

Title: Berne solid-state batteries

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What is a solid-state battery (SSB)?

A solid-state battery (SSB) is an electrical battery that uses a solid electrolyte to conduct ions between the electrodes, instead of the liquid or gel polymer electrolytes found in conventional batteries. Theoretically, solid-state batteries offer much higher energy density than the typical lithium-ion or lithium polymer batteries.

What is a solid-state battery?

In 2017, John Goodenough, the co-inventor of Li-ion batteries, unveiled a solid-state glass battery, using a glass electrolyte and an alkali -metal anode consisting of lithium, sodium or potassium. Later that year, Toyota extended its decades-long partnership with Panasonic to include collaboration on solid-state batteries.

What is the difference between lithium ion and solid-state battery energy density?

At a cell level, lithium-ion energy densities are generally below 300Wh/kg while solid-state battery energy densities are able to exceed 350 Wh/kg. This energy density boost is especially beneficial for applications requiring longer-lasting and more compact batteries such as electric vehicles.

How does a solid state battery work?

Solid-state batteries can use metallic lithium for the anode and oxides or sulfides for the cathode, thereby enhancing energy density. The solid electrolyte acts as an ideal separator that allows only lithium ions to pass through.

Solid-State Batteries Race to Mass Production With differing technologies, Toyota, Samsung SDI, QuantumScape, and others are vying for breakthroughs in solid-state batteries for ...

This paper reviews solid-state battery technology's current advancements and status, emphasizing key materials, battery architectures, and performance characteristics. We analyze ...

Kennesaw State researchers use sulfur-modified solid electrolytes to improve lithium-ion movement in solid-state batteries.

Comprehensive guide to solid state batteries: how they work, advantages, challenges, and when they'll be available. Expert analysis of the technology changing EVs.

Berne solid-state batteries

Expert analysis compares Donut Lab's solid-state pitch to pseudo-capacitor behavior and real cycle life data, helping you spot red flags fast.

Verge Motorcycles is developing what it claims is first production solid-state EV, using a battery from newcomer Donut Lab. But the company can't sell the bikes before they get safety ...

Analyses of properties and performance of battery cells as well as measurements to determine service life and thermal properties, carried out on state-of-the-art test stands.

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Solid-state batteries promise safer, longer-range EVs, but Honda and Toyota reveal major hurdles in durability and mass production remain unresolved.

Donut Lab says its all-solid-state battery is already in production, offering better fast charging and energy density than today's lithium-ion packs.

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