

storage research Weicheng Bai¹ & Jian Ke¹ Received: 19 June 2018 /Revised: 29 September 2018 /Accepted: 27 October 2018 /Published online: 14 November 2018 ... randomness, and intermittent, which cause it hard to use. In this situation, the development of efficient energy storage to meet human demand for energy is to become a hot spot in the ...

Abstract The development of two-dimensional (2D) high-performance electrode materials is the key to new advances in the fields of energy storage and conversion. As a novel family of 2D layered materials, MXenes possess distinct structural, electronic and chemical properties that enable vast application potential in many fields, including batteries, supercapacitor and ...

(1) Preparation of memristive devices and their applications in non-volatile resistance random access memory (RRAM), neural networks, electronic skin, neuromorphic computing chips, and artificial ...

With this peculiar microstructure, remarkable energy-storage performance, including synergistic enhancement of energy-storage density ($W_{rec} \sim 11.2 \text{ J/cm}^3$) and efficiency ($\eta \sim 90.5 \%$), as well as large power density ($P_D \sim 548 \text{ WM/cm}^3$) and short discharge time ($t_{0.9} \sim 27 \text{ ns}$) has been successfully achieved.

Hairui Bai, Guanglong Ge, Fei Yan, Kun Zhu, Jinfeng Lin, Cheng Shi, Jin Qian, Zhe Wang, Bo Shen*, Jiwei Zhai*, "Interfacial polarization regulation of ultrathin 2D nanosheets inducing high energy storage density of polymer-based nanocomposite with opposite gradient architecture", *Energy Storage Materials*, 46, (2022)503-511.

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Surface modification on ceramic fillers is of interest to help improve their compatibility in ceramic/polymer nanocomposites and, if possible, to control the influence of modifiers on the performance of the nanocomposites. In this paper, four kinds of small-molecule modifiers were chosen to treat the surface of BT nanoparticles, and the PVDF-based nanocomposites filled ...

In this situation, the development of efficient energy storage to meet human demand for energy is to become a hot spot in the worldwide. Electrochemical energy storage of high efficiency and low

In the application of energy storage for smoothing wind power output, the combination of battery and supercapacitor (SC) is considered as an effective alternative to improve the battery lifetime and enhance the

system economy. In this paper, third-order Butterworth low-pass filter and high-pass filter are adopted to smooth the wind power and allocate power between battery and SC.

Ke Zhang, Feng Wu, Kun Zhang, Suting Weng, Xinran Wang, Mingda Gao, Yuheng Sun, Dong Cao, Ying Bai, Huajie Xu, Lithium metals offer great promises to achieve higher energy density beyond conventional lithium-ion batteries (LIBs) because of its ultrahigh specific capacity (3860 mAh g^{-1}) and the lowest reduction potentials (-3.04 V ...

If widely used in various fields such as catalyst carrier, sewage treatment, gas storage and separation, and precious metal recovery, it can greatly reduce the preparation ...

@article{Ju2024TwostageRT, title={Two-stage robust transaction optimization model and benefit allocation strategy for new energy power stations with shared energy storage considering green certificate and virtual energy storage mode}, author={Liwei Ju and Xiping Bai and Gen Li and Wei Gan and Xin Qi and Fan Ye}, journal={Applied Energy}, year ...

Zinc-air batteries deliver great potential as emerging energy storage systems but suffer from sluggish kinetics of the cathode oxygen redox reactions that render unsatisfactory cycling lifespan. The exploration on bifunctional electrocatalysts for oxygen reduction and evolution constitutes a key solution, where rational design strategies to ...

Iron carbide allured lithium metal storage in carbon nanotube cavities [Energy Storage Materials 36 (2021) 459-465] DOI of original article 10.1016/j.ensm.2021.01.022 Gaojing Yang, Zepeng Liu, Suting Weng, Qinghua Zhang, ...

4.Mingquan Liu, Feng Wu, Lumin Zheng, Xin Feng, Ying Li, Yu Li, Ying Bai*, Chuan Wu*, Nature-inspired porous multichannel carbon monolith: Molecular cooperative enables sustainable production and high-performance capacitive energy storage, InfoMat, 2021, 3, 1154-1170. 5.Ke Zhang, Feng Wu, Kun Zhang, Suting Weng, Xinran Wang*, Mingda Gao ...

According to the energy source of catalytic reactions, catalysis can be divided into photocatalysis, electrocatalysis, photoelectrocatalysis and so on [1, 5, 19].MOFs are considered as promising catalysts due to their functional surface groups and the adjustable band structure [].However, they are still limited in some shortcomings, such as low energy utilization efficiency.

The ferroelectricity was first discovered in Rochelle salt (sodium potassium tartrate tetrahydrate) in 1920 by Valasek [1], who also confirmed the single polarization hysteresis loop and the piezoelectric response [2].To data, ferroelectric (FE) materials have found a plethora of applications in FE random access memory (FeRAM) [3], energy storage capacitors [4], FE ...

Giant Field-Induced Strain with Low Hysteresis and Boosted Energy Storage Performance under Low Electric

Field in (Bi 0.5 Na 0.5)TiO₃-Based Grain Orientation-Controlled Ceramics

Metal-organic frameworks (MOFs) have emerged as a promising material with unique features such as diverse composition, high porosity, tunable pore structure, and versatile functionality. These characteristics have attracted significant research interest in photochemical and electrochemical energy conversion and storage (ECS).

The commercial application of lithium batteries (LBs) promotes the rapid development of electrochemical energy storage technology, which makes portable electronic products widely used [1], [2], [3], [4] the past ten years, the progress of power LBs technology has led to the rapid development of electric vehicles (EVs) [5], [6], [7]. Mileage and safety are ...

PbZrO₃-xSrTiO₃ solid solution thin films were designed and fabricated by a metal organic decomposition method, and their structural, ferroelectric, and energy storage characteristics were investigated systematically. It is found that the incorporation of SrTiO₃ not only gradually transforms PbZrO₃ from antiferroelectrics to relaxor ferroelectrics but also ...

Antiferroelectric PbZrO₃ (AFE PZO) films have great potential to be used as the energy storage dielectrics due to the unique electric field (E)-induced phase transition character. However, the phase transition process always accompanies a polarization (P) hysteresis effect that induces the large energy loss (W loss) and lowers the breakdown strength (E BDS), leading to the inferior ...

Dielectric capacitor is an energy storage system which charges and discharges energy through the polarization and depolarization of electric field [1] pared with chemical energy storage devices, dielectric capacitors charge and discharge rapidly (<100 ns) and exhibit an extremely high power density (~10⁷ W/kg) [2]. With the rapid development of the modern ...

In recent years, the development of carbon material derived from biomasses, such as plants, crops, animals and their application in electrochemical energy storage have ...

Dielectric polymer-based nanocomposites with high dielectric constant and energy density have attracted extensive attention in modern electronic and electrical applications. Core-satellite BaTiO₃-CoFe₂O₄ (BT-CF) structures with a BT core of ~ 100 nm and CF satellites (~ 28 nm) on the surface of the BT particle were prepared. The dielectric properties and energy storage ...

Dielectric capacitors play an increasingly important role in power systems because of their fast charging and discharging speed. Applications are usually limited due to the low W_{rec}. We design materials with high values of DP(P_{max}-P_r) and recoverable energy storage density(W_{rec}) from the high entropy perspective. Two single phases with a large Curie ...

This paper proposes a method for coordinated sizing of energy storage (ES) and diesel generators in an

isolated microgrid based on discrete Fourier transform (DFT). ES and diesel generators have different response characteristics and can complementarily compensate the generation-demand imbalance at different time scales. The DFT-based coordinated ...

Ke Yu, Hong Wang, Yongcun Zhou, Yuanyuan Bai, Yujuan Niu; Enhanced dielectric properties of BaTiO₃/poly(vinylidene fluoride) ... influences on the structure of the polymer matrix and contribute to the enhancement of the dielectric responses and energy storage properties of the nanocomposites.

Ke Zhang, Feng Wu, Kun Zhang, Suting Weng, Xinran Wang*, Mingda Gao, Yuheng Sun, Dong Cao, Ying Bai, Huajie Xu, Xuefeng Wang*, Chuan Wu*, Chlorinated dual-protective layers as interfacial stabilizer for dendrite-free lithium metal anode, ...

In this situation, the development of efficient energy storage to meet human demand for energy is to become a hot spot in the worldwide. Electrochemical energy storage of high efficiency and ...

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