Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supporting Information

Efficient ITO-free organic light-emitting devices with dual-functional PSS-rich PEDOT:PSS electrode by enhancing carrier balance

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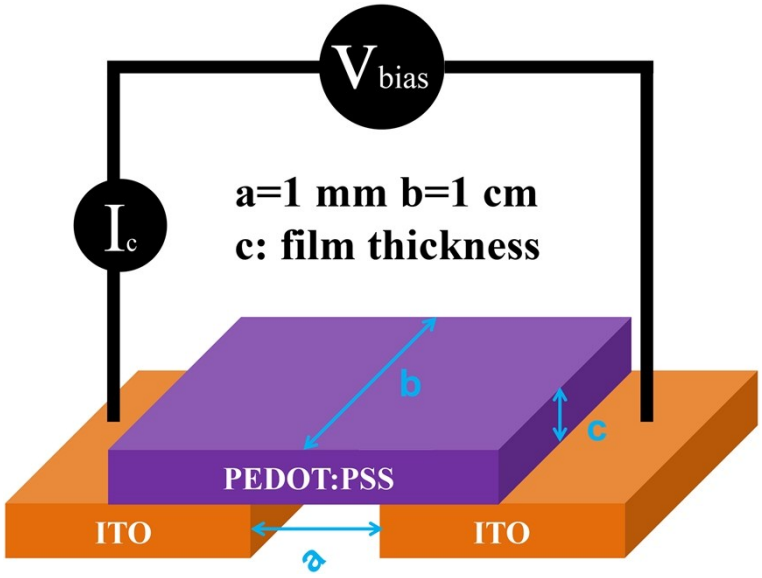

Figure S1. the test model for measuring the lateral conductivity of PEDOT:PSS films

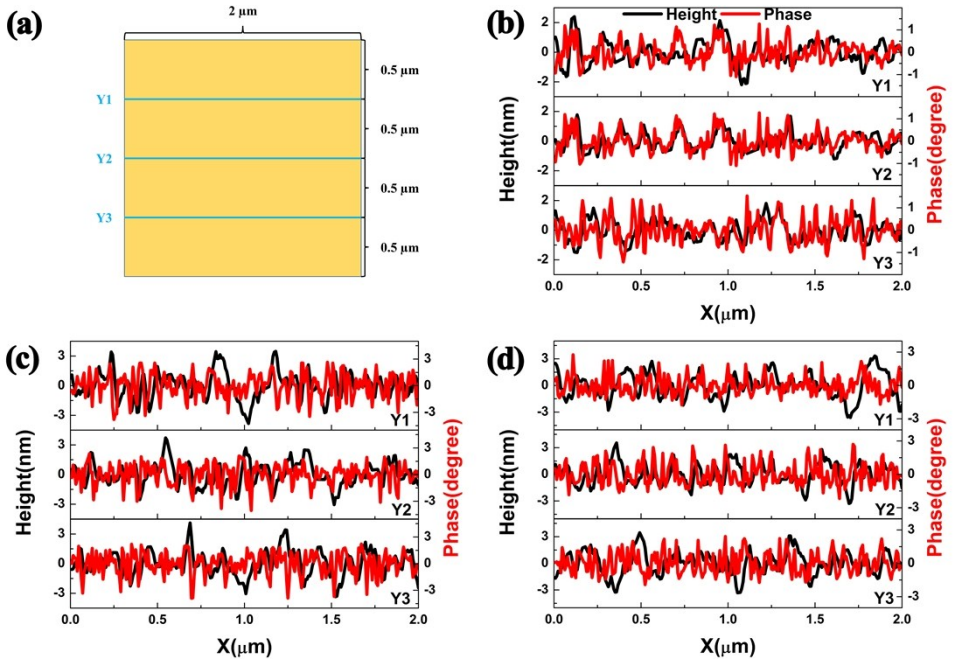

Figure S2. (a) the positions of cross-section curves Y1, Y2 and Y3, (b) (c) (d) the cross-section curves of PEDOT-1, PEDOT-2 and PEDOT-3 films, black curves represent the curves in height images and red curves represent the curves in phase images

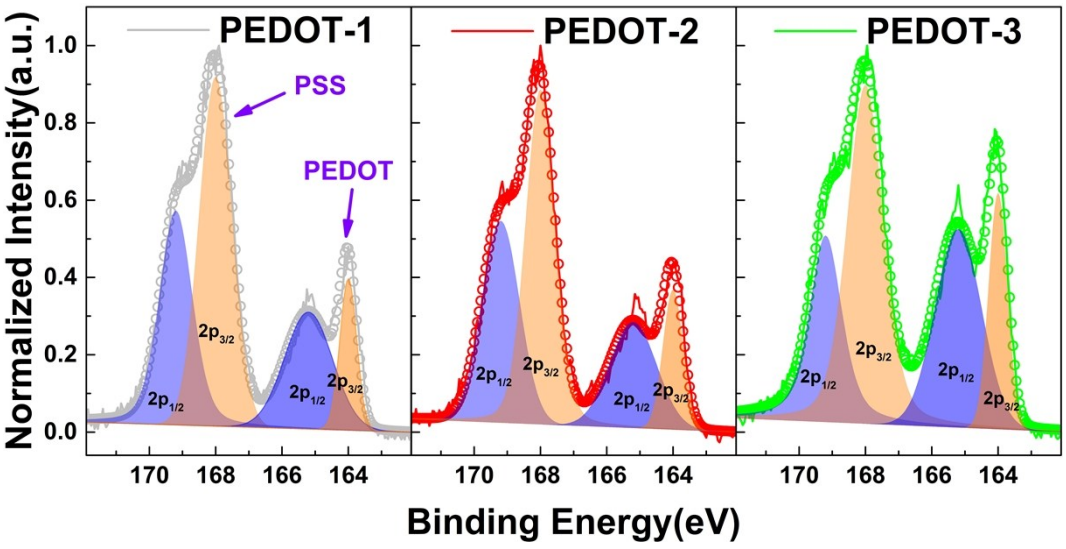

Figure S3. the X-ray photoelectron spectroscopic(XPS) spectra of PEDOT-1, PEDOT-2 and PEDOT-3

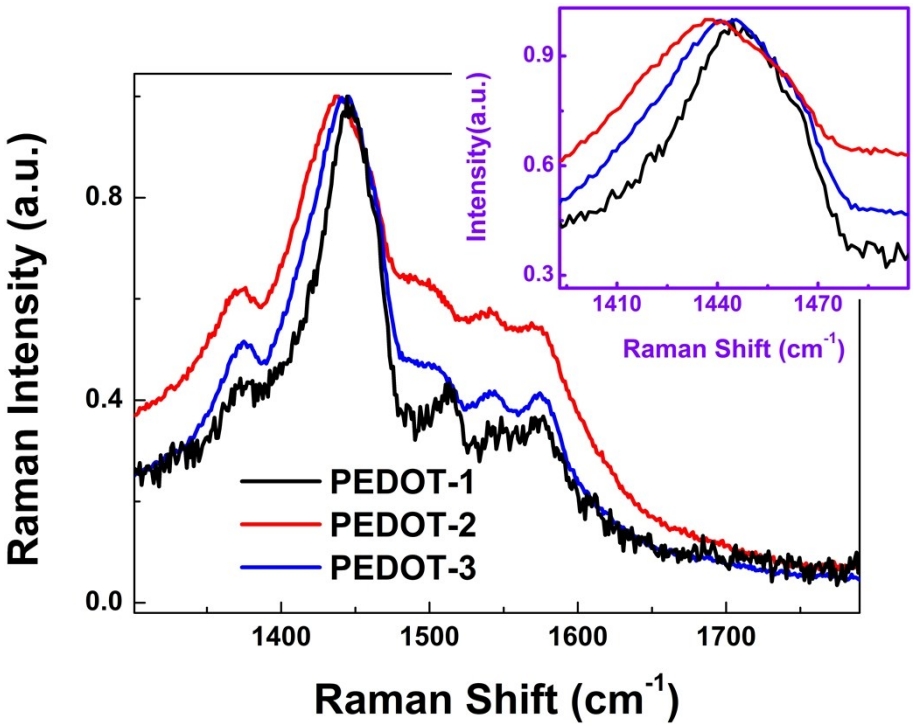

Figure S4. the Raman spectra of PEDOT-1, PEDOT-2 and PEDOT-3

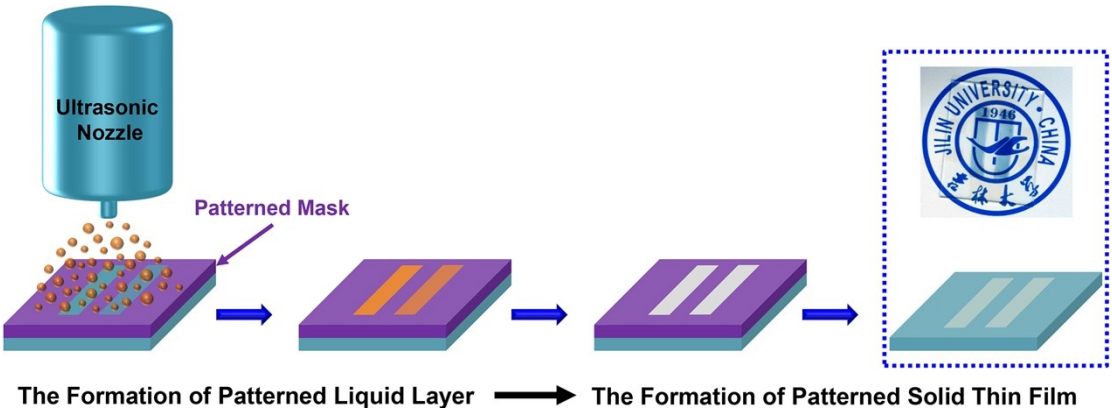

Figure S5. the fabrication process of patterned PEDOT:PSS films, the inset is the patterned PEDOT:PSS film

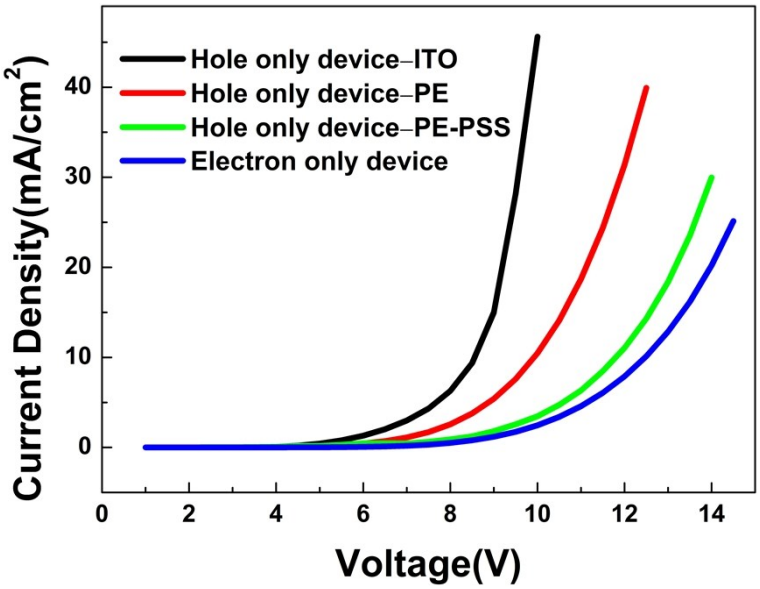

Figure S6. the current density-voltage characteristics of single carrier devices, the hole only device is ITO (for device ITO), PEDOT-3 (for device PE), PEDOT-2 (for device PE-PSS)/TAPC (25 nm)/TCTA (5 nm)/CBP: 10 wt% $Ir(ppy)_3$ (30 nm)/TAPC (45 nm)/MoO_3 (3 nm)/Mg:Ag (100 nm), the electron only device is ITO/TmPyPB (30 nm) /CBP: 10 wt% $Ir(ppy)_3$ (30 nm)/TmPyPB (45 nm)/LiF (1 nm)/Mg:Ag (100 nm).

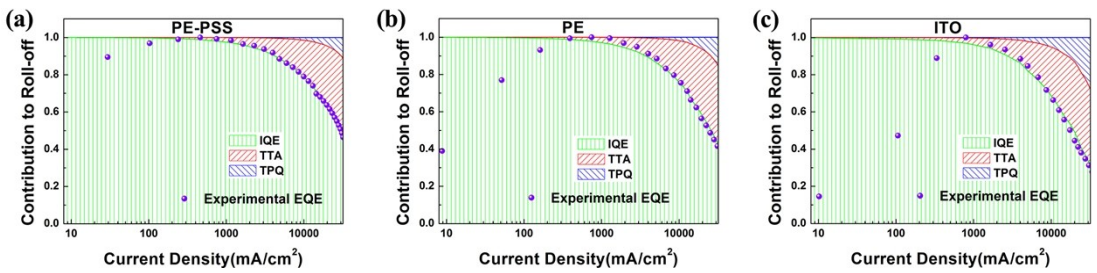

Figure S7. the contribution of TTA and TPQ to efficiency roll-off in Devices (a) PE-PSS, (b) PE and (c) ITO

Table S1. the fitting parameters used in the simulation

τ (μs)	W (nm)	k_L ($cm^{-3}\cdot s^{-1}$)			k_{TT} ($cm^{-3}\cdot s^{-1}$)	k_{TP} ($cm^{-3}\cdot s^{-1}$)
		μ_h ($cm^2\cdot V^{-1}\cdot s^{-1}$)	μ_e ($cm^2\cdot V^{-1}\cdot s^{-1}$)	ε_r		
1.6	30	2×10^{-3}	3×10^{-4}	3	6×10^{-12}	5.6×10^{-13}

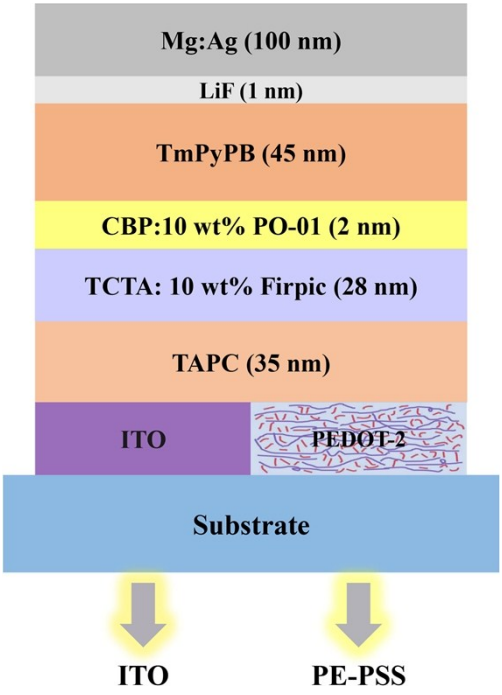

Figure S8. the device structure of white device PE-PSS and ITO-based white device

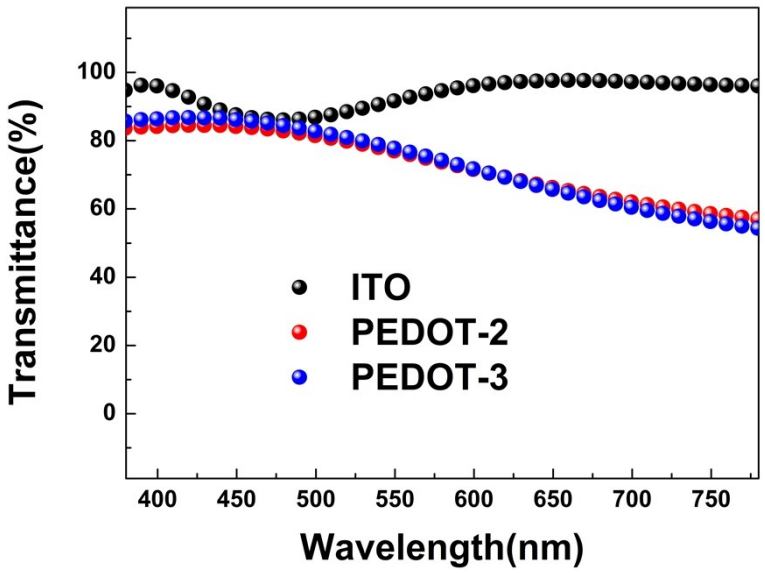

Figure S9. the transmittance of ITO, PEDOT-2 and PEDOT-3 films