Type of presentation: Poster

MS-14-P-5860 The enhancement of capacity by B substituted $LiMn_2O_4$ cathode materials and their cycling performance

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Energy production and consumption that rely on the combustion of fossil fuels have had severe impacts on world economics and ecology [1]. The rechargeable li-ion batteries have became the part of energy cycles.Li-ion batteries have found very broad and promisingapplications in modern technology [2, 3].In this research, LiBxMn2-xO4 cathode materials were synthesized via using conventional solid state reaction method.The XRD, SEM, temperature dependence resistivity (R-T) and micro strain of samples were analyzed and the results were compared by the cycle life and battery performance.The lattice parameters were calculated by Jade 5.0 using Rietveld refinement technique. The samples for $x \leq 0.5$ have no impurity phases. The xrd pattern of LiMn2O4 samples for as seen in Figure 1. Electrochemical measurements were carried out at room temperature (24°C). To assess thequasi open-circuit voltage profiles, galvanostatic charge-discharge cycles wererecorded at a slow scan mode using a MTI-BST8 system as seen Figure 2.We report that the B substitution increases the capacity of the coin cell which is a promising result for energy storage technologies.

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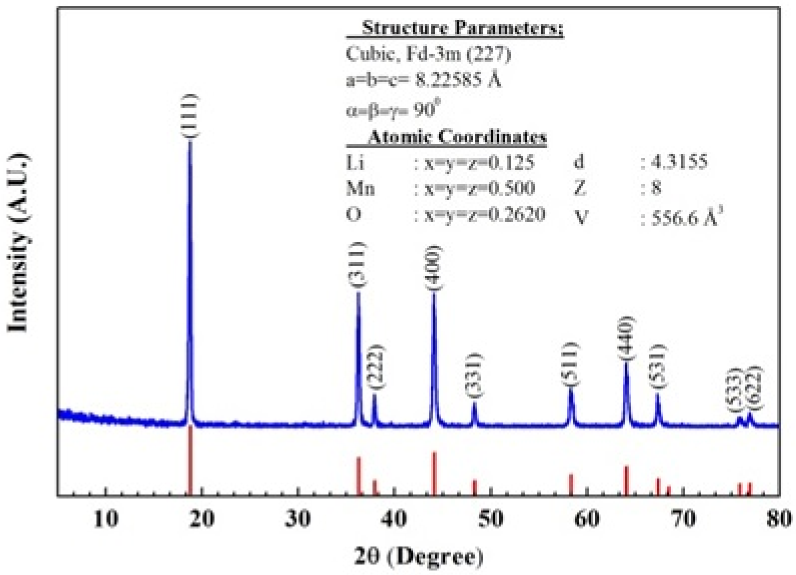

Fig. 1: XRD pattern of $LiMn_2O_4$.

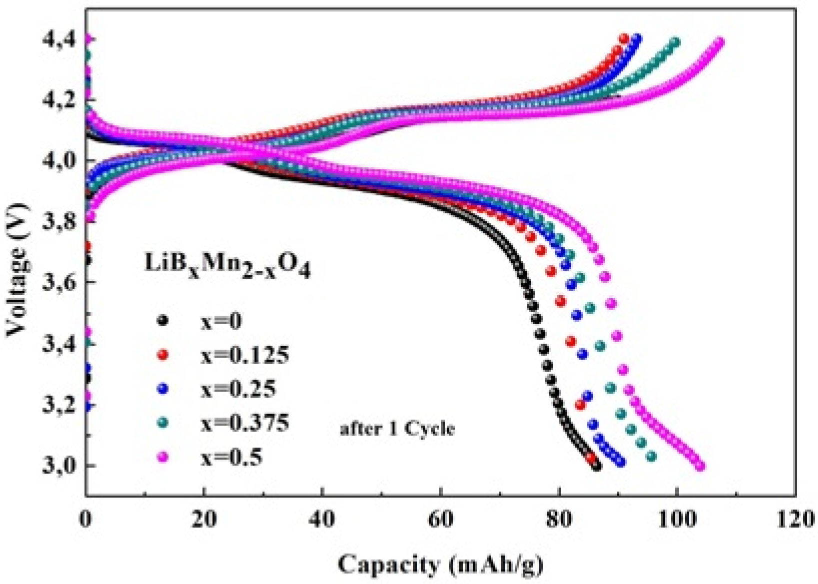

Fig. 2: Cyclic voltammetry of $LiB_xMn_{2-x}O_4$.