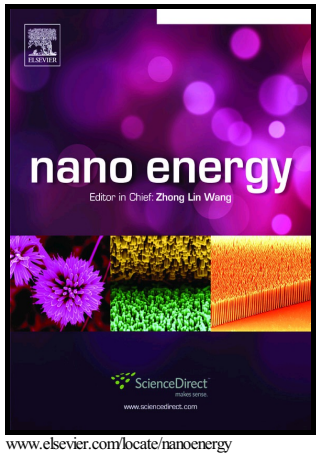
Author's Accepted Manuscript

High-performance oxygen evolution catalyst using two-dimensional ultrathin metal-organic frameworks nanosheets

Guangtong Hai, Xilai Jia, Keyu Zhang, Xin Liu, Zhenyu Wu, Ge Wang



www.elsevier.com/locate/nanoenergy

PII: S2211-2855(17)30763-2
DOI: https://doi.org/10.1016/j.nanoen.2017.11.071
Reference: NANOEN2372

To appear in: *Nano Energy*

Received date: 14 October 2017
Revised date: 26 November 2017
Accepted date: 30 November 2017

Cite this article as: Guangtong Hai, Xilai Jia, Keyu Zhang, Xin Liu, Zhenyu Wu and Ge Wang, High-performance oxygen evolution catalyst using two-dimensional ultrathin metal-organic frameworks nanosheets, *Nano Energy,* https://doi.org/10.1016/j.nanoen.2017.11.071

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 galley proof before it is published in its final citable 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.

ACCEPTED MANUSCRIPT

Nano Energy

Article type: Communication

High-performance oxygen evolution catalyst using two-dimensional ultrathin metal-organic frameworks nanosheets

Guangtong Hai[a], Xilai Jia[a,*], Keyu Zhang[a], Xin Liu[a], Zhenyu Wu[a], and Ge Wang [a,*]

[a] *Beijing Key Laboratory of Function Materials for Molecule & Structure Construction, School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing 100083, PR China.*

Abstract: Synthesis of high-performance electrocatalysts is significant for energy conversions. The oxygen evolution reaction (OER) is a fundamental process in such energy conversions. Here, we first report the synthesis of NiFe-bimetal two-dimensional (2D) ultrathin metal-organic frameworks (MOFs) nanosheets (NiFe-UMNs) with a uniform thickness of ~10 nm, which show excellent catalytic activity for OER in alkaline conditions. The as-prepared NiFe-UMNs can deliver the current density of 10 $mA \cdot cm^{-2}$ at a low overpotential of 260 mV. Moreover, NiFe-UMNs possess by far the lowest Tafel slope of 30 $mV \cdot dec^{-1}$ for OER. The high-performance activity is the result of abundant surface coordinatively unsaturated metal atoms, as well as the addition of Fe that is also crucial to enhance the activity.

Keywords: two-dimensional metal-organic framework, oxygen evolution reaction, ultrathin nanosheet, electrocatalysts.

* Corresponding authors.

Email addresses: jiaxl@ustb.edu.cn (X. Jia), gewang@mater.ustb.edu.cn (G. Wang)

Accepted manuscript

Download English Version:

https://daneshyari.com/en/article/7953022

Download Persian Version:

https://daneshyari.com/article/7953022

Daneshyari.com