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Simultaneouly Enhanced Durability and Performance by Employing Dopamine Copolymerized PEDOT with High Work Function and Water-proofness for Inverted Perovskite Solar Cells

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Partial characterization results

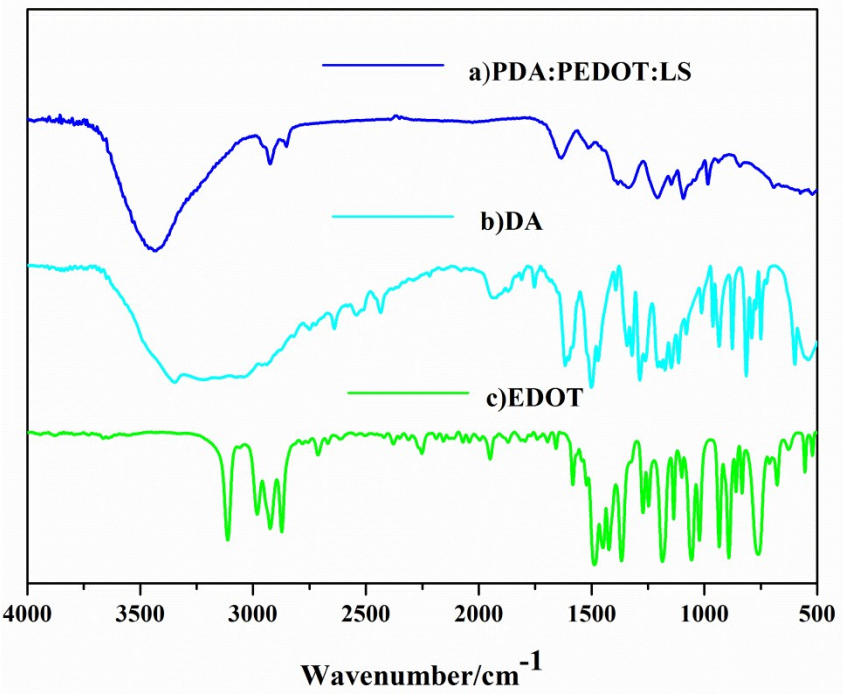

Figure S1. IR spectra of samples: a) PDA:PEDOT:LS; b)DA; c)EDOT.

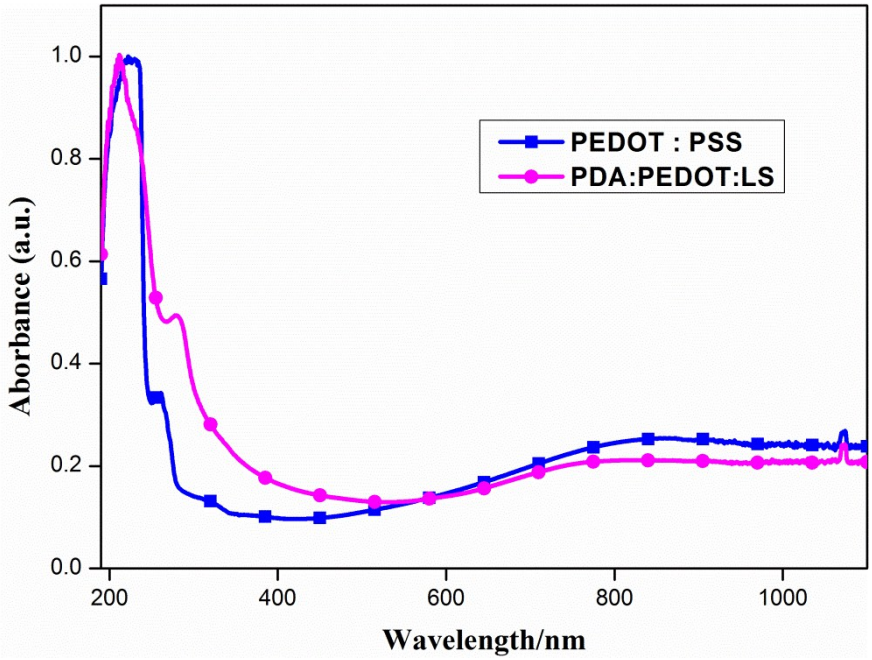

Figure S2. The UV-*vis* absorption spectra for PEDODT:PSS and PDA:PEDOT:LS;

Table S1. The conductivity of PEDOT:PSS ,PDA:PEDOT:LS and PDA:PEDOT:LS-h.

Sample	Conductivity (s/cm)
PEDOT:PSS	0.02
PDA:PEDOT:LS	0.004
PDA:PEDOT:LS-h	0.08

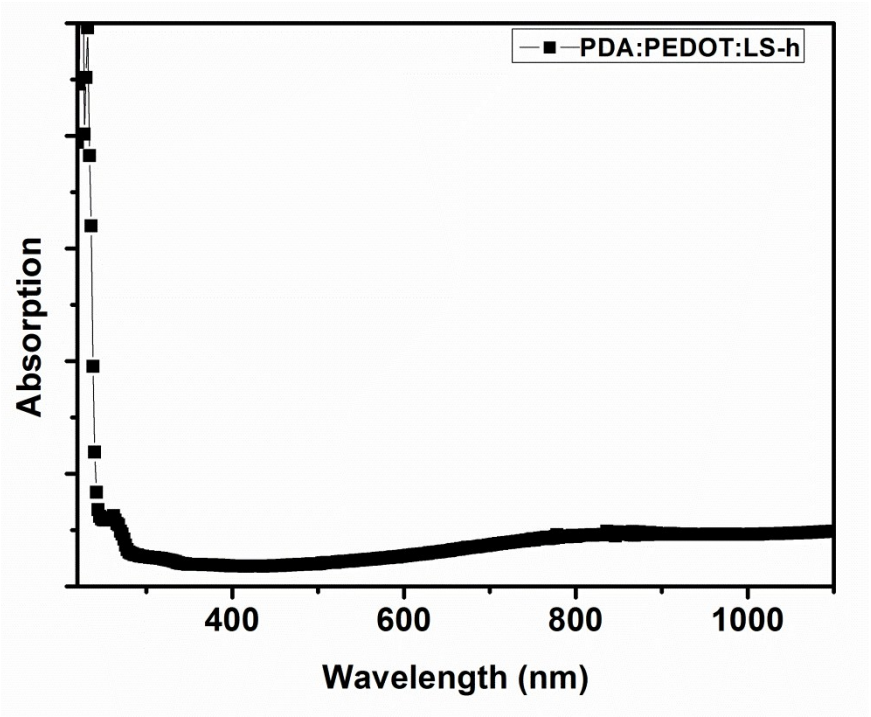

Figure S3. The UV–*vis* absorption spectra for the PDA:PEDOT:LS-h dispersions

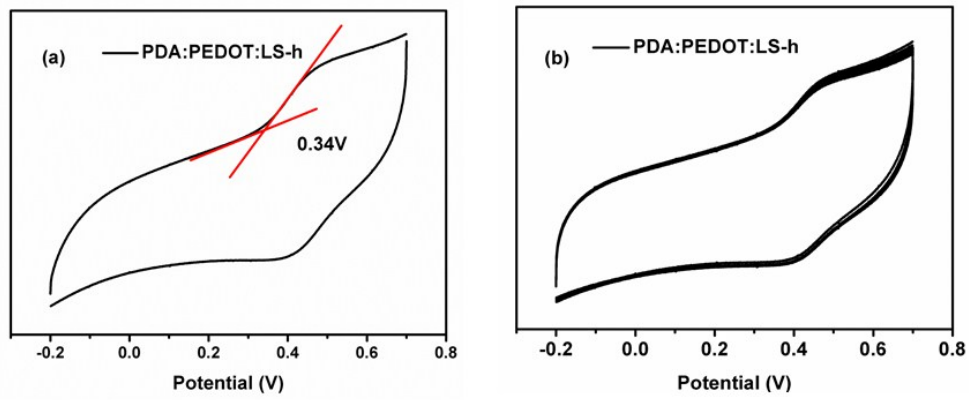

Figure S4. Cyclic voltammogram of PDA:PEDOT:LS-h film in CH_2Cl_2 (a); 30 scans (b) (0.1M Bu_4NPF_6, Scan rate: 100 mV/s).

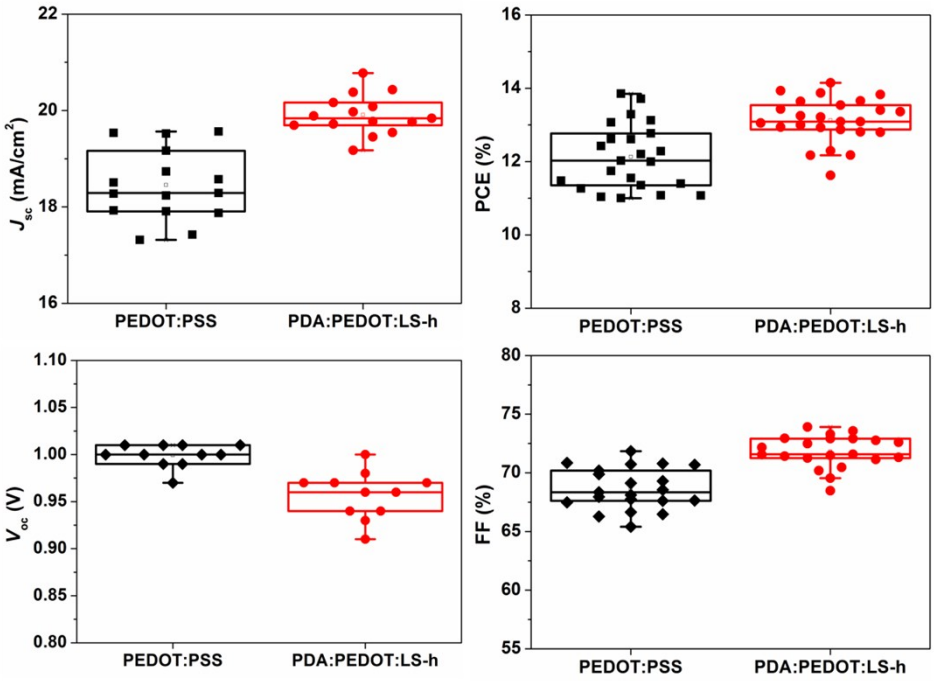

Figure S5. The statistic device performances with PEDOT: PSS and PDA:PEDOT:LS-h as the HELs, respectively.

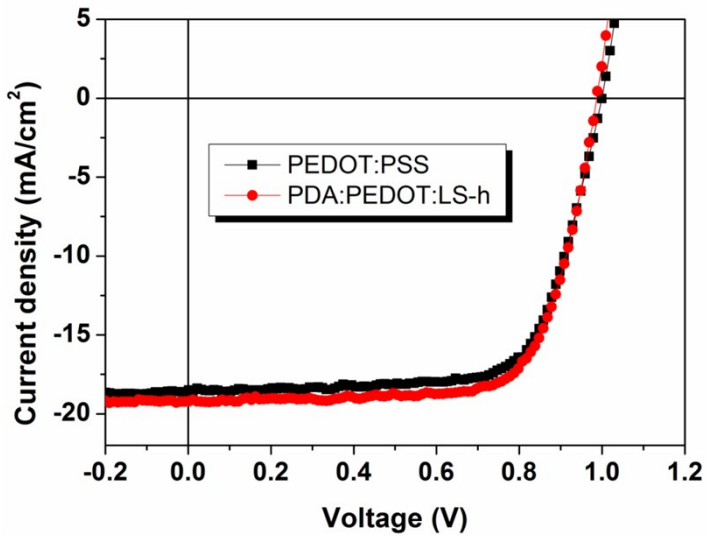

Figure S6. *J-V* curves of the PSCs with PEDOT:PSS and PDA:PEDOT:LS-h as the HELs

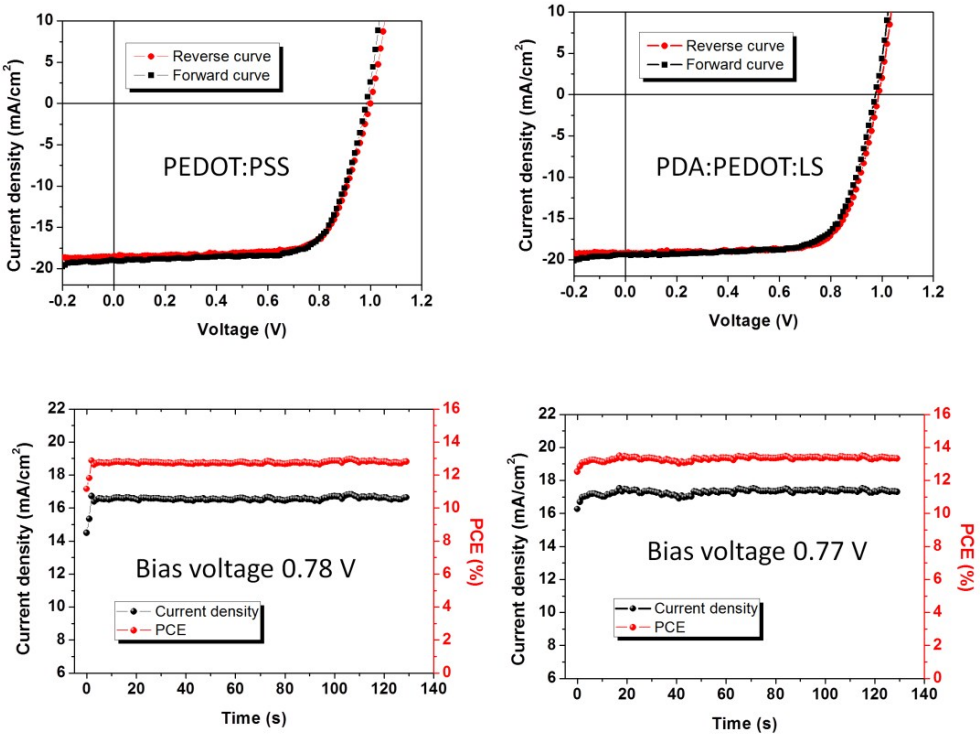

Figure S7. (a-b) *J-V* curves of devices with (a) PEDOT: PSS and (b) PDA:PEDOT:LS-h HEL measured along the forward (from -0.2 V to 1.1 V) and reverse (from 1.1 V to -0.2 V) scans. The voltage step is 0.01V, and the delay time is 100 ms; Steady output characteristics of devices with (c) PEDOT:PSS and (d) PDA:PEDOT:LS-h as the HELs.

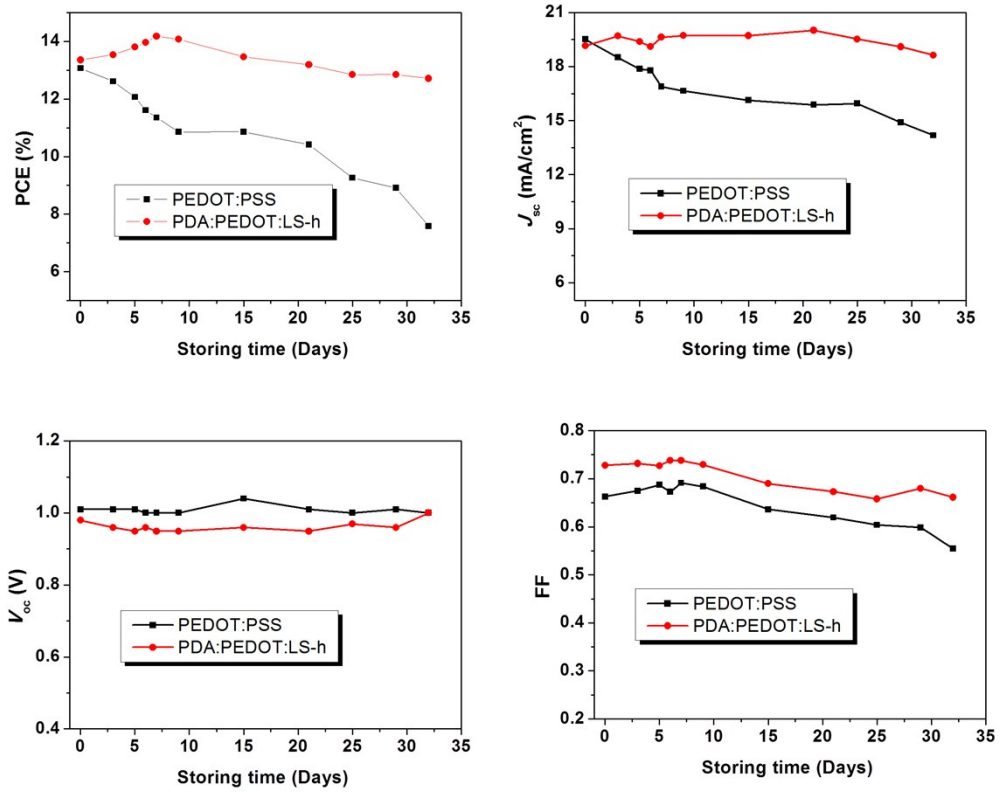

Figure S8. Stability characteristics of the PSCs using PEDOT:PSS and PDA:PEDOT:LS-h as the HELs. (a) PCE; (b) J_{sc}; (c) V_{oc}; (d) FF.