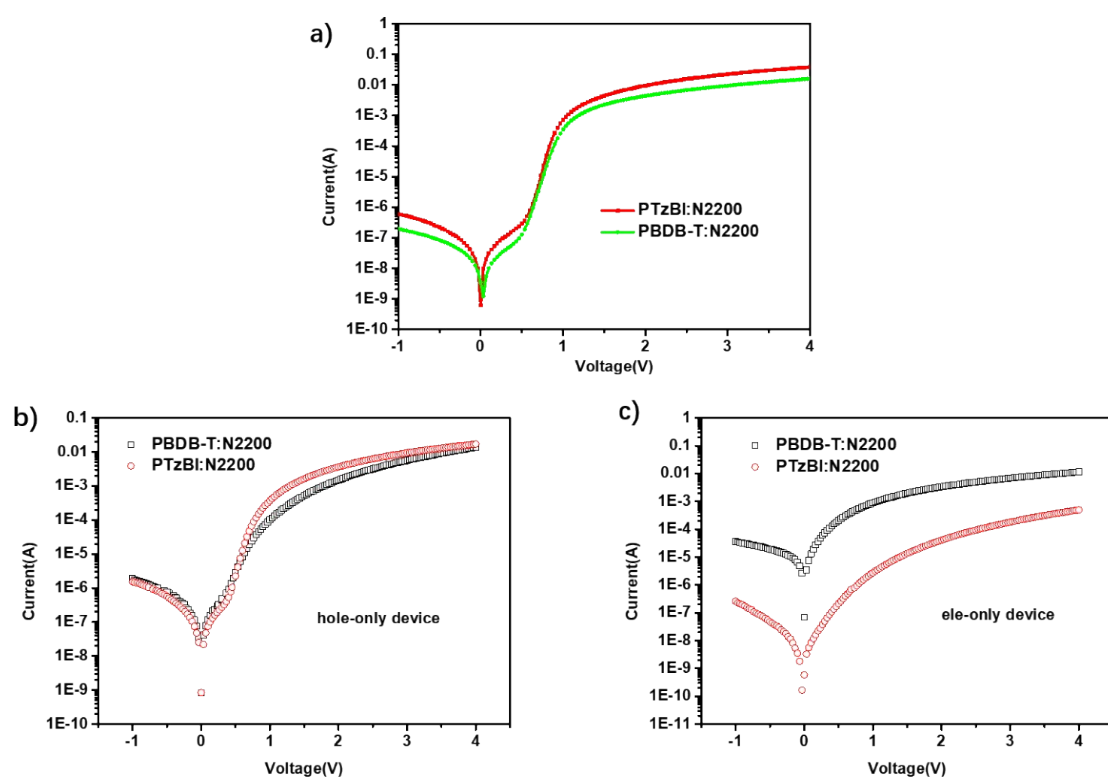


Fig. S3. Dark J - V characteristics of (a) double-carrier, (b) hole-only, and (c) electron-only devices based on active layers of PTzBI:N2200 and PBDB-T:N2200 blend films.

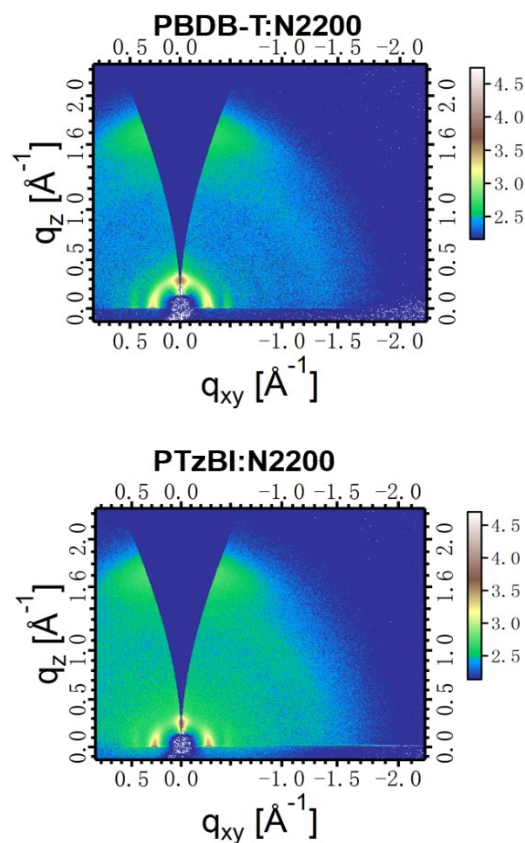


Fig. S4. 2D GIWAXS patterns of PBDBT:N2200 and PTzBI:N2200 blend films

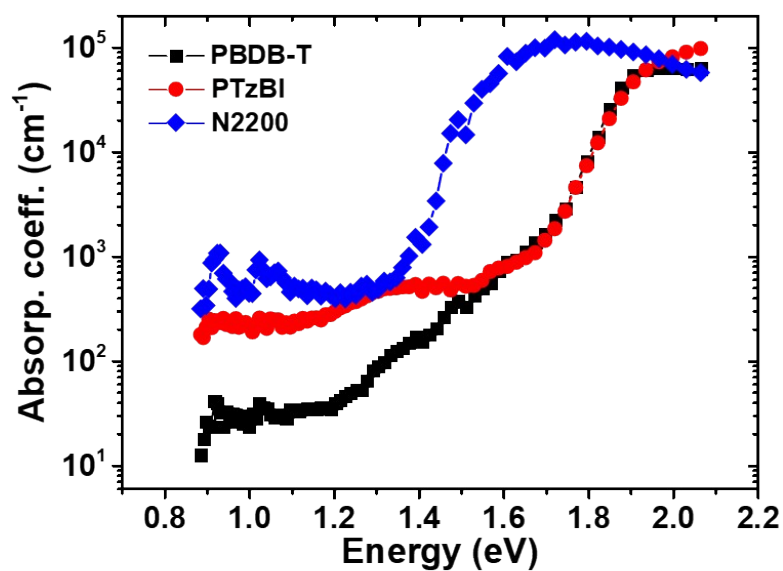


Fig. S5. Photothermal deflection spectroscopy of thin films based on neat donor and acceptor films.

Table S1. Mobilities of holes, electrons and double carriers (solar cell) in the compared all-polymer blends.

BHJ	μ_e (cm ² ·V ⁻¹ ·S ⁻¹)	μ_h (cm ² ·V ⁻¹ ·S ⁻¹)	μ_{solar} (cm ² ·V ⁻¹ ·S ⁻¹)
PBDB-T:N2200	0.73×10^{-3}	0.12×10^{-3}	1.38×10^{-3}
PTzBI:N2200	4.31×10^{-5}	1.15×10^{-3}	1.55×10^{-3}