

Accepted Manuscript

A high-capacity NiCo₂O₄@reduced graphene oxide nanocomposite Li-ion battery anode

Wei Wang, Xinjie Song, Cuiping Gu, Dongxu Liu, Jinyun Liu, Jiarui Huang



PII: S0925-8388(18)30098-7

DOI: [10.1016/j.jallcom.2018.01.097](https://doi.org/10.1016/j.jallcom.2018.01.097)

Reference: JALCOM 44561

To appear in: *Journal of Alloys and Compounds*

Received Date: 10 November 2017

Revised Date: 3 January 2018

Accepted Date: 7 January 2018

Please cite this article as: W. Wang, X. Song, C. Gu, D. Liu, J. Liu, J. Huang, A high-capacity NiCo₂O₄@reduced graphene oxide nanocomposite Li-ion battery anode, *Journal of Alloys and Compounds* (2018), doi: 10.1016/j.jallcom.2018.01.097.

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 proof before it is published in its final 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.

A high-capacity NiCo₂O₄@reduced graphene oxide nanocomposite Li-ion battery anodeWei Wang^{a, †}, Xinjie Song^{b, †}, Cuiping Gu^{a, *}, Dongxu Liu^a, Jinyun Liu^{a, *}, Jiarui Huang^{a, *}^a *Key Laboratory of Functional Molecular Solids, Ministry of Education, Center for Nano Science and Technology, College of Chemistry and Materials Science, Anhui Normal University, Wuhu 241000, P.R. China.*^b *Department of Food Science and Technology, Yeungnam University, Gyeongsan, Gyeongbuk 712749, Republic of Korea.*

Abstract: Nano-engineering graphene-based composite anodes have motivated broad investigations of the high energy density lithium-ion batteries. Here, a sandwich-like and porous NiCo₂O₄@reduced graphene oxide (rGO) nanocomposite was presented. Through an incipient dipping process, the NiCo₂O₄ precursors attach on the rGO densely, which significantly improves the material loading of the NiCo₂O₄@rGO composites. Serving as an anode of the lithium-ion battery, the NiCo₂O₄@rGO composites exhibit an unprecedented capacity of 1566 mAh g⁻¹ cycling at a current density of 1000 mA g⁻¹ over 700 times; while a capacity of 886 mAh g⁻¹ at 100 mA g⁻¹ over 100 cycles was achieved upon a NiCo₂O₄@rGO//LiCoO₂ full-cell, which indicates a promising potential for high energy density battery applications.

Keywords: NiCo₂O₄; Graphene; Anode; Secondary battery; Capacity

*Corresponding authors. Tel.: +86 553 386 9301; fax: +86 553 386 9303. E-mail addresses: jrhuang@ahnu.edu.cn (Jiarui Huang); cpgu2008@ahnu.edu.cn (Cuiping Gu); jyliu@ahnu.edu.cn (Jinyun Liu). † Equal contribution as the first author.

Download English Version:

<https://daneshyari.com/en/article/7993366>

Download Persian Version:

<https://daneshyari.com/article/7993366>

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