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PHOTODEGRADATION DEPTH PROFILES OF NON-FULLERENE ACCEPTOR ORGANIC SOLAR CELLS

Non-fullerene acceptor (NFA)-based organic solar cells have garnered attention in the photovoltaic field owing to their low manufacturing costs, flexibility and power conversion efficiency enhancement. However, these devices have short lifetimes owing to the nature of organic semiconductors, which can be altered by external stresses, such as photon illumination, electronic and optoelectronic properties. These factors have made it necessary to investigate new materials used in structural configuration layers to improve the efficiency and stability of devices. In this work, we present an analysis of the chemical characterizations made by SIMS and XPS of bulk heterojunction inverted organic solar cells (iOSC) fabricated using a small molecule as the acceptor material. The materials used for the fabrication of the active layer of the cell were the donor PM6 (polymer) and acceptor Y7 (small molecule, non-fullerene acceptor) [1], and PDINO (polymer) was used as the electron transport layer (ETL). Chemical characterizations were carried out on non-encapsulated organic solar cells with prior electrical characterization (*I-V* characteristic curve) considering the ISOS-D1 protocols.

Keywords

organic solar cell, PM6:Y7 blend, SIMS, XPS, non-fullerene acceptor

Reference

Sacramento, A., Abad, J. L., Ramírez-Como, M., Balderrama, V. S., & Estrada, M. (2024). Degradation analysis of inverted PM6 (PBDB-T-2F): Y7 (BTP-4Cl) solar cells with PDINO and MoO 3 as the ETL/HTL. Sustainable Energy & Fuels, 8(1), 103-112.

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Author approval

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