Active Materials and interfaces for stable perovskite solar cells

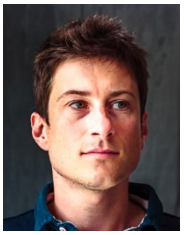
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Abstract

Organic-inorganic 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 inorganic materials, while they still allow processing from solution as a potential advantage to deliver a cost-effective solar technology.

Compare to the impressive progress in power conversion efficiency, stability studies are rather poor and often controversial. An intrinsic complication comes from the fact that the stability of perovskite solar cells is strongly affected by any small difference in the device architecture, preparation procedure, materials composition and testing procedure.

In the present talk, we will focus on the stability of perovskite solar cells in working condition. We will discuss a measuring protocol to extract reliable and reproducible ageing data. We will present new materials and preparation procedures, which improve the device lifetime without giving up on high power conversion efficiency.



Biography

Antonio Abate is a research group leader at the Helmholtz-Centrum Berlin. He is an expert in hybrid organic-inorganic materials for optoelectronics. His group is currently researching active materials and interfaces to make stable perovskite solar cells. Before to move to the Helmholtz-Centrum Berlin, Antonio was leading the solar cell research at the Adolphe Merkle Institute and he was a Marie Skłodowska-Curie Fellow at École Polytechnique Fédérale in Switzerland. After getting his PhD at Politecnico di Milano in 2011, he worked for 4 years as a postdoctoral researcher at the University of Oxford and the University of Cambridge. He published more than 70 high-impact peer-reviewed papers, including 4 review articles, which have garnered more than 9000 literature citations. He is co-inventor in 8 patents filed with 3 different research institutes (Politecnico di Milano, University of Oxford, École Polytechnique Fédérale de Lausanne).

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