Supporting information

Application of Arginine-Doped PEDOT:PSS as Hole Transfer Layer in Perovskite Solar Cells

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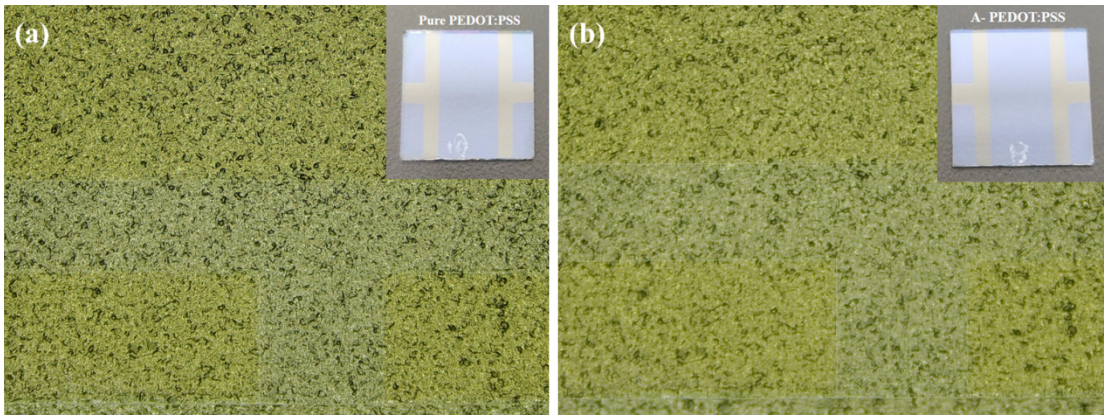

Fig.S1. Microscope images of different PEDOT:PSS film：(a) Pure PEDOT:PSS, (c) A-PEDOT:PSS.

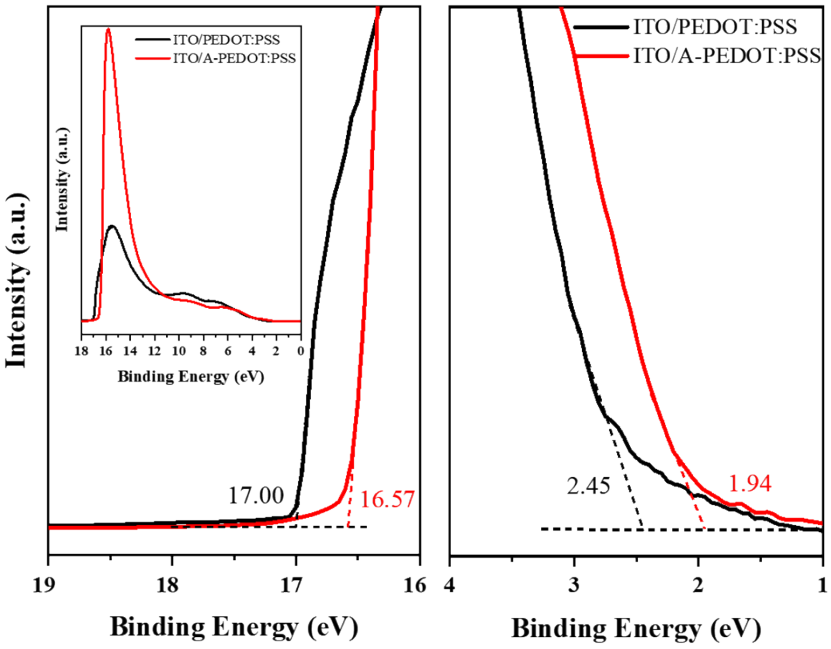

Fig. S2. UPS spectra of PEDOT:PSS and A-PEDOT:PSS films

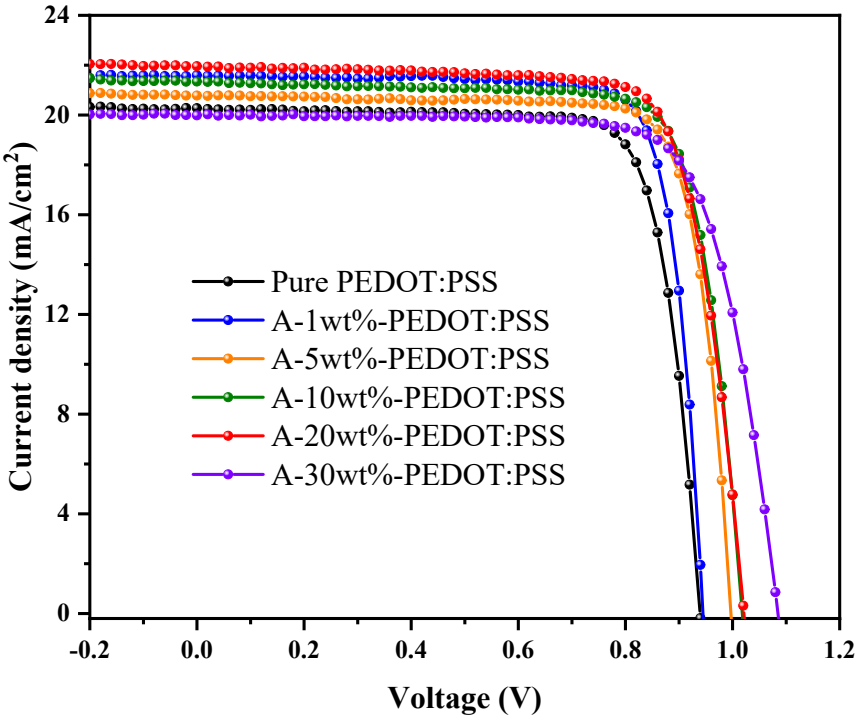

Fig. S3. J-V characteristics of inverted PSCs with different concentrations (1, 5, 10, 20, and 30 wt%) of arginine hole transport layers under AM 1.5G illumination of 100mW/cm^2.

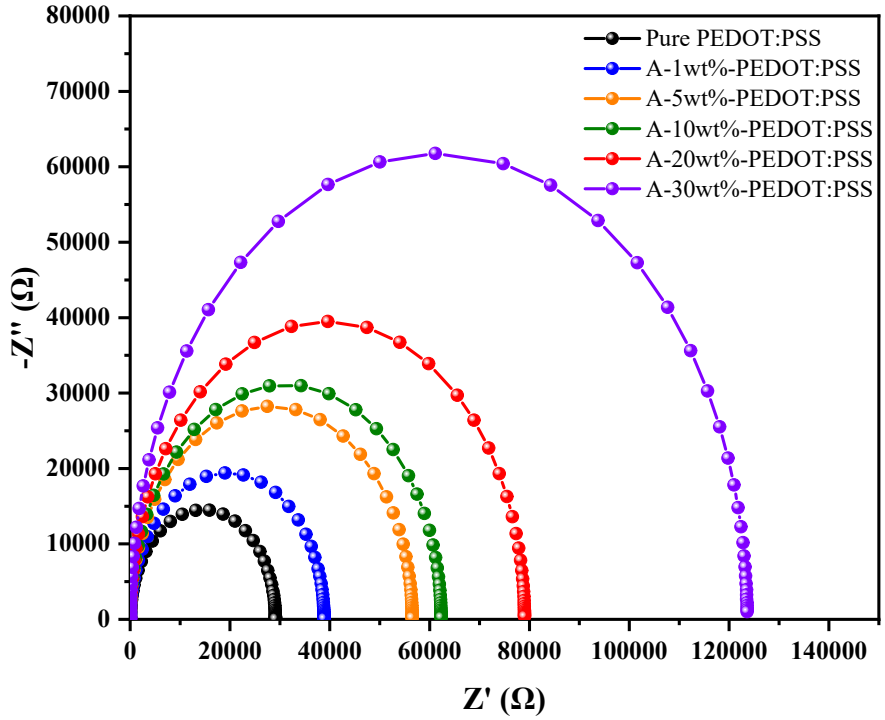

Fig.S4. Electrochemical impedance spectroscopy of inverted PSCs with different concentrations (1, 5, 10, 20, and 30 wt%) of arginine hole transport layers under dark conditions.

Table S1 Parameters of equivalent circuit extracted from the fitting of impedance data in A-PEDOT:PSS device and control device.

Device	R_s (Ω)	R_{rec} (Ω)	C (F)
Pure PEDOT:PSS	66.97	2.904×10^{4}	7.333×10^{-9}
A-1 wt%-PEDOT:PSS	41.48	3.882×10^{4}	7.468×10^{-9}
A-5 wt%-PEDOT:PSS	28.85	5.648×10^{4}	9.129×10^{-9}
A-10 wt%-PEDOT:PSS	27.60	6.227×10^{4}	8.944×10^{-9}
A-20 wt%-PEDOT:PSS	27.95	7.899×10^{4}	9.357×10^{-9}
A-30 wt%-PEDOT:PSS	53.51	1.235×10^{5}	1.067×10^{-8}

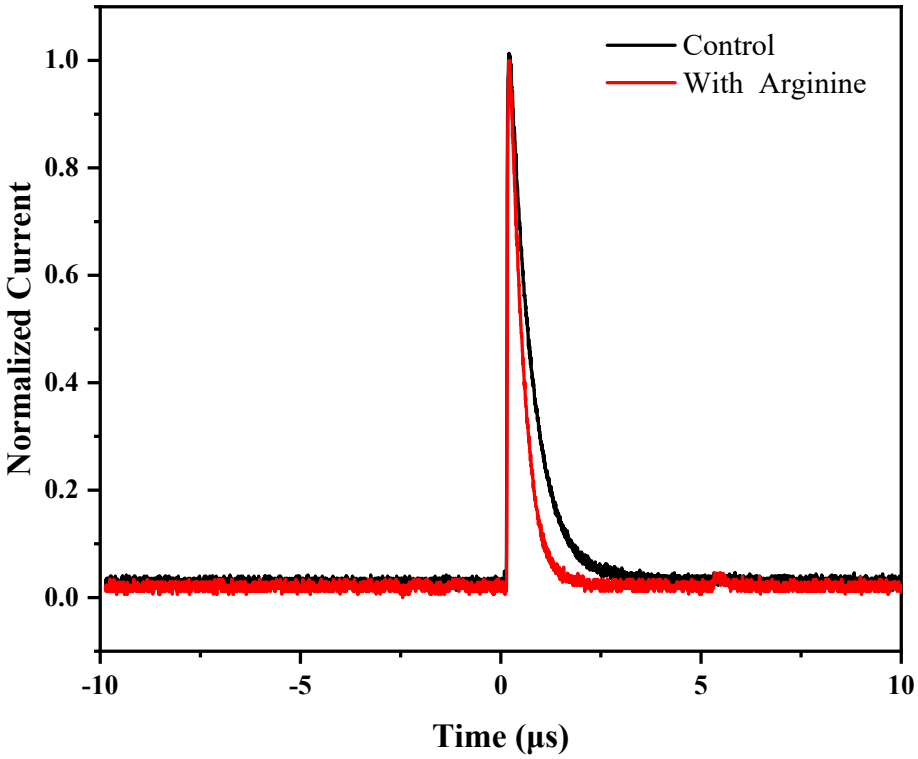

Fig.S5. TPC measurements of A-PEDOT:PSS device and control device.