

Battery with foreign matter

What is the evolution mechanism of foreign matter defect in a battery?

Through intentionally making defect batteries, aging experiments, and characterization analysis at different stages, the evolution mechanism of foreign matter defect in the battery is revealed. The self-induced internal-short-circuit fusing and sudden spontaneous combustion of the battery under non-abuse are all reproduced.

Does foreign matter cause battery damage?

The battery damage situation caused by the foreign matter of different particle sizes during the battery production process is revealed. Through the non-abuse aging cycle test, we reproduced the SSC and the self-induced ISC fusing of lithium-ion cells. Then through the analysis of the test data, we propose the early warning method for SSC.

How to avoid the generation of batteries containing foreign matter?

In order to avoid the generation of batteries containing foreign matter as much as possible, battery manufacturers need to establish a complete and strict raw material detection mechanism, workshop cleaning mechanism, insulation withstand voltage (Hi-pot) test mechanism, and self-discharge test mechanism.

Can a foreign matter defect cause an internal short circuit?

Since the thickness of the separator in the cells is generally only about 15 μm , the foreign matter defect is theoretically likely to cause an internal short circuit (ISC) and SSC under normal use in the later period. However, we did not find systematic and detailed research reports in this regard.

What is the evolution mechanism of foreign matter defect in lithium-ion cells?

Evolution mechanism of foreign matter defect in the lithium-ion cell is revealed. Sudden spontaneous combustion of lithium-ion cells under non-abuse is reproduced. Self-induced internal-short-circuit fusing of lithium-ion cells is reproduced. Early warning strategy for sudden spontaneous combustion of batteries is proposed.

What is foreign matter implantation?

Foreign matter implantation: A cell jelly roll (in Li-ion battery manufacturing terminology, the cell jelly roll is a semi-finished cell that has completed the assembly of the electrode, separator, cell lid and other components, and has not yet undergone the process of inserting housing and electrolyte injection).

In the process of inspection, the battery passes the voltage withstand test to detect the internal short-circuit unqualified product before the liquid injection; X-ray detects the battery cell ...

Abstract: Analyzing foreign matter on batteries is important to maintain performance and safety. We analyzed a Nickel Manganese Cobalt (NMC) cathode simulation sample using a HORIBA ...

Different types of defects can be introduced into batteries during the battery manufacturing process, such as pinholes, metal particles, non-uniform coating, burrs or rips on the tab, deflected electrode, etc. [22, 26]. Among all kinds of defects, the foreign matter defect (FMD) is a severe problem which can be introduced in almost every process of battery ...

De très nombreux exemples de phrases traduites contenant "foreign matter" - Dictionnaire français-anglais et moteur de recherche de traductions françaises.

In this paper, we propose a data-driven detection method for foreign matter defect in lithium-ion batteries. In contrast to the existing battery diagnosis and fault detection methods ...

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