

Lithium-ion batteries (LIBs) have been widely applied in various fields, ranging from the portable electronics to electric vehicles, due to their superior energy and power density [1]. However, several technical challenges persist in terms of both the cost and performance, which motivate the researchers to explore novel approaches to enhance the electrode ...

life lithium-ion (Li-ion) batteries from domestic consumption in Nigeria. While this takes into account the wider e-waste and recycling landscape in the country, the main focus is on feasible management options under an e-waste compensation scheme in Nigeria. The primary focus is on batteries from mobile phones, which are mostly individual pouch

A targeted repair scheme for graphite anode in spent lithium-ion batteries achieves deep removal of impurities and effective repair of coating layer, which endows the repaired graphite with comparable lithium storage performance to commercial graphite. Download: Download high-res image (165KB) Download: Download full-size image

In order to improve the equalization efficiency of retired lithium-ion batteries, this paper proposes a layered equilibrium topology based on the combination of inductors and transformers. This circuit consists of the retired lithium-ion battery pack, the improved Buck-Boost circuit, a switch matrix, and the flyback transformer.

Lithium-ion batteries are widely used in a variety of applications, including electric vehicles, energy storage systems, due to their high energy density, long cycle life and low self-discharge rate [1]. A number of battery cells are usually connected in series in order to supply higher voltage and higher power to the load in a wide range of applications, while significant ...

MI cooling is mainly based on the shape of the prismatic lithium-ion battery itself and combines with the manifold to form U-type paths between the battery spaces Fig. 1. illustrates the schematic of the cooling system. The structure can be divided into two parts: the manifolds and the battery cooling part.

Lithium-ion batteries are commonly applied to electric vehicles and energy storage technologies owing to their high energy density, low self-discharge rate, no memory effect, long cycle life, and low environmental pollution [1, 2] actual production and application, for the purpose of meeting the requirements of large voltage and high power, lithium-ion ...

For decades, lithium-ion batteries (LIBs) have been the most dominant type of secondary energy storage due to their high energy density, high cyclability and compact size (Or et al., 2020; Li et al., 2018a). The LIBs market in 2021 was valued at USD 41.97 billion and is forecasted to grow to a staggering USD 182.5 billion

in 2030, with a growth rate of 18.1% ...

Among them, *A. niger* can produce different kinds of organic acids. [86, 87] Nazanin et al. used these biogenic acids (citric acid, malic acid, and so on) derived from it as effective leaching agents and chelators. The modified *A. niger* successfully leached about 100% Li, 94% Cu, 72% Mn, 62% Al, 45% Ni, and 38% Co from spent electrode materials ...

In the presence of spent battery powder, adapted *Aspergillus niger* produced much more total organic acid than unadapted *Aspergillus niger*. Organic acids in higher concentrations are more effective on the immobilization of metals. ... Recovery of valuable metal ions from the spent lithium-ion battery using aqueous mixture of mild organic acids ...

A lithium-ion battery or Li-ion battery is a type of rechargeable battery. Lithium-ion batteries are... ? 150,000. Saft Ls33600 3.6V C0640pt C8-5645rr Machine Lithium Battery. Origin: France Model: LS33600 (energy type) Battery voltage: ...

A modern lithium-ion battery consists of two electrodes, typically lithium cobalt oxide (LiCoO_2) cathode and graphite (C_6) anode, separated by a porous separator immersed in a non-aqueous liquid ...

Herein, we present a novel win-win bioregulation strategy to repurpose SLIB cathodes into dual-functional biocatalysts for oxygen and hydrogen evolution reactions (OER and HER) using *Aspergillus niger* soluble extracellular ...

The amount of remaining available energy in the battery during the charging and discharging process is the SOC of the battery. 17 Considering that the reaction inside the lithium-ion battery is a highly nonlinear system and the system is easily disturbed by the external environment. 18 Therefore, how to develop a robust and adaptive battery ...

Facing the dual pressure of energy crisis and environmental pollution, the development of new energy industry, especially electric vehicles (EVs), has become a research hotspot in the world [1], [2] pared with other batteries, Lithium-ion battery has the advantages of high energy density, long cycle life, low self-discharge rate, and become the most widely ...

The production of lithium-ion (Li-ion) batteries has been continually increasing since their first introduction into the market in 1991 because of their excellent performance, which is related to their high specific energy, energy density, specific power, efficiency, and long life. Li-ion batteries were first used for consumer electronics products such as mobile phones, ...

Exide Industries Ltd is a leading Indian manufacturer of lead-acid storage batteries and provider of energy solutions. Catering to automotive, industrial, and submarine applications, the company also ventures into lithium-ion battery ...

As more boaters use lithium-ion powered devices such as: e-bikes, laptops, phones, vapes and e-powered watercraft, it's vital to understand and manage the new risks as they evolve. ... Lithium-ion Battery Safety. Large Portable Lithium-ion Battery Safety; ... The Boat Safety Scheme Limited is a public safety initiative, run as a not-for ...

Processes in a discharging lithium-ion battery Fig. 1 shows a schematic of a discharging lithium-ion battery with a negative electrode (anode) made of lithiated graphite and a positive electrode (cathode) of iron phosphate. As the battery discharges, graphite with loosely bound intercalated lithium ($\text{Li} \times \text{C}_6$) undergoes an oxidation half-reaction, resulting in the ...

Lithium-ion batteries (LiBs) are expected to become essential for a cleaner and more sustainable planet, as they may curtail our dependency on conventional fossil fuel-based energy generation with renewable energy sources, for example, solar and wind power [1]. LiBs constitute 37% of the global rechargeable market and could rapidly propel the world towards a ...

Soaking the battery in a 0.8 mol/L NaCl solution for 3 h is the best scheme for chemical discharge, which can reduce the ... both *A. niger* and *A. thiooxidans* resulted in an increase in lithium leaching rate of close to 10 ... Leaching kinetics of de-lithium residue from spent ternary lithium-ion battery cathodic materials with starch as ...

A lithium-ion battery or Li-ion battery is a type of rechargeable battery. Lithium-ion batteries are... ? 150,000. Saft Ls33600 3.6V C0640pt C8-5645rr Machine Lithium Battery. Origin: France Model: LS33600 (energy type) Battery voltage: 3.6V Rated capacity: 17000MAH Battery...

In this paper, a bio-hydrometallurgical route based on fungal activity of *Aspergillus niger* was evaluated for the detoxification and recovery of Cu, Li, Mn, Al, Co and Ni metals from spent lithium-ion phone mobile batteries under various conditions (one-step, two-step and spent medium bioleaching). The maximum recovery efficiency of 100% for Cu, 95% for Li, ...

The lithium-ion battery market is rapidly expanding but lacks recycling for spent lithium-ion battery (SLIB) cathodes, overlooking their potential as valuable raw materials. Herein, we present a novel win-win bioregulation strategy to repurpose SLIB cathodes into dual-functional biocatalysts for oxygen and hydrogen evolution reactions (OER and HER) using *Aspergillus niger* soluble ...

dissolve the lithium by displacing the lithium ion from the battery with hydrogen ions or by the formation of soluble metal complexes and chelates. Lithium is then displaced and released from the battery. Co-culture is initiated through placing two populations of cells, in this case bacteria and fungi with a specific amount of contact between both.

Addressing the above issues, this paper proposes a lithium-ion battery RUL prediction scheme considering CR

phenomenon based on variational mode decomposition (VMD) algorithm [10], particle filter (PF) model [11] and autoregressive integrated moving average (ARIMA) model [12], which is called VPA model. VMD is used to extract signal caused by ...

Lithium-ion batteries are widely used as the primary energy source in new energy vehicles and energy storage stations due to their high energy density, good discharge performance, low self-discharge rate, and long cycle life [[1], [2], [3]].The battery packs of new energy vehicles consist of thousands of batteries connected in series or parallel [[4], [5], [6]].

Lithium-ion batteries are widely used in electric vehicles, electrochemical energy storage, and other fields due to the advantages of high energy density and long cycle life, and are experiencing a sharp increase [1, 2].However, the high cost still remains the key to constraining large-scale applications of Li-ion cells [3].The formation is the core process of the post ...

Lithium-ion batteries (LIB) are the mainstay of power supplies in various mobile electronic devices and energy storage systems because of their superior performance and long-term rechargeability [1] recent years, with growing concerns regarding fossil energy reserves and global warming, governments and companies have vigorously implemented replacing oil ...

Accurate state of charge (SOC) estimation of Lithium-ion batteries is vital for reliable and safe operations. However, modeling uncertainty in the equivalent circuit model (ECM) and sensor noise can deteriorate the estimation accuracy. Conventional compensation schemes have declined performance under time-varying disturbances and when the initial SOC is ...

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