Special Issue

Advances in Lithium-Ion Batteries for Energy Storage Applications

Message from the Guest Editor

Lithium-ion batteries (LIBs) remain at the forefront of energy storage technology, powering applications from portable electronics to electric vehicles and grid-scale systems. Ongoing advances in materials design, interfacial engineering, and diagnostic methods are critical for meeting demands for higher energy density, longer cycle life, faster charging, and enhanced safety. This Special Issue of *Applied Sciences* focuses on cutting-edge developments in LIB science and technology, spanning novel electrode and electrolyte materials, solid–electrolyte interphase optimization, and next-generation cell architectures. We welcome original research and reviews on advanced characterization techniques, modeling and simulation of electrochemical processes, and AI-assisted materials discovery. Studies addressing safety, recycling, and sustainable manufacturing are particularly encouraged. By uniting contributions from materials scientists, electrochemists, engineers, and data scientists, this Special Issue aims to accelerate innovation in lithium-ion battery research and support the transition toward a low-carbon, electrified future.

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As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal *Applied Sciences* has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

Editor-in-Chief

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