Special Issue

Nanomaterials for Photocatalytic Hydrogen Production and Energy Conversion

Message from the Guest Editors

The global transition toward sustainable and low-carbon energy systems has intensified the search for technologies capable of converting solar energy into clean fuels. Among these, photocatalytic water splitting represents an attractive route for green hydrogen production. However, its practical implementation remains constrained by limited efficiencies and stability due to the complexity of the underlying redox processes. In particular, the hydrogen evolution reaction (HER) often requires expensive cocatalysts, while the oxygen evolution reaction (OER) involves sluggish multi-electron transfer steps, making it a major bottleneck. Nanomaterials have emerged as key enablers for advancing photocatalytic performance through tunable band structures, large surface areas, and engineered interfaces. This Special Issue aims to present the latest advances in nanomaterials for photocatalytic hydrogen production, oxygen evolution, and integrated solar-driven energy conversion processes. Contributions bridging fundamental understanding and technological implementation are encouraged.

Guest Editors

Dr. Francesco Ambrosio

Department of Basic and Applied Sciences, Università degli Studi della Basilicata, Potenza, Italy

Dr. Alessandro Landi

Department of Chemistry and Biology, University of Salerno, Fisciano, Italy

Deadline for manuscript submissions

15 November 2026

Nanomaterials

an Open Access Journal by MDPI

Impact Factor 4.3
CiteScore 10.3
Indexed in PubMed

mdpi.com/si/280534

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

mdpi.com/journal/nanomaterials

MDPI

Nanomaterials

an Open Access Journal by MDPI

Impact Factor 4.3
CiteScore 10.3
Indexed in PubMed

mdpi.com/journal/nanomaterials

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. We are proud of our increasing impact factor and ability to provide rapid decisions to authors.

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)

MDPI