

Optimized hole transfer layer morphology as molybdenum oxide to improve performance organic photovoltaics

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The Organic Photovoltaic (OPV) applying Molybdenum oxide (MoO_x) nanorods as Hole Transfer Layer (HTL) enhanced Photoelectric Conversion Efficiency (PCE) than flat MoO_x layer as HTL. The device structure is FTO/ MoO_x nanorods/P3HT:PCBM/ZnO/Ag. The morphology of MoO_x layer was controlled by hydrothermal reaction time and concentration of the precursor. Reducing hydrothermal reaction time and concentration of the precursor, the morphology of nanorod layer was different as flat layer. The device with 0.24 wt% MoO_x precursor concentration had the highest efficiency of 2.748%. This PCE increased 43% higher than flat MoO_x OPV.