

Web of Science

Search

Search Results

My Tools ▾

Search History

Marked List

1 of 723

Ordered Mesoporous Carbon Electrodes for Li-O-2 Batteries

By: Park, JB (Park, Jin-Bum)^[1]; Lee, J (Lee, Jinwoo)^[3]; Yoon, CS (Yoon, Chong Seung)^[2]; Sun, YK (Sun, Yang-Kook)^[1,4]

[View ResearcherID and ORCID](#)

ACS APPLIED MATERIALS & INTERFACES

Volume: 5 Issue: 24 Pages: 13426-13431

DOI: 10.1021/am404336f

Published: DEC 25 2013

[View Journal Impact](#)

Abstract

Ordered mesoporous carbon (OMC) with highly ordered pore channels was applied as an oxygen-side electrode for a Li-O-2 battery. To evaluate the effect of the pore channel size on battery performance, we employed OMCs possessing two different pore sizes (6 and 17 nm). When cycled at a current density of 200 mA g(carbon)⁽⁻¹⁾, the OMC electrodes reduced polarization in the oxygen evolution reaction by 0.1 V compared to those consisting of conventional super P carbon electrode. X-ray diffraction and transmission electron microscopy of the discharged oxygen electrodes provided evidence for the formation of amorphous Li₂O₂, a product of the oxygen reduction reaction, inside the OMC pores rather than on the electrode surface as in the case of the super P electrode. The OMC electrodes were also effective at high current densities (500 mA g(carbon)⁽⁻¹⁾ and 1000 mA g(carbon)⁽⁻¹⁾).

Keywords

Author Keywords: Li-O-2 batteries; ordered mesoporous carbon; Li₂O₂; air electrode

KeyWords Plus: LITHIUM-AIR BATTERIES; ONE-POT SYNTHESIS; ELECTROCHEMICAL PERFORMANCE; CATHODE CATALYSTS; MOLECULAR-SIEVES; GRAPHENE; ELECTROCATALYSTS; NANOCOMPOSITES; CARBON/SILICA; ELECTROLYTES

Author Information

Reprint Address: Sun, YK (reprint author)

+ Hanyang Univ, Dept Energy Engr, Seoul 133791, South Korea.

Addresses:

+ [1] Hanyang Univ, Dept Energy Engr, Seoul 133791, South Korea

+ [2] Hanyang Univ, Dept Mat Sci & Engr, Seoul 133791, South Korea

+ [3] Pohang Univ Sci & Technol POSTECH, Dept Chem Engr, Pohang 790784, Kyungbuk, South Korea

- [4] King Abdulaziz Univ, Fac Sci, Dept Chem, Jeddah, Saudi Arabia

Organization-Enhanced Name(s)

King Abdulaziz University

E-mail Addresses: yksun@hanyang.ac.kr

Funding

Funding Agency	Grant Number
Human Resources Development of the Korea Institute of Energy Technology	

Citation Network

36 Times Cited

32 Cited References

[View Related Records](#)



Create Citation Alert

(data from Web of Science Core Collection)

All Times Cited Counts

38 in All Databases

36 in Web of Science Core Collection

2 in BIOSIS Citation Index

2 in Chinese Science Citation Database

0 in Data Citation Index

0 in Russian Science Citation Index

0 in SciELO Citation Index

Usage Count

Last 180 Days: 7

Since 2013: 93

[Learn more](#)

Most Recent Citation

Kim, Byung Gon. Ordered Mesoporous Titanium Nitride as a Promising Carbon-Free Cathode for Aprotic Lithium-Oxygen Batteries . ACS NANO, FEB 2017.

[View All](#)

This record is from:

Web of Science Core Collection
- Science Citation Index Expanded

Suggest a correction

If you would like to improve the quality of the data in this record, please [suggest a correction](#).

Evaluation and Planning (KETEP) grant	
Korea government Ministry of Knowledge Economy	20124010203310
National Research Foundation of Korea (NRF)	
Korea government (MEST)	2009-0092780

[View funding text](#)

Publisher

AMER CHEMICAL SOC, 1155 16TH ST, NW, WASHINGTON, DC 20036 USA

Categories / Classification

Research Areas: Science & Technology - Other Topics; Materials Science

Web of Science Categories: Nanoscience & Nanotechnology; Materials Science, Multidisciplinary

Document Information

Document Type: Article

Language: English

Accession Number: WOS:000329137400085

PubMed ID: 24236914

ISSN: 1944-8244

Other Information

IDS Number: 281YR

Cited References in Web of Science Core Collection: **32**

Times Cited in Web of Science Core Collection: **36**