

Abstract Submitted
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Organic Solar Cells: Construction and Characterization¹ JAKE KEIPER², MARIAN TZOLOV³, Lock Haven University of Pennsylvania — An Organic Solar Cell is a type of photovoltaic cell that uses organic polymers for light absorption and charge transport. Organic Solar Cells have benefits such as being light weight, flexible, conforming to variety of surfaces, and potentially inexpensive and disposable. Production can vary by materials used and the structure of the devices. Different polymers are used in these cells to alter the band gap and utilize different parts of the solar spectrum. Structure varies in the sequence of the layers, such as the cells being regular or inverted cells. We will present results on regular cells with hole injection layers PEDOT and PlexCore. The interaction of the HIL with the solvent of the subsequent polymer blend solution was studied. We show that if this interaction is not prevented substantial electrical shorts form in the device severely deteriorating the photovoltaic performance. Methods of characterization include Current-Voltage characteristics and Impedance spectroscopy. We currently are using P3HT, PCPDTBT, and PCBM (C-60) for the active layer of the solar cells. Impedance spectroscopy has given us a great insight on the electrical processes in our devices and allows us to model the layers as realistic circuit components. This is useful when trying to improve our cells, as it allows us to target aspects of the production process.

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