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High Stability Perovskite Solar Cell: Progress and Prospects

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Message from the Guest Editors

Dear colleagues,

Commendable progress has been made as far as the solar-to-electricity conversion efficiency of perovskite solar cells (PSCs) is concerned. In comparison to conventional silicon solar cells, PSCs are lightweight, flexible, inexpensive to produce, and easy to fabricate. Power conversion efficiencies up to 26.1% for n-i-p, 25.4% for p-i-n single junction, and 33.9% for perovskite/Si tandem have been achieved. However, the efficiency cannot be retained for long as a result of the degradation of the photoactive perovskite layer or other components of the device. Various factors have been identified to contribute to this degradation, which include oxidation, hydration, phase segregation, ion migration, charge trapping, and exposure to UV light, high temperatures, and mechanical stress. Therefore, efforts to suppress degradation in PSCs have focused on techniques aimed at passivating defects in the photoactive layer through nucleation and crystallization control, together with proper design of charge transport layers, interface engineering, and dimensional tailoring.

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Message from the Editor-in-Chief

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