Title: Pack battery impact on the ground
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How to analyze the ground impact process of a battery pack?
To analyze the ground impact process of the battery pack from the view of the whole vehicle level,the coupling model of multi-rigid bodies and finite element model is built for the whole vehicle. Then the ground impact experiments with a production car are made and the simulation results and experiment results are compared.

Does lithium-ion battery pack have a ground impact?
A hypothetic global FE model is developed for ground impact of battery pack. Parametric study is carried out for ground impact of battery pack. Failures of individual cell and shell casing are predicted with detailed models. The present paper documents a comprehensive study on the ground impact of lithium-ion battery packs in electric vehicles.

Can a ground impact damage a battery pack?
The "Floor" battery pack configuration is found,amongst others in the BMW i3,Nissan Leafs,Mitsubishi i-Miev,Tesla Model S,SmartBatt prototype vehicle and many smaller experimental cars. To the best of authors' knowledge,no work has been reportedin the open literature on predicting damage to the battery pack due to the ground impact.

How is the impact process of a battery pack analyzed?
Finally,the impact processes of the whole vehicle in the ground impact condition are analyzed based on the demonstrated model,and the ground impact process of the battery pack is analyzed from the view of the whole vehicle level. The analysis of the impact process can guide the design of protective structures of the battery pack.

To address this, this paper suggests the application of fiber metal laminate (FML) material in automotive battery packs, as it is ...

The investigations of ground impact show that whether the battery pack is at the lowest point has a great impact on the safety under the Bottom scraping condition, while the material of the ...

This paper presents a comprehensive study of the ground impact on lithium-ion battery packs in electric vehicles. Realistic system-level test procedures and conditions are proposed and the ...

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Virtual simulation analysis was performed in the full vehicle FE model and measured the impact energy at various locations and acceleration on the battery pack.

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