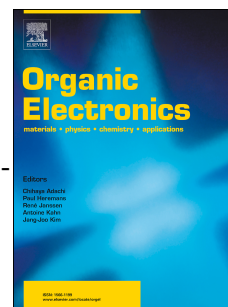


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Regulation of the performance parameters of poly(3-alkylthiophene)/[6,6]-phenyl C₆₁-butyric acid methyl ester solar cells by 1,2,3,4-bis(*p*-methylbenzylidene) sorbitol

Danhui Wang, Nana Yuan, Xuan Zhang, Lin Li, Zhishan Bo, Jianjun Zhou, Hong Huo



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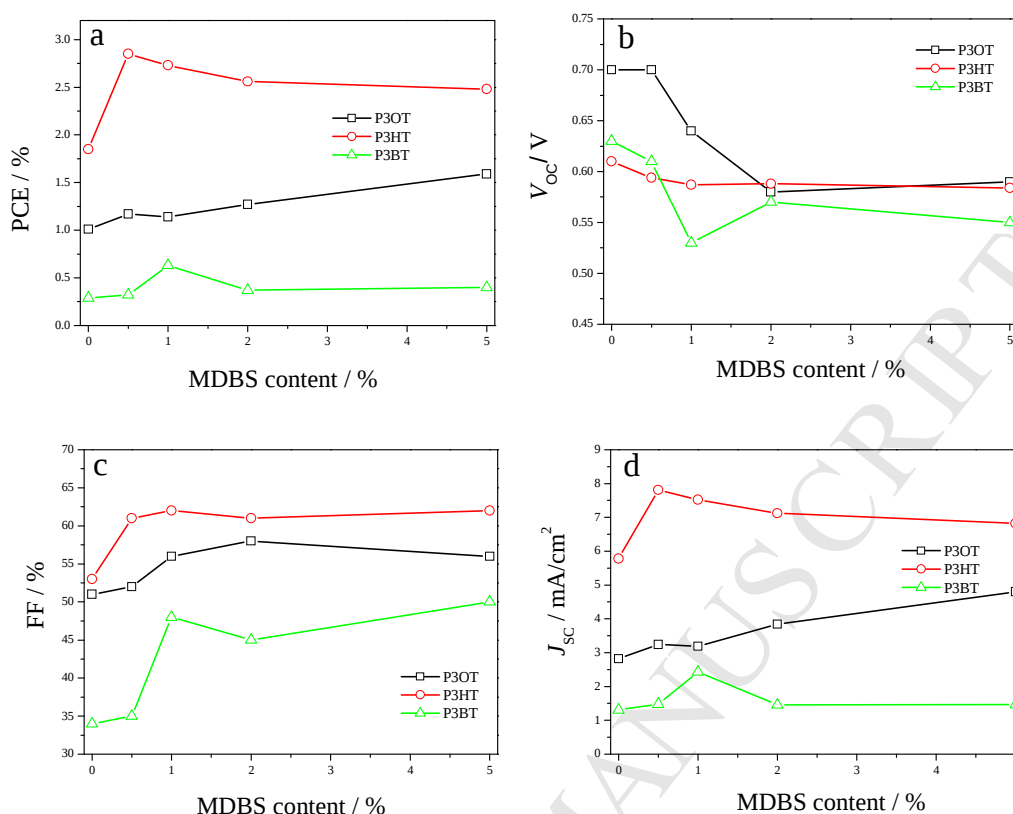
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1,2,3,4-bis(*p*-methylbenzylidene) sorbitol (MDBS) is a nucleating agent for both poly(3-alkylthiophene)s (P3ATs) and [6,6]-phenyl C₆₁-butyric acid methyl ester (PCBM), but the intermolecular interaction between P3AT and MDBS is stronger than that between PCBM and MDBS. MDBS regulates the crystallization kinetics of P3AT in P3AT/PCBM blend films, resulting in the acceleration of the crystallization rate, and the decrease of the open circuit voltage (V_{OC}) and the increase of both the fill factor (FF) and the short circuit current (J_{SC}) with the addition of MDBS. Based on the variation of V_{OC} , FF, and J_{SC} , the power conversion efficiency (PCE) of P3AT/PCBM BHJ OPV devices improves with the addition of MDBS.

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