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Fabrication and study of organic solar cells composed of P3HT/PCBM blend with monolayers of P(VDF-TrFE) HECTOR CARRASCO, JOSEE VEDRINE, Univ of Puerto Rico - Humacao, LUIS ROSA COLLABORATION — Organic polymeric materials that are conducting provide an added facility in device fabrication, particularly in solar cell applications. In this work, we study the electrical and morphological properties of bulk hetero-junction solar cells fabricated with poly (3-hexylthiophene-2,5-diyl) (P3HT) and phenyl-C61-butyric-acid-methyl ester (PCBM) blends, when a monolayer of the ferroelectric polymer poly[(vinylidene fluoride-co-trifluoroethylene) [P(VDF-TrFE)]] is deposited between ITO conductor and bulk heterojunction. The bulk heterojunction and ferroelectric films are annealed at 140 °C under vacuum atmosphere to improve their crystallinity, which may assist in enhanced charge transfer. We measure device photovoltaic properties with changing blend thickness, while keeping the ferroelectric layer constant.. The current-voltage characteristics are measured and compared for the different film thicknesses. AFM techniques are used to analyze their morphological and conductive properties.

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