Solid-state electrochemistry of energy storage materials

Electrochemical cells, in the form of batteries (or supercapacitors) and fuel cells, are efficient devices for energy storage and conversion. These devices show considerable ...

Solid-state lithium batteries represent a transformative approach in energy storage technology. Extensive investigations into lithium-ion transport mechanisms within pyrochlore- and garnet ...

On the other hand, electrochemical systems, which include different types of batteries, effectively store and release energy by utilizing materials like metal hydrides and ...

Composite cathode composed of active particles and solid electrolytes (SEs) can considerably enlarge the particle-SE contact areas and achieve high areal loadings in all-solid ...

An introduction on electrochemical energy storage illustrates the research aims and prospective approaches to reach these. We particularly address "NMR in battery research" ...

Ameliorating structural and electrochemical properties of traditional poly-dioxolane electrolytes via integrated design of ultra-stable network for solid-state batteries

The recent progress on all solid-state polymer electrolytes has been reviewed in term of their potential application in LIBs. It is expected that the high-performance solid-state ...

The quest for developing the scalable methods of synthesis of materials with potential electrochemical energy storage applications remains a great challenge. Herein, we ...

For the next generation of energy storage systems, electrode materials have drawn a lot of interest. Acquiring high specific capacitance, strong chemical stability, extended ...

High entropy materials have garnered considerable attention recently as a class of materials with intricate stoichiometry, exhibiting high levels of entropy. These materials hold ...

In the critical area of sustainable energy storage, solid-state batteries have attracted considerable attention due to their potential safety, energy-density and cycle-life ...

All-solid-state lithium batteries (ASSLBs), where solid-state electrolytes (SSEs) take the place of liquid electrolytes, are considered as the next generation of energy storage ...

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6 ???· The Journal of Solid State Electrochemistry is devoted to all aspects of solid-state chemistry and solid-state physics in electrochemistry, publishing novel ...

Above all, the multifunctional materials hold good potential for intelligent display energy storage. Graphical Abstract Similar content being viewed by others Dihydrophenazine ...

Examples focus on solid state fuel cells, but methodologies are applicable to a wide range of technologies including electrochemical gas separation membranes, batteries, supercapacitors, ...

Her research focuses on advanced electrode materials, solid electrolytes, and interface chemistry of Te-based next-generation electrochemical energy storage devices.

Web: https://mozgmalina.pl