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Use of planar organic-inorganic heterojunction architectures for understanding charge separation in hybrid solar cells JAMIE ADAMSON, Colorado School of Mines, Golden, CO, DANA OLSON, MATTHEW WHITE, JOSEPH BERRY, National Renewable Energy Laboratory, Golden, CO, REUBEN COLLINS, Colorado School of Mines, Golden, CO, DAVID GINLEY, National Renewable Energy Laboratory, Golden, CO — Organic photovoltaic cells are valued in part for their compatibility with highly scalable fabrication techniques and low-cost materials. These excitonic solar cells are engineered to create large interfacial surface area between the donor and acceptor phases to maximize the region where photoexcited excitons can be dissociated into free carriers. ZnO, in particular, is attractive for these bulk heterojunction (BHJ) devices because of the many nanostructures that can be easily fabricated from its chemical precursors. It is unclear whether poor cell performance is due to unoptimized BHJ morphology or other effects. In this study, hybrid photovoltaic devices with p-type poly(3-hexylthiophene) and n-type ZnO are made with planar geometries to enable interpretation of device performance without morphological complications of a BHJ.

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