

Abstract Submitted  
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**Cadmium Telluride Solar Cells with PEDOT:PSS Back Contact<sup>1</sup>**

MICHAEL MOUNT, FERNANDA DUARTE, Seton Hall University, NABA PAUDEL, YANFA YAN, University of Toledo, WEINING WANG, Seton Hall University — Cadmium Telluride (CdTe) solar cell is one of the most promising thin film solar cells and its highest efficiency has reached 21%. To keep improving the efficiency of CdTe solar cells, a few issues need to be addressed, one of which is the back contact. The back contact of CdTe solar cells are mostly Cu-base, and the problem with Cu-based back contact is that Cu diffuses into the grain boundary and into the CdS/CdTe junction, causing degradation problem at high temperature and under illumination. To continue improving the efficiency of CdTe/CdS solar cells, a good ohmic back contact with high work function and long term stability is needed. In this work, we report our studies on the potential of conducting polymer being used as the back contact of CdTe/CdS solar cells. Conducting polymers are good candidates because they have high work functions and high conductivities, are easy to process, and cost less, meeting all the requirements of a good ohmic back contact for CdTe. In our studies, we used poly(3,4-ethylenedioxythiophene) polystyrene sulfonate (PEDOT:PSS) with different conductivities and compared them with traditional Cu-based back contact. It was observed that the CdTe solar cell performance improves as the conductivity of the PEDOT:PSS increase, and the efficiency (9.1%) is approaching those with traditional Cu/Au back contact (12.5%).

<sup>1</sup>Cadmium Telluride Solar Cells with PEDOT:PSS Back Contact

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