A Method for Improving the Electrochemical Properties of a $\text{Li}_{1.2}\text{Ni}_{0.15}\text{Co}_{0.1}\text{Mn}_{0.55}\text{O}_2$ Cathode Material

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doi: 10.20964/2017.05.29

Received: 18 January 2017 / Accepted: 10 March 2017 / Published: 12 April 2017

A method for improving the electrochemical properties of $\text{Li}_{1.2}\text{Ni}_{0.15}\text{Co}_{0.1}\text{Mn}_{0.55}\text{O}_2$ is described in this paper. The improvement of the electrochemical properties of $\text{Li}_{1.2}\text{Ni}_{0.15}\text{Co}_{0.1}\text{Mn}_{0.55}\text{O}_2$ was achieved by introducing small amounts of H_2O molecules. The modification was carried out by using a method of water quenching and tempering at a proper temperature. A remarkable specific capacity of 283.8 mAh g^{-1} (0.2 C) was achieved. The high specific capacity and cycling ability is assigned to the change of lattice parameters by the inserted H_2O molecules, leading to the increased mobility and enhanced distribution of Li^+ ions in the $\text{Li}_{1.2}\text{Ni}_{0.15}\text{Co}_{0.1}\text{Mn}_{0.55}\text{O}_2$ layers.

Keywords: $\text{Li}_{1.2}\text{Ni}_{0.15}\text{Co}_{0.1}\text{Mn}_{0.55}\text{O}_2$; water quenching; tempering temperatures; H_2O compounds; lattice parameters

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