Abstract Submitted
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Improved Open Circuit Voltage in Hybrid Photovoltaics by Surface Modification of ZnO with Mercurochrome[1] STUART KIRSCHNER, Johns Hopkins University, ROBERT DAVIS, YUN-JU LEE, DAVID WHEELER, JULIA HSU, Sandia National Laboratories — Inorganic–organic PV cells such as ZnO/P3HT provide an attractive alternative to conventional silicon solar cells due to their solution based, low-temperature fabrication, and scalability in manufacturing. ZnO/P3HT heterojunctions however suffer poor PV performance compared to all-organic cells which use PCBM as the electron acceptor. One pathway for improving performance in these hybrid devices replies on surface modification of ZnO with electron acceptors such as C60 to aid in charge transfer from the electron donating polymer to ZnO. In this study ZnO sol-gel films are modified with mercurochrome resulting in a decrease in ZnO work function as measured by Kelvin probe and concurrently an increase in open circuit voltage (Voc). Additionally, EQE measurements show that part of the current in the modified cells results from absorption by mercurochrome. Potential mechanisms for the increased Voc in these modified hybrid cells will be discussed.

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