



energies



an Open Access Journal by MDPI

Advanced Quantum Dot Intermediate Band Solar Cells

Guest Editor:

Prof. Dr. Lucas Cuadra

Department of Signal Theory and
Communications, University of
Alcalá, Alcalá de Henares,
Madrid, Spain

Deadline for manuscript
submissions:

closed (31 January 2020)

Message from the Guest Editor

Dear Colleagues,

The intermediate band solar cell (IBSC) aims to overcome this problem by (1) generating a higher current (thanks to the extra, two-step absorption of sub-bandgap photons via a half-filled, electrically isolated intermediate band (IB) located within the semiconductor gap), which is injected (2) at a high voltage (limited by the bandgap and not by any of the two sub-gaps the IB divides it).

Quantum dots (QDs) are one of the approaches used to implement the IBSC concept. They are nanostructures in which carriers are confined to the three spatial directions and exhibit discrete energy levels separated from the conduction and valence bands by gaps with zero-density of states. A dense array of QDs makes the energy levels become an IB. This approach, called quantum dot intermediate band solar cell (QD-IBSC), has been recently used to experimentally prove, at room temperature, the physical principles (1) and (2) the operation that IBSC is based on.



mdpi.com/si/24470

Special Issue



energies



an Open Access Journal by MDPI

Editor-in-Chief

Prof. Dr. Enrico Sciubba

Department of Mechanical and
Aerospace Engineering,
University of Roma Sapienza, Via
Eudossiana 18, 00184 Roma, Italy

Message from the Editor-in-Chief

Energies is an international, open access journal in energy engineering and research. The journal publishes original papers, review articles, technical notes, and letters. Authors are encouraged to submit manuscripts which bridge the gaps between research, development and implementation. The journal provides a forum for information on research, innovation, and demonstration in the areas of energy conversion and conservation, the optimal use of energy resources, optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems.

Author Benefits

Open Access: free for readers, with article processing charges (APC) paid by authors or their institutions.

High Visibility: indexed within Scopus, SCIE (Web of Science), Ei Compendex, RePEc, Inspec, CAPlus / SciFinder, and other databases.

Journal Rank: CiteScore - Q1 (Control and Optimization)

Contact Us

Energies Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland

Tel: +41 61 683 77 34
www.mdpi.com

mdpi.com/journal/energies
energies@mdpi.com
[X@energies_mdpi](https://x.com/energies_mdpi)