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**Photocurrent of Photovoltaic Cells** SETH PEELER, MAX MCINTYRE, RAQUEL COSSEL, CHRIS BOWSER, MARIAN TZOLOV, Lock Haven University of PA — Photovoltaic cells can be used to harness clean, renewable energy from light. Examined in this project were photovoltaic cells based on a bulk heterojunction between PCPDTBT and PCBM sandwiched between an ITO anode and an Al cathode. Current-voltage characteristics and impedance spectra for multiple photovoltaic devices were taken under varying DC electrical bias and different level of illumination. This data was interpreted in terms of an equivalent circuit with linear elements, e.g. capacitance, series resistance, and parallel resistance. A physical interpretation of each circuit element will be presented. The spectral response of the devices was characterized by optical transmission and photocurrent spectroscopy using a spectrometer in the spectral range from 300 to 900 nm. The DC measurements confirmed that the devices are electrically rectifying. The AC measurements allowed modeling of the devices as a dielectric between two electrodes with injection current passing through it. The characteristic peaks for both PCBDTBT and PCBM are clearly visible in both the photocurrent and transmission data. The good correlation between the photocurrent and transmission data indicates photocurrent generation due to absorption in both materials constituting the heterojunction.

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