

Electronic supplementary information

Enhanced Performance in Bulk Heterojunction Solar Cells with Alkylidene Fluorene Donor by Introducing Modified PFN-OH/Al Bilayer Cathode

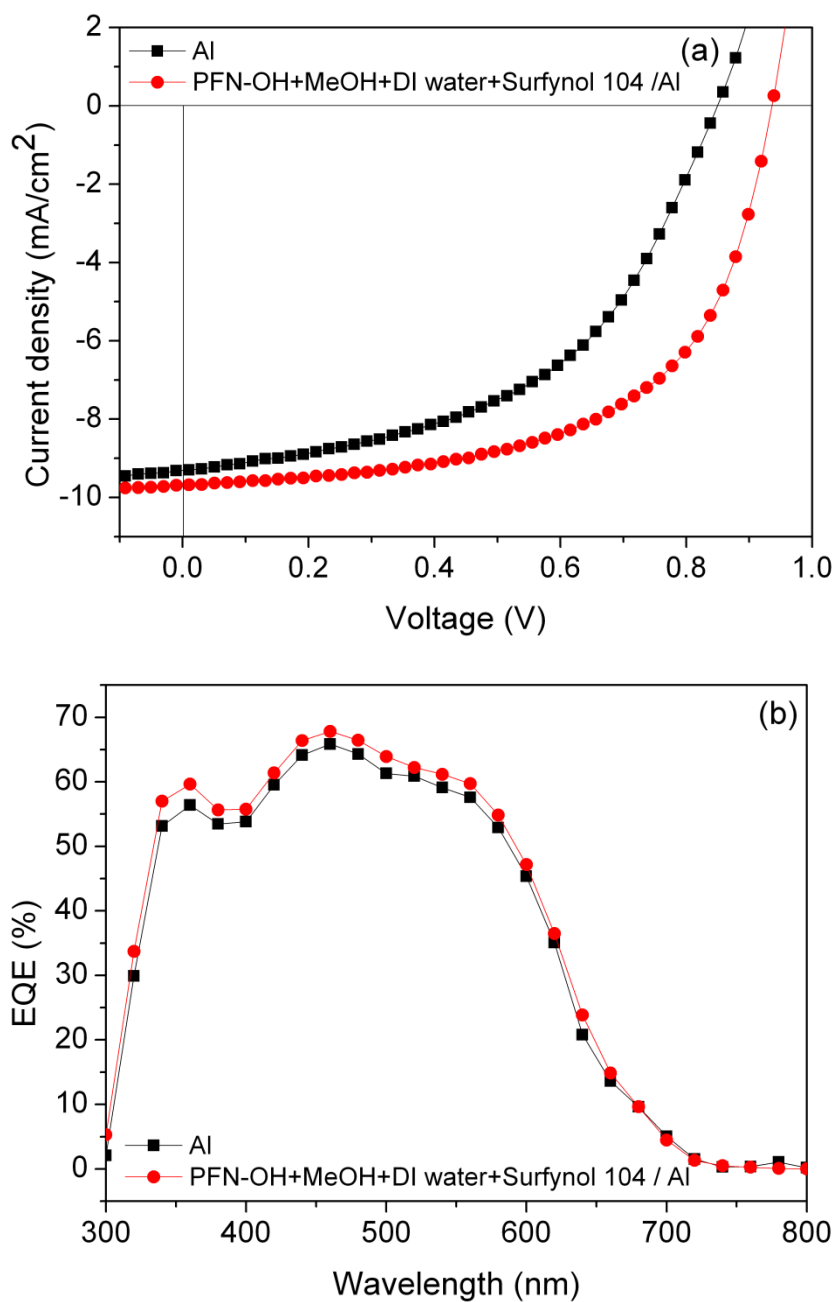
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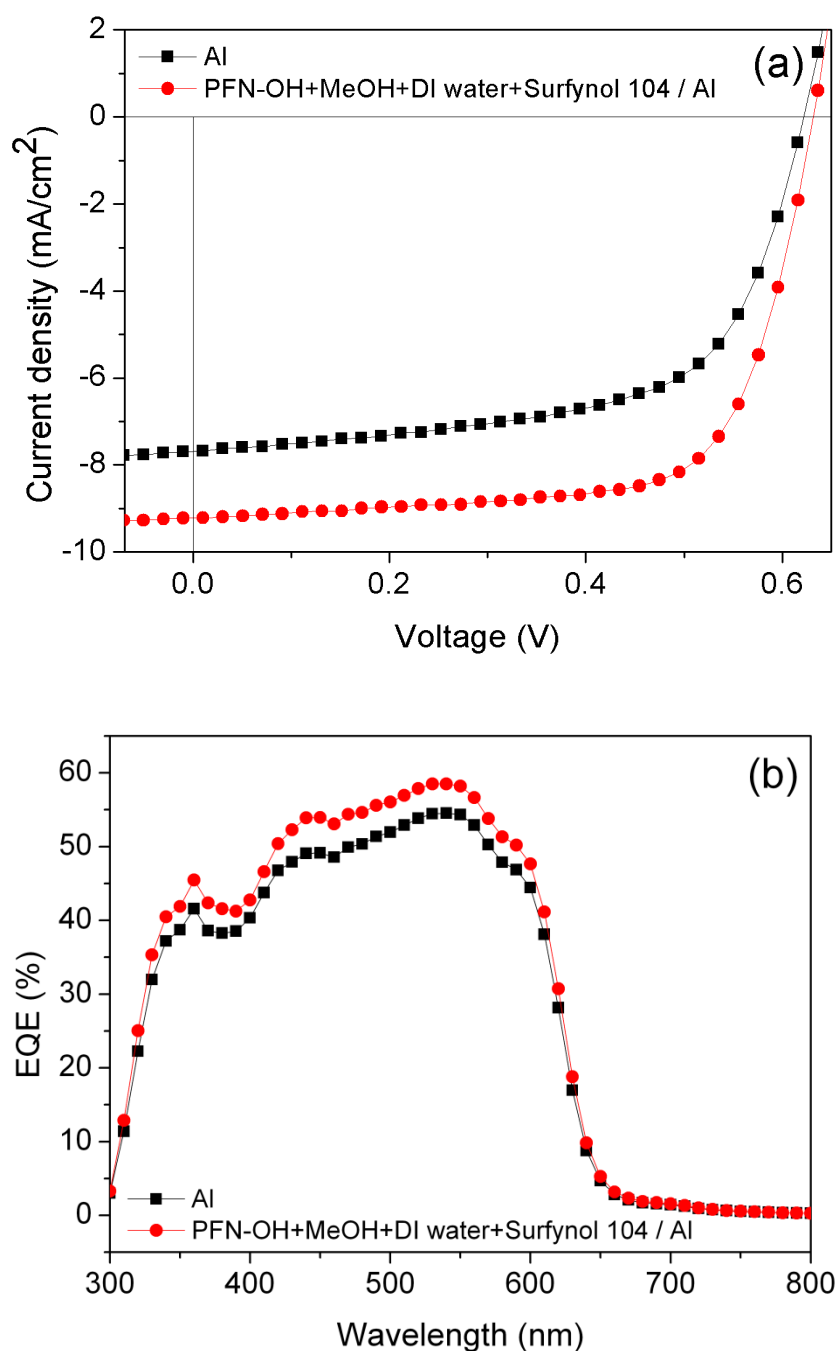
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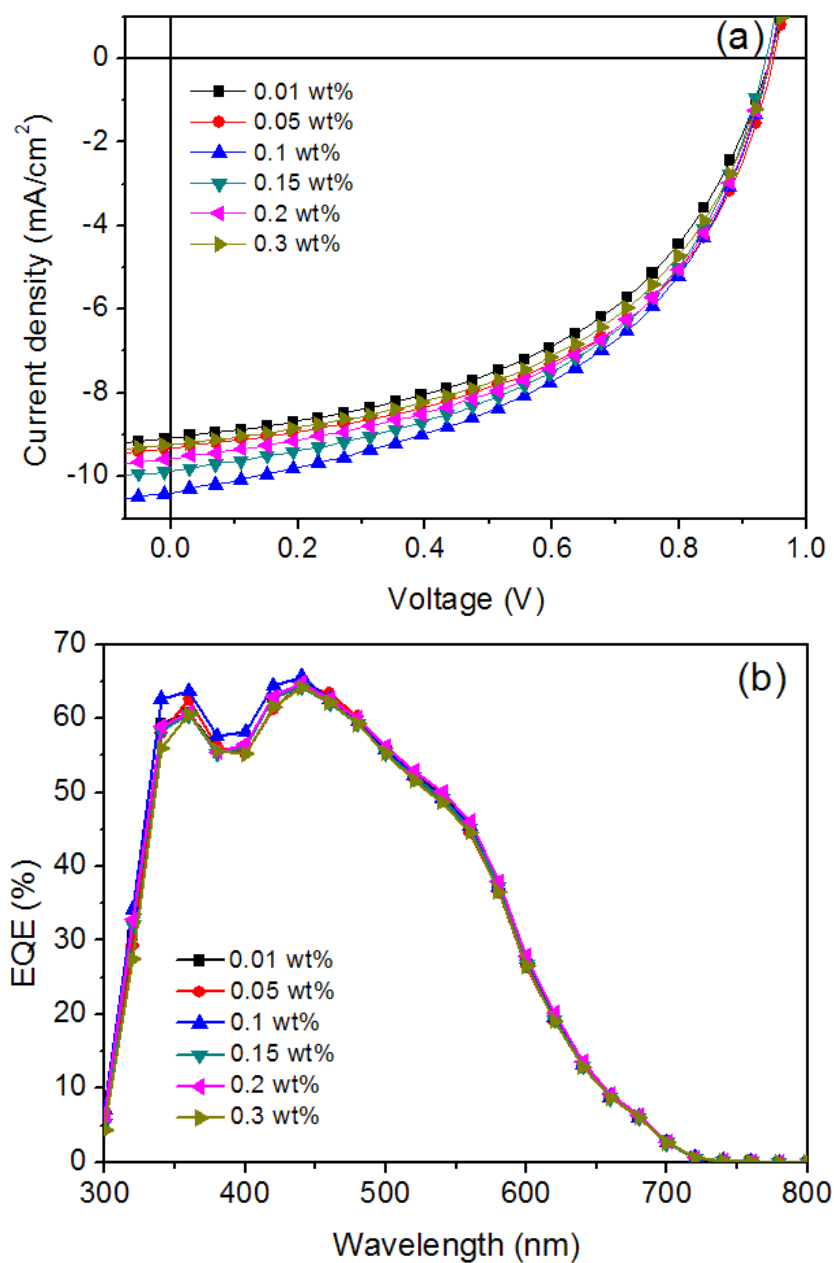
Polymer	Cathode	Voc[V]	Jsc[mA cm ⁻²]	FF[%]	PCE[%]
PCDTBT : PC ₇₁ BM (1 : 4)	Al	0.858	9.3	49.5	4.0
	PFN-OH+DI water+ Surfynol 104/Al	0.959	9.7	58.5	5.3

Fig.S1 (a) J-V characteristics and (b) external quantum efficiency (EQE) characteristics of PSCs with PCDTBT:PC₇₁BM = 1:4 as the active layer when using Al and modified PFN-OH /Al cathodes.



Polymer	Cathode	Voc[V]	Jsc[mA cm ⁻²]	FF[%]	PCE[%]
P3HT : PC ₆₁ BM (1 : 0.6)	Al	0.616	7.7	62.6	3.0
	PFN-OH+DI water+ Surfynol 104/Al	0.621	9.2	68.6	3.9

Fig.S2 (a) J-V characteristics and (b) external quantum efficiency (EQE) characteristics of PSCs with P3HT:PC₆₁BM = 1:0.6 as the active layer when using Al and modified PFN-OH /Al cathodes.



Surfynol 104	Voc[V]	Jsc[mA/cm ²]	FF[%]	PCE[%]
0.01 wt%	0.939	9.1	49.2	4.2
0.05 wt%	0.939	9.3	51.6	4.5
0.1 wt%	0.939	10.5	49	4.8
0.15 wt%	0.939	9.8	49.7	4.6
0.2 wt%	0.939	9.5	50.7	4.5
0.3 wt%	0.939	9.2	50.2	4.4

Fig.S3 (a) J-V characteristics and (b) external quantum efficiency (EQE) characteristics of PSCs with PAFBToBT:PC₇₁BM = 1:4 as the active layer when introducing an interfacial layer with various concentrations of Surfynol 104 into PFN-OH+methanol solution.

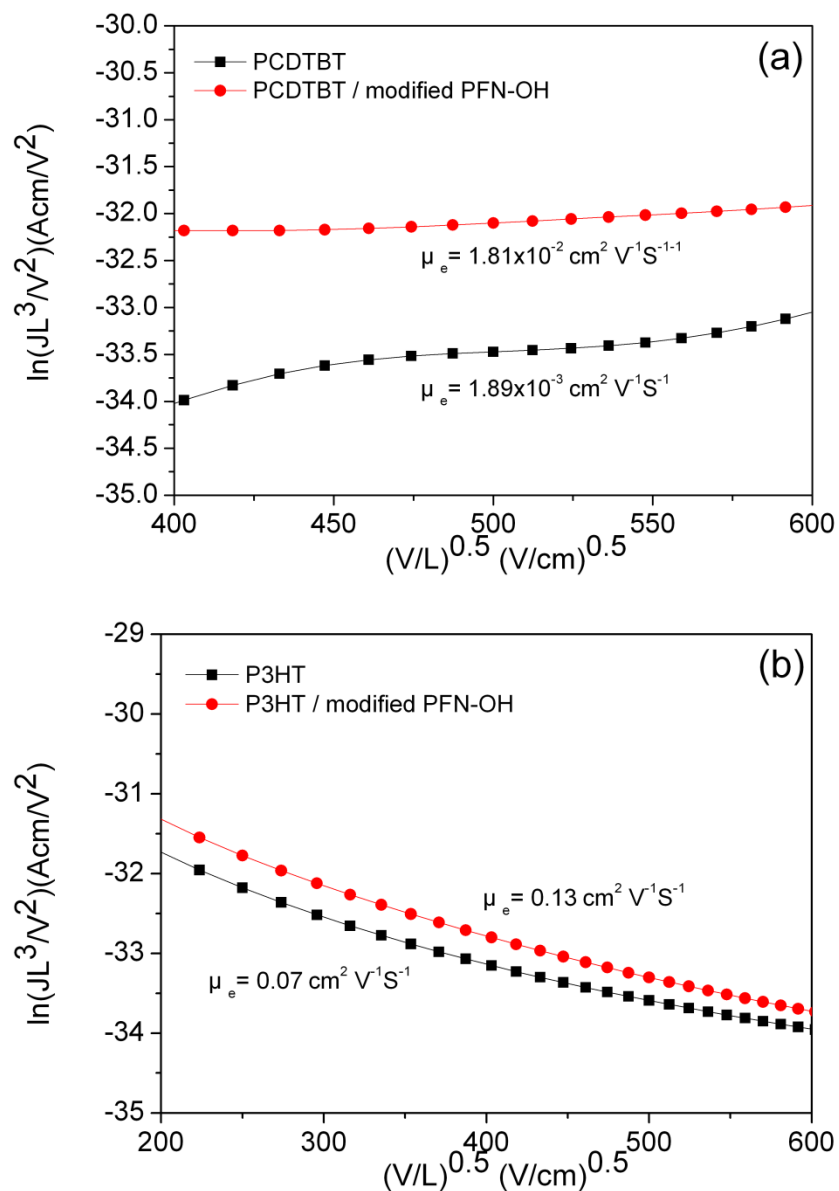


Fig.S4 The logarithm of JL^3/V^2 versus the square root of the mean electric field of electron-only devices measured in the dark. (a) PCDTBT, and (b) P3HT.