

New sodium-based energy storage battery system



Overview

Researchers within the University of Maryland's A. James Clark School of Engineering, have now developed a NASICON-based solid-state sodium battery (SSSB) architecture that outperforms current sodium-ion batteries in its ability to use sodium metal as the anode for higher energy density, cycle it at record high rates, and all with a more stable ceramic electrolyte that is not flammable like current liquid electrolytes.



Article Content

1 Battery Storage Systems

Feb 2, 2018 · 41 efficiency of charging/discharging (89–92%) and long cycle life. The main drawbacks of the NaS battery are the operating temperatures of 300oC to 350oC and the ...

Technology Strategy Assessment

Jul 19, 2023 · About Storage Innovations 2030 This technology strategy assessment on sodium batteries, released as part of the Long-Duration Storage Shot, contains the findings from the ...

BYD launches sodium-ion grid-scale BESS ...

Nov 27, 2024 · BYD has launched what it claimed is the "world's first high-performance" sodium-ion BESS product, using its Long Blade Battery cell.

Sodium-Based Energy Storage | ARPA-E

Mar 28, 2013 · Sharp Laboratories of America and their partners at the University of Texas and Oregon State University are developing a sodium-based battery that could dramatically ...

Enabling renewable energy with battery energy ...

Aug 2, 2023 · These developments are propelling the market for battery energy storage systems (BESS). Battery storage is an essential enabler of renewable ...

Sodium-Ion Batteries: Benefits & Challenges | EB ...

Oct 22, 2024 · Discover the advantages, challenges, and future potential of sodium-ion batteries in transforming energy storage and electric mobility. ...

Sodium symphony: Crafting the future of energy storage with sodium ...

Aug 1, 2024 · In SICs, the energy storage mechanism is dual-fold, comprising a sodium-ion battery-type electrode and a supercapacitor-type electrode. Supercapacitors primarily store ...

Northvolt develops state-of-the-art sodium-ion ...

Aug 7, 2025 · Northvolt is proud to add sodium-ion to its cell chemistry portfolio, enabling safe, low-cost, sustainable power for energy storage systems.

Toward Emerging Sodium-Based Energy Storage ...

With the continuous development of sodium-based energy storage technologies, sodium batteries can be employed for off-grid residential or industrial storage, ...

CATL Sodium-Ion Batteries Cuts Costs By 90% : \$10/kWh Energy ...

Aug 15, 2025 · CATL's sodium-ion batteries promise \$10/kWh storage and 90% lower costs. See how they could transform EVs and grid energy worldwide fast.

Sodium-based batteries: from critical materials ...

Mar 15, 2019 · Sodium-based energy storage systems are attracting tremendous attention along with the growing demand for electric vehicles and grid-scale ...

New Sodium, Aluminum Battery Aims to ...

Feb 7, 2023 · A research team, led by the Department of Energy's Pacific Northwest National Laboratory, demonstrated that the new design for a grid ...

Why Sodium-Ion Batteries Are a Promising ...

Aug 13, 2024 · As sodium-ion batteries start to change the energy storage landscape, this promising new chemistry presents a compelling option for next ...

Electrochemical storage systems for renewable energy ...

Jun 15, 2025 · Electrochemical storage systems, encompassing technologies from lithium-ion batteries and flow batteries to emerging sodium-based systems, have demonstrated promising ...

New sodium, aluminum battery aims to integrate

Feb 7, 2023 · A new sodium battery technology shows promise for helping integrate renewable energy into the electric grid. The battery uses Earth-abundant raw materials such as aluminum ...

11 New Battery Technologies To Watch In 2025

Dec 12, 2024 · We explore cutting-edge new battery technologies that hold the potential to reshape energy systems, drive sustainability, and support the ...

Sodium Batteries for Use in Grid-Storage ...

Feb 13, 2025 · By examining the potential of soda ash batteries, this review aims to contribute to the growing body of research dedicated to creating efficient, ...

New sodium battery that can be charged in ...

Apr 21, 2024 · Researchers have developed a high-power hybrid sodium-ion battery that can be charged in seconds, potentially replacing lithium-ion batteries.

UChicago, UC San Diego labs create ...

Jul 29, 2024 · UChicago Pritzker Molecular Engineering Prof. Y. Shirley Meng's Laboratory for Energy Storage and Conversion has created the world's first ...

New sodium-ion developments from CATL, BYD, ...

Nov 28, 2024 · Sodium-ion batteries are undergoing a critical period of commercialization with Chinese cleantech juggernauts actively working on ...

Sodium-Ion Batteries: A Promising Alternative to ...

Nov 3, 2024 · The development of sodium-ion batteries is still ongoing. Yet, they hold promise for revolutionizing the energy storage sector. As scientists and ...

New solid-state sodium batteries enable lower ...

Dec 19, 2023 · Dr. Eric Wachsman, Distinguished University Professor and Director of the Maryland Energy Innovation Institute notes, "Sodium opens the ...

Sodium-ion Batteries: The Future of Affordable Energy Storage

Jan 20, 2025 · The potential of sodium-ion batteries is extensive. They offer a sustainable, cost-effective, and scalable solution for energy storage. As the technology matures, it's likely to play ...

An overview of sodium-ion batteries as next ...

While efforts are still needed to enhance the energy and power density as well as the cycle life of Na-ion batteries to replace Li-ion batteries, these energy ...

CATL's new sodium battery to challenge lithium ...

Apr 22, 2025 · The Naxtra sodium battery line is expected to provide electric cars with a 500-kilometer (310-mile) driving range on a single charge.

[2505.04391] Advancements in Solid-State Sodium-Based Batteries...

May 7, 2025 · The outlook on the future of sodium-based solid-state batteries underscores their potential to meet emerging energy storage demands while leveraging the abundant availability ...

New! Safe Sodium-ion cells and batteries

Oct 25, 2024 · All in all, Sodium-ion batteries are a significant step forward towards sustainable electric energy. While the primary use is for Energy Storage, they offer a safe and sustainable ...

Technology Strategy Assessment

Jul 19, 2023 · The objective of SI 2030 is to develop specific and quantifiable research, development, and deployment (RD& D) pathways to achieve the targets identified in the Long ...

Sodium-ion batteries: state-of-the-art technologies and ...

Feb 9, 2025 · Sodium-ion batteries (SIBs) are a prominent alternative energy storage solution to lithium-ion batteries. Sodium resources are ample and inexpensive. This review provides a ...

New solid-state sodium batteries enable lower ...

Dec 19, 2023 · Researchers within the University of Maryland's A. James Clark School of Engineering, have now developed a NASICON-based solid-state ...

Sodium-ion batteries: the revolution in ...

Discover the advantages and disadvantages of sodium-ion batteries compared to other renewable energy storage technologies, their application in the energy ...

A review of battery energy storage systems and advanced battery ...

May 1, 2024 · This article provides an overview of the many electrochemical energy storage systems now in use, such as lithium-ion batteries, lead acid batteries, nickel-cadmium ...

Different Types of Battery Energy Storage Systems (BESS)

Jan 14, 2025 · As technologies continue to evolve, new solutions like solid-state batteries and sodium-ion batteries promise to push the boundaries of what's possible in energy storage. ...

Toward Emerging Sodium-Based Energy Storage ...

Jun 13, 2022 · As one of the potential alternatives to current lithium-ion batteries, sodium-based energy storage technologies including sodium batteries and ...

An overview of sodium-ion batteries as next ...

With their use in several different industries, such as in electric or hybrid automobiles, renewable energy systems, autonomous and robotic systems, ...

DOE ESHB Chapter 4: Sodium-Based Battery Technologies

Feb 2, 2022 · He is passionate about energy storage technologies, and over the past 10 years, he has explored a broad range of varied battery technologies ranging from lithium ion and bio ...

Battery technologies for grid-scale energy storage

Jun 20, 2025 · The rise in renewable energy utilization is increasing demand for battery energy-storage technologies (BESTs). BESTs based on lithium-ion batteries are being developed and ...

World's largest sodium-ion project comes online ...

Jul 4, 2024 · The first phase of the world's largest sodium-ion battery energy storage system (BESS), in China, has come online.

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