

Supplementary Information

Improved exchange reaction in an ionic liquid electrolyte of a quasi-solid-state dye-sensitized solar cell by using 15-crown-5-functionalized MWCNT

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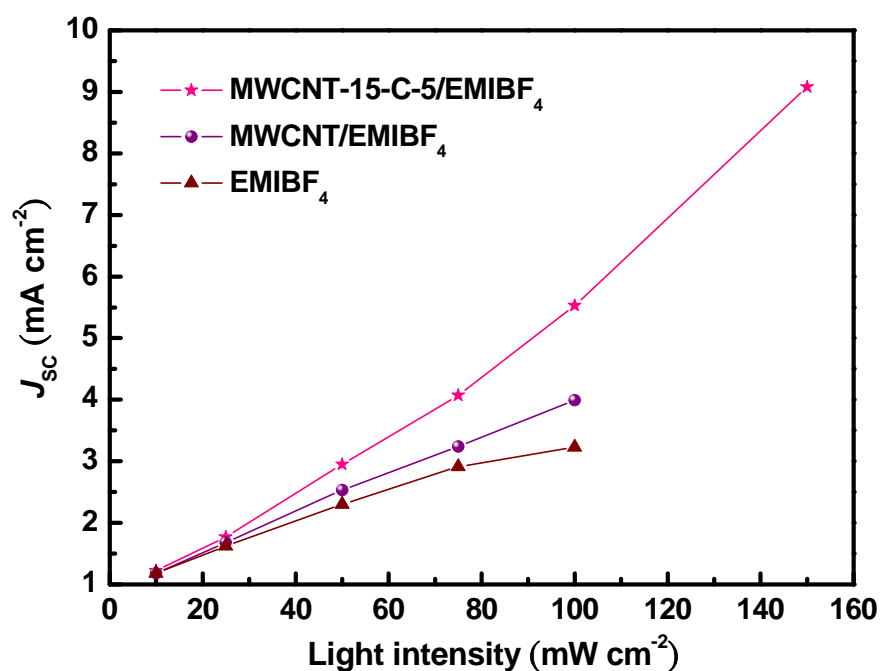


Fig. S1 Short-circuit current density (J_{SC}) as a function of light intensity for the DSSCs with the electrolytes of EMIBF₄, MWCNT/EMIBF₄, and MWCNT-15-C-5/EMIBF₄.

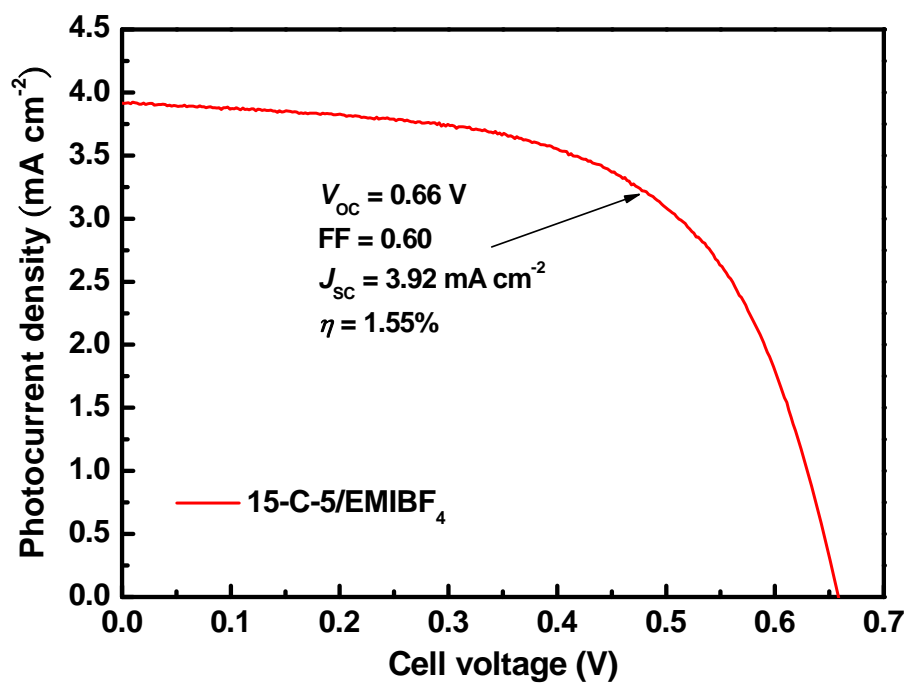


Fig. S2 Photocurrent density-voltage (J - V) characteristic of the DSSC with the EMIBF₄-based electrolyte consisting of 0.5 M 15-crown-5 (15-C-5), 0.5 M LiI, 0.05 M I₂, and 0.5 M TBP, at 100 mW cm⁻² illumination, and its corresponding photovoltaic parameters.

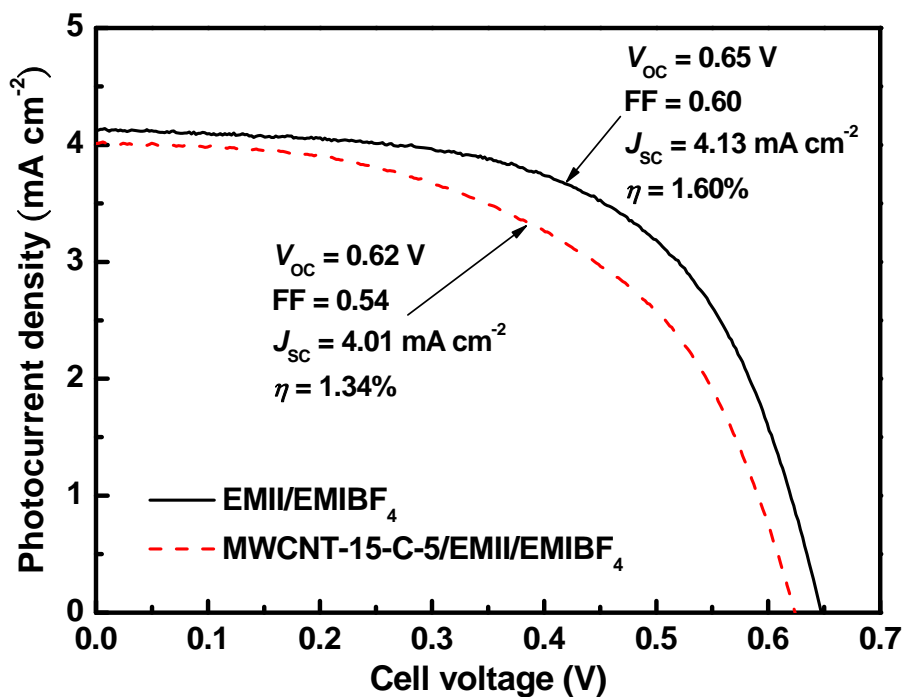


Fig. S3 Photocurrent density-voltage (J - V) characteristics of the DSSCs with and without using the MWCNT-15-C-5, at 100 mW cm^{-2} illumination, and their corresponding photovoltaic parameters.