Supplementary Information

Self-Assembled Polar Hole Transport Monolayer for High-Performance Perovskite Photodetectors

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Contents

S1. UV-vis spectra corresponding to different thicknesses of P3HT-COOH films

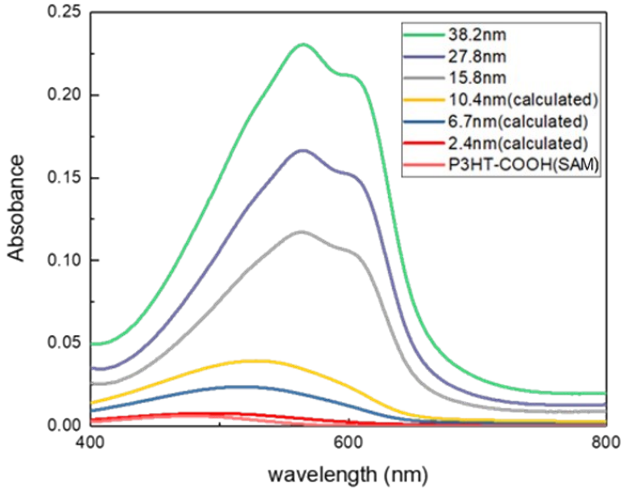

Fig. S1 UV-vis absorbance corresponding to different thicknesses of P3HT-COOH films.

S2. Performance of $MAPbI_3$ solar cells with different HTLs

Fig. S2 presents the photocurrent density (J) – voltage (V) curves of the best $MAPbI_3$ devices using PEDOT:PSS, spin-coated P3HT-COOH, and self-assembled P3HT-COOH HTLs under AM 1.5G one sun illumination and the corresponding device performance parameters over 20 cells were summarized in Table S1.

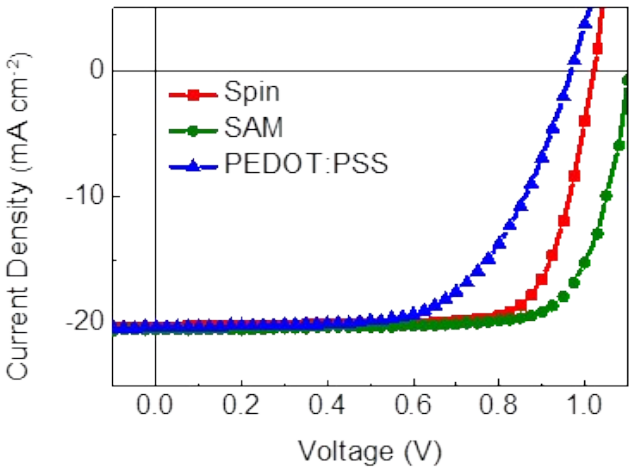

Fig. S2 Current density – voltage (J – V) curves of perovskite solar cells under one sun illumination (AM 1.5G) .

Table S1 Summary of device performance parameters under one sun condition with AM 1.5G filter. The values in the parenthesis denote the values for the best device.

Device	Jsc (mA cm^{-2})	Voc (V)	FF (%)	PCE (%)
Spin	20.23 ± 0.19 (20.30)	1.030 ± 0.001 (1.028)	76.24 ± 0.33 (76.44)	15.78 ± 0.04 (15.81)
SAM	20.48 ± 0.01 (20.50)	1.098 ± 0.001 (1.099)	76.66 ± 0.24 (76.81)	17.19 ± 0.03 (17.21)
PEDOT:PSS	20.15 ± 0.25 (20.30)	0.970 ± 0.015 (0.968)	62.57 ± 0.35 (62.46)	12.12 ± 0.09 (12.25)