

Accepted Manuscript

Assessing potential cathodes for resource recovery through wastewater treatment and salinity removal using non-buffered microbial electrochemical systems

G.N. Nikhil, Dileep Kumar Yeruva, S. Venkata Mohan, Y.V. Swamy

PII: S0960-8524(16)30534-X

DOI: <http://dx.doi.org/10.1016/j.biortech.2016.04.047>

Reference: BITE 16406

To appear in: *Bioresource Technology*

Received Date: 4 February 2016

Revised Date: 9 April 2016

Accepted Date: 11 April 2016

Please cite this article as: Nikhil, G.N., Yeruva, D.K., Venkata Mohan, S., Swamy, Y.V., Assessing potential cathodes for resource recovery through wastewater treatment and salinity removal using non-buffered microbial electrochemical systems, *Bioresource Technology* (2016), doi: <http://dx.doi.org/10.1016/j.biortech.2016.04.047>

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.



Special Issue: Waste Biorefinery

Assessing potential cathodes for resource recovery through wastewater treatment and salinity removal using non-buffered microbial electrochemical systems

G.N. Nikhil¹, Dileep Kumar Yeruva, S. Venkata Mohan, Y.V. Swamy^{1*}

Bioengineering and Environmental Sciences (BEES)

CSIR-Indian Institute of Chemical Technology (CSIR-IICT), Hyderabad 500 007, India

¹Academy of Scientific and Innovative Research (AcSIR), New Delhi, India

*E-mail: vmohan_s@yahoo.com; Tel: 0091-40-27191765

Abstract

The present study evaluates relative functioning of Microbial Electrochemical Systems (MES) for simultaneous wastewater treatment, desalination and resource recovery. Two MES were designed having abiotic cathode (MES-A) and biocathode (MES-B) which were investigated with synthetic feed and saline water as proxy of typical real-field wastewater. Comparative anodic and cathodic efficiencies revealed a distinct disparity in both the MES when operated in open circuit (OC) and closed circuit (CC). The maximum open circuit voltage (OCV) read in MES-A and MES-B was about 700 mV and 600 mV, respectively. Salinity and organic carbon removal efficiencies were noticed high during CC operation as 72% and 55% in MES-A and 60% and 63% in MES-B. These discrete observations evidenced ascribe to the influence of microbial electrochemical induced ion-migration over cathodic reduction reactions (CRR).

Keywords: bioelectrofermentation; biofilms; biocathode; external circuitry; waste

Download English Version:

<https://daneshyari.com/en/article/7070913>

Download Persian Version:

<https://daneshyari.com/article/7070913>

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