# Accepted Manuscript


Annealing temperature dependent $ZnCo_2O_4$ nanosheet arrays supported on Ni foam for high-performance asymmetric supercapacitor

Xizi Li, Mingyi Zhang, Lili Wu, Qishan Fu, Hong Gao

PII: S0925-8388(18)33437-6

DOI: 10.1016/j.jallcom.2018.09.197

Reference: JALCOM 47616

To appear in: *Journal of Alloys and Compounds*

Received Date: 3 July 2018

Revised Date: 11 September 2018

Accepted Date: 17 September 2018

Please cite this article as: X. Li, M. Zhang, L. Wu, Q. Fu, H. Gao, Annealing temperature dependent $ZnCo_2O_4$ nanosheet arrays supported on Ni foam for high-performance asymmetric supercapacitor, *Journal of Alloys and Compounds* (2018), doi: https://doi.org/10.1016/j.jallcom.2018.09.197.

# Annealing temperature dependent $ZnCo_2O_4$ nanosheet arrays supported on Ni foam for high-performance asymmetric supercapacitor

Xizi Li[a], Mingyi Zhang[a], Lili Wu[a,b], Qishan Fu[a], Hong Gao[a,*]

[a] *Key Laboratory for Photonic and Electronic Bandgap Materials, Ministry of Education, School of Physics and Electronic Engineering, Harbin Normal University, Harbin 150025, P. R. China.*

[b] *Center for Engineering Training and Basic Experimentation, Heilongjiang University of Science and Technology, Harbin 150022, P. R. China.*

## Abstract

Porous network $ZnCo_2O_4$ nanosheets are successfully achieved by a simple hydrothermal process and adjusting the annealing temperature. The electrochemical performance of $ZnCo_2O_4$ nanosheets is significantly influenced by different annealing temperatures. It has been discovered that electrode of $ZnCo_2O_4$ that has be annealed at 200 $^oC$ shows an ultrahigh areal capacitance of 3.19 F $cm^{-2}$ at a current density of 2 mA $cm^{-2}$. An asymmetric supercapacitor device was assembled by $ZnCo_2O_4$ annealed at 200 $^oC$ as positive electrode and activated carbon as negative electrode, which exhibits the energy densities of 50.7 and 37.7 Wh $kg^{-1}$ at power densities of 187.6 and 2950.4 W $kg^{-1}$, respectively.

**Keywords:** $ZnCo_2O_4$; nanosheets; annealing; asymmetric supercapacitor.

Corresponding author E-mail address: gaohong65cn@126.com (H. Gao).