Special Issue

Advances in Electrochemical Energy Storage Materials: From Fundamental Mechanisms to Practical Applications

Message from the Guest Editors

The urgent global transition towards sustainable energy systems is critically dependent on breakthroughs in electrochemical energy storage. This Special Issue aims to showcase cutting-edge research and review articles that address the fundamental and applied challenges in this rapidly evolving field. We seek to compile a collection of high-quality papers that push the boundaries of material design, deepen our understanding of electrochemical mechanisms, and bridge the gap between laboratory innovation and practical device engineering. The scope encompasses the entire development cycle, from the rational design and novel synthesis of advanced materials (e.g., nanostructured electrodes, innovative electrolytes, and catalytic interfaces) to their detailed characterization and implementation in high-performance devices. A particular emphasis will be placed on studies utilizing in situ and operando techniques to probe reaction mechanisms, catalyst dynamics, and the evolution of interfaces in real-time. Furthermore, we encourage submissions on engineering research that focuses on scalability, device integration, and performance under realistic operating conditions.

Guest Editors

Dr. Weiqiang Lv

School of Physics, University of Electronic Science and Technology of China, Chengdu 611731, China

Dr. Yeshu Tan

Department of Building Environment and Energy Engineering, The Hong Kong Polytechnic University, Hong Kong, China

Deadline for manuscript submissions

20 September 2026

Crystals

an Open Access Journal by MDPI

Impact Factor 2.4
CiteScore 5.4

mdpi.com/si/256043

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

mdpi.com/journal/crystals

Crystals

an Open Access Journal by MDPI

Impact Factor 2.4
CiteScore 5.4

mdpi.com/journal/crystals

MDPI

About the Journal

Message from the Editor-in-Chief

Welcome to *Crystals*, the journal dedicated to the fascinating world of crystallographic research! Crystals are more than mere decorative elements; they hold the key to understanding the fundamental structure of matter. Our mission is to explore the crucial significance of this research across various fields. From medicine to technology, chemistry to geology, crystals play a vital role. Their structure provides insights into new advanced materials, innovative drugs, and groundbreaking technologies. Through *Crystals*, we delve into the microscopic world to discover solutions that will shape the future. Join us on a journey through the *Crystals*, where science merges with beauty and innovation.

Editor-in-Chief

Prof. Dr. Alessandra Toncelli
Department of Physics, University of Pisa, 56126 Pisa, PI, Italy

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), Inspec, Ei Compendex, CAPlus / SciFinder, and other databases.

Journal Rank:

JCR - Q2 (Crystallography) / CiteScore - Q2 (Condensed Matter Physics)