

What are three-dimensional lithium-ion microbatteries?

Three-dimensional lithium-ion microbatteries are considered as promising candidates to fill the role, owing to their high energy and power density. Combined with silicon as a high-capacity anode material, the performance of the microbatteries can be further enhanced.

Can three-dimensional silicon-based lithium-ion microbatteries be used in miniaturized electronics?

Finally,we suggest possible future studies based on the current development status to provide a research direction towards further improved three-dimensional silicon-based lithium-ion microbatteries. Three-dimensional silicon-based lithium-ion microbatteries have potential usein miniaturized electronics that require independent energy storage.

What is silicon based lithium-ion microbatteries?

Combined with silicon as a high-capacity anode material, the performance of the microbatteries can be further enhanced. In this review, the latest developments in three-dimensional silicon-based lithium-ion microbatteries are discussed in terms of material compatibility, cell designs, fabrication methods, and performance in various applications.

Can micro-lithium-ion-battery energize smart devices?

Meanwhile, the so-called micro-lithium-ion-battery (micro-LIB) emerges as a more promising candidate to energize smart devicessince it can provide power in micro- to milliwatt regimes with a relatively small footprint area 16. The fabrication of such a small energy storage device is not as simple as reducing the size of a conventional battery 17.

What are lithium-ion batteries used for?

As one type of conventional energy storage technology, lithium-ion batteries (LIBs) with high energy density are widely utilized in mobile phones, laptops, and portable electronics.

How are all-solid-state micro lithium-ion batteries fabricated?

All-solid-state micro lithium-ion batteries fabricated by using dry polymer electrolyte with micro-phase separation structure. Electrochem. Commun. 9,2013-2017 (2007). Long,J. W.,Dunn,B.,Rolison,D. R. &White,H. S. 3D architectures for batteries and electrodes. Adv. Energy Mater. 10,1-6 (2020).

5 · Known for their high energy density, lithium-ion batteries have become ubiquitous in today"s technology landscape. However, they face critical challenges in terms of safety, ...

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Liu, Z. et al. Towards wearable electronic devices: a quasi-solid-state aqueous lithium-ion battery with outstanding stability, flexibility, safety and breathability. Nano Energy 44, 164-173 (2018).

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