

Stability assessment and reporting for perovskite photovoltaics

January 24 2020



Professor Michael Saliba during research work at the Department of Materials and Earth Sciences. Credit: Technische Universität Darmstadt

Improving the long-term stability of perovskite solar cells, which is crucial for the use of this pioneering technology—this is the topic of a

paper published in the journal *Nature Energy* by an international research team, in which TU materials scientist Professor Michael Saliba is also involved. Perovskite solar cells convert sunlight into electricity and are regarded as the greatest hope for the solar cell industry.

In the last 10 years, so-called perovskites have emerged as highly promising materials for solar [cells](#). Perovskites are comprised of low-cost, abundant components and can be processed with inexpensive solution-processing methods comparable to techniques used for printing newspapers. This has attracted major interest from diverse research communities, which has led to perovskites being called "wonder material." Recently, it was reported that solar cells based on perovskites achieve performances comparable to established, commercial technologies that took decades to optimize. Thus, perovskite solar cells hold great promise as a source of sustainable energy with a low carbon footprint.

Established technologies can withstand outside exposure to the elements for many decades while hardly degrading. As [perovskite solar cells](#) approach their theoretical performance maximum, the key challenge of long-term stability for many decades is still not met. On the other hand, perovskite research is still relatively young and therefore has not yet established binding protocols on measuring stability. To get the perovskite technology market-ready soon, however, accelerated aging parameter must be found to extrapolate long-term degradation while aging for a significantly shorter time.

This challenge was tackled in a recent publication in *Nature Energy*, aggregating the condensed knowledge among 59 leading researchers from 51 institutions from all over the world to form an agreed-upon starting point for a standardized measurement protocol in the future. Among the co-authors is Professor Michael Saliba, who heads the Opto Group at the Department of Materials and Earth Sciences at TU

Darmstadt and, at the same time, a group of young researchers at Forschungszentrum Jülich.

"The coming years will be crucial to transform this new technology from a curiosity in the academic ivory tower into a source of clean, inexpensive and sustainable energy," says Michael Saliba, "Only with this coordinated effort to establish a consensus [stability](#) protocol will it be possible to elevate [perovskite solar cells](#) to next level."

More information: Mark V. Khenkin et al. Consensus statement for stability assessment and reporting for perovskite photovoltaics based on ISOS procedures, *Nature Energy* (2020). [DOI: 10.1038/s41560-019-0529-5](#)

Provided by Technische Universität Darmstadt

Citation: Stability assessment and reporting for perovskite photovoltaics (2020, January 24) retrieved 17 April 2024 from <https://techxplore.com/news/2020-01-stability-perovskite-photovoltaics.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.