## Supporting Information for

# Solid-State Dye-Sensitized Solar Cell with a Charge Transfer Layer Comprising Two Ionic Liquids and a Carbon Material

**Chuan-Pei Lee[a], Min-Hsin Yeh[a], R. Vittal[a], and Kuo-Chuan Ho[a,b,†]**

[a]Department of Chemical Engineering,

National Taiwan University, Taipei 10617, Taiwan

[b]Institute of Polymer Science and Engineering,

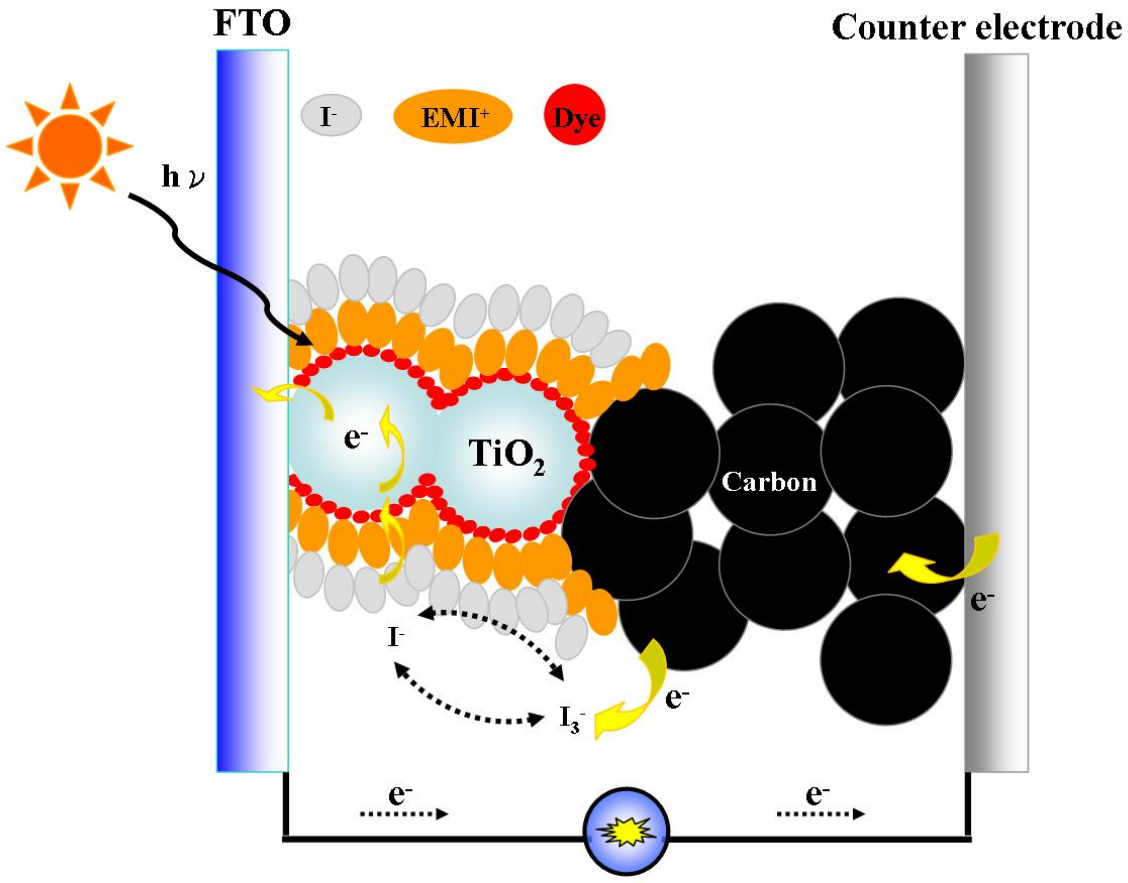
National Taiwan University, Taipei 10617, Taiwan

**Figure S1** Schematic illustration for the charge transport processes in the DSSC with a carbon material-CTI.

**Figure S2** Thermogravimetric (TGA) traces of the components of the electrolytes used in this study, i.e., EMII, $EMIBF_4$, CB, MWCNT, and SWCNT.

**Figure S3** Pictures of the binary CTIs with different weight percentages of $EMIBF_4$.

**Figure S4** Pictures of the binary CTIs with and without carbon black, each containing 20 wt% of $EMIBF_4$, obtained at a temperature being set at 75 $^{o}$C.




**Step 1:** $3I^- + 2dye^+ \longleftrightarrow I_3^- + 2dye$ (at dye-sensitized $TiO_2$/CTI)

**Step 2:** $I_3^- + 2e^- \longleftrightarrow 3I^-$ (at EETM/CTI)

**Figure S1**

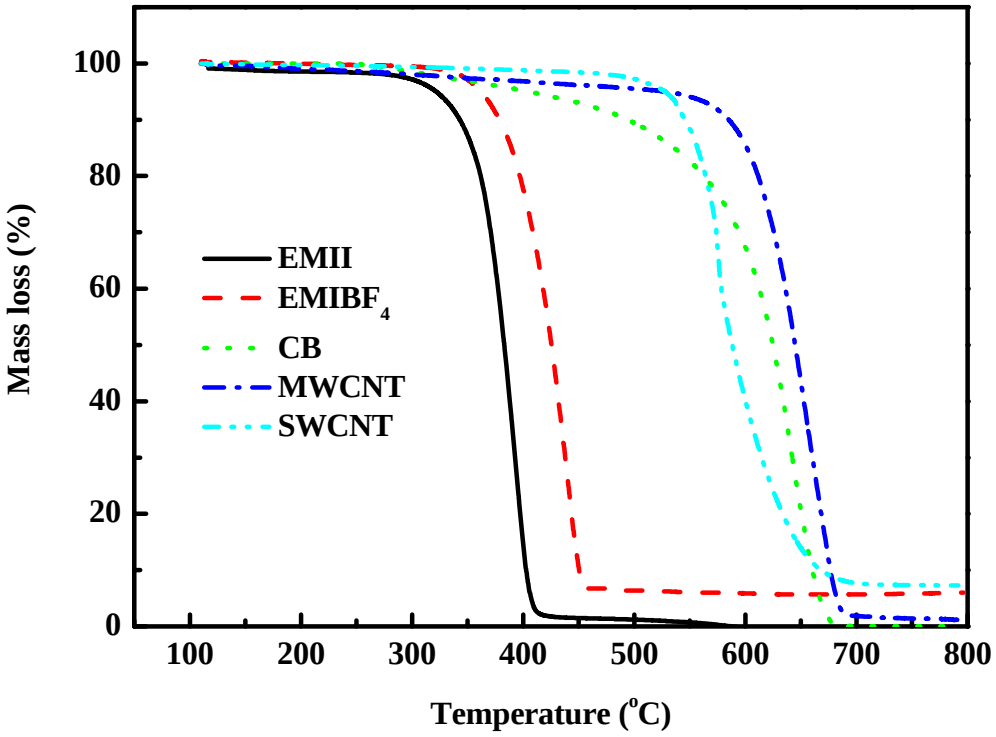



**Figure S2**

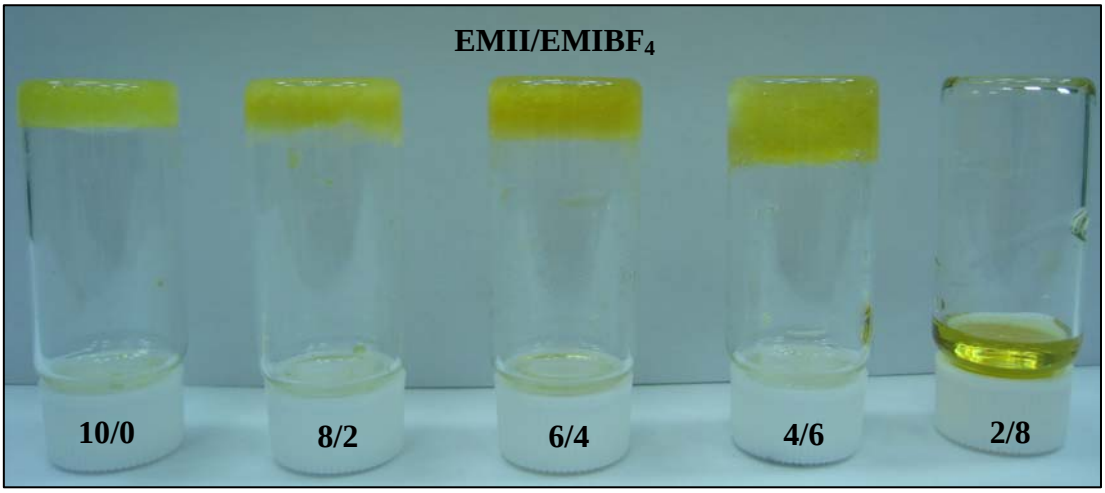



**Figure S3**

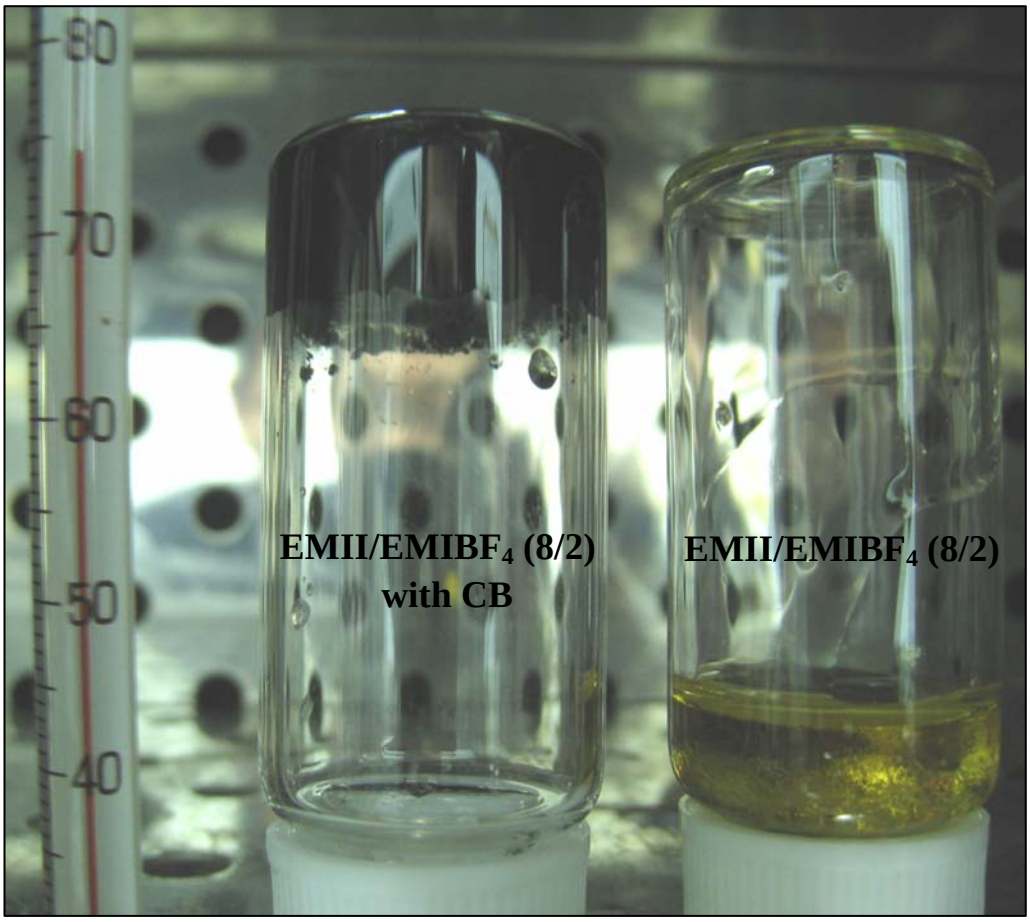



**Figure S4**