**Strategies toward stable and efficient perovskite photovoltaics**

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Organolead trihalide perovskite solar cells (PSCs) have been attracting tremendous attention in both scientific and industrial communities in the past few years owing to the soaring efficiency achieved. However, the long-term stability of hybrid perovskite materials and devices arises as one of the major challenges to be addressed before any practical application. Here we proposed several strategies including charge transport material modification, low-dimensional perovskite heterostructure, interface engineering, and grain encapsulation, which allows simultaneously enhancing the stability and efficiency of PSCs. 1-4 More recently, we found that halide perovskites in the form of nanometer-sized quantum dots (QDs) offers a new way to improve their intrinsic stability because of the nanoscale phase stabilization and allows accessing more optimal open-circuit voltage deficit. We developed a facile strategy that enables controllable synthesis of perovskite QDs with significantly reduced defect density, yielding a certified record efficiency of 16.6% for QD solar cells with negligible hysteresis.

**References**

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