

Accepted Manuscript

Enhanced capacitive deionization by nitrogen-doped porous carbon nanofiber aerogel derived from bacterial-cellulose

Guang Zhu, Hongyan Wang, Haifeng Xu, Li Zhang



PII: S1572-6657(18)30370-9
DOI: [doi:10.1016/j.jelechem.2018.05.024](https://doi.org/10.1016/j.jelechem.2018.05.024)
Reference: JEAC 4080

To appear in: *Journal of Electroanalytical Chemistry*

Received date: 14 March 2018
Revised date: 14 May 2018
Accepted date: 16 May 2018

Please cite this article as: Guang Zhu, Hongyan Wang, Haifeng Xu, Li Zhang , Enhanced capacitive deionization by nitrogen-doped porous carbon nanofiber aerogel derived from bacterial-cellulose. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. *Jeac*(2017), doi:[10.1016/j.jelechem.2018.05.024](https://doi.org/10.1016/j.jelechem.2018.05.024)

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.

Enhanced capacitive deionization by nitrogen-doped porous carbon nanofiber aerogel derived from bacterial-cellulose

Guang Zhu*, Hongyan Wang, Haifeng Xu and Li Zhang,

Key Laboratory of Spin Electron and Nanomaterials of Anhui Higher Education Institutes, Suzhou University, Suzhou 234000, P. R. China

Abstract

In this work, nitrogen-doped carbon nanofiber aerogels (N-CNFA) were successfully prepared by freeze-drying and thermal treatment of bacterial cellulose in NH_3 atmosphere. Scanning electron microscopy, transmission electron microscopy, X-ray photoelectron spectroscopy were used to characterize their morphology and structure. Nitrogen adsorption-desorption isotherms show that nitrogen doping can improve the specific surface area of CNFA obviously. The electrochemical measurements show that N-CNFA possesses higher specific capacitance and lower charge transfer resistance than undoped CNFA. The electrosorption capacity of N-CNFA can reach up to 17.29 mg g^{-1} in 1000 mg L^{-1} NaCl solution, much higher than that of undoped CNFA (12.81 mg g^{-1}). These results indicate that N-CNFA should be a promising candidate for CDI application.

Keywords: carbon nanofibers aerogels; capacitive deionization; nitrogen doping; desalination

* Corresponding author. Tel.: +86 557 2871680; E-mail address: guangzhu@ahsztc.edu.cn

Download English Version:

<https://daneshyari.com/en/article/6661587>

Download Persian Version:

<https://daneshyari.com/article/6661587>

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