Supporting Information for

Study of White Electroluminescence from Single-Component Polymer Using Electrolyte-Gated Diode

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1. Bandgap, HOMO and LUMO calculation

The photoluminescence spectrum was measured and is shown in **Figure 1A**. The single-component polymer (SCP) film exhibits a bright blue emission at 375nm excitation wavelength with photoluminescence peak located at 472nm. Optical bandgap for SCP material was measured from the absorption spectrum. The onset of the longest absorption wavelength, λ_{onset}, is used to determine the optical bandgap according to equation (1)[28]:

$$E_{BG} = 1242/\lambda_{\text{onset}} \qquad (1)$$

In **Figure 1A**, the absorption spectrum of SCP film exhibits a peak at 385nm and an absorption onset at 470nm which correspond to a bandgap of 2.64eV.

Cyclic Voltammetry is one of the standard techniques used for estimating both the energy of the highest occupied molecular orbital (HOMO) and the energy of the lowest unoccupied molecular orbital (LUMO)[29].
The estimations of HOMO and LUMO can be made with equations (2) and (3):

$$\mathrm{E_{HOMO}} = \left[\left(\mathrm{E_{ox}} - \mathrm{E_{\frac{1}{2}(ferrocene)}}\right) + 4.8\right]\mathrm{eV} \qquad (2)$$

$$\mathrm{E_{LUMO}} = E_{HOMO} - E_{BG} \qquad (3)$$

, where E_{ox}=0.8 eV according to **Figure 2A**, $\mathrm{E_{\frac{1}{2}(ferrocene)}} = (0.25 + 0.79)/2$=0.52 eV (ferrocene as the reference electrode). E_{HOMO} is calculated to be 5.1eV according to equation (2). E_{LUMO} is then calculated to be 2.46 according to equation (3).

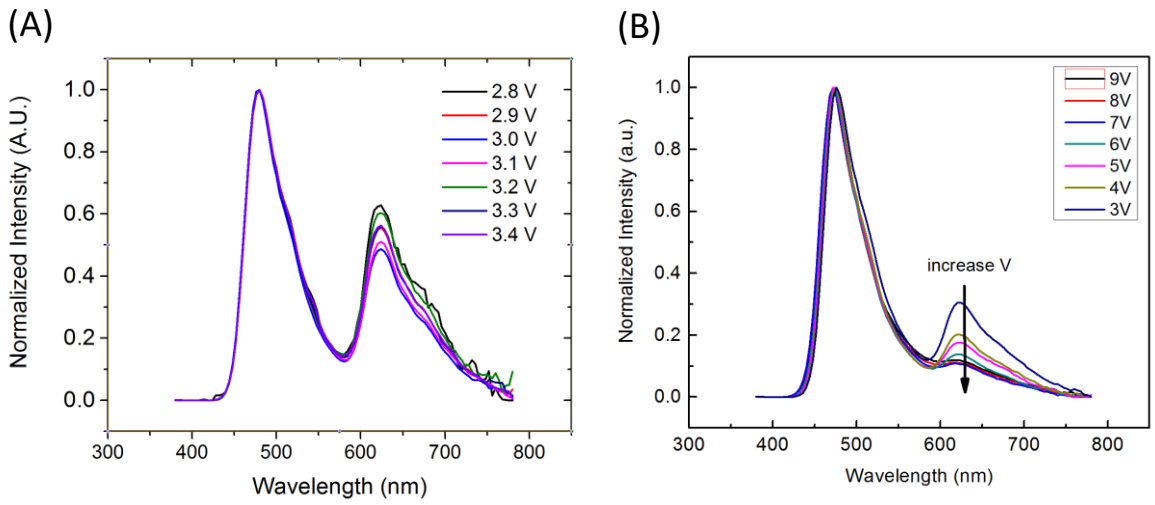

Figure S1. EL Spectra of SCP diode under different driving voltages A) from 2.8 V to 3.4 V with the interval of o.1 V, and B) from 3 V to 9 V with the interval of 1V.