High-efficient Cesium Perovskite Solar Cells influenced by alterations in current-voltage hysteresis

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Photovoltaic performances of CsPbI₃ are reported. High efficient all-inorganic perovskite solar cells based on Cesium lead halide, CsPbI₃, shows hysteresis during the current-voltage (*I-V*) measurements under 1 sun illumination. This work unravels how the *I-V* hysteresis is controlled by changing the crystal phase of the perovskite-absorber. Additionally, we demonstrated that the nature of the interfaces play a determining role in establishing the degree of hysteresis. Fundamental analysis verified that upon the existence of hole extraction interlayer (MoO₃), the CsPbI₃ showed poor (8 nm MoO₃) or large (0 nm MoO₃) *I-V* hysteresis effect. These results lead to the conclusion that the hysteresis is also originated by the interface phenomena. Our experimental observation suggests that the morphology of the perovskite film in addition to selective interface cathode electrode plays a critical role for recording high photoconversion efficiencies in perovskite solar cell.



TOC. Hysteresis is dominated by the absorber CsPbI₃ perovskite film as well as electron extraction material, mainly MoO₃.