

Morphology Study of Inverted Planar Heterojunction Perovskite Solar Cells in Sequential Deposition

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Abstract : In this study, a sequential deposition process is used for the fabrication of PEDOT: PSS based inverted planar perovskite solar cell. A small amount of additive deionized water (DI-H₂O) was added into PbI₂ + Dimethyl formamide (DMF) precursor solution in order to increase the solubility of PbI₂ in DMF, and finally to manipulate the surface morphology of the perovskite films. A morphology transition from needle like structure to hexagonal plates, and then needle-like again has been observed as the DI-H₂O was added continuously (0.0 wt% to 3.0wt%). The latter one leads to full surface coverage of the perovskite, which is essential for high performance solar cell.

Keywords : charge carrier diffusion lengths, Methylammonium lead iodide, precursor composition, perovskite solar cell, sequential deposition

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