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Applications Based on Symmetry/Asymmetry in Lithium-Sulfur Batteries

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Deadline for manuscript submissions:
30 June 2024

Message from the Guest Editors

Dear Colleagues,

We are inviting submissions to a Special Issue of MDPI entitled "Application Based on Symmetry/Asymmetry in Lithium-Sulfur Batteries".

High energy density and environmental benignity render lithium–sulfur batteries (LSBs) a promising candidate for next-generation energy storage batteries. However, several major drawbacks, such as the sluggish and obscured key conversion between lithium sulfides and polysulfides, and the complicated interface/phase reaction between lithium sulfides/polysulfides and electrodes, catalysts, electrolytes, separators, etc., deeply influence these batteries' performance. To clarify, it is worth introducing the concept of symmetry/asymmetry in LSBs—for instance, granted by the type of material and the approaches of fabricating, modeling, and testing—to offer a theoretical and experimental basis for reasonable design and fabrication. From this perspective, the aim of this Special Issue is to explore applications based on symmetry/asymmetry in lithium–sulfur batteries, and eventually pave a way towards the industrial design and manufacture of high-performance LSBs in the near future.

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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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