

Dr Song's research interests lie in the areas of modelling, estimation, optimization, and control of energy storage (e.g., battery, supercapacitor, and flywheel) for electrified vehicles and ...

The low plating/stripping CEs are mainly associated with the sustained consumption of highly active aqueous electrolyte accompanied by the generation of irreversible by-products such as ZnO, Zn(OH)₂ or Zn₄SO₄(OH)₆ · nH₂O on the surface of Zn anode, which causes a loss for a mass of active Zn²⁺ ions [19]. The parasitic water decomposition will ...

The corresponding Ragone plot (Fig. 3 e) exhibits a higher energy density of 116.0 Wh kg⁻¹ at a power density of 141 W kg⁻¹, and more impressively, a decent energy density up to 36.1 Wh kg⁻¹ can be retained even at an ultrahigh power density of 21660 W kg⁻¹ (based on the cathode mass), which is superior to the previously reported ...

Our lab focuses on modeling, estimation, optimization, and control of energy storage (e.g., battery, supercapacitor, fuel cell, flywheel, etc) for electrified vehicles and renewable energy systems. Using energy storage as a bridge, we are thrilled to connect automotive, transportation, and power system communities through interdisciplinary ...

Here, the state-of-the-art advances of the hydrogel materials for flexible energy storage devices including supercapacitors and rechargeable batteries are reviewed. In addition, devices with various kinds of functions, such as self-healing, shape memory, and stretchability, are also included to stress the critical role of hydrogel materials.

5 · These advancements have significantly boosted the performance of energy storage devices. DNA biotemplates not only enhance supercapacitor capacitance and increase Li-S ...

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Dr Song's research interests lie in the areas of modelling, estimation, optimization, and control of energy storage (e.g., battery, supercapacitor, and flywheel) for electrified vehicles and renewable energy systems. He is the author or co-author of more than 50 peer-reviewed publications including 40 journal articles. He has received several ...

Lithium-ion batteries (LIBs) are the dominant energy storage technology to power portable electronics and electric vehicles. However, their current energy density and cost cannot satisfy the ever ...

Aqueous zinc (Zn) batteries (AZBs) are widely considered as a promising candidate for next-generation energy storage owing to their excellent safety features. However, the application of a Zn anode is hindered by severe dendrite formation and side reactions.

The rapid developments of the Internet of Things (IoT) and portable electronic devices have created a growing demand for flexible electrochemical energy storage (EES) devices. Nevertheless, these flexible devices suffer from poor flexibility, low energy density, and poor dynamic stability of power output during deformation, limiting their ...

Rechargeable lithium-ion batteries (LIBs) that operate based on the "rocking-chair" intercalation mechanism have demonstrated an enormous success over their competitors during the past three decades, yet are facing challenges in further increasing the cell-level energy density [1], [2], [3]. Post-Li batteries based on the reversible plating/stripping of Li ions on a Li ...

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The development of next-generation lithium-based rechargeable batteries with high energy density, low cost, and improved safety is a great challenge with profound technological significance for portable electronics, electric vehicles, and grid-scale energy storage. Specifically, advanced lithium bat ...

DOI: 10.1016/J.ENERGY.2014.08.042 Corpus ID: 96225235; Lauric acid/intercalated kaolinite as form-stable phase change material for thermal energy storage @article{Song2014LauricAK, title={Lauric acid/intercalated kaolinite as form-stable phase change material for thermal energy storage}, author={Shaokun Song and Lijie Dong and Yang Zhang and Shun Chen and Qi Li ...

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Aqueous rechargeable zinc ion batteries (ZIBs) have been deemed to be possible candidates for large-scale energy storage due to their ecoefficiency, substantial reserve, safety, and low cost. However, the challenges inherent in aqueous electrolytes, such as water splitting reactions, water evaporation, and liquid leakage, have greatly hindered ...

Jin Cui. Institute for Sustainable Energy/College of Sciences, Shanghai University, 99 Shangda Road, Shanghai, 200444 PR China. ... Energy and environmental issues have given rise to the development of advanced energy-storage devices worldwide. Electrochemical energy technologies, such as rechargeable batteries, are considered to be the ...

Yongli Song: Investigation. Yanhui Cui: Resources. Jian Liu: Resources. Ziqi Wang: Data Curation. ... His main research interests are advanced energy storage materials, especially in the areas of zinc-ion aqueous batteries. Haocong Yi received his B.S. degree from Huazhong University of Science and Technology (HUST, China) in 2018. He is ...

Single atoms of select transition metals supported on carbon substrates have emerged as a unique system for electrocatalysis because of maximal atom utilization (?100%) and high efficiency for a range of reactions involved in electrochemical energy conversion and storage, such as the oxygen reduction, oxygen evolution, hydrogen evolution, and CO₂ reduction ...

Yi Cui Professor Department of Materials Science and Engineering Stanford University. H-Index (Google Scholar): 267. Education ... Energy Storage Materials (Editorial Advisory Board, 2015-) Industrial and Center Board. 4C Air Inc. (Co-Founder with Professor Steven Chu, Board of Directors, 2015-present)

The crucial role of nanotechnology in advanced battery systems is highlighted and efforts to construct nanostructured composite sulfur cathodes with improved electronic conductivity and effective soluble species encapsulation are summarized for maximizing the utilization of active material, cycle life, and system efficiency. The development of next ...

Semantic Scholar extracted view of "Excellent energy storage density and efficiency in blend

polymer-based composites by design of core-shell structured inorganic fibers and sandwich structured films" by Yang Cui et al.

The Zn²⁺ sluggish kinetics resulting from high desolvation barriers of Zn(H₂O)₆²⁺ in the electrode/electrolyte interface restricts the practical application of Zn-ion batteries (ZIBs). Herein, ethylene glycol (EG) molecules are inserted into V₂O₅·3H₂O to form V-EG nanoarray structures to improve the Zn²⁺ diffusion rate. Unlike most efforts focused on improving ...

The spread of portable electronics and electric vehicles has prompted the development of energy storage systems with high-energy density and long-cycle life [1, 2]. Among various alternatives, lithium-sulfur (Li-S) battery is the most potential candidate due to the abundant resource, low cost and high theoretical capacity [3], [4], [5] spite these ...

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