



Symmetry in Lithium Battery Charging

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Message from the Guest Editors

Dear Colleagues,

Lithium batteries have been widely used as important energy storage components in many applications, such as portable electronics, electrical/hybrid transportation, smart grids, etc. It is estimated that the global lithium-ion battery market will exceed USD 100 billion in 2025. Though lithium batteries have recently seen rapid development, improving their charging rate is still a meaningful and challenging task. The key difficulties are ensuring their lifetime and safety while increasing the charge current and designing the best strategy for batteries under different environments and aging states. Relevant charging technologies include battery modeling, state estimation, cycle life prediction, fault prognosis and diagnosis, scheme of game between lifetime and charge speed, etc.

The research of symmetrical lithium batteries is also of concern. The electrochemical stability of new solid electrolytes to lithium is usually determined by the constant-current cycle of symmetrical lithium batteries...





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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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