

## Accepted Manuscript

Simultaneous nutrient and carbon removal and electricity generation in self-buffered biocathode microbial fuel cell for high-salinity mustard tuber wastewater treatment

Linfang Zhang, Guokai Fu, Zhi Zhang

PII: S0960-8524(18)31426-3

DOI: <https://doi.org/10.1016/j.biortech.2018.10.012>

Reference: BITE 20576

To appear in: *Bioresource Technology*

Received Date: 28 August 2018

Revised Date: 1 October 2018

Accepted Date: 4 October 2018

Please cite this article as: Zhang, L., Fu, G., Zhang, Z., Simultaneous nutrient and carbon removal and electricity generation in self-buffered biocathode microbial fuel cell for high-salinity mustard tuber wastewater treatment, *Bioresource Technology* (2018), doi: <https://doi.org/10.1016/j.biortech.2018.10.012>

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 nutrient and carbon removal and electricity generation  
in self-buffered biocathode microbial fuel cell for high-salinity  
mustard tuber wastewater treatment**

Linfang Zhang <sup>a, b</sup>, Guokai Fu<sup>a, b\*</sup>, Zhi Zhang <sup>a, b</sup>

<sup>a</sup> *Faculty of Urban Construction and Environmental Engineering, Chongqing University, Chongqing 400044, China*

<sup>b</sup> *Key Laboratory of Three Gorges Reservoir Region's Eco-Environment, Ministry of Education, Chongqing University, Chongqing 400044, China*

\*Corresponding author.

Tel.: +86 2365120811. E-mail address: fuguokai@cqu.edu.cn (G. Fu).

**Abstract:** Mustard tuber wastewater (MTWW) was used as both anolyte and catholyte in biocathode microbial fuel cell (BMFC). The results showed simultaneous nutrient and carbon removal and electricity generation were realized in BMFC. Excellent Chemical Oxygen Demand (COD) removal occurred in both anode (> 90%) and cathode (> 91%). Concerning nutrient removal, it was mainly removed in cathode. The maximum total phosphorus (TP) removal could reach  $80.8 \pm 1.0\%$  by biological action. Simultaneous nitrification and denitrification (SND) was realized in cathode. The bacteria involved in nitrification were *Nitrosomonas* and *SM1A02*. *Oceanimonas* and *Saprospiraceae\_uncultured* (anaerobic denitrifier), *Thauera*, *Stenotrophomonas*, *Flavobacterium* and *Marinobacter* (aerobic denitrifier), and *Thioalkalispira* (autotrophic denitrifier) were responsible for denitrification. Considering slight variation of anode and cathode pH, it could be concluded that MTWW was adequately self-buffered when used as electrolyte. Furthermore,

Download English Version:

<https://daneshyari.com/en/article/11012232>

Download Persian Version:

<https://daneshyari.com/article/11012232>

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