

Supplementary Information

Improving the performance of photovoltaic cells based on nanocomposites with contorted polycyclic aromatic hydrocarbon additive in bulk heterojunction

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polycyclic aromatic hydrocarbon

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- 1. The J–V characteristics of the iPSCs based on the PTB7-Th:PC₇₁BM bulk**

heterojunction with and without the 4Cl-cHBC additives.

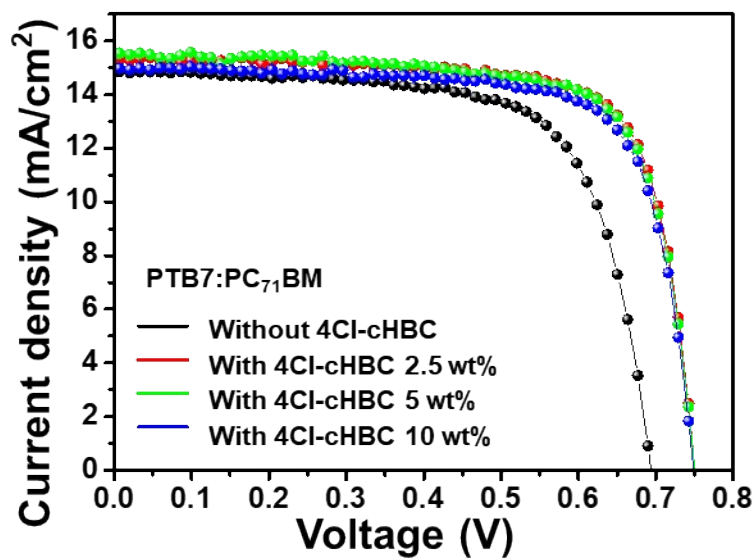


Figure S1. The J–V characteristics of the iPSCs based on PTB7:PC₇₁BM bulk heterojunction with and without the 4Cl-cHBC additive under the illumination (AM1.5).

2. Photovoltaic performances of the iPSCs based on the PTB7:PC₇₁BM bulk

heterojunction with and without the 4Cl-cHBC additives.

Active layer	V_{oc} (V) “avg.”	J_{sc} (mA cm ⁻²) “avg.”	FF “avg.”	PCE (%) “avg.”
PTB7:PC71BM	0.692 “0.693”	14.838 “14.679”	69.865 “70.101”	7.176 “7.128”
PTB7:PC ₇₁ BM with 4Cl-cHBC 2.5 wt%	0.748 “0.747”	15.345 “15.389”	75.524 “74.340”	8.673 “8.550”
PTB7:PC ₇₁ BM with 4Cl-cHBC 5 wt%	0.749 “0.748”	15.525 “15.292”	74.204 “73.527”	8.625 “8.406”
PTB7:PC ₇₁ BM with 4Cl-cHBC 10 wt%	0.747 “0.746”	14.988 “14.706”	74.571 “74.320”	8.348 “8.154”

Table S1. Photovoltaic performances of the iPSCs based on the PTB7:PC₇₁BM bulk heterojunction with and without the 4Cl-cHBC additives.

3. The fitting plot of J–V characteristics by space-charge limited current (SCLC) model

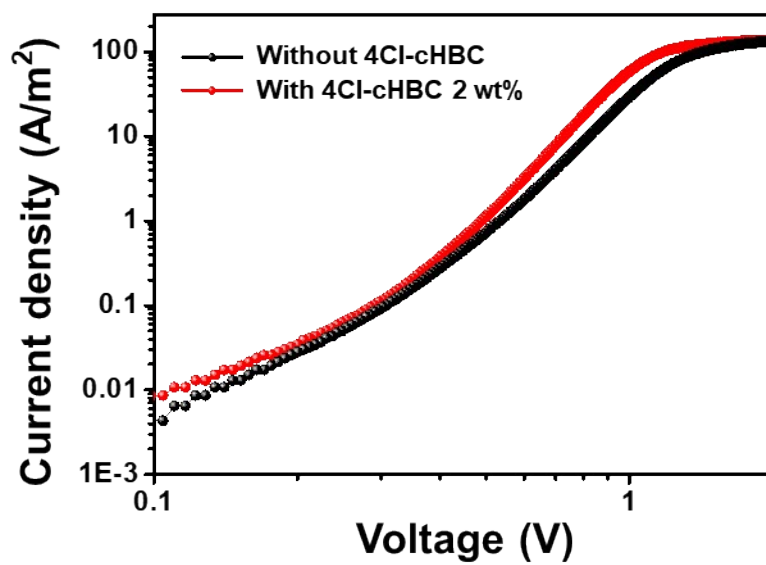


Figure S2. The fitting plot of J–V characteristics by space-charge-limited-current (SCLC) model in the electron-only device based on PTB7-Th:PC₇₁BM bulk heterojunction with and without the 4Cl-cHBC additive.

4. Energy level diagram of the iPSCs based on the PTB7-Th:PC₇₁BM bulk heterojunction with the 4Cl-cHBC additives.

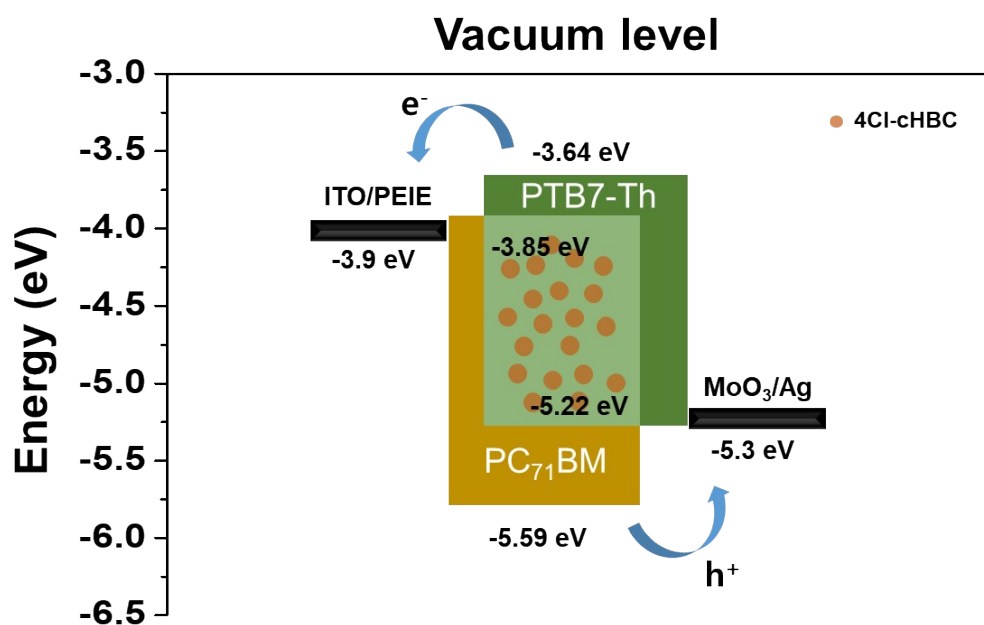


Figure S3. Energy level diagram of the iPSCs based on the PTB7-Th:PC₇₁BM bulk heterojunction with the 4Cl-cHBC additives highlighting pathways for charge generation and transport.