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The integration of renewable energy with energy storage became a general trend in 2020. With increased renewable energy generation creating pressure on the power grid, local governments and power grid enterprises in ...

Barium titanate-based energy-storage dielectric ceramics have attracted great attention due to their environmental friendliness and outstanding ferroelectric properties. Here, we demonstrate that a recoverable energy density of 2.51 J cm^{-3} and a giant energy efficiency of 86.89% can be simultaneously achieved in $0.92\text{BaTiO}_3\text{-}0.08\text{K}_0.73\text{Bi}_0.09\text{NbO}_3$ ceramics. In ...

With the rapidly growing demand for low-cost and safe energy storage, the advanced battery concepts have triggered strong interests beyond the state-of-the-art Li-ion batteries (LIBs). Herein, a ...

Among various energy conversion processes^{1,2}, solar- thermal technology³⁻⁸ has emerged as an attractive way to harness solar energy, particularly for heat-related applications, due to its ...

Applications of hierarchically structured porous materials from energy storage and conversion, catalysis, photocatalysis, adsorption, separation, and sensing to biomedicine. Ming-Hui Sun ¹, Shao Zhuan Huang ¹, Shao-Zhuan Huang ¹, Li-Hua Chen ¹, Yu Li ¹, Xiao-Yu Yang ¹, Zhong-Yong Yuan ²,

Eos is accelerating the shift to clean energy with zinc-powered energy storage solutions. Safe, simple, durable, flexible, and available, our commercially-proven, U.S.-manufactured battery technology overcomes the limitations of conventional lithium-ion in 3- to 12- hour intraday applications. It's how, at Eos, we're putting American ...

Energy storage in dielectrics is realized via dielectric polarization P in an external electric field E , with the energy density U_e determined by $\int P_r P_m E dP$, where P_m and P_r are the maximum polarization in the charging process and remnant polarization in the discharging process, respectively (fig. S1) (). P_r manifests itself as the P-E hysteresis, which ...

Silicon-doped hafnium oxide anti-ferroelectric thin films for energy storage Faizan Ali,^{1,a} Xiaohua Liu,^{1,a} Dayu Zhou,^{1,b} Xirui Yang,¹ Jin Xu,² Tony Schenk,³ Johannes Muller,^{EUR 4} Uwe Schroeder ...

The breakthrough of energy storage technology will enable energy distribution and adaptation across space-time, which is revolutionary for the generation of energy. Optimizing the energy storage performance of polymer dielectrics remains challenging via the physical process of electrical breakdown in solid dielectrics is hard to be intuitively obtained.

Xiaohua Shen, Jianghua Zhang, Hao Chen, Hongtao Sun, ... Xidong Duan. Article 102878 ... to "Multilayer design of core-shell nanostructure to protect and accelerate sulfur conversion reaction" Energy Storage Materials 60 (2023) 102818. Jae Ho Kim, Dong Yoon Park, Jae Seo Park, Minho Shin, ... Seung Jae Yang. Article 102854 View PDF ...

A customizable electrochemical energy storage device is a key component for the realization of next-generation wearable and biointegrated electronics. This Perspective begins with a brief introduction of the drive for customizable electrochemical energy storage devices. It traces the first-decade development trajectory of the customizable electrochemical energy ...

Currently, solar-thermal energy storage within phase-change materials relies on adding high thermal-conductivity fillers to improve the thermal-diffusion-based charging rate, which often leads to limited enhancement of charging speed and sacrificed energy storage capacity. Here we report the explora ...

The development of antiferroelectric (AFE) materials with high recoverable energy-storage density (W_{rec}) and energy-storage efficiency (η) is of great importance for meeting the requirements of miniaturization and integration for advanced pulse power capacitors. However, the drawbacks of traditional AFE materials, namely, high critical field (E_{cr}) and low ...

Latent heat thermal energy storage systems using PCMs in building envelope has been considered as an effective strategy to improve the energy saving or indoor thermal comfort of buildings [[2], [3] ... Xiaohua Bao: Formal analysis. Haibin Yang: Formal analysis. Xiaoxiao Xu: Formal analysis. Tao Xu: Formal analysis.

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.

Xinyuan ranked fifth among China's energy storage system integrators in terms of new installed capacity in 2021. CNESA has been releasing the Annual Ranking of Energy Storage ...

DOI: 10.1016/j.solmat.2020.110420 Corpus ID: 212864122; Development of a stable inorganic phase change material for thermal energy storage in buildings @article{Bao2020DevelopmentOA, title={Development of a stable inorganic phase change material for thermal energy storage in buildings}, author={Xiaohua Bao and Haibin Yang and Xiaoxiao Xu and Tao Xu and Hongzhi ...

Solar-thermal energy storage within phase-change material composites. a Thermal-diffusion-based thermal charging. The incident light was converted into thermal energy by a black absorber film to ...

Sodium-ion batteries are a promising alternative to lithium-ion batteries. In particular, organic sodium-ion batteries employing environmentally friendly organic materials as electrodes are gaining increasing research interest for developing secondary batteries as a result of the ease of processing, low cost, and flexibility of the organic electrode materials. ...

The introduction of hierarchical porosity into materials has led to a significant improvement in the performance of materials. Herein, recent progress in the applications of hierarchically structured porous materials from energy conversion and storage, catalysis, photocatalysis, adsorption, separation, and sensing to biomedicine is reviewed.

The superior energy storage performance together with mature technology of integration into 3-D arrays suggests great promise for this recently discovered anti-ferroelectric material to replace ...

Xiaohua LU | Cited by 11,106 | of Nanjing Tech University, Nanjing | Read 488 publications | Contact Xiaohua LU ... However, the use of ILs in surface-dependent processes, e.g. energy storage, is ...

A defect-free MOF composite membrane prepared via in-situ binder-controlled restrained second-growth method for energy storage device. Jine Wu, Qing Dai, Huamin Zhang, Xianfeng Li. Pages 687-694 View PDF. Article preview.

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