

Editorial – Nanophotonics for Solar Energy

This special issue presents results from the *Second European Workshop on Nanophotonics for Solar Energy*, which was held on 17 October 2018 in Berlin, Germany. The workshop attracted 53 attendees from 7 European countries. It was organized by Klaus Jäger and Christiane Becker from Helmholtz-Zentrum Berlin für Materialien und Energie, and Sven Burger from Zuse Institute Berlin. During 15 talks, the renowned speakers reported on the latest developments on optics and nanostructures for solar cells and solar fuel devices. Most of the contributions were dedicated to nano-optical concepts for different kinds of solar energy devices, a field that experienced a remarkable boom in the 2010s leading to a large number of scientific publications. However, the talks and particularly the discussions during breaks conveyed the impression of a community in transformation: Will the topic “Nanophotonics for Solar Energy” be self-sufficient in the future? Will some of the new concepts and technologies make it into the photovoltaic industry, a mature global industry? Did we benchmark our achievements always to the right references in the past or were nano-optical concepts sometimes sold more promising than they are? Fortunately, the expertise of the attendees spanned from close-to-industry to fundamental scientists stimulating fruitful discussions. The attendees broadly agreed on the crucial role of optics for every upcoming solar energy device. But promising future optical concepts are not restricted to structures on nanometer scale. The best optical solution for a specific device design can also involve micro-structures, concentrated optics or luminescent materials, just to name a few. The papers in this issue reflect a community in transformation and mark promising trends in optics for solar energy. This includes light trapping schemes for perovskite, chalcopyrite and silicon thin-film technologies, but also view factor calculations for bifacial and building integrated photovoltaics. Another topic, which was prominently discussed in the workshop but unfortunately not represented in this issue were multi-junction solar cells. Finally, we are happy to announce a follow-up workshop on “Optics for Solar Energy” in October 2021. The change in title from “nanophotonics” to “optics” reflects the trends in the community and leaves open space for the rich variety of optical concepts – including nanophotonics as one topic amongst others. We are looking forward to hosting the optics experts of the solar energy community again at Berlin!

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