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Structural characterization of $LiNiO_2$ and $LiNi_{0.96}Mg_{0.04}O_2$ cathode materials

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ABSTRACT

The layered compounds $LiMO_2$ (M=transition metals) remain most promising because of their theoretical capacity is much higher than that of their competitors such as spinel or olivine material. The goal of this paper is to synthesize a cathode material composed of $LiNiO_2$ and $LiNi_{0.94}Mg_{0.04}O_2$ that has an increased capacity and cycling life. To do this, we synthesis the compounds of $LiNiO_2$ and $LiNi_{0.96}Mg_{0.04}O_2$ with varying amount of Mg by using solid state reaction method at high temperature. Each unique compound will be characterized using XRD, FESEM and FTIR to reveal the structural properties of the material.

Keywords: Solid-state reaction method, Layered structure, Lattice constant, FTIR, FESEM.