

Integrated energy conversion and storage devices: Interfacing solar cells, batteries and supercapacitors. ... Zhen Shi, Hongli Wang, Jirong Wang, Zhigang Xue. Pages 1-10 ... select article Simultaneous optimization of solvation structure and water-resistant capability of MgCl_2 -based electrolyte using an additive combination of ...

Water consumption, primary energy demand, metal depletion, fine particulate matter formation, terrestrial acidification, human toxicity, and fossil resource scarcity of energy storage systems ...

Graphene and two-dimensional transition metal carbides and/or nitrides (MXenes) are important materials for making flexible energy storage devices because of their electrical and mechanical properties...

Photovoltaic (PV) power, as the fastest-growing low-carbon energy, is expected to play an important role in achieving the global goals of net zero emissions and limiting global warming to 1.5°C . In order to make PV power a benefit to the global population and drive low-carbon transitions, Shi Chen has been focusing on this field in recent years.

About this collection. We are delighted to present a Chemical Society Reviews themed collection on "Electrochemistry in Energy Storage and Conversion", Guest Edited by Jun Chen (Nankai University) and Xinliang Feng (TU Dresden). Rapid depletion of fossil fuels and increasing environmental concerns induce serious scientific and technological challenges to address the ...

It is difficult for dielectric capacitors to achieve high recoverable energy density and energy efficiency simultaneously. The introduction of heterovalent ions into the A- and B-sites of NaNbO_3 produces a local random field that improves the relaxor and the energy-storage performances. According to this strategy, $(1-x)\text{NaNbO}_3\text{-}x\text{Bi}(\text{Mg}_{0.5}\text{Sn}_{0.5})\text{O}_3$ (xBMS, $x = \dots$

Hydrogen production by electrocatalytic water splitting is an efficient and economical technology, however, is severely impeded by the kinetic-sluggish and low value-added anodic oxygen evolution ...

DOI: 10.1016/J.MATCHEMPHYS.2019.04.032 Corpus ID: 146453418; Nano-encapsulated phase change materials prepared by one-step interfacial polymerization for thermal energy storage @article{Shi2019NanoencapsulatedPC, title={Nano-encapsulated phase change materials prepared by one-step interfacial polymerization for thermal energy storage}, author={Jian Shi ...

To further narrow the performance gap (as seen in Fig. 1) with conventional lithium-ion batteries, water-in-salt electrolyte (WiSE) was first proposed in 2015, in which the salt exceeds the solvent in both weight and volume [18] this case, the activity of water was significantly inhibited, which further broadened the ESW of

aqueous electrolytes and enabled ...

Ball-flower-like hierarchically porous carbons via a "work-in-tandem" strategy for effective energy storage and CO₂ capture. *Journal of Energy Storage* 2024, 84, 110636. ...

Herein, we report a super-concentrated aqueous/organic hybrid electrolyte, i.e. cheap sodium perchlorate (NaClO₄) salt mixed with water/AN solvents, to significantly increase SWMR. The hybrid electrolyte with an optimized salt/water/AN molar ratio of 1/1.5/2.4 exhibits a wide ESW of ~3.16 V while maintaining high conductivity (41.2 mS cm⁻¹) and high-level safety.

The BNNS@ST-2/PEI nanocomposites with the same filler volume fraction has an energy storage density of 4.29 J cm⁻³ at 500 MV m⁻¹, whereas pristine PEI has an energy storage density of 1.74 J cm⁻³ at 450 MV m⁻¹. Notably, the finer D-E Loops of BNNS@ST-2/PEI compared to the PEI matrix and ST/PEI nanocomposites indicate that the ...

Abstract Aqueous rechargeable zinc-based batteries have sparked a lot of enthusiasm in the energy storage field recently due to their inherent safety, low cost, and environmental friendliness. ... Yuchuan Shi. Department of Applied Chemistry, School of Science, State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong ...

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Battery Grid Energy Storage Electrocatalysis Nanomaterial. Articles Cited ... J Wan, J Xie, X Kong, Z Liu, K Liu, F Shi, A Pei, H Chen, W Chen, J Chen, ... *Nature nanotechnology* 14 (7), 705-711, 2019. 923: 2019: Substrate dependent self-organization of mesoporous cobalt oxide nanowires with remarkable pseudocapacitance ... Efficient solar ...

Although the large latent heat of pure PCMs enables the storage of thermal energy, the cooling capacity and storage efficiency are limited by the relatively low thermal conductivity (~1 W/(m ? K)) when compared to metals (~100 W/(m ? K)). 8, 9 To achieve both high energy density and cooling capacity, PCMs having both high latent heat and high thermal ...

In this work, a new DIB storage concept combining an environmentally friendly, transition-metal-free, abundant graphite positive electrode material, and a nonflammable water-based ...

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@article{Liu2022BiomassbasedPC, title={Biomass-based phase change material gels demonstrating solar-thermal conversion and thermal energy storage for thermoelectric power generation and personal thermal management}, author={Xing Liu and Hua Su and Zhongliang Huang and Pengcheng Lin and Tao Yin and Xinxin Sheng and Ying Chen}, journal={Solar ...

Aqueous electrolytes facilitate more sustainable battery technologies due to the attributes of being nonflammable, environmentally benign, and cost effective. Yet, water's ...

In situ characterizations and ab initio molecular dynamics calculations reveal a bilayer hybrid interface composed of inorganic LiF and organic carbonaceous species reduced from $\text{Li}^+ 2$ (TFSI $^-$) and $\text{Li}^+ 4$ (TEGDME). Aqueous batteries are promising devices for electrochemical energy storage because of their high ionic conductivity, safety, low cost, and ...

The maximum concentration of $\text{Ni}(\text{OH})_2$ nanosheets in water without adding any additives reaches as high as 50 mg mL^{-1} , which can be printed on arbitrary substrates to form $\text{Ni}(\text{OH})_2$ thin films. As a proof-of-concept application, $\text{Ni}(\text{OH})_2$ nanosheet ink is coated on commercialized carbon fiber yarns to fabricate wearable energy storage devices.

Molecular simulation of thermal energy storage of mixed $\text{CO}_2/\text{IRMOF-1}$ nanoparticle nanofluid. J Hu, C Liu, Q Li, X Shi ... Water-stable MOFs and hydrophobically encapsulated MOFs for CO_2 capture from ambient air and wet flue gas. ... J Song, Y Chen, H Xiao, X Shi, Y Liu, L Zhu, YL He, X Chen. Industrial & engineering chemistry research 59 (38 ...

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Liu P, Liu W, Huang Y, Li P, Yan J, Liu K. Mesoporous hollow carbon spheres boosted, integrated high performance aqueous Zn-ion energy storage. Energy Storage Materials, 2020, 25: 858-865. Article CAS Google Scholar Xu F, Tang Z, Huang S, Chen L, Liang Y, Mai W, Zhong H, Fu R, Wu D. Facile synthesis of ultrahigh-surface-area hollow carbon ...

Finally, we anticipate the future development of salt caverns for energy storage in China to focus on large-scale, integrated, and intelligent projects, emphasizing their significance in achieving ...

DOI: 10.1016/J.ENCONMAN.2021.114668 Corpus ID: 239656780; Recent progress of energy harvesting and conversion coupled with atmospheric water gathering @article{Chen2021RecentPO, title={Recent progress of energy harvesting and conversion coupled with atmospheric water gathering}, author={Zhihui Chen and Jinwen Shi and Yueqi Li ...

The numerous emerged electrode materials for energy storage devices offer opportunities for the development of capacitive deionization (CDI), which is considered as a promising water treatment ...

Activated carbon-coated carbon nanotubes were used for energy storage in supercapacitors and capacitive water purification. ... Zhuo Wang, Tingting Yan, Guorong Chen, Liyi Shi, ... Advanced Applications of Carbonaceous Materials in Sustainable Water Treatment, Energy Storage, and CO₂ Capture: A Comprehensive Review. Sustainability 2023, 15 ...

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