

Abstract Submitted  
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**Inverted Polymeric Photovoltaic Cells and Parallel Tandems with Transparent Single Wall Carbon Nanotubes Interlayer**<sup>1</sup> KAMIL MIELCZAREK, ALEX COOK, ANVAR ZAKHIDOV, University of Texas at Dallas, ANTTI KASKELA, ALBERT NASIBULIN, ESKO KAUPPINEN, Aalto University, Finland — We demonstrate an organic photovoltaic (OPV) monolithic multi junction cell in a parallel electrical configuration utilizing polymers with complementary absorption spectra and transparent single wall CNT (SWCNT) as an interlayer electrode (IE). Parallel tandem cells are of importance because they can append to the limited spectral coverage of available polymers and because there is no need balance current as is the case with in-series configurations. Devices comprise of polymeric sub cells where one is inverted using ZnO nanoparticles and a MoO<sub>3</sub> buffer layers, this inverted structure allows for the SWCNT IE to function as a cathode. Each sub cell is characterized independently and the short circuit current of the tandem device is shown to increase. Overall increase in efficiency is observed and attributed to enhanced spectral coverage by spectrally complimentary polymers and the effective use of parallel tandem architecture. We also demonstrate a semi transparent inverted OPV structure with a SWCNT electrode and a efficiency of over 3%.

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