

Enabling High-Energy Density Li-ion Batteries using Sulfur-based Cathode Material

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Li-ion battery market is currently expanding from small, portable batteries to electric vehicles and energy storage systems. More than doubled energy density than that of currently used batteries is required. A general approach to increase the energy density of a battery is the replacement of current cathode and anode active materials to higher capacity materials, and electrolyte that is interfacially compatible to them. Sulfur-based cathode and silicon-based anode materials are considered as one of the most promising active materials for high-energy batteries. However, there are just a few reports on the full-cell with those materials and the interfacial reaction behavior in full-cells is still unknown. Herein, we demonstrate good cycling performance of a full-cell composed of a new micron-sized sulfur-based cathode material and submicron-sized lithiated silicon-based anode material. Correlation between the cycling performance and interfacial phenomena would be discussed in the meeting.