

Are lithium-sulfur batteries a good energy storage device?

Lithium-sulfur (Li-S) batteries are promising energy-storage devices because of their high theoretical energy densities. However, the practical application of Li-S batteries is still impeded by the poor cycling performance and rate capability at practical conditions.

Is photoassisted charging a viable solution for non-aqueous Li-O₂ batteries?

This concept of 'photoassisted charging process' offers a novel strategy to address the overpotential issue of non-aqueous Li-O₂ batteries and also a distinct approach for integrating solar cells and batteries 15,16,17,18. Figure 1a shows the structure of the device, named as solar battery, in this work.

Is a non-aqueous rechargeable lithium-oxygen battery a promising next-generation energy storage technique?

Nature Communications 5, Article number: 5111 (2014) Cite this article With a high theoretical specific energy, the non-aqueous rechargeable lithium-oxygen battery is a promising next-generation energy storage technique.

Does a redox shuttle facilitate oxygen reduction in a lithium air battery?

A redox shuttle to facilitate oxygen reduction in the lithium air battery. Electrochem. Commun. 26, 74-76 (2013). Amine, K., Chen, Z. & Wang, Q. Redox shuttles for overcharge protection of lithium batteries.

What redox couple for TiO₂ solar cells?

For dye-sensitized TiO₂ solar cells, the triiodide/iodide (I₃⁻/I⁻) redox couple is a benchmark electrolyte for the dye regeneration 24. Despite being mentioned in a patent 12 and a very recent publication 14, not much attention has been placed on utilizing I₃⁻/I⁻ redox couple for non-aqueous Li-O₂ batteries.

What are the charging curves of a Li-O₂ battery?

The charging curves of a simple Li-O₂ battery, the Li-O₂ battery with LiI redox shuttle and the solar battery at a current density of (a) 0.016 mA cm⁻² and (b) 0.032 mA cm⁻². The LiI redox shuttle and photoelectrode significantly reduces the battery charging voltage.

: ,,,(),?2012,2017,2017 ...

The development of photo-assisted lithium-ion batteries (P-LIBs) holds immense promise for enhancing battery performance and enabling self-charging capabilities. However, the realization of these transformative devices hinges on the creation of novel photoelectrodes with exceptional light absorption and electrochemical properties this study, we introduce a ...

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Lianghao Yu is a PhD candidate in College ...

1 INTRODUCTION. Among various energy storage technologies, heat storage technology has attracted extensive attention, because it cannot only match heat energy supply and demand in time or space, but also be ...

In addition, band tilting induced by piezoelectric polarization can also modulate the energy band structure of the catalyst to match the redox potential of the target reaction, breaking the intrinsic thermodynamic restriction. Hence, the coupling ...

The development of solar energy storage strategies is a key step for handling the inherent variability of sunlight within a global solar-based energy model. In the present study, we have developed a photocapacitive device based on the heterostructured BiVO₄-PbO_x system. BiVO₄ provides the photoactive core of the device, while PbO_x nanoparticles (formed by the ...

Different atomic arrangements lead to the changes of the electronic structures, which in turn affect the voltages, the diffusion dynamics, and relevant electrochemical properties of the materials. In this study, the inherent ...

Considering the market demand for lithium-ion batteries (LIBs) and sodium-ion batteries (SIBs) as energy storage devices, it is necessary to find a negative electrode material with low cost ...

Here, we report the use of a triiodide/iodide redox shuttle to couple a built-in dye-sensitized titanium dioxide photoelectrode with the oxygen ...

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Efficient Bifunctional Photoelectric Integrated Cathode for Solar Energy Conversion and Storage. ACS Nano 2023, 17 ... Ming Xu, Jianmin Gu, Zixun Fang, Yu Li, Xing Wang, Xiaoyu Zhao, Tifeng Jiao, Wei Wang. ... Metal Halide ...

Introduction. Nanofluidics is a research field that explores the transport of fluids, gases, and ionic species at the nanometer scale. 1 - 4 This enables the precise regulation of transported substances within confined ...

Wei Li, Yanchao Mao, Mingyang Li, Yiming Li, Yexiang Tong*, Peng Liu*.Abnormal Photoelectric and Magnetic Properties of Three-Dimensional Super-Structure Sb Nanocages and One-Dimensional Nanowires. ECS J. Solid State Sci. Technol. 2013,2,Q45-Q49.

Among these alternatives, the integrated photovoltaic energy storage system, a novel energy solution

combining solar energy harnessing and storage capabilities, garners ...

He is mainly engaged in the design and optimization of low cost and high performance secondary battery electrode materials, including layered cathode materials of high energy density lithium ...

Inspired by human brain and visual system, optoelectronic memristors-based neuromorphic computing has attracted the interests of researchers to overcome the limitation of traditional von Neumann architecture. With advantages of highly parallel computing and massive interconnection, the optical memristors could construct light-inspired artificial neural network ...

An "all-in-one" mesh typed integrated energy unit is developed which converts solar energy to electric energy and stores it simultaneously. The entire integrated device operates in uniform electrolyte system which contains 0.8 M ...

The energy storage devices, like Li-ion battery [17], [18] ... A series of researches around wire-shaped "energy fiber" have demonstrated good photoelectric conversion and energy storage efficiencies and the outstanding flexibility and stability make it very promising for the ... Dapeng Yu is a Chang Kung professorship in Physics in School ...

Read the latest articles of Nano Energy at ScienceDirect , Elsevier's leading platform of peer-reviewed scholarly literature ... Chuang Yu, Yong Li, Mathew Willans, Yang Zhao, ... Xueliang Sun. Article 104396 View PDF. ... select article Self-powered silicon PIN photoelectric detection system based on triboelectric nanogenerator. https ...

Postdoctoral Researcher at University of California, Santa Barbara · o Hands-on experience and in-depth knowledge of organic and inorganic semiconducting materials and devices. o Knowledge ...

Electrochemical Energy Reviews >> 2022, Vol. 5 >> Issue (2): 263-311. doi: 10.1007/s41918-021-00098-3. Previous Articles Next Articles . Perovskite Cathode Materials for Low-Temperature Solid Oxide Fuel Cells: Fundamentals to Optimization Zhiheng ...

Yu li photoelectric energy storage in integrated energy modules for self-charging. Within these integrated energy modules, the photoelectric storage efficiency (PSE) is a crucial property for continuous power supply to electronic devices. The lithium-oxygen (Li-O₂) batteries are recently attracting increasing research attention because of their

Recently, two-dimensional (2D) magnetic materials have attracted extensive interest thanks to their potential application as spintronic devices. Albei...

Here we demonstrate the concept of an aqueous lithium-iodine (Li-I) solar flow battery (SFB) by incorporation of a built-in dye-sensitized TiO₂ photoelectrode in a Li-I redox flow battery via linkage of an I

3- /I - based ...

Yu Hou, Xiao Chen, Shuang Yang, Yu Lin Zhong, Chunzhong Li, Huijun Zhao*, Hua Gui Yang*, Low-temperature processed In₂S₃ electron transport layer for efficient hybrid perovskite solar cells, Nano Energy, 2017, 36: 102-109. (IF=16.8) 14.

Energy Storage Materials 15, 148-170, 2018 310 2018 Regulating Li deposition by constructing LiF-rich host for dendrite-free lithium metal anode Y Yuan, F Wu, Y Bai, Y Li, G Chen, Z ...

Yu li photoelectric energy storage in integrated energy modules for self-charging. Within these integrated energy modules, the photoelectric storage efficiency (PSE) is a crucial property for ...

This paper has previewed the latest representative finding of photo/electrocatalytic coupling reactions on energy conversion and storage, especially for oxygen evolution reaction ...

1. High-energy-density fiber-shaped supercapacitors based on three-dimensional interface of carbon nanotubes: design and their mechanism in energy storage, National Natural Science Foundation of China (Beijing) 2017-01 to 2020-12, GRANT_NUMBER

Yuan-Bo Li, Yu-Xiang Bi, Wen-Chang Ke, Cheng-Yu Wang, Duo-Duo Hu, Yan Li, and Xi-Sheng Wang Asian J. Org. Chem 2023, e202300234. DOI: 10.1002/ajoc.202300234 94. Synthesis of trifluoromethylated thioethers via Ni ...

Treating the ends of the nanotube wire with a light-sensitive dye and an electrolyte, creates photoelectric-conversion and energy-storage regions in the same device (see ...

Photo-rechargeable energy storage devices pave a new way for directly utilizing solar energy, and therefore, the design and assembly of photo-assisted supercapacitors in order to realize the efficient storage of solar energy become increasingly important.

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