Short Communication

Electrochemical Corrosion Behavior of the Copper Current Collector in the Electrolyte of Lithium-ion Batteries

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Copper is usually used as an anode current collector in lithium-ion batteries. Its stability in the organic electrolyte impacts the performance of the lithium-ion battery. In this paper, the corrosion mechanism of the copper current collector in the electrolyte of lithium-ion batteries was examined by electrochemical impedance spectroscopy(EIS) and polarization measurements. The microstructures of copper were observed by scanning electron microscopy(SEM) and energy dispersive spectroscopy (EDS). The fitted results of electrochemical impedance spectroscopy showed that R_f and R_t increased at the initial stage of exposure to the electrolyte indicating that a protective layer formed. After exposure to the electrolyte for up to 720 h, pitting holes could be clearly observed on the surface of copper.

Keywords: Lithium-ion Batteries, Copper current collector, Electrochemical impedance spectra, Corrosion mechanism

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