Special Issue

High-Safety Lithium-Ion Batteries: Basics, Progress and Challenges

Message from the Guest Editor

The ongoing “endurance mileage” anxiety has stimulated the energy-density increase of lithium-ion batteries, and great efforts have been made in understanding the inherent electrochemistry, and in developing advanced material systems. However, the energy density increase of LIBs inevitably accompanies the rising safety concerns. Thermal safety characteristics and thermal runaway mechanism investigations of LIBs are continuing to attract widespread interest. Deciphering the thermal failure route, behavior and mechanism of high energy density is of great importance in building next-generation batteries with enhanced safety. Potential topics include, but are not limited to:

- Understanding heat generation characteristics during charge/discharge under isothermal or adiabatic situations.
- Thermal runaway route and mechanism of high-energy-density batteries.
- Simulation and modeling of self-heating of batteries during abuse conditions.
- Material-level investigation of the exothermic reaction during the thermal runaway chain reactions.
- New battery architectures or advanced electrodes or electrolyte materials to improve the thermal safety of batteries.

Guest Editor

Dr. Lang Huang

Qingdao Institute of Bioenergy and Bioprocess Technology, Chinese Academy of Sciences, Qingdao 26101, China

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

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Editor-in-Chief

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

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