

Fabrication of CsPb solar cells under ambient conditons

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Although organic/inorganic hybrid perovskite solar cells (HPSCs) have great attention in recent year due to their high power conversion efficiency (PCE) over 25% and low fabrication cost, long-term stability still could not satisfy the requirements toward its industrialization.

Therefore, interests in the all inorganic perovskites such as CsPb₃ based solar cells have been rapidly increased.

However, the PCE of all inorganic PSC is lower than that of HPSCs and high efficiency devices are fabricated inside a nitrogen glove box.

Because the CsPb₃ films are sensitive to moisture and water, it is a great challenge to develop suitable fabrication method in the ambient condition.

In this work, we report on the high performance CsPb₃ PSCs consisting with Indium-Tin-Oxide (ITO)/NO_x/CsPb₃/Phenyl-C61-butyrac acid methyl ester (PCBM)/ bathocuproin (BCP)/Ag under ambient conditions.

We will discuss how the processing conditions such as precursor composition and pre- or post-treatments affect the quality of perovskite layer and performance of final devices.