

Accepted Manuscript

Nanocrystalline NiS Particles Synthesized by Mechanical Alloying As a Promising Oxygen Evolution Electrocatalyst

Weiji Dai, Ye Pan, Ning Wang, Shikai Wu, Xingzhou Li, Yin-an Zhu, Tao Lu

PII: S0167-577X(18)30158-7
DOI: <https://doi.org/10.1016/j.matlet.2018.01.141>
Reference: MLBLUE 23789

To appear in: *Materials Letters*

Received Date: 28 November 2017
Revised Date: 16 January 2018
Accepted Date: 26 January 2018

Please cite this article as: W. Dai, Y. Pan, N. Wang, S. Wu, X. Li, Y-a. Zhu, T. Lu, Nanocrystalline NiS Particles Synthesized by Mechanical Alloying As a Promising Oxygen Evolution Electrocatalyst, *Materials Letters* (2018), doi: <https://doi.org/10.1016/j.matlet.2018.01.141>

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.



Nanocrystalline NiS Particles Synthesized by Mechanical Alloying As a Promising Oxygen

Evolution Electrocatalyst

Weiji Dai, Ye Pan*, Ning Wang, Shikai Wu, Xingzhou Li, Yin-an Zhu, Tao Lu

Jiangsu Key Laboratory of Advanced Metallic Materials, School of Materials Science and Engineering,

Southeast University, Nanjing, 211189, P.R. China

*Corresponding author. Tel./fax: +86 25 52090681.

E-mail address: panye@seu.edu.cn (Y. Pan).

Abstract: Cost-effective and efficient oxygen evolving electrocatalysts are urgently required for energy conversion technology. In this work, nanocrystalline NiS particles were prepared by a facile one-step mechanical alloying method as a promising oxygen evolution reaction electrocatalyst. The nanocrystalline NiS catalysts exhibited an overpotential of 354 mV at the current density of 10 mA cm^{-2} after 1000 cycles Cyclic voltammetry scan activation in alkaline electrolyte (1 M KOH). The Tafel slope reduced 33% to 116 mV/dec after the activation. The working electrode could maintain its 81.3% catalytic activity after the 10 hours long-term test. The improved OER performance of the nc-NiS catalysts was benefit from the changes on the morphology and composition, which were induced by the CV1000 activation.

Keywords: Nanocrystalline; NiS; Oxygen evolution reaction; Electrocatalyst; Electrical properties;

Functional

Download English Version:

<https://daneshyari.com/en/article/8013978>

Download Persian Version:

<https://daneshyari.com/article/8013978>

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