batteries

an Open Access Journal by MDPI

IMPACT FACTOR 4.8

CITESCORE 6.6

The Precise Battery—towards Digital Twins for Advanced Batteries

Guest Editors:

Prof. Dr. Kai Peter Birke
Chair for Electrical Energy Storage Systems, Institute for Photovoltaics, University of Stuttgart, Pfaffenwaldring 47, 70569 Stuttgart, Germany

Dr. Alexander Fill
Chair for Electrical Energy Storage Systems, Institute for Photovoltaics, University of Stuttgart, Pfaffenwaldring 47, 70569 Stuttgart, Germany

Deadline for manuscript submissions:
closed (31 July 2023)

Message from the Guest Editors

E-mobility has led to high demands regarding energy and power density, durability and safety. To meet these requirements, research efforts in various areas are in progress. New candidates for negative electrodes are being investigated, such as lithium metal or silicon. At the positive electrode, the Ni content is steadily increased to reduce the amount of cobalt and nickel.

In parallel to new material developments at the cellular level, the optimization of cell design and operating strategy are in focus. Important factors include the tab design, the geometric cell and battery formats. The challenges of material selection and cell design are doubtless important trade-offs among different KPIs.

Without a precise battery model and advanced calculation methods, all the aforementioned mentioned attempts fail. A precise battery model is a digital twin including electrical, thermal, mechanical and aging models as well as new approaches employing artificial intelligence. Additionally, the digital twin should show real-time ability.

Consequently, we want to promote and address a new Special Issue ‘The precise battery - towards digital twins for advanced batteries’.

batteries

an Open Access Journal by MDPI

IMPACT FACTOR 4.8

CITESCORE 6.6

Editor-in-Chief

Prof. Dr. Karim Zaghib
Department of Chemical and Materials Engineering, Concordia University, Montréal, QC H3G 1M8, Canada

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.

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 - Q1 (Electrical and Electronic Engineering)

Contact Us

Batteries Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland

Tel: +41 61 683 77 34
www.mdpi.com

mdpi.com/journal/batteries
batteries@mdpi.com
𝕏@batteriesmdpi