Dual lithium-ion battery

What is a dual ion battery?

In 2012, Placke et al. first introduced the definition "dual-ion batteries" for the type of batteries and the name is used till today. To note, earlier DIBs typically applied graphite as both electrodes, liquid organic solvents and lithium salts as electrolytes.

Are dual-ion batteries based on a graphitic cathode?

The work explores novel dual-ion batteries that use an antimony-containing anode and a graphitic cathode. The results contribute to the development of new batteries that may involve anode materials incorporating alloying elements.

What are dual-ion batteries (Dibs)?

For more information on the journal statistics,click here. Multiple requests from the same IP address are counted as one view. Dual-ion batteries (DIBs) are a new kind of energy storage devicethat store energy involving the intercalation of both anions and cations on the cathode and anode simultaneously.

Are dual-ion batteries a good choice?

Among all available candidates,dual-ion batteries (DIBs) have drawn tremendous attention in the past few years from both academic and industrial battery communities because of their fascinating advantages of high working voltage,excellent safety,and environmental friendliness.

What is the energy density of a dual ion battery?

Hence,it is often considered necessary in the field of dual-ion batteries to consider the salt mass as well while calculating the cell's energy density. After including masses of all active components,the energy density of SGDIB is reduced to 154 Wh/kg,slightly higher than that of DGB.

Are dual-ion batteries better than libs?

Among them, dual-ion batteries (DIBs) have been regarded as one of the most appealing alternatives to LIBs with intriguing features of high operating voltage, fast intercalation kinetics, and cost-efficiency [16, 17, 18, 19, 20].

Dual-ion batteries (DIBs) are a new kind of energy storage device that store energy involving the intercalation of both anions and cations on the cathode and anode simultaneously. They feature high output voltage, low cost, and good safety.

This unique ion-relay behavior doubled the specific capacity of the ASSB Cu 2 S cathode (fig. S2A) compared to that of liquid lithium-ion batteries (LLIBs), which was confirmed by the voltage curves of the ASSB Cu ...

To fully employ the advantages of DIBs, the overall optimization of anode materials, cathode materials, and compatible electrolyte systems is urgently needed. Here, we review the development history and the reaction mechanisms involved in DIBs. Afterward, the optimization strategies toward DIB materials and electrolytes are highlighted.

Dual-ion batteries (DIBs) with non-aqueous electrolyte, as potential alternatives to LIBs in smart-grid application, have attracted much attention in recent years. DIBs were initially known as dual-graphite batteries, where both anions and cations separately intercalate into graphite electrodes during the charge-discharge process. The anion ...

Dual-ion batteries (DIBs) are attracting attention due to their high operating voltage and promise in stationary energy storage applications. Among various anode materials, elements that alloy and dealloy with lithium are assumed to be prospective in bringing higher capacities and increasing the energy density of DIBs.

The increasing global energy demand and environmental issues are calling for the urgent development of efficient, sustainable, and carbon-neutral energy conversion and storage technologies [1,2,3,4,5,6] the past few years, lithium-ion batteries (LIBs) have attracted extensive attention due to their merits of high energy density and good cycling stability ...

Dual-ion batteries (DIBs), based on the working mechanism involving the storage of cations and anions separately in the anode and cathode during the charging/discharging process, are of great interest beyond lithium-ion batteries (LIBs) in high-efficiency energy storage due to the merits of high working voltage, material availability, as well ...

Recovery Li/Co from spent LiCoO 2 electrode based on an aqueous dual-ion lithium-air battery Electrochim. Acta, 332 (2020), Article 135529, 10.1016/j.electacta.2019.135529

The work explores novel dual-ion batteries that use an antimony-containing anode and a graphitic cathode. The results contribute to the development of new batteries that may involve anode materials i...

Most mobile phones now use single-cell lithium-ion batteries with high energy density. Recently, fast charging has become a critical feature for more and more manufacturers, such as the realme 240W charger. However, the single-cell solution can be a major obstacle to faster charging speed. As a result, the dual-cell solution has been reused again. This is why ...

For electrochemical energy storage, dual-ion batteries (DIBs) demonstrate many advantages as rapidly achieved in recent years, such as high energy density, flexible chemical system design and increased safety under high voltage [1], [2], [3].These merits essentially origin from as the characteristic of DIBs cathode, which can store many anions, such as PF 6 - [4, ...

The convergence of anion and cation storage has given rise to a new battery technology known as dual-ion batteries (DIBs). This comprehensive review presents the current status, advancements, and future prospects of sustainable DIBs beyond Li. Notably, most DIBs exhibit similar cathode reaction mechanisms involving anion intercalation, while ...

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Furthermore, a lithium-ion-based dual-ion battery configuration using the MoSe2/NC nanocomposite as the anode and com. graphite as the cathode (MoSe2/NC-G Li-DIB) has been proposed for the first time and demonstrated a reversible discharge capacity of 86 mA h g-1 at 2C (1C = 100 mA g-1) after 150 cycles and a high rate capability up to 76 mA h g-1 ...

Here, we introduce a novel intelligent dual-anode strategy aimed at surmounting the limitations inherent in current commercial lithium-ion batteries (LIBs) anode designs. Through harnessing the forward conduction characteristic of diodes, we effectively integrate Li-metal anode and silicon-based anode within an intelligently designed dual-anode ...

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