

Abstract Submitted
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Charge Photogeneration in Organic Photovoltaics: Role of Hot versus Cold Charge Transfer Excitons KENAN GUNDOGDU, BHOJ GAUTAM, ROBERT YOUNTS, NC State University, LIANG YAN, UNC, ROBERT YOUNTS, HARALD ADE, NC State University, WEI YOU, UNC, NC STATE UNIVERSITY TEAM, UNIVERSITY OF NORTH CAROLINA TEAM — The role of excess excitation energy on long-range charge separation in organic donor/acceptor bulk heterojunctions continues to be unclear. While ultrafast spectroscopy results argue for efficient charge separation through high energy CT states within the first picosecond (ps) of excitation, charge collection measurements suggest excess photon energy does not increase the current density in bulk heterojunction (BHJ) devices. Here we studied the population dynamics of charge separated polarons upon excitation of high energy polymer states and low energy interfacial CT states in two polymer/fullerene blends from ps to nanosecond (ns) time scales. We observed that the charge separation dynamics do not show significant dependence on excitation energy. These results confirm that excess exciton energy is not necessary for the effective generation of charges.

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