A roadmap for solid-state batteries

What is a solid-state battery roadmap?
Based on an extensive literature review and an in-depth expert consultation process, the roadmap critically evaluates existing research as well as the latest findings and compares the development potential of solid-state batteries over the next ten years with that of established lithium-ion batteries.

What are the main interests of a solid state battery?
Current key interests include solid-state batteries, solid electrolytes, and solid electrolyte interfaces. He is particularly interested in kinetics at interfaces. Abstract Solid-state batteries are considered as a reasonable further development of lithium-ion batteries with liquid electrolytes.

What is a solid-state battery?
Solid-state battery mainly consists of a solid electrolyte separator,anode and cathode active materials. The most promising anode active materials to achieve high energy density are lithium metal and silicon.

When will a Sol-ID-state battery be available?
Stellantis and Honda announced the date of integration of sol-id-state battery prototypes in their R&D roadmaps for 2026and 2030+,respectively. Blackstone Technologies built up their production facility for a polycrystalline solid electrolyte,which will be printed in 3D. They plan to reach a production capac-ity of 500 MWh in 2022.

How can a solid-state battery be recycled?
Similar to the recycling of conventional LIB,these established processes can be adapted and applied to solid-state batter-ies to enable the recovery of their main cell components. The metallic components of solid electrolytes and cathodes are accessible by pyro- or hydrometallurgical recycling processes.

When was a solid-state rechargeable battery invented?
Batteries with an oxide separator marked the first attempts to work on a solid-state rechargeable battery. The first research projects began in the 1970swith thin film battery approaches. In 1980,at the same time as lithium-ion batteries (LIB) were developed,research was also done on solid oxide batteries with bulk layers .

The roadmap demonstrates that solid-state batteries have a lot of potential, but will have to prove their commercial viability in the next five years. Current lithium-ion batteries ...

Due to the higher initial costs, the high-end sectors will be targeted. Exemplary structure of a state-of-the-art liquid electrolyte lithium-ion battery and a solid-state battery with ...

ProLogium Technology, a global leader in solid-state battery innovation, will participate in IAA Mobility 2025 in Munich (9-12 September), presenting its latest 4th-generation Superfluidized All-Inorganic

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Solid-State ...

Solid-state batteries are considered as a reasonable further development of lithium-ion batteries with liquid electrolytes. While expectations are high, there are still open questions concerning the choice of materials, and ...

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This document provides a roadmap for solid-state battery technology development through 2035. It contains the following key points: 1. Solid-state batteries offer higher energy density and greater safety compared to ...

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Toward better batteries: Solid-state battery roadmap 2035+ Recently, Solid-State Battery Roadmap 2035+ was released by Fraunhofer ISI, which supports the German battery ...

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The evolution of energy storage systems has reached a pivotal juncture, with solid-state batteries (SSBs) emerging as a transformative solution to overcome the limitations ...

energy storage technologies secondary batteries supercapacitors alkali-ion batteries alkali metal batteries metal-air batteries solid-state batteries redox flow batteries ...

TL;DR: A roadmap for solid-state batteries highlights the challenges and potential for solid-state batteries compared to lithium-ion batteries. The roadmap includes diverse cell concepts with ...

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This work describes the most logical approach to address the industrial manufacturing of solid-state batteries attending to material, product, and production ...

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