Special Issue

Hydrogen Evolution Reaction Mechanism at Nanoscale

Message from the Guest Editor

Hydrogen, as a clean and sustainable energy carrier, plays a pivotal role in the global pursuit of net-zero emissions. The hydrogen evolution reaction (HER) is a critical component in the production of hydrogen, which involves the reduction of protons to molecular hydrogen. Despite its importance, the HER is often limited by high overpotential and sluggish kinetics, necessitating the development of efficient and cost-effective electrocatalysts. Therefore, it is very important to study the mechanism of HER to achieve efficient hydrogen evolution.

In this Special Issue of *Nanomaterials*, we aim to present the latest advancements in the understanding and applications of nanoscale mechanisms in the HER. We invite contributions from leading researchers in the field to share their insights on the design, synthesis, and performance of advanced catalytic nanomaterials. Topics of interest include the fundamental mechanisms of HER at the nanoscale, the role of heterostructured interfaces, and the development of novel catalysts for efficient hydrogen production and the applications of hydrogen.

Guest Editor

Dr. Jingui Wang

School of Chemistry and Chemical Engineering, Qilu University of Technology (Shandong Academy of Sciences), Jinan 250353, China

Deadline for manuscript submissions

16 January 2026

Nanomaterials

an Open Access Journal by MDPI

Impact Factor 4.3
CiteScore 9.2
Indexed in PubMed

mdpi.com/si/220317

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 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)