

Simultaneous electrochemical and calorimetric measurement of Lithium ion secondary battery using isothermal microcalorimeter

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Recently, the study of the utilization of the high-performance Li-ion cells as energy sources of electric vehicles (EV) and other large-sized equipments have been performed. However large-sized Li-ion cells are not used easily, primarily due to safety considerations. Organic compounds are used as electrolytes of Li-ion cells, and these compounds are flammable. Therefore the generation of heat by chemical decomposition and the chemical reactions in the cells is an important factor to be considered. To realize high-safety, high-performance lithium ion secondary batteries, we examined pouch-type lithium ion cells by varying the composition of the electrolyte using IMC (isothermal microcalorimeter) with a closed specific case at elevated temperatures. In particular, a battery self-discharge test was carried out and calculated using extrapolation method.