Supporting information for:

**Electrochemically Deposited Film as Interface Layer to Improve the Performance of Polymer Light-emitting diodes**

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1. Electrochemical redox behavior of TCPC on PEDOT:PSS

![Cyclic voltammogram](image)

**Figure S1.** Cyclic voltammogram for electrochemical polymerization under conditions such as: 1 mg mL\(^{-1}\) TCPC, 0.1 M TBAPF\(_6\), scanning potential region 0 V to +1.5 V, mixed solvents \(V_{CH2Cl2}:V_{CH3CN} = 2:3\), scanning rate 50 mV/s.

2. AFM images of PEDOT:PSS and ECP layer

![AFM images](image)

**Figure S2.** AFM height images of (a) ITO/PEDOT:PSS and (b,c,d) ITO/PEDOT:PSS/ECP (6, 12, 15 nm). The size of the images is 5×5 μm. The ECP film is prepared under conditions such as: 1 mg mL\(^{-1}\) TCPC, 0.1 M TBAPF\(_6\), scanning potential region –0.8 V to +0.83 V, mixed solvents \(V_{CH2Cl2}:V_{CH3CN} = 2:3\), scanning rate 200 mV/s.
3. Absorption spectrum of ECP thin film on ITO/PEDOT:PSS substrate before and after rinse

Figure S3. Absorption spectrum of ECP thin film on ITO/PEDOT:PSS substrate before and after rinse with p-xylene used to dissolve light-emitting P-PPV.

4. I-V characteristic of hole only device

Figure S4. The I-V characteristic of hole only devices of ITO/PEDOT:PSS (40 nm)/ECP (x nm)/P-PPV (80 nm)/MoO₃ (10 nm)/Al (120 nm), x=0, 12 nm. X = 0 means that there was no ECP layer between PEDOT:PSS and P-PPV, which was actually a control device.
5. Electroluminescence (EL) spectrum of PLEDs device

![EL Spectrum](image)

**Figure S5.** The EL spectra of PLEDs devices with ECP thin layer of different thickness.