Short Communication

Synthesis and Electrochemical Performance of $\text{Na}_{0.5}\text{Li}_{0.1}\text{Ni}_{0.2}\text{Mn}_{0.7}\text{Mg}_{0.1}\text{O}_2$ as a Cathode for Sodium-Ion Batteries

Jin Wang¹, Zhaofu Zhou¹, Yushan Li¹, Meng Li¹, Jianqiu Deng^{1,2,*}, Qingrong Yao^{2,*},
Zhongmin Wang^{1,2}, Huaiying Zhou^{1,2}

¹ Guangxi Key Laboratory of Information Materials, Guilin University of Electronic Technology, Guangxi, Guilin 541004, China

² School of Materials Science and Engineering, Guilin University of Electronic Technology, Guangxi, Guilin 541004, China

*E-mail: jqdeng@guet.edu.cn (Jianqiu Deng), qingry96@guet.edu.cn (Qingrong Yao)

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Exploring ideal cathode materials with low cost and good electrochemical performance is the key issue for development of sodium ion batteries. Herein, P2-type layered $\text{Na}_{0.5}\text{Li}_{0.1}\text{Ni}_{0.2}\text{Mn}_{0.7}\text{Mg}_{0.1}\text{O}_2$ is synthesized by a facile self-propagating combustion method. The sample makes up of plate-like structured particles with high crystallinity. A high specific capacity of 157 mAh g^{-1} at 0.2 C and good rate capability can be achieved in a voltage range of 1.5–4.6 V. The stable cycle performance is also delivered in a narrow voltage range of 2.0–4.0 V, indicating that $\text{Na}_{0.5}\text{Li}_{0.1}\text{Ni}_{0.2}\text{Mn}_{0.7}\text{Mg}_{0.1}\text{O}_2$ is a promising cathode material for sodium ion batteries.

Keywords: Sodium ion batteries; Cathode; P2-type layered oxide; Self-propagating combustion method.

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