

Abstract Submitted  
for the MAR17 Meeting of  
The American Physical Society

**Role of a pure acceptor phase on charge generation and recombination in BHJ solar cells** THOMAS FERRON, MATTHEW WALDRIP, MICHAEL POPE, BRIAN COLLINS, Washington State University — Electric properties of organic photovoltaics arise not only from molecular donor/acceptor pairs but the nanostructure brought about through device processing. Characterization of this structure has been a challenging endeavor due to low levels of both crystallinity and material contrast that hinder traditional methods such as electron microscopy and hard x-ray scattering. Increased popularity in resonant x-ray techniques have allowed for a stronger understanding of the complicated morphology found in these systems. Recent studies have qualitatively measured relative domain purity in addition to domain spacing to investigate device performance. Here we utilize Resonant Soft X-ray Scattering to track the shifting morphological balance of a known 3-phase OPV. We find an increasing volume fraction of a pure acceptor phase promotes both increased charge generation as well as reduced bimolecular recombination. The importance of a pure acceptor phase will be discussed.

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Date submitted: 11 Nov 2016

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