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【109】 In-situ buried interface passivation enables efficient and stable inverted perovskite solar modules

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Scaling-up perovskite solar cells (PSCs) is a prerequisite to the adoption of perovskite photovoltaics. However, the performance and stability of perovskite solar modules (PSMs) have lagged behind those of lab-scale PSCs. The development of PSMs requires interfacial passivation, yet this is challenging for the buried interface, owing to the dissolution of passivation agents during perovskite deposition. Here, we overcome this limitation with in-situ buried interface passivation –achieved via directly adding a cyanoacrylic acid-based molecular additive into the perovskite precursor solution. The preferential buried interface passivation results in facilitated hole transfer and suppressed surface recombination. We report a power-conversion efficiency (PCE) of 20.3% for inverted-structure PSMs.

Theoretical Work

Theory

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