Reasons for heat and discharge of energy storage batteries

What happens after heat generation of battery?

After heat generation of battery,if the heat can't be effectively dissipated to the environment in a timely manner,the temperature of the battery surface will increase,and then electromagnetic energy will be emitted outward,which is thermal radiation.

What affects the temperature of a battery?

Under the same operating conditions of external heating to thermal runaway of the battery,and when the external ambient temperature and the convective heat transfer coefficient are constant,the temperature of the battery is largely influenced by the electrochemical heat generation.

Does battery temperature change under a discharging condition?

It is well known that the battery temperature change under a discharging condition is more drastic compared with charging condition,so it is essential to explore the thermal behavior of batteries under the discharging condition during thermally triggered thermal runaway condition of the battery.

How does battery thermal runaway affect charge/discharge rate?

Since the heat production of the battery is positively correlated with the charge/discharge rate,it can be predicted that when the charging and discharging rate is further increased,the rate of the battery thermal runaway is also accelerated.

Why do lithium ion batteries need to be charged and discharged?

Heat generationis a crucial factor for lithium-ion batteries during the charge and discharge process,which can trigger serious safety issue such as fire hazard and explosion. Over-discharge is a common inducement which can result in not only heat generation effect,but electrode and electrolyte failure.

What is the mechanism of heat generation and battery failure?

The over-discharge strategy is introduced to understand the mechanism of heat generation and battery failure. A pouch-type battery in electric vehicle was used to investigate the heat generation. Heat generation and failure mechanism is triggered by copper dissolution and electrolyte degradation.

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