

Accepted Manuscript

Title: Three Dimensional Nickel Oxides/Nickel Structure by In Situ Electro-oxidation of Nickel Foam as Robust Electrocatalyst for Oxygen Evolution Reaction

Author: Guan-Qun Han Yan-Ru Liu Wen-Hui Hu Bin Dong
Xiao Li Xiao Shang Yong-Ming Chai Yun-Qi Liu
Chen-Guang Liu



PII: S0169-4332(15)02516-7
DOI: <http://dx.doi.org/doi:10.1016/j.apsusc.2015.10.097>
Reference: APSUSC 31578

To appear in: *APSUSC*

Received date: 18-8-2015
Revised date: 13-10-2015
Accepted date: 15-10-2015

Please cite this article as: <doi><http://dx.doi.org/10.1016/j.apsusc.2015.10.097></doi>

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.

**Three Dimensional Nickel Oxides/Nickel Structure
by In Situ Electro-oxidation of Nickel Foam as Robust
Electrocatalyst for Oxygen Evolution Reaction**

Guan-Qun Han ^{a, b}, Yan-Ru Liu ^a, Wen-Hui Hu ^a, Bin Dong ^{*a, b}, Xiao Li ^a,

Xiao Shang ^a, Yong-Ming Chai ^a, Yun-Qi Liu ^a, Chen-Guang Liu ^{*a}

a State Key Laboratory of Heavy Oil Processing, China University of Petroleum (East China),

Qingdao 266580, PR China

b College of Science, China University of Petroleum (East China), Qingdao 266580, PR China

Abstract

Three dimensional (3D) nickel oxide/nickel (NiO_x/Ni) structure has been synthesized through a facile in situ electro-oxidation method. The formation of NiO_x through the electro-oxidation process has been proved by SEM and EDX, with some dense black dots appearing on the surface of Ni foam and the molar ratio of O/Ni increasing, which is nearly 7 times larger than the pure Ni foam. The increase in O content indicates the formatted black particles on the surface of Ni foam are composed of NiO_x. The electrocatalytic property of the obtained 3D NiO_x/Ni structure has been measured and it can be used as a highly active electrocatalyst for oxygen evolution reaction (OER). The overpotential to reach $j=10 \text{ mA cm}^{-2}$ is 0.39 V. And after the long-term I-t measurement, extremely high electrochemical and physical stability are exhibited in the 3D structure, keeping electrochemical activity and

* Corresponding author. Email: dongbin@upc.edu.cn (B. Dong), cgliu@upc.edu.cn (C.-G. Liu)

Tel: +86-532-86981376, Fax: +86-532-86981787

Download English Version:

<https://daneshyari.com/en/article/5357475>

Download Persian Version:

<https://daneshyari.com/article/5357475>

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