

Abstract Submitted
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The nanoscale morphology of new types of solar cells based on solution-processed small-molecules¹ NURADHIKA HERATH, VALERIA LAUTER, JIM BROWNING, Oak Ridge National Laboratory — Organic electronics have become promising alternatives for the today's energy demand, owing to their low cost fabrication processes, ability to performance under low light, and flexibility. Solution processed small molecule (SM)- fullerene based solar cell devices have been subjected to number of studies recently with significant progress of power conversion efficiency (PCE). The bulk hetero junction (BHJ) consisting SM-fullerene blend is the most critical part of the solar cell device as nano-to-meso-scale morphology of BHJ plays a significant role in the device performances and properties. In this study we investigate the morphological structure of a device constructed from solution processed SM-molecule *p*-DTS(FBTTh₂)₂ with fullerene PC₇₀BM BHJ blend using neutron reflectometry (NR). Here we present the scattering length density changes of PC₇₀BM concentration along the film depth and the history dependence of the BHJ device by taking the measurements as-cast as thermally annealed (150 °C).

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Nuradhika Herath
Oak Ridge National Laboratory

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