

In this work, we used solid-state NMR to understand the impact of different pore volumes and pore size distributions on the adsorption of a solvent-free ionic liquid electrolyte, 1-ethyl-3 ...

Nowadays there is serious concern as to how much longer the world's consumption of fossil fuels can continue as regards its effects on the environment. Renewable forms of energy are being ...

Researchers at the U.S. Department of Energy's (DOE) Argonne National Laboratory have developed and demonstrated an innovative set of methods to evaluate long-term aging in real-world battery cells. The ...

This chapter concerns in situ applications of nuclear magnetic resonance ( NMR ) spectroscopy, including magnetic resonance imaging ( MRI ), to the current research in the fields relevant to ...

For the transition to renewable energy sources, novel energy storage materials are more important than ever. This review addresses so-called molecular solar thermal (MOST) systems, which appear very promising since ...

A thorough understanding of the fundamental electrochemical and chemical processes in batteries is crucial to advancing energy density and power density. However, the ...

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

Despite recent research efforts such understanding is far from complete. In this work we first use Nuclear Magnetic Resonance (NMR) experiments to study the NMR ...

Lithium containing solids exhibit interesting ion conducting properties because of the dynamic nature of Li + ions. A variety of lithium solid-state NMR experiments constitute an ...

Energy storage material is a hot topic in material science and chemistry. During the past decade, nuclear magnetic resonance (NMR) has emerged as a powerful tool to aid understanding of ...

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

This chapter gives a general introduction to NMR interactions in solids. More details on paramagnetic interactions of NMR, often dominating the spectra of paramagnetic ...

Interviews with leading scientists in energy storage reveal how NMR and EPR have helped them to develop new electrode materials that are more stable, efficient, and durable.

Electrochemical energy storage materials constitute essential elements in the development of sustainable energy technologies. They are crucial for improving the efficiency of energy ...

Based on this, recent progress in investigating energy storage mechanisms in EDLCs and pseudocapacitors through various NMR techniques is discussed. Finally, an outlook on future ...

An increasing use of the fast field cycling nuclear magnetic resonance relaxometry technique to investigate dynamics in electrolytes for energy storage has been evidenced during the last ...

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