

Analysis of electrochemical processes in conjugated polymer blends through electrochemical spectroscopic methods

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Materials can be designed and hybridized to enhance the charge transport properties and device performance. The effective strategies include molecular engineering and combinations of multiple components. Herein, we present characterization of polymer blends containing both crystalline and amorphous organic semiconductors. Through the impedance analysis of the metal-insulator-semiconductor-metal capacitor, we investigated electrochemical processes such as ion transport in the layers. We also performed the spectroscopic analysis of thin films under device driving conditions to study charge transfer at the interface of the electrolyte and semiconductor. The device-level analysis was correlated with the spectroscopic and microscopic analyses of the polymer blend films.