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Morphology Optimization and Photophysics Study in Air-Processed Perovskite Solar Cells

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Abstract : Perovskite solar cell technology has passed through a phase of unprecedented growth in the efficiency scale from 3.8% to above 22% within a half decade. This technology has drawn tremendous research interest. It has been observed that performances of perovskite based solar cells are extremely dependent on the morphology and crystallinity of the perovskite layer. It has also been observed that device lifetime depends on the perovskite morphology; devices with larger perovskite grains degrade slowly than those of the smaller ones. Various methods of perovskite growth have been applied to achieve the most appropriate morphology necessary for high efficient solar cells. The recent progress in morphology optimization by various methods emphasizing on grain sizes, stoichiometry, and ambient compatibility as well as photophysics study in air-processed perovskite solar cells will be discussed.

Keywords : perovskite solar cells, morphology optimization, photophysics study, air-processed solar cells
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