Electronic Supplementary Information

From planar heterojunction to n-i structure: An efficient strategy to improve short-circuit current and power conversion efficiency of aqueous-solution-processed hybrid solar cells

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Figure S1. (a) UV-vis absorption spectra of CdTe NCs with a TEM image inserted. (b) UV-vis absorption spectrum and the synthetic route of PPV.

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Figure S2. AFM surface topography images (500 nm \times 500 nm) of the CdTe film before (a) and after (b) annealing for 1 h at 250 °C.

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Figure S3. Cross-sectional scanning electron microscopy image of the planar-heterojunction device.

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Figure S4. Jsc of the planar-heterojunction devices with different thickness of CdTe film.

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Figure S5. Electron mobility (a) and hole mobility (b) measurement using the SCLC method of different structures.

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Figure S6. J-V characteristics of the devices with different structures at the reverse

bias

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Science					
Jsc/mA/cm ²	Voc/V	FF	PCE/%		
12.13	0.591	0.512	3.64		
11.85	0.594	0.533	3.75		
15.87	0.596	0.404	3.82		
16.08	0.591	0.501	4.76		
	Jsc/mA/cm ² 12.13 11.85 15.87 16.08	Jsc/mA/cm ² Voc/V 12.13 0.591 11.85 0.594 15.87 0.596 16.08 0.591	Jsc/mA/cm ² Voc/V FF 12.13 0.591 0.512 11.85 0.594 0.533 15.87 0.596 0.404 16.08 0.591 0.501		

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Table S1. Photovoltaic performance parameters of the devices with different

structures

	BHJ	n-i	n-i/CdCl ₂
μ_e /×10 ⁻⁴	1.62	2.63	3.16
$\mu_h \! / \! \times \! 10^{\text{-5}}$	6.31	0.05	3.89

Table S2. Electron mobility and hole mobility of different structures.