

# Can germanium be used in energy storage batteries





## Overview

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Can germanium be used for high-capacity lithium ion batteries?

For more information on the journal statistics, [click here](#). Multiple requests from the same IP address are counted as one view. Germanium, a promising electrode material for high-capacity lithium ion batteries (LIBs) anodes, attracted much attention because of its large capacity and remarkably fast charge/discharge kinetics.

Are germanium-based anode materials a good choice for lithium-ion batteries?

Germanium-based anode materials have emerged as a key focus of research in the realm of lithium-ion batteries, owing to their high theoretical specific capacity (about 4 times that of carbon), low lithium insertion potential, and excellent conductivity (about 104 times that of silicon).

When was germanium first used in rechargeable batteries?

We first heard of the germanium application as a negative-electrode material in the rechargeable batteries based on the lithium insertion as long ago as 1982 , that is, much earlier than the lithium-ion batteries appeared.

Are germanium oxides a good raw material for lithium ion batteries?

The germanium oxides as raw material for the manufacturing of negative electrodes of lithium-ion and sodium-ion batteries are likely to take leading positions because they simplify technology of the electrodes' production and reduce their price significantly.



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### Germanium-Based Anode Materials for Lithium-Ion Batteries

Jun 11, 2025 · Germanium-based anode materials have attracted considerable attention due to their high theoretical lithium storage capacity, excellent electrical conductivity and superior ...

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### Recent progress on germanium-based anodes for lithium ion batteries

Sep 1, 2020 · Germanium-based materials with extremely high theoretical energy capacities have gained a lot of attention recently as potential anodes for lithium ion batteries. These materials ...

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### First-Principles Dynamics Investigation of Germanium as an ...

Oct 29, 2023 · Germanium, a promising electrode material for high-capacity lithium ion batteries (LIBs) anodes, attracted much attention because of its large capacity and remarkably fast ...

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### Germanium-Based Nanomaterials for ...

Jun 9, 2016 · Abstract Germanium-based nanomaterials have emerged as important candidates for next-generation energy-storage devices owing to ...

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### GermaniumBased Electrode Materials for LithiumIon ...

May 18, 2015 · Lithium-ion batteries (LIBs) have received worldwide attention as a top performing energy-storage system. Currently, graphite is being used as the commercial anode material in ...

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### First-Principles Dynamics Investigation of Germanium as an ...

Germanium, a promising electrode material for high-capacity lithium ion batteries (LIBs) anodes, attracted much attention because of its large capacity and remarkably fast charge/discharge ...

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### Germanium in Lithium-Ion and Sodium-Ion Batteries (A ...

Jan 11, 2022 · Abstract In recent decade, special interest is paid to germanium as potential material of negative electrodes in lithium-ion and, the more so, sodium-ion batteries. In the ...

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### Germanium Anodes: The Future of Energy Storage

Jun 11, 2025 · Explore the cutting-edge research and developments in Germanium Anodes, and their potential to transform the energy storage landscape.

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### Construction and modification of germanium-based anode ...

Jan 31, 2025 · Lithium-ion batteries have been widely used in portable electronic devices and electric vehicles due to their high energy density, long cycle life, and no memory effect. ...

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### Germanium-Based Nanomaterials for Rechargeable Batteries

Jun 9, 2016 · Abstract Germanium-based nanomaterials have emerged as important candidates for next-generation energy-storage devices owing to their unique chemical and physical ...

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### Forecast for usage of germanium in lithium-ion batteries

Germanium is an attractive element for the anodes in lithium-ion battery. The current article discusses the issue of the availability of raw material for the battery industry, particularly in ...

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