

Abstract Submitted  
for the MAR05 Meeting of  
The American Physical Society

**Efficiency of Organic Conjugated Polymer/C<sub>60</sub> Bulk Heterojunction Photovoltaic Devices** D.B. ROMERO, ECE Department, UMD, M. BREBAN, Physics Department, UMD, C. ZHANG, AP Photonics LLC, W.N. HERMAN, LPS-UMD — We investigate the influence of thin-film morphology on the efficiency of organic conjugated polymer/C<sub>60</sub> bulk heterojunction polymer photovoltaic devices. Blends of soluble derivatives of fullerenes (PCBM- C<sub>60</sub>) as electron acceptors and MEH-PPV or [MEH-PPV]-biphenylene-vinylene copolymer as donors are used in the fabrication the ITO/PEDOT:PSS/Polymer Blend/LiF/Al photocells. Thermal annealing effects on the phase segregation within the active layer are probed by scanning electron and atomic force microscopies. The micro/nano-structure morphologies are systematically correlated with the electrical and optical properties of the devices by current-voltage, capacitance- voltage, photocurrent, and electroabsorption spectroscopies. The implications of these results on the optimization of the open-circuit voltage, short-circuit current, and efficiency of the polymer photovoltaic devices will be explored.

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Date submitted: 01 Dec 2004

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