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Fabrication and characterization of bulk heterojunction solar cells
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Bulk heterojunction solar cells were fabricated using PCPDTBT and PCDTBT polymers, and PCBM in inert atmosphere. We characterized the devices using current-voltage characteristics, impedance spectroscopy, spectrally resolved photocurrent measurements, optical absorption spectroscopy, and film thickness measurements. We will present results of the open circuit voltage, short circuit current and fill factor of the devices. The impedance data allowed us to determine the existence of very thin depletion region in the solar cells. These data are supported by impedance measurements on structures of very thick films of the same material. The correlation between the photocurrent spectra and the optical absorption allows to conclude that the absorption in the polymer as well as in the PCBM leads to photocurrent generation. We have explored ways to increase the thickness of the polymer films for improved light utilization.

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