

The synthesizing of Li-rich cathode via citric acid-assisted spray pyrolysis

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Li-ion batteries for future applications, such as electric vehicles (EV) and power tools, are required to have high capacity, good power density, long life cycle and low cost. Many researchers have paid attention to Li-rich cathode materials due to their higher capacity compared with commercial LiCoO_2 .

Li-rich cathode was synthesized through various methods such as co-precipitation, sol-gel method, solid-state synthesis and spray pyrolysis. Among them, solid-state and liquid-phase synthesizing methods demand long calcination process at high temperature to obtain desired phase. It causes lithium evaporation on Li-rich cathode and reduces discharge capacity. Whereas, the spray pyrolysis is a vapor-state process which needs shorter post-treatment than other methods. It has also advantages including high purity, homogeneous mixing and good stoichiometry for synthesizing multi-component material.

In this work, the Li-rich cathode was synthesized by citric acid-assisted spray pyrolysis. Synthesized powders were analyzed by SEM, XRD and fabricated coin type half-cell for evaluating electrochemical characterization.