

Author's Accepted Manuscript

Nano-sized over-lithiated oxide by a mechano-chemical activation-assisted microwave technique as cathode material for lithium ion batteries and its electrochemical performance

Weigang Wang, Guorong Hu, Zhongdong Peng, Ke Du, Yanbing Cao, Jianguo Duan



www.elsevier.com/locate/ceri

PII: S0272-8842(17)32174-0
DOI: <https://doi.org/10.1016/j.ceramint.2017.09.237>
Reference: CER116408

To appear in: *Ceramics International*

Received date: 19 September 2017
Revised date: 28 September 2017
Accepted date: 29 September 2017

Cite this article as: Weigang Wang, Guorong Hu, Zhongdong Peng, Ke Du, Yanbing Cao and Jianguo Duan, Nano-sized over-lithiated oxide by a mechano-chemical activation-assisted microwave technique as cathode material for lithium ion batteries and its electrochemical performance, *Ceramics International*, <https://doi.org/10.1016/j.ceramint.2017.09.237>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

**Nano-sized over-lithiated oxide by a mechano-chemical
activation-assisted microwave technique as cathode material for
lithium ion batteries and its electrochemical performance**

Weigang Wang^a, Guorong Hu^{a*}, Zhongdong Peng^a, Ke Du^a, Yanbing Cao^a, Jianguo Duan^{b*}

^a *School of Metallurgy and Environment, Central South University, Changsha, 410083, China*

^b *Faculty of Metallurgical and Energy Engineering, Kunming University of Science and Technology, Kunming, 650093, China*

*Corresponding authors.

Email addresses: 879049070@qq.com, hgrhsj@263.net (G. Hu), csudjg@163.com (J. Duan).

Abstract

Over-lithiated oxide has been attracting enormous attention due to its high work voltage and high specific capacity. However, the bottlenecks of low initial coulombic efficiency and voltage decay block its industrial application. In this paper, nano-sized $\text{Li}[\text{Li}_{0.2}\text{Mn}_{0.54}\text{Ni}_{0.13}\text{Co}_{0.13}]\text{O}_2$ was successfully synthesized by a mechano-chemical activation-assisted microwave technique, in which Mn-Co-Ni-based micro spherical precursor by conventional co-precipitation method was ball milled with Li_2CO_3 as lithium source and alcohol as dispersant into nano size and then sintered by microwave to obtain the final product. The as-prepared sample sintered for 30 min exhibited a superior electrochemical performance: almost no capacity fading after 100 cycles at 0.1C. The rate performance was also improved significantly and the one sintered for 30 min delivered a discharge capacity of 239, 228, 215, 193 mA h g^{-1} at

Download English Version:

<https://daneshyari.com/en/article/7888751>

Download Persian Version:

<https://daneshyari.com/article/7888751>

[Daneshyari.com](https://daneshyari.com)