

Title: Heterogeneous lithium battery cells

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Broad use of global or spatially averaging measurements over a cell to characterize highly localized Li plating phenomena in lithium-ion batteries during fast charging has created a disconnect ...

Understanding and manipulating structural heterogeneity and chemical dynamics are key to improving battery performance, lifespan, and safety. This review examines spatial heterogeneity ...

In the current study, we show that if the current collector is heterogeneous, the heat generation becomes negligible when the LIB cell is subjected to mechanical abuse. The phenomenon is ...

Accordingly, this work introduces a framework for a fully coupled electro-chemo-mechanical heterogeneous 3D model that allows resolving the inhomogeneities accompanied by ...

In this paper, an electrochemical-mechanical coupling model is established for a two-dimensional, fully heterogeneous lithium-ion battery. The positive and negative active particles in the ...

Heterogeneous aging of lithium-ion (Li-ion) battery cells within a battery pack is a major challenge that limits the pack's overall performance, safety, and life.

In this study, a multi-scale heterogeneous electrochemical-thermo-mechanical coupling model (MHETM) is proposed.

Lithium metal batteries face challenges of unstable interfaces and slow ion transport. Here, authors report a hydrogen-bonded domain electrolyte based on addition of 2-cyano-N ...

This model describes the behavior of a lithium-ion battery unit cell modeled using an idealized heterogeneous three-dimensional geometry. In contrast to the typical homogenized approach for ...

In this study, we use an experimentally validated electrochemical battery model to simulate hundreds of



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battery configurations, each consisting of four cells in parallel.

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