Synthesis and Electrochemical properties of $Li[(Ni_{0.5}Mn_{0.5})_{1-x}Co_x]O_2$ cathode materials prepared by ultrasonic spray pyrolysis

박상호, 오성우, 선양국*
한양대학교
(yksun@hanyang.ac.kr*)

The layered lithium metal oxides, $LiMO_2$ (M=Co, Ni, Mn) and the $LiMn_2O_4$ are most widely studied 4 V class cathode materials for lithium secondary batteries with high energy density. The LiCoO has been commercialized but has still some problems, such as its high cost, moderate, and toxicity. $LiNiO_2$ and $LiMnO_2$ also have been extensively studied as possible alternatives to $LiCoO_2$. In this work, the layered $Li[(Ni_{0.5}\ Mn_{0.5})_{1-x}Co_x]O_2$ powders have been synthesized by ultrasonic spray pyrolysis method. $Li[(Ni_{0.5}Mn_{0.5})_{1-x}Co_x]O_2$ powders were characterized by means of X-ray diffraction, Rietveld refinments, charge/discharge cycling, and cyclic voltammetry. The prepared powers has a hexagonal α-$NaFeO_2$ structure and delivered a specific discharge capacity of 170 mAh g^{-1} in the voltage range of 2.8 - 4.4 V.