

Novel materials for stable perovskite solar cells

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Halide perovskites are quickly overrunning research activities in new materials for cost-effective and high-efficiency photovoltaic technologies. Since the first demonstration from Kojima and co-workers in 2009, several perovskite-based solar cells have been reported and certified with rapidly improving power conversion efficiency. Recent reports demonstrate that perovskites can compete with the most efficient photovoltaic materials. At the same time, they still allow processing from solution as a potential advantage to deliver a cost-effective solar technology.

Stability studies are relatively weak and often controversial compared to the impressive progress in power conversion efficiency. An intrinsic complication is that the stability of perovskite solar cells is strongly affected by any slight difference in the device architecture, manufacturing, materials composition and testing procedure.

In the present talk, I will present new materials and preparation procedures that improve the lifetime of perovskite solar cells without giving up on high power conversion efficiency. We will give particular attention to the environmental impact.