

## Special Issue

# In Situ and Operando Characterizations for Energy Materials

### Message from the Guest Editors

A better design of energy materials (for batteries, solar cells, fuel cells, supercapacitors, etc.) demands the in-depth understanding of failure mechanisms in their native working environment. Unlike ex situ characterizations, in situ and/or in-operando methods can provide comprehensive insights into complex phenomena, including dynamic phase transitions, air-sensitive interphases, metastable intermediates, and kinetically dependent heterogeneity in systems.

This Special Issue aims to solicit contributions to further develop in situ and operando characterization techniques to better understand energy materials. The topics of interest include, but are not limited to, the following: (1) the improvement of existing characterization methods, (2) the development of new characterization tools and data analysis methods, (3) new findings on energy materials using in situ/operando characterizations, and (4) the review of recent advances on topics listed above.

---

### Guest Editors

Dr. Daren Wu

Dr. Kaixi Deng

Dr. Heinz-Günter Brokmeier

---

### Deadline for manuscript submissions

closed (25 August 2024)



## Crystals

---

an Open Access Journal  
by MDPI

---

Impact Factor 2.4  
CiteScore 5.0



[mdpi.com/si/197109](https://mdpi.com/si/197109)

*Crystals*  
Editorial Office  
MDPI, Grosspeteranlage 5  
4052 Basel, Switzerland  
Tel: +41 61 683 77 34  
[crystals@mdpi.com](mailto:crystals@mdpi.com)

[mdpi.com/journal/  
crystals](https://mdpi.com/journal/crystals)





# Crystals

---

an Open Access Journal  
by MDPI

---

Impact Factor 2.4  
CiteScore 5.0



[mdpi.com/journal/  
crystals](https://mdpi.com/journal/crystals)



## 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, CAPus / SciFinder, and other databases.

#### Journal Rank:

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