Special Issue

Next-Generation Aqueous Batteries: From Materials Innovation to Real-World Applications

Message from the Guest Editors

Among diverse battery systems, aqueous batteries stand out with core strengths: intrinsic safety from non-flammable electrolytes, cost-effectiveness using earth-abundant materials, and high ionic conductivity enabling superior power performance. This Special Issue aims to showcase the latest advances in the materials, mechanisms, and devices in aqueous batteries. It seeks to summarize and highlight the potential, issues, and breakthroughs associated with highly safe aqueous batteries in scalable storage and wearable technologies. We welcome research articles, reviews, and perspectives from researchers worldwide. Topics include, but are not limited to, the following:

- Aqueous ion batteries, including H+, NH4+, Li+, Na+, K+, Zn2+, Ca2+, Fe2+, Mg2+, Mn2+, Al3+, halogen, and chalcogens, etc.;
- Novel electrode materials, electrolytes, separators, etc.;
- Supercapacitors, static batteries, and redox flow batteries using aqueous electrolyte;
- Energy storage mechanisms and interfacial chemistry related to aqueous batteries;
- Challenges that hinder aqueous battery development;
- Pathways from lab to fab for aqueous batteries.

Guest Editors

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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.

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