

## Accepted Manuscript

Enhanced low C/N nitrogen removal in an innovative microbial fuel cell (MFC) with electroconductivity aerated membrane (EAM) as biocathode

Yun Wu, Qing Yang, Qingnan Zeng, Huu Hao Ngo, Wenshan Guo, Hongwei Zhang

PII: S1385-8947(16)31728-4  
DOI: <http://dx.doi.org/10.1016/j.cej.2016.11.141>  
Reference: CEJ 16142

To appear in: *Chemical Engineering Journal*

Received Date: 12 October 2016  
Revised Date: 23 November 2016  
Accepted Date: 24 November 2016

Please cite this article as: Y. Wu, Q. Yang, Q. Zeng, H. Hao Ngo, W. Guo, H. Zhang, Enhanced low C/N nitrogen removal in an innovative microbial fuel cell (MFC) with electroconductivity aerated membrane (EAM) as biocathode, *Chemical Engineering Journal* (2016), doi: <http://dx.doi.org/10.1016/j.cej.2016.11.141>

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 low C/N nitrogen removal in an innovative microbial fuel cell (MFC) with electroconductivity aerated membrane (EAM) as biocathode

Yun Wu<sup>a\*, b, c</sup>, Qing Yang<sup>b</sup>, Qingnan Zeng, Huu Hao Ngo<sup>c\*, a</sup>, Wenshan Guo<sup>c</sup>, Hongwei Zhang<sup>a, b</sup>

<sup>a</sup> State Key Laboratory of Separation Membranes and Membrane Processes, Tianjin Polytechnic University, Tianjin 300387, China

<sup>b</sup> School of Environmental and Chemical Engineering, Tianjin Polytechnic University, Tianjin 300387, China

<sup>c</sup> Centre for Technology in Water and Wastewater, School of Civil and Environmental Engineering, University of Technology Sydney, Broadway, NSW 2007, Australia

\*Corresponding authors:

Email: wucloud@163.com; Tel: +86-13820489466

Email: ngohuuhaol21@gmail.com; Tel: +61-295142745

.

## Abstract

A novel microbial fuel cell (MFC) was developed to enhance simultaneous nitrification and denitrification (SND) by employing electrons from the anode. The cathode chamber of the reactor consisted of a membrane aerated biofilm reactor (MABR) which was made of an electroconductivity aerated membrane. The maximum power density of  $4.20 \pm 0.12 \text{ W m}^{-3}$  was obtained at a current density of  $4.10 \pm 0.11 \text{ A m}^{-2}$  (external resistance =  $10 \text{ }\Omega$ ). Compared with an open-circuit system, the removal rates of  $\text{NH}_4^+\text{-N}$  and TN were improved by  $9.48 \pm 0.33\%$  and  $19.80 \pm 0.84\%$ ,

Download English Version:

<https://daneshyari.com/en/article/4763325>

Download Persian Version:

<https://daneshyari.com/article/4763325>

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