

Facile preparation of flexible eicosane/SWCNTs phase change films via colloid aggregation for thermal energy storage. Author links open overlay panel Renjie Chen a c d 1, Xinyu Huang b 1, Weibin Deng a c d, ... And the highest energy storage efficiency of the samples was up to 91.3% (PCMF2 under 5 V input voltage). Owing to the flexibility of ...

Tip effect of NiCo-LDH with low crystallinity for enhanced energy storage performance of yarn-shaped supercapacitors Journal of Colloid and Interface Science (IF 9.4) Pub Date : 2024-10-15, DOI: 10.1016/j.jcis.2024.10.064

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 ...

Flow battery is a safe and scalable energy storage technology in effectively utilizing clean power and mitigating carbon emissions from fossil fuel consumption. In the present work, we ...

The increasing requirements for reducing the consumption of fossil fuels and environmental pollution have promoted the development of new energy generation and storage strategies based on renewable and clean energy. [1] Among a number of promising alternatives, due to the unique advantages of using a highly safe aqueous electrolyte, aqueous storage ...

Inspired by "water ripples" in nature and the flocculation phenomenon in colloid chemistry, a novel liquid drop/colloid flocculation approach is developed to fabricate an extremely flexible and compressible 3D macroscopic graphene-based architecture (hydrogels or aerogels), via a new coagulation-induced self-assembly mechanism. This facile and universal technique can be ...

Colloids are attractive building blocks for the assembly of organized functional materials. However, their stabilizing surface charges limit the high voltage tolerance and the capacitive energy storage of resultant solid films, which has long remained challenging for dielectric applications of colloids. Here, we propose a strategy of ...

Energy storage performances of Ni-based electrodes rely mainly on the peculiar nanomaterial design. In this work, a novel and low-cost approach to fabricate a promising core-shell battery-like ...

The reduction in leakage current density guarantees a superior energy storage density of PI/CSO composite materials under high electric fields. At 150 ?, the maximum U e ...

Metal-organic framework (MOF) composites are considered to be one of the most vital energy storage

materials due to their advantages of high porousness, multifunction, various structures and controllable chemical compositions, which provide a great possibility to find suitable electrode materials for batteries and supercapacitors. However, MOF composites are still in the face of ...

Advances in Colloid and Interface Science. Volume 283, September 2020, 102226. ... Thermal energy storage (TES) ... Chandrasekaran [140]. They indicated that there was a possible energy saving potential of about 6-9% in the cool TES using the nanofluid PCMs.

Stable operation of rechargeable lithium-based batteries at low temperatures is important for cold-climate applications, but is plagued by dendritic Li plating and unstable ...

An ultrahigh discharge energy density of 38.8 J cm^{-3} along with a high discharge efficiency of $\approx 80\%$ is achieved at the electric field of 800 kV mm^{-1} in the gradient polymer films, which is the ...

Colloids and Surfaces A: Physicochemical and Engineering Aspects. Volume 632, 2 January 2022, ... 140.90, 147.74 and 159.87 ppm refer to other quaternary carbon atom on the aromatic ring. Furthermore, the Mass spectrum of the target compound is shown in Fig ... the energy storage efficiency can be calculated using the following equation. $E = | \dots$

select article Engineering triangular bimetallic metal-organic-frameworks derived hierarchical zinc-nickel-cobalt oxide nanosheet arrays@reduced graphene oxide-Ni foam as a binder-free electrode for ultra-high rate performance supercapacitors and methanol electro-oxidation

The emerging proton electrochemistry offers opportunities for future energy storage of high capacity and rate. However, the development of proton batteries is hindered by low working-potentials of electrodes and poor cycle life of full-cells (e.g., tens-of-hours). ... Colloid electrolytes enable prolonged cycling of a $\text{MnO}_2 // \text{MoO}_3$ cell from 11 ...

Employing nanoscale redox materials to form stable and well-dispersed colloids as energy storage species could alleviate issues such as phase separation, flow blockages and high ... 98.0 %, Aladdin) was added and heated to a temperature of $140 \text{ }^\circ\text{C}$. The obtained solution was stirred at $140 \text{ }^\circ\text{C}$ for an additional 24 h. After cooling to ...

Excellent high-temperature energy storage films necessitate a high dielectric constant (ϵ_r) and breakdown strength (BDS) the past, percolation theory has indicated that the physical blending of insulating polymers with conductive fillers effectively enhances the dielectric properties of polymers [12], [13], [14] recent years, researchers have successfully increased ...

Enhancing solar photothermal conversion and energy storage with titanium carbide (Ti_3C_2) MXene nanosheets in phase-change microcapsules Journal of Colloid and Interface Science (IF 9.9) Pub Date : 2023-07-19, DOI: 10.1016/j.jcis.2023.07.114

The hybrid energy storage devices by using our hybrid hydrogels as positive electrodes and pure graphene hydrogels as negative electrodes can deliver an energy density of 28.7 and 23.0 Wh kg⁻¹; ...

Lithium-ion batteries currently suffer from low capacity and fast degradation under fast charging and/or low temperatures. In this work, a colloid liquid electrolyte (CLE) is designed, where the trace amount of lithium thiocarbonate (LTC) colloids in commercial carbonate electrolyte (1 m LiPF₆ in ethylene carbonate/dimethyl carbonate) not only boosts up s Li⁺ but ...

Alfa Chemistry's research on colloids in batteries and energy storage are as follows: Alfa Chemistry aims at the development of electric energy storage field, and has long been committed to the accumulation and innovation of electric energy storage materials and technologies. We keep up with the pace of the world's electrochemical industry, and ...

Flow battery is a safe and scalable energy storage technology in effectively utilizing clean power and mitigating carbon emissions from fossil fuel consumption. In the present work, we demonstrate an aqueous colloid flow battery (ACFB) with well-dispersed colloids based on nano-sized Prussian blue (...

Alfa Chemistry can provide effective technical support for various problems encountered by customers in the research and development of colloidal energy storage materials. References. Elena C. Montoto, et al. Redox Active Colloids as Discrete Energy Storage Carriers. Journal of the American Chemical Society. 2016.

Journal of Colloid and Interface Science. Volume 662, 15 May 2024, ... It was currently the highest energy storage densities and efficiencies in the reported BT/PI nanocomposite films at 150 °C. ... After 12 h of drying in 60 °C oven, the 2D scale-like BT nanoparticles with an average particle size of 140 nm were obtained. Download: Download ...

3 ; This review explores the recent advancements in biomass-derived materials for energy storage system (ESS), including supercapacitors and electrocatalytic reactions. ... the as ...

Introduction. Transition metal sulfides containing S²⁻/S₂²⁻ dimers have attracted tremendous attention for electrochemical energy storage systems (EESs) because of their unique properties of high energy density, good conductivity, excellent stability, and vital catalyst functionalization feature [1, 2] addition, the massive resource of metal sulfides in ...

Supercapacitors and batteries are among the most promising electrochemical energy storage technologies available today. Indeed, high demands in energy storage devices require cost-effective fabrication and robust electroactive materials. In this review, we summarized recent progress and challenges made in the development of mostly nanostructured materials as well ...

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