Short Communication

Effect of Humidity on Properties of Lithium-ion Batteries

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A study was performed to determine the cause of abnormal direct current resistance (DCR) during high-temperature storage of a commercialized lithium-ion battery (1C=50 Ah) designed for an electrical vehicle. Scanning electron microscopy, energy-dispersive X-ray spectroscopy, inductively coupled plasma atomic emission spectroscopy, air permeability measurements and electrochemical impedance spectroscopy were used to analyze batteries with abnormal and normal DCRs. The results of these analyses show that imperfect solid electrolyte interface formation increases the direct current resistance. This imperfection results from the presence of excessive moisture during battery production.

Keywords: Excess moisture; Lithium-ion battery; Imperfect solid electrolyte interface; Direct current resistance

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