



New materials for battery life

Scientists have achieved a series of milestones in growing a high-quality thin film conductor, suggesting in a new study that the material is a promising candidate platform for future wearable electronics and other miniature applications. ...

Battery producers are optimistic of AI revolutionising the discovery of new materials, emulating a shift seen in the pharmaceutical industry where the technology is being used to speed up the ...

These solid-state materials tend to be electrically conductive and to have low solubility in conventional electrolytes used in batteries, two physical attributes that are important for electrode materials to function long-term in a battery. Organic materials, on the other hand, tend to be insulating and highly soluble in conventional electrolytes.

A team led by engineers at the University of California San Diego developed a new cathode material for solid-state lithium-sulfur batteries that is electrically conductive and structur ... promise for doubling the energy density of batteries in electric vehicles without increasing weight and extends the battery life, making solid-state lithium ...

MIT engineers designed a battery made from inexpensive, abundant materials, that could provide low-cost backup storage for renewable energy sources. Less expensive than lithium-ion battery technology, the new ...

However, lithium-ion batteries have environmental impacts throughout their life cycle. Raw material extraction and manufacturing processes are energy-intensive, and proper disposal and recycling are crucial to minimize environmental harm. ... The future of battery technology is filled with alternative materials and new battery technology that ...

A company working with Tesla's main US battery supplier has silicon-based tech that could soon give electric cars 500-mile ranges and charge refills in just 10 minutes.

"Our research explains one possible underlying mechanism of the process and provides a pathway to identify new materials for battery design." The research is co-authored by Luhan Ye, Yang Lu, Yichao Wang, and Jianyuan Li. It was supported by the Department of Energy Vehicle Technology Office, the Harvard Climate Change Solutions Fund, and ...

A multi-institutional research team led by Georgia Tech's Hailong Chen has developed a new, low-cost cathode that could radically improve lithium-ion batteries (LIBs) -- potentially transforming the electric vehicle (EV) market and large-scale energy storage systems. "For a long time, people have been looking for a lower-cost, more sustainable alternative to ...

The development of new pos. electrode materials is on route to increase the energy d. of lithium-ion batteries



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(LIBs) for elec. vehicle and grid storage applications. The performance of new materials is typically evaluated using hand-made half coin cells with the new material as the pos. electrode and a piece of lithium foil for the neg.

This new solid electrolyte could dramatically improve the efficiency and lifespan of this class of batteries. A proof-of-concept battery built with the new material lasted over 1000 cycles while retaining 89.3% of its capacity--a performance unmatched by other solid-state sodium batteries to date.

Angular dependence of the quantum oscillation. a) Magnetoresistance measured at selected angles θ with respect to the film normal direction, as depicted in the inset, where $\theta=0^\circ$; indicates out-of-plane magnetic field B and $\theta=90^\circ$; corresponds to B parallel to current J . b) Oscillatory traces of $\Delta R_{xx}(B)/R_{xx}(0)$ vs. $1/B$ (shifted vertically for clarity).

In recent years, lithium-sulfur batteries (LSBs) are considered as one of the most promising new generation energies with the advantages of high theoretical specific capacity of sulfur (1675 mAh/g), abundant sulfur resources, and environmental friendliness storage technologies, and they are receiving wide attention from the industry. However, the problems ...

So what's new with battery materials? This probably isn't news to you, but EV sales are growing quickly--they made up 14% of global new vehicle sales in 2022 and will reach 18% in 2023 ...

Copper Atoms Bring a Potential New Battery Material to Life ... Program (being incorporated into the new Advanced Battery Materials Research program) under contract number DE-AC02-98CH10886 (recently changed to DE-SC0012704). Other sources of support include the Human Resources Development program (20124010203320) of the Korea Institute ...

A proof-of-concept battery built with the new material lasted over 1000 cycles while retaining 89.3% of its capacity--a performance unmatched by other solid-state sodium batteries to date. Researchers detail their findings ...

14 %; This study presents a flexible, recyclable all-polymer aqueous battery, offering a sustainable solution for wearable energy storage. The resulting all-polyaniline aqueous sodium ...

Recently, a joint team of researchers from POSTECH and Sogang University developed a functional polymeric binder for stable, high-capacity anode material that could ...

Researchers from AMBER, the Science Foundation Ireland Research Centre for Advanced Materials and BioEngineering, at Trinity College Dublin, have announced the development of a new material which offers the potential to improve battery life in everyday electronics, like smartphones, according to Irish Tech News. The discovery could mean that ...



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Even after 5,000 charge and discharge cycles, the new material battery still retains 80 percent of its initial capacity. The research also mentioned that the new material battery's energy density of up to 390 watt-hours per kilogram reflects a longer battery life, 1.3 times that of the most advanced lithium-ion batteries on the market.

Article Content. Researchers have moved one step closer to making solid-state batteries from lithium and sulfur a practical reality. A team led by engineers at the University of California San Diego developed a new cathode material for solid-state lithium-sulfur batteries that is electrically conductive and structurally healable--features that overcome the limitations of ...

3 · Read the latest research on everything from new longer life batteries and batteries with viruses to a nano-size battery. ... New Battery Cathode Material Could Revolutionize EV Market and Energy ...

The key to the team's innovation is a new kind of electrolyte -- the material that lies between the two electrical poles of the battery, the cathode and the anode, and allows charge carriers to pass through from one side to the ...

A lithium-ion or Li-ion battery is a type of rechargeable battery that uses the reversible intercalation of Li + ions into electronically conducting solids to store energy. In comparison with other commercial rechargeable batteries, Li-ion batteries are characterized by higher specific energy, higher energy density, higher energy efficiency, a longer cycle life, and a longer ...

Solid-state batteries with features of high potential for high energy density and improved safety have gained considerable attention and witnessed fast growing interests in the past decade. Significant progress and numerous efforts have been made on materials discovery, interface characterizations, and device fabrication. This issue of MRS Bulletin focuses on the ...

The new discovery -- which the scientists say was unintended and builds off novel electronics work -- could be the foundation for better battery life across consumer devices such as laptops or ...

Seeking a way to turn hours into minutes, TankTwo looked at modularizing a battery. Their String Cell(TM) battery contains a collection of small independent self-organizing cells. Each string cell consists of plastic enclosure, covered with a conductive material that allows it to quickly and easily form contacts with others.

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