

Accepted Manuscript

Short Communication

Palladium Nanoparticles Supported on Nitrogen-Doped Carbon Spheres as Enhanced Catalyst for Ethanol Electro-oxidation

Ying Li, Li Yao, Lin-Qun Zhang, An-Ran Liu, Yuan-Jian Zhang, Song-Qin Liu

PII: S1572-6657(14)00314-2

DOI: <http://dx.doi.org/10.1016/j.jelechem.2014.07.028>

Reference: JEAC 1758

To appear in: *Journal of Electroanalytical Chemistry*

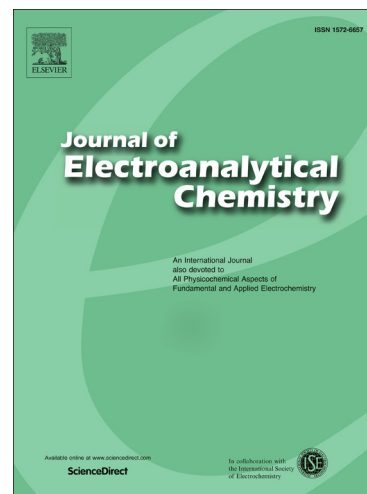
Received Date: 3 July 2014

Revised Date: 22 July 2014

Accepted Date: 24 July 2014

Please cite this article as: Y. Li, L. Yao, L-Q. Zhang, A-R. Liu, Y-J. Zhang, S-Q. Liu, Palladium Nanoparticles Supported on Nitrogen-Doped Carbon Spheres as Enhanced Catalyst for Ethanol Electro-oxidation, *Journal of Electroanalytical Chemistry* (2014), doi: <http://dx.doi.org/10.1016/j.jelechem.2014.07.028>

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.



Palladium Nanoparticles Supported on Nitrogen-Doped Carbon Spheres as Enhanced Catalyst for Ethanol Electro-oxidation

Ying Li, Li Yao, Lin-Qun Zhang, An-Ran Liu, Yuan-Jian Zhang and Song-Qin Liu*

School of Chemistry and Chemical Engineering, Southeast University, Nanjing 210096, China.

*Corresponding Author, Fax: +86-25-52090618; Tel: +86-25-52090613; E-mail: liusq@seu.edu.cn (S.-Q. Liu).

Abstract

In this paper, nitrogen-doped carbon spheres (NCSs) were prepared as a new catalyst support for ethanol electro-oxidation through carbonization of poly(*o*-phenylenediamine) spheres. The NCS-supported palladium nanocatalyst exhibited higher current density and better stable life for ethanol electro-oxidation in alkaline media than palladium catalyst supported on activated carbon and nitrogen-doped carbon nanotubes. The catalytic current of the palladium/NCS composite was even comparable to commercial platinum catalyst (40 wt % Pt loading).

Keywords: Palladium nanoparticle; Nitrogen-doped carbon sphere; Ethanol electro-oxidation

1. Introduction

Recently, various nitrogen-doped carbon materials have received considerable attention for supporting electrocatalyst nanoparticles in highly efficient fuel cells [1-6]. Comparing with conventional carbon supports, nitrogen-doped carbon materials can increase the electric conductivities and surface area, enhance the affinity between the catalysts and supports through electrostatic and coordinative action, avoid the migration and aggregation of nanocatalysts, and improve the durability of catalysts. But, nitrogen-doped carbon materials usually have been synthesized under harsh

Download English Version:

<https://daneshyari.com/en/article/6662546>

Download Persian Version:

<https://daneshyari.com/article/6662546>

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