

Basic Studies of Cycle Behavior of Silicon Anode Active Materials for High-Energy Lithium-ion Batteries

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Longer driving range electric vehicles require higher energy lithium-ion battery (LIB) than that of state-of-the-art LIBs. Therefore, the development of high capacity cathode and anode active materials beyond conventional ones is highly encouraged. Silicon (Si) as high-capacity anode materials has been studied for decades. However, still its limited fraction is used in Si-graphite composite, due to a large volume change and low electrical conductivity. Ever since the advent of the Si anode, numerous challenges such as size control, surface coating, active/inactive alloy, void space engineering, and composite have been conducted. In this presentation, we report basic studies of cycle behavior along with interfacial resistance changes of various silicon anode active materials and interfacial reaction behavior with electrolyte components.

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