

Study on the drop-casted perovskite solar cells

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Organic-inorganic halide perovskite has been considered as the most promising light absorbing material in the next generation solar cell technology because of their broad tunability and superior optical and electrical properties such as large absorption coefficient, high charge carrier mobility, and long charge carrier diffusion length. As a result of intensive study, perovskite solar cells (PeSCs) are approaching commercialization owing to high efficiency over 25% and rapid improvement of long-term stability. A typical way to fabricate high efficiency PeSCs is spin-coating method in N<sub>2</sub> or Ar atmosphere, which is not suitable for the upscaling process and inducing high cost.

Although non-spin-coating methods such as slot-die coating and blade coating have been developed, these methods need to be performed in inert or low-humidity air (relative humidity <40%) and to be combined with gas blowing systems for high performance. Hence, interest in the humidity tolerant process for high efficiency devices has dramatically increased.

Among various candidates, we have tried to demonstrate high efficiency PeSCs via simple drop-casting which has better tolerance to humidity. In this study, we will discuss the effect of processing conditions such as solvent and precursor composition on the morphology of perovskite and device performance.