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The effect of CsBr doping on the crystallization kinetics of perovskite films

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In recent years, organic-inorganic hybrid perovskite solar cells (PSCs) have made great progress due to the superior optoelectronic properties including high absorption coefficient, high defect tolerance, and long charge carrier diffusion lengths. Benefiting from these excellent properties, the power conversion efficiency (PCE) of PSCs has improved from 3.9% to certified 25.2% with great development prospects. In this work, we demonstrate that doping a small amount of CsBr into the perovskite component, can tune the crystallization behavior and bandgap, promote energy level alignment between perovskite active layer and electron transport layer, and accelerate carrier transport and extraction. In addition, grazing incidence wide angle X-ray scattering (GIWAXS) is used to study the crystal structure and crystal orientation. As a result, we can obtain high performance devices with PCE of 19.24%.

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