Special Issue

Advances in Battery Modeling: Models, Charging Strategies, Performance Estimations and Thermal Management

Message from the Guest Editors

Batteries have become an essential power source in many fields, such as electric vehicles and smart grids, due to increasing environmental concerns. The lifespan and cost of batteries play a crucial role in addressing energy crises and environmental issues. The development of models that accurately predict battery life, design effective charging strategies, and assess battery performance now presents considerable challenges in both science and engineering. This Special Issue of *Batteries* is open to submissions. Scientists and engineers are encouraged to submit articles addressing topics in the following areas:

- Battery modeling method development.
- Simulation of the charging and discharging processes for various types of batteries, including lithium-ion batteries, solid-state batteries, and second-life batteries.
- Optimization of the parameters of batteries in specific applications, i.e., electric vehicles, power grid systems, and fuel cell vehicles.
- Simulation of the battery degradation process with physical-based models or data-driven approaches.
- Charging strategy development in distinct scenarios.
- Design of thermal management.

Guest Editors

Dr. Xuan Zhou

Department of Electrical and Computer Engineering, University of Michigan-Dearborn, Dearborn, MI 48126, USA

Dr. Rongheng Li

Department of Electrical and Computer Engineering, University of Michigan-Dearborn, Dearborn, MI 48126, USA

Deadline for manuscript submissions

15 April 2025

Batteries

an Open Access Journal by MDPI

Impact Factor 4.6
CiteScore 4.0

mdpi.com/si/195965

Batteries
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
batteries@mdpi.com

mdpi.com/journal/batteries

Batteries

an Open Access Journal by MDPI

Impact Factor 4.6
CiteScore 4.0

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 - Q2 (Electrochemistry) / CiteScore - Q2 (Electrical and Electronic Engineering)