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Morphology Study of Bulk Heterojuction Solar Cells Based on PCDTBT HSIN-WEI WANG, THOMAS RUSSELL, TODD EMRICK, UMass Amherst — To achieve high efficiency, the processing of conditions bulk heterojunction photovoltaic are important so that the desired morphology favoring efficient charge separation, electron and hole transportation can be generated. Solar cells based on poly[N-9"-hepta-decanyl-2,7-carbazole-alt- 5,5-(4',7'-di- 2-thienyl-2',1',3'-benzothiadiazole) (PCDTBT) as the donor system have been made. The effect of solvent, additives and annealing temperature have been systematically investigated. Grazing incidence small angle scattering (GI-SAXS), wide angle scattering (GI-WAXS), transmission electron microscopy (TEM), scanning electron microscopy (SEM) and atomic force microscopy (AFM) were utilized to study the morphology.

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