

High-Performance Normal and Inverted Polymer Solar Cells with Zwitterions As the Electron-Collection Interlayer

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Polymer solar cells are regarded as the next-general solar cells due to their low fabrication cost and high mechanical flexibility. The interfaces between the electrodes and the active layer have significant effect on the photovoltaic efficiency and performance stability. Here, we will report novel approaches to use zwitterions, which have both positive and negative charges on the same molecule, as the electron-collection interlayer of both normal and inverted polymer solar cells. The zwitterions can simultaneously improve the open-circuit voltage, fill factor and photovoltaic efficiency of polymer solar cells with PCDTBT. Zwitterions can effectively lower the work functions of materials and prevent the chemical reaction between low band-gap polymers and active metals.