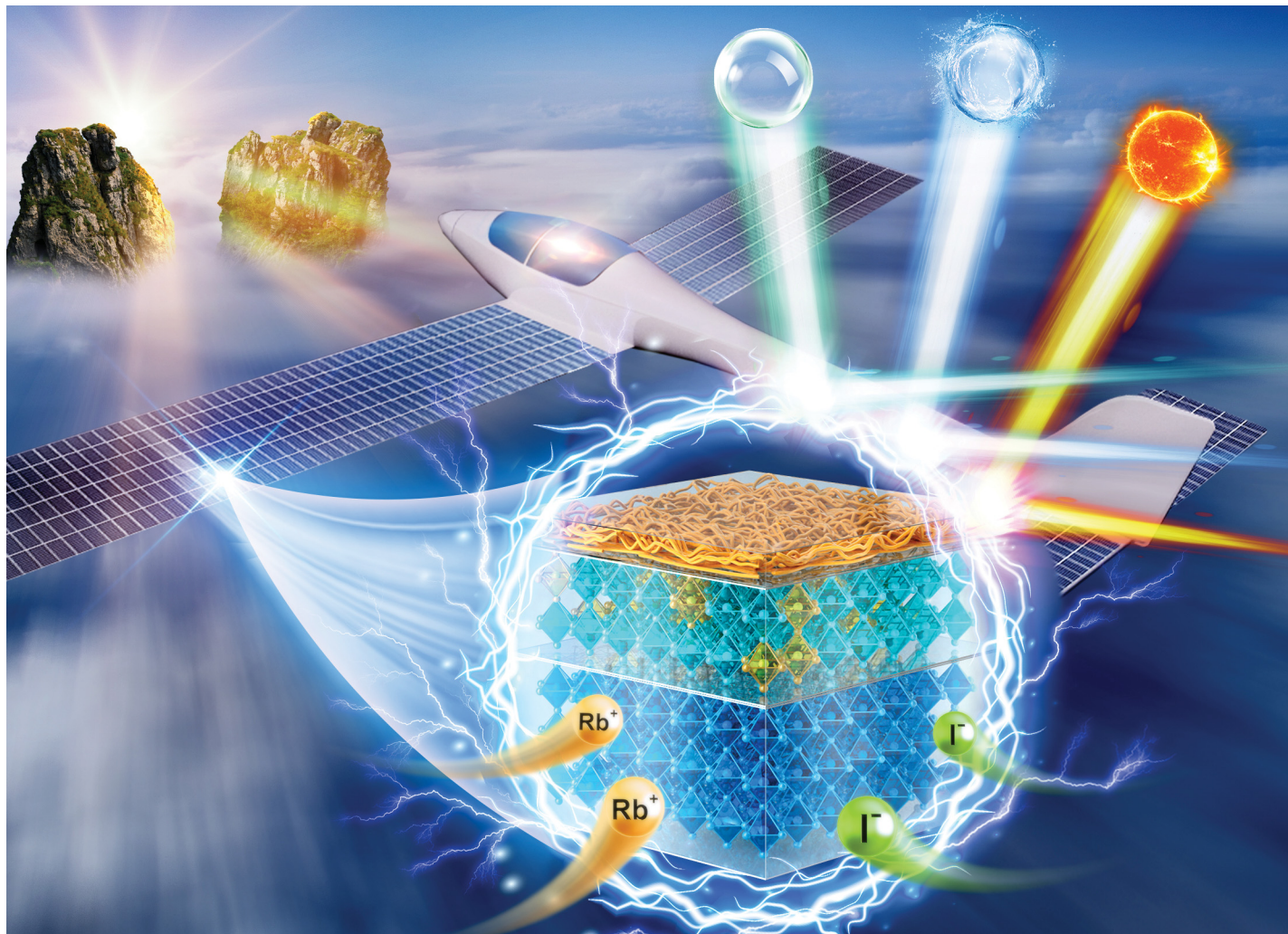




Showcasing research from Doctor Qiufeng Ye's laboratory, Shaoxing University, Zhejiang, China.

Suppressing charge recombination in a methylammonium-free wide-bandgap perovskite film for high-performance and stable perovskite solar cells

MA-free wide-bandgap perovskite materials have attracted increasing attention because of their applications for tandem devices. However, voltage deficits in MA-free WBG perovskite system are still too high mainly caused by serious charge recombination. Here, we propose an all-around passivation strategy by incorporating RbI, constructing surface heterojunction, and using TOPO in $\text{FA}_{0.8}\text{Cs}_{0.2}\text{Pb}(\text{I}_{0.75}\text{Br}_{0.25})_3$ PSCs, which can optimize film morphology, enhance light-absorbing and passivate undercoordinated defects. The device performance of 23.35% and record voltage deficit of 0.386 V are achieved. The devices also display impressive long-term air stability, light-soaking operating stability and thermal stability.

As featured in:



See Zebao Fang, Feng Ye, Zhun Liu, Tie Li *et al.*, *Energy Environ. Sci.*, 2024, **17**, 5866.