Special Issue

Emerging Trends and Innovations in Nanostructured Perovskite Photovoltaic Devices

Message from the Guest Editor

Solar energy is abundant and crucial for sustainable development, with perovskite materials emerging as promising candidates for next-generation photovoltaic devices, achieving efficiencies over 25%. Nanostructured perovskites, including quantum dots (QDs) and nanocrystals (NCs), are gaining attention for their unique properties and applications. Perovskite NCs, known for their quantum confinement effects, can be fabricated using environmentally friendly solvents like octane and hexane, unlike the toxic solvents used for bulk thin films. Their inherent stability, enhanced by high surface energy, prolongs solar cell lifetimes. Size variation allows tuning of absorption and energy levels, improving solar cell performance. Additionally, nanocrystals significantly contribute to developing hole and electron transport layers (e.g., SnO-QDs, NiO-QDs). Despite their advantages, the market for perovskite NC solar cells has yet to reach its full potential. We invite contributions on the synthesis, characterization, and application of nanostructured materials in perovskite solar cells, including hybrids and tandem solar cells. We look forward to your submissions!

Guest Editor

Dr. Vladimir Svrcek

National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan

Deadline for manuscript submissions

closed (25 July 2025)

Nanomaterials

an Open Access Journal by MDPI

Impact Factor 4.3
CiteScore 9.2
Indexed in PubMed

mdpi.com/si/224979

Nanomaterials
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
nanomaterials@mdpi.com

mdpi.com/journal/nanomaterials

Nanomaterials

an Open Access Journal by MDPI

Impact Factor 4.3
CiteScore 9.2
Indexed in PubMed

mdpi.com/journal/nanomaterials

MDPI

About the Journal

Message from the Editor-in-Chief

Nanoscience and nanotechnology are exciting fields of research and development, with wide applications to electronic, optical, and magnetic devices, biology, medicine, energy, and defense. At the heart of these fields are the synthesis, characterization, modeling, and applications of new materials with lower nanometer-scale dimensions, which we call “nanomaterials”. These materials can exhibit unusual mesoscopic properties and include nanoparticles, coatings and thin films, metal–organic frameworks, membranes, nano-alloys, quantum dots, self-assemblies, 2D materials such as graphene, and nanotubes. Our journal, *Nanomaterials*, has the goal of publishing the highest quality papers on all aspects of nanomaterial science to an interdisciplinary scientific audience. All of our articles are published with rigorous refereeing and open access.

Editor-in-Chief

Prof. Dr. Eugenia Valsami-Jones
School of Geography, Earth and Environmental Science, University of Birmingham, Birmingham B15 2TT, UK

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), PubMed, PMC, CAPlus / SciFinder, Inspec, and other databases.

Journal Rank:

JCR - Q2 (Physics, Applied) / CiteScore - Q1 (General Chemical Engineering)