



Materials

an Open Access Journal by MDPI

CiteScore: 6.4

Indexed in PubMed

Impact Factor: 3.2

Special Issue Reprint

Emerging Materials for Energy Applications

Edited by: Fernando B. Naranjo and Susana Fernández

Renewable electricity generation is expected to become a cornerstone of our future sustainable, climate-neutral energy system and could become the 'primary fuel of the future', serving most of our needs. In this sense, photovoltaic (PV) solar energy systems have emerged as a promising driver of the energy transition, currently achieving impressive efficiencies, with records in the range of 20–30% for single-junction cells based on many different materials. Designs based on improved photonic and/or advanced concepts can help approach the efficiency limit by eliminating losses from incomplete absorption or nonradiative recombination, thereby playing a crucial role in the next generation of PV technology. The exciting research opportunities and challenges in photonic design and innovative advanced materials could accelerate the massive integration of photovoltaics.

This Reprint is devoted to the most recent results that focus on the following: -Recent developments in photonic materials for applications such as photonics-integrated layers, organic photonics, and especially photovoltaics. -New absorbers and alternative transparent electrodes based on advanced materials with innovative architectures, and their applications in the development of next-generation PV devices.

<https://www.mdpi.com/books/reprint/12643>

