

# **Are perovskites the better semiconductors for solar cells?**

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## **Abstract**

In the last few years metal halide perovskites have advanced to become the most promising absorber material within all emerging photovoltaic technologies. With champion devices exceeding a solar to electrical power conversion efficiency of 24 %, perovskite solar cells have almost reached the efficiency level of best silicon devices. Such a performance level can only be achieved by deploying outstanding semiconductors and optimized device architectures.

Here I will summarize the basic requirements for best performing photovoltaic devices. I will discuss the importance of radiative recombination and present a case study [1] performed on a solar cell comprising a three and two dimensional perovskite material as the absorber. While the performance of the studied solar cell is already quite good, the performed analysis suggests that further improvements are feasible especially by enhancing the radiative recombination in the absorber layer.

## **References**

[ 1 ] B. Hailegnaw et al. Solar rrl, 2019, 10.1002/solr.201900126

## **Biography**

Markus Scharber is currently Assoc. Prof. at the Johannes Kepler University Linz. He studied physics at the Johannes Kepler University. In 2002 he received a PhD from the Linz Institute for Organic Solar Cells. From 2002 until early 2012 he was working at Konarka Technologies Inc. heading among other responsibilities the Material and Device Group. His research interests lie in the area of fundamental processes in novel semiconductors focusing on applications for energy harvesting.