

New aqueous energy storage devices comprising graphite cathodes, MXene anodes and concentrated sulfuric acid solutions. Netanel Shpigel, Fyodor Malchik, Mikhael D. Levi, Bar Gavriel, ... Yury Gogotsi. Pages 1-10
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Abstract Lithium-ion batteries (LIBs) are currently the most suitable energy storage device for powering electric vehicles (EVs) owing to their attractive properties including high energy efficiency, lack of memory effect, long cycle life, high energy density and high power density. These advantages allow them to be smaller and lighter than other conventional ...

As green, safe, and cheap eutectic mixtures, deep eutectic solvents (DESs) provide tremendous opportunities and open up attractive perspectives as charge transfer and reaction media for electrochemical energy storage and conversion (EESC). In this review, the fundamental properties of DESs are first summarized.

DOI: 10.1016/J.APENERGY.2015.05.054 Corpus ID: 108471337; Electrochemical supercapacitors for energy storage and delivery: Advanced materials, technologies and applications? @article{Yu2015ElectrochemicalSF, title={Electrochemical supercapacitors for energy storage and delivery: Advanced materials, technologies and applications?}, ...

Next, we highlight a number of energy storage systems that utilize nanocellulose-derived materials, including supercapacitors, lithium-ion batteries, lithium-sulfur batteries, and sodium-ion batteries. In this section, the main focus is on the integration of nanocellulose with other active materials, developing films/aerogel as flexible ...

Abstract Advanced lead-free energy storage ceramics play an indispensable role in next-generation pulse power capacitors market. Here, an ultrahigh energy storage density of $\sim 13.8 \text{ J cm}^{-3}$ and a large efficiency of $\sim 82.4\%$ are achieved in high-entropy lead-free relaxor ferroelectrics by increasing configuration entropy, named high-entropy strategy, realizing ...

Electrochemical energy storage systems are mostly comprised of energy storage batteries, which have outstanding advantages such as high energy density and high energy conversion ...

Abstract Zinc-bromine flow batteries (ZBFBs) hold promise as energy storage systems for facilitating the efficient utilisation of renewable energy due to their low cost, high energy density, safety... Skip to Article Content; ... Chenyu Zhao. China Huadian Engineering Co., Ltd., Beijing, China. Search for more papers by this author. Haochen Hu,

@article{Shi2024RecentPA, title={Recent Progress and Prospects on Sodium-Ion Battery and All-Solid-State

Sodium Battery: A Promising Choice of Future Batteries for Energy Storage}, author={Kuangyi Shi and Bin Guan and Zhongqi Zhuang and Junyan Chen and Yujun Chen and Zeren Ma and Chenyu Zhu and Xuehan Hu and Sikai Zhao and Hongtao Dang and ...

Excellent energy-storage properties with an ultrahigh recoverable energy storage density $\sim 10.59 \text{ J cm}^{-3}$ and a large efficiency $\sim 87.6\%$ are realized in lead-free relaxor ferroelectrics, which is respons...

Currently, carbon materials, such as graphene, carbon nanotubes, activated carbon, porous carbon, have been successfully applied in energy storage area by taking advantage of their structural and functional diversity. However, the development of advanced science and technology has spurred demands for green and sustainable energy storage materials. ...

Toward emerging two-dimensional nickel-based materials for electrochemical energy storage: Progress and perspectives. Weili Xu, Xun Zhao, Feiyang Zhan, Qingqing He, ... Lingyun Chen. Pages 79-135 View PDF. Article preview. select article Recent progress on enhancing the Lithiophilicity of hosts for dendrite-free lithium metal batteries.

Next-generation advanced high/pulsed power capacitors rely heavily on dielectric ceramics with high energy storage performance. However, thus far, the huge challenge of realizing ultrahigh ...

Electrochemical energy storage and conversion (EESC) technology is key to the sustainable development of human society. As an abundant and renewable source, biomass has recently shown widespread applications in EESC, achieving both low environmental impact and high performances. This article provides overview and perspectives on various types ...

For nanocellulose-based energy storage, structure engineering and design play a vital role in achieving desired electrochemical properties and performances. Thus, it is important to identify suitable structure and design engineering strategies and to better understand their relationship. In this Account, we review recent developments in ...

The continued miniaturization of portable electronics requires energy storage devices with large volumetric energy densities 1,2,3,4.Although suffering from sluggish charge/discharge processes and ...

The structural design of electrode materials is one of the most important factors that determines the electrochemical performance of energy storage devices. In recent years, hollow micro ...

Nanocellulose has emerged as a sustainable and promising nanomaterial owing to its unique structures, superb properties, and natural abundance. Here, we present a comprehensive review of the current research activities that center on the development of nanocellulose for advanced electrochemical energy storage.

Rechargeable batteries currently hold the largest share of the electrochemical energy storage market, and they

play a major role in the sustainable energy transition and industrial decarbonization to respond to global climate change. Due to the increased popularity of consumer electronics and electric vehicles, lithium-ion batteries have quickly become the most ...

Dramatic cost declines in solar and wind technologies, and now energy storage, open the door to a reconceptualization of the roles of research and deployment of electricity ...

Compared with electrochemical energy storage techniques, electrostatic energy storage based on dielectric capacitors is an optimal enabler of fast charging-and-discharging speed (at the microsecond level) and ultrahigh power density (1-3). Dielectric capacitors are thus playing an ever-increasing role in electronic devices and electrical power systems.

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Our results reveal that regulating the atomic configurational entropy introduces favourable and stable microstructural features, including lattice distorted nano-crystalline grains and a disordered amorphous-like phase, which enhances the breakdown strength and reduces the polarization switching hysteresis, thus synergistically contributing to ...

Corrigendum to "Significant increase in comprehensive energy storage performance of potassium sodium niobate-based ceramics via synergistic optimization strategy", energy storage materials 45 (2022) 861-868. Miao Zhang, Haibo Yang, Ying Lin, Qibin Yuan, Hongliang Du. Page 563 View PDF; Previous vol/issue.

Aqueous Zn-iodine (Zn-I_2) batteries have attracted extensive research interest as an emerging redox conversion energy storage system due to the low cost and high safety. However, the ...

Aqueous Zinc-Iodine Batteries: From Electrochemistry to Energy Storage Mechanism. Hui Chen, Hui Chen. Key Laboratory of the Ministry of Education for Advanced Catalysis Materials, Department of Chemistry, Zhejiang Normal University, Jinhua, 321004 China. Search for more papers by this author.

In today's world, clean energy storage devices, such as batteries, fuel cells, and electrochemical capacitors, have been recognized as one of the next-generation technologies to assist in overcoming ...

Finally, a high recoverable energy density of 2.32 J/cm^3 and an excellent energy storage efficiency of 92.2% were obtained at 300 kV/cm . In addition, pulsed charge-discharge tests show that $\text{Sr}_{0.7}\text{Bi}_{0.15}\text{Yb}_{0.05}\text{TiO}_3$ possesses a rapid discharge rate and high-power density with superior thermal stability.

The first report of metal-Te battery was in 2014, and it has been deeply investigated due to its potential for

next-generation energy storage devices since then. Despite metal-Te batteries are suffering from the same problems as metal-S batteries, such as intermediates dissolution and large electrode volume change, the research direction can go ...

With the ever-increasing adaption of large-scale energy storage systems and electric devices, the energy storage capability of batteries and supercapacitors has faced increased demand and challenges. The electrodes of these devices have experienced radical change with the introduction of nano-scale ...

With the ever-increasing adaption of large-scale energy storage systems and electric devices, the energy storage capability of batteries and supercapacitors has faced increased demand and challenges. The electrodes of these devices have experienced radical change with the introduction of nano-scale materials. As new generation materials ...

Chenyu Zhang's 6 research works with 226 citations and 373 reads, including: Numerical energy and exergy evaluation for a multiple-layer latent heat storage unit enhanced with nanoparticles...

The Journal of Energy Storage focusses on all aspects of energy storage, in particular systems integration, electric grid integration, modelling and analysis, novel energy storage ...

With the speedy development in the field of electrochemical energy storage devices, the high-energy-density system is considered to be an indispensable prerequisite. Metal-O₂ batteries, including Li-O₂, Zn-O₂, Al-O₂, Mg-O₂, are regarded as advanced battery systems because of their light weight and high energy storage capabilities ...

Therefore, to achieve high energy storage performance via constructing flexible and high-dynamic polarization configurations in ferroelectric ceramics, the long-range polarization ordering and average symmetry need to be broken as much as possible so that the ceramics appear weak macroscopic polar [17], [19]. On the other hand, composition ...

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