

Accepted Manuscript

Self-assembly of 3D hierarchical MnMoO₄/NiWO₄ microspheres for high-performance supercapacitor

Xuansheng Feng, Ying Huang, Menghua Chen, Xuefang Chen, Chao Li, Suhua Zhou, Xiaogang Gao

PII: S0925-8388(18)32135-2

DOI: [10.1016/j.jallcom.2018.06.025](https://doi.org/10.1016/j.jallcom.2018.06.025)

Reference: JALCOM 46361

To appear in: *Journal of Alloys and Compounds*

Received Date: 9 May 2018

Revised Date: 1 June 2018

Accepted Date: 3 June 2018

Please cite this article as: X. Feng, Y. Huang, M. Chen, X. Chen, C. Li, S. Zhou, X. Gao, Self-assembly of 3D hierarchical MnMoO₄/NiWO₄ microspheres for high-performance supercapacitor, *Journal of Alloys and Compounds* (2018), doi: 10.1016/j.jallcom.2018.06.025.

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.



Self-assembly of 3D hierarchical MnMoO₄/NiWO₄ microspheres for high-performance supercapacitor

Xuansheng Feng, Ying Huang^{*}, Menghua Chen, Xuefang Chen, Chao Li, Suhua Zhou, Xiaogang Gao

Key Laboratory of Space Applied Physics and Chemistry, Ministry of Education, School of Science,

Northwestern Polytechnical University, Xi'an 710072, PR China

ABSTRACT

A simple synthesize method of hybrid transition metal oxides is important for the application of electrodes materials. In this work, we report one-pot hydrothermal method to synthesize 3D hierarchical MnMoO₄/NiWO₄ microspheres. Notably, the 3D hierarchical MnMoO₄/NiWO₄ microspheres electrodes with a MnMoO₄/NiWO₄ molar ratio of 4:3 present outstanding electrochemical performance. The excellent specific capacitance of the hybrid materials is 598 F g⁻¹ at a discharge current density of 1 A g⁻¹ and the capacitance retains 82% of its initial capacitance even after 5000 cycles, which are attributed to the obtained 3D hierarchical MnMoO₄/NiWO₄ microspheres are constituted by self-assembly MnMoO₄ nanoflakes and NiWO₄ nanoparticles and feature with abundant transportation shortcuts for electrolyte ions and excellent electrochemical performance. The results reveal that the 3D hierarchical MnMoO₄/NiWO₄ microspheres have great application prospect for electrochemical energy storage and the quick and facile method provides a new avenue for the preparation of hybrid materials.

Key Words: 3D hierarchical MnMoO₄/NiWO₄ microspheres; One-pot hydrothermal method; Self-assembly; Electrochemical performance

1. Introduction

Over the past few years, tremendous efforts have been made to supercapacitors for their potential applications in different types of electronic systems[1, 2]. Supercapacitors usually include electrical double layer capacitors (EDLCs) and pseudocapacitors due to the difference of charge storage mechanism[3]. Specifically, pseudocapacitors supply standout electrochemical performance because of their fast and strong reversible redox reactions[4].

Nowadays, extensive attentions have been paid to the structural design and processing method of electrode materials which are an important role for the development of

Download English Version:

<https://daneshyari.com/en/article/7990952>

Download Persian Version:

<https://daneshyari.com/article/7990952>

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