

Accepted Manuscript

Porous Two-dimensional Layerd Molybdenum Compounds Coupled with N-doped Carbon Based Electrocatalysts for Hydrogen Evolution Reaction

Zexing Wu, Min Song, Zijin Zhang, Jie Wang, Haitao Wang, Xien Liu

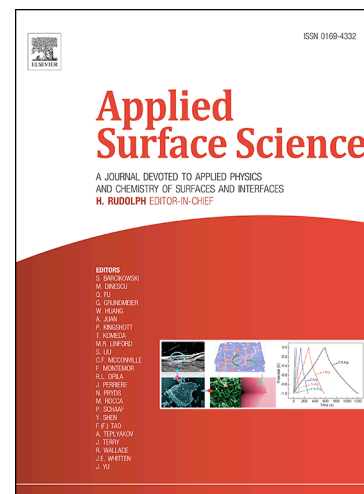
PII: S0169-4332(18)32620-5
DOI: <https://doi.org/10.1016/j.apsusc.2018.09.194>
Reference: APSUSC 40498

To appear in: *Applied Surface Science*

Received Date: 5 August 2018
Revised Date: 16 September 2018
Accepted Date: 23 September 2018

Please cite this article as: Z. Wu, M. Song, Z. Zhang, J. Wang, H. Wang, X. Liu, Porous Two-dimensional Layerd Molybdenum Compounds Coupled with N-doped Carbon Based Electrocatalysts for Hydrogen Evolution Reaction, *Applied Surface Science* (2018), doi: <https://doi.org/10.1016/j.apsusc.2018.09.194>

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.



Porous Two-dimensional Layered Molybdenum Compounds Coupled with N-doped Carbon Based Electrocatalysts for Hydrogen Evolution Reaction

Zexing Wu^a, Min Song^a, Zijin Zhang^a, Jie Wang^b, Haitao Wang^c, Xien Liu^{*a}

- a) State Key Laboratory Base of Eco-chemical Engineering, College of Chemistry and Molecular Engineering, Qingdao University of Science & Technology, Qingdao 266042, P. R. China
- b) School of Chemistry and Pharmaceutical Sciences, Qingdao Agricultural University, Qingdao, 266109, China.
- c) Key Laboratory for Green Chemical Process of Ministry of Education, School of Chemistry and Environmental Engineering, Wuhan Institute of Technology, Xiongchu Avenue, Wuhan, 430073, P. R. China

Abstract

Developing an efficient and inexpensive non-precious electrocatalyst to reduce the overpotential of hydrogen evolution reaction (HER) is of critical importance for the large scale production of hydrogen energy. Herein, a two-dimensional layered molybdenum-based catalyst coupled with N-doped carbon was prepared through a facile and scalable hydrothermal-low temperature pyrolysis strategy. Particularly, the content of carbon source and pyrolysis temperature have an extremely important influence on the composition of the catalyst. Moreover, the relationship between chemical composition and catalytic performance was investigated systematically. Impressively, the optimal electrocatalyst possesses excellent catalytic performance in terms of the low overpotential (121 mV) with a small Tafel slope (54 mV dec^{-1}). More importantly, This work provide an avenue to the future design and preparation of other molybdenum based electrocatalysts.

Key words: Two-dimensional structure; Molybdenum; N-doped Carbon; Electrocatalysts; Hydrogen Evolution Reaction

Introduction

Hydrogen, as a potential green and sustainable alternative to traditional fossil energy,

Download English Version:

<https://daneshyari.com/en/article/11027011>

Download Persian Version:

<https://daneshyari.com/article/11027011>

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