

Special Issue

High-Performance Lithium-Ion Batteries: Thermal Safety, Thermal Management and Solid-State Technologies

Message from the Guest Editors

As lithium-ion batteries advance toward higher energy density and faster charging, thermal safety and life-cycle reliability have become paramount. This Special Issue invites original research and review papers on high-performance lithium-ion batteries, focusing on thermal safety mechanisms, early warning, thermal management, advanced materials, and system integration. We particularly encourage contributions that combine fundamental insights with practical applications, especially those leveraging artificial intelligence (AI) and machine learning (ML) to accelerate materials discovery, modeling, and real-world safety monitoring. Topics of interest include, but are not limited to:

- **Thermal Safety & Abuse Behavior:** Thermal runaway mechanisms, propagation suppression, and safety under physical/electrical abuse.
- **Thermal Management:** Novel cooling/heating, phase-change materials, heat pipes, and immersion cooling.
- **Materials & Solid-State Batteries:** Solid electrolytes, stable interfaces, flame-retardants, and safer electrode/separator design.
- **Multiphysics Simulation:** Electrochemical–thermal–mechanical modeling, digital twins, and multiscale prediction.
- **AI/ML Applications**.....

Guest Editors

Prof. Dr. Jie Liu

Department of Mechanical, Electronic and Control Engineering, Beijing Jiaotong University, Beijing 100044, China

Prof. Dr. Xiaogang Wu

School of Electrical Engineering, Hebei University of Technology, Tianjin 300401, China

Deadline for manuscript submissions

29 January 2027



Batteries

an Open Access Journal
by MDPI

Impact Factor 6.3
CiteScore 9.8



mdpi.com/si/284133

Batteries

Editorial Office

MDPI, Grosspeteranlage 5

4052 Basel, Switzerland

Tel: +41 61 683 77 34

batteries@mdpi.com

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





Batteries

an Open Access Journal
by MDPI

Impact Factor 6.3
CiteScore 9.8



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



About the Journal

Message from the Editor-in-Chief

Take the opportunity to publish your original scientific work or a review paper concerning battery materials, battery technology or battery application within this new open access journal. Along with material science, the journal also addresses engineering and multidisciplinary research topics, such as cell and system design or storage system integration. Publishing proffers visibility for the benefit of other experts and facilitates discussion of the research results within the field. You are invited to publish your work, read published papers and to participate in topical discussions.

Editor-in-Chief

Prof. Dr. Karim Zaghib

Department of Chemical and Materials Engineering, Concordia
University, Montréal, QC H3G 1M8, Canada

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 - Q1 (Electrochemistry) / CiteScore - Q1 (Electrical and Electronic Engineering)