Supporting Information

Remove the Residual Additives towards Enhanced Efficiency with Higher Reproducibility in Polymer Solar Cells

Long Ye, Yan Jing, Xia Guo, Hao Sun, Shaoqing Zhang, Maojie Zhang, Lijun Huo and Jianhui Hou*

Corresponding author: hjhzlz@iccas.ac.cn

S1 Recorded *J-V* Curves

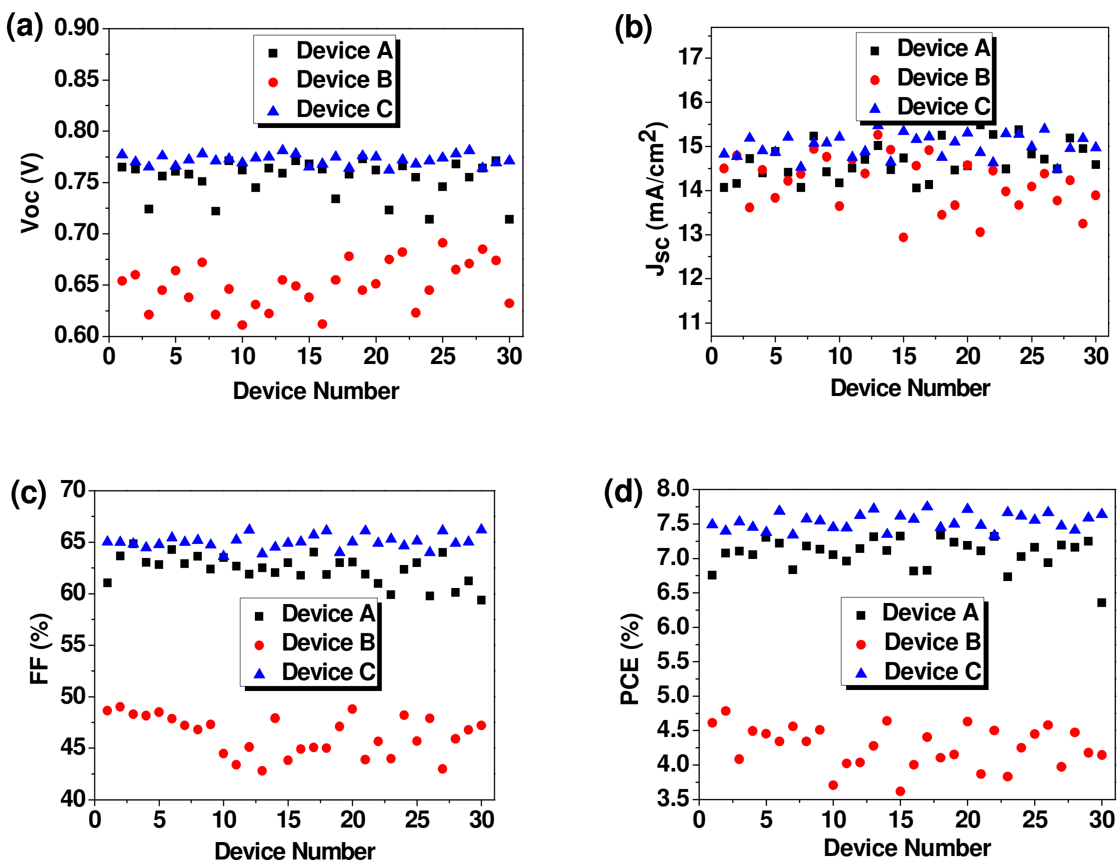

Figure S1. Statistical results (30 devices for each process) for Device-A, Device-B, and Device-C: (a) V_{oc}, (b) J_{sc}, (c) *FF*, (d) *PCE*.

S2 EQE curves for three devices

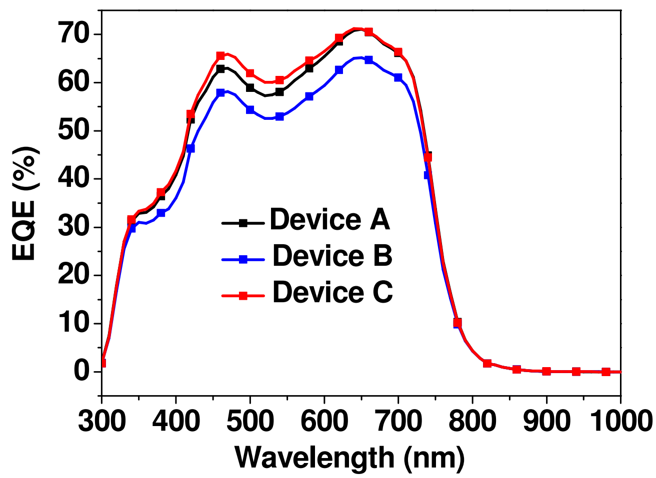

Figure S2. The EQE curves of the best performance devices at different processing conditions.

S3 Hole Mobility data of several representative polymers

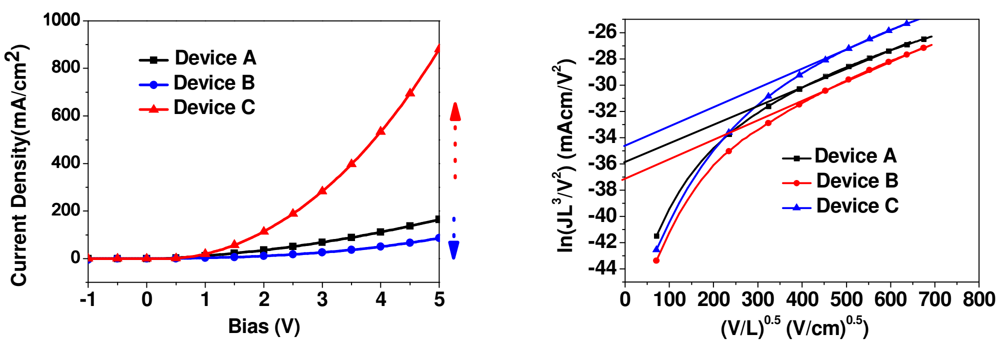

Figure S3. The *J*–*V* dark characteristics of the hole-only devices at different processing conditions.

S4 KPFM analysis

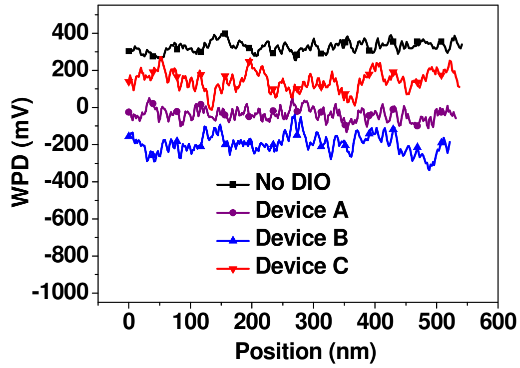

Figure S4. PF-KPFM work function differences of the top surfaces. The WFD were routing to sample for all data, and the average value of WFD, namely, WFD_{ave} were the average value deduced from a typical area within 500 nm scales.

S5 XPS Analysis

Table S1. XPS element analysis results of blend films.

Conditions	C_{1s}（%）	O_{1s}（%）	S_{2p}（%）	C/S Ratio
Pure Polymer[a]	87.27	1.82	10.99	7.94
Pure Polymer	86.55	2.73	10.72	8.07
Device A	90.19	2.77	7.04	12.81
Device B	90.22	2.47	7.31	12.34
Device C	90.45	2.82	6.72	13.46

[a] Calibrated by the stoichiometric ratios

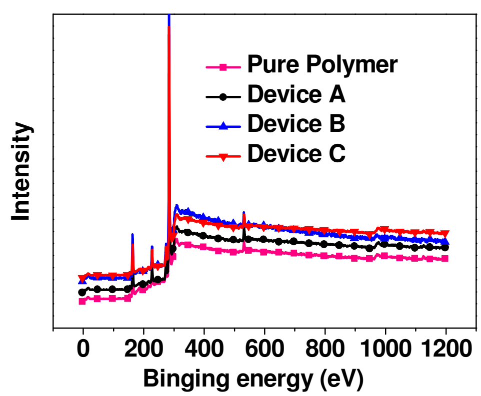

Figure S5. XPS survey of the top surfaces at various conditions.

S6 Physical Chemistry Calculation

According to Clausius-Clapeyron Equation $\ln\left(\frac{P_2}{P_1}\right)=\frac{\Delta_{vap}H_m}{R}\left(\frac{1}{T_1}-\frac{1}{T_2}\right)$

Where R is the gas constant, Based on two data point (2 mmHg, 417.15 K) and (6 mmHg, 441.15 K), We could obtain the vapor the 69.99 kJ/mol, then can calculate the vapor pressure at ambient temperature is 1×10^{-2} Pa.