

Synthesis of the layered-spinel composite for Li-ion battery by using flame spray pyrolysis

임성남, 박승빈*

KAIST

(SeungBinPark@kaist.ac.kr*)

The research effort of Li-ion batteries has been conducted for high-power application such as HEV. However, Li-ion batteries currently do not meet requirements. Despite the high capacity of layered-layered composite electrodes, they have drawbacks such as inferior rate capability and cycle performance. Recently, some groups proposed the layered-spinel electrodes to design high capacity and high rate capability. These electrodes compensate the low rate capacity of the layered electrode by integrating spinel phase, because it has a good rate capability, even if it has low capacity values. The electrochemical performance of Li-ion batteries is depends on the crystallinity, phase purity, particle morphology and surface area which depend on synthesis method. Flame spray pyrolysis (FSP) is a suitable process to synthesize electrode material, because the particles prepared by FSP exhibit high purity, controlled size, and clear crystallinity.

In this work, the integrated layered-spinel composite was synthesized by using flame spray pyrolysis. The characteristic of material according to the ratio of layered to spinel analyzed by XRD. Following the characterization, the electrochemical performance test was conducted.