

Accepted Manuscript

Simultaneous perchlorate and nitrate removal coupled with electricity generation in autotrophic denitrifying biocathode microbial fuel cell

Chen Jiang, Qi Yang, Dongbo Wang, Yu Zhong, Fei Chen, Xin Li, Guangming Zeng, Xiaoming Li, Meirong Shang

PII: S1385-8947(16)31364-X
DOI: <http://dx.doi.org/10.1016/j.cej.2016.09.121>
Reference: CEJ 15831

To appear in: *Chemical Engineering Journal*

Received Date: 1 August 2016
Revised Date: 23 September 2016
Accepted Date: 24 September 2016

Please cite this article as: C. Jiang, Q. Yang, D. Wang, Y. Zhong, F. Chen, X. Li, G. Zeng, X. Li, M. Shang, Simultaneous perchlorate and nitrate removal coupled with electricity generation in autotrophic denitrifying biocathode microbial fuel cell, *Chemical Engineering Journal* (2016), doi: <http://dx.doi.org/10.1016/j.cej.2016.09.121>

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.



Simultaneous perchlorate and nitrate removal coupled with
electricity generation in autotrophic denitrifying biocathode
microbial fuel cell

Chen Jiang^{a, b}, Qi Yang^{a, b, *}, Dongbo Wang^{a, b, *}, Yu Zhong^{a, b}, Fei Chen^{a, b}, Xin Li^{a, b},
Guangming Zeng^{a, b}, Xiaoming Li^{a, b}, Meirong Shang^{a, b}

^a College of Environmental Science and Engineering, Hunan University, Changsha
410082, P.R. China

^b Key Laboratory of Environmental Biology and Pollution Control (Hunan University),
Ministry of Education, Changsha 410082, P.R. China

Author information

First author: E-mail: jiangchen1@hnu.edu.cn (Chen Jiang),

*Corresponding author: E-mail: Yangqi@hnu.edu.cn (Qi Yang),
w.dongbo@yahoo.com (Dongbo Wang)

Abstract

In this study, an autotrophic denitrifying biocathode was investigated to couple the reduction of nitrate or/and perchlorate with electricity generation. Results showed that when the current density in microbial fuel cell (MFC) with sole perchlorate and sole nitrate as the substrate stabilized at 3.00 and 1.52 mA/m³ respectively, the perchlorate and nitrate removal efficiency achieved 53.14% and 87.05%. As influent molar ratio of NO₃⁻/ClO₄⁻ was 1:1, the stable current density reached the a peak value (3.10 A/m³) accompanied by the maximum integral mixed substrate removal (40.97% for ClO₄⁻

Download English Version:

<https://daneshyari.com/en/article/4763725>

Download Persian Version:

<https://daneshyari.com/article/4763725>

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