

Accepted Manuscript

Review

Microbial fuel cells for azo dye treatment with electricity generation: A Review

Komal Solanki, Sindhu Subramanian, Suddhasatwa Basu

PII: S0960-8524(12)01921-9

DOI: <http://dx.doi.org/10.1016/j.biortech.2012.12.063>

Reference: BITE 11033

To appear in: *Bioresource Technology*

Received Date: 28 May 2011

Revised Date: 9 December 2012

Accepted Date: 10 December 2012

Please cite this article as: Solanki, K., Subramanian, S., Basu, S., Microbial fuel cells for azo dye treatment with electricity generation: A Review, *Bioresource Technology* (2012), doi: <http://dx.doi.org/10.1016/j.biortech.2012.12.063>

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.



Microbial fuel cells for azo dye treatment with electricity generation: A Review

Komal Solanki¹, Sindhu Subramanian² and Suddhasatwa Basu^{1*}

¹Department of Chemical Engineering, Indian Institute of Technology Delhi, New Delhi 110016

²Department of Chemical Engineering and Materials Science, Amrita Vishwa Vidyapeetham, Coimbatore, India

Abstract

A microbial fuel cell (MFC) has great potential for treating wastewater containing azo dyes for decolourization, and simultaneous production of electricity with the help of microorganisms as biocatalysts. The concept of MFC has been already well established for the production of electricity; however, not much work has been published regarding dye decolourization with simultaneous electricity generation using MFCs. This paper reviews the performance limitations, future prospects, and improvements in technology in terms of commercial viability of azo dye decolourization with electricity generation in MFC. The major limitation identified is the high cost of cathode catalyst. Therefore, there is need of developing inexpensive cathode catalysts. Biocathode is one such option. Moreover, enhanced performance can be obtained by photo-assisted electrochemical process like rutile coated cathode.

Keywords: Microbial fuel cells; Azo dye; Decolourization; Electricity generation;

* Corresponding author e-mail address: sbasu@chemical.iitd.ac.in; Tel.: +91 11 26591035; fax: +91 11 26581120.

Article Outline

1. Introduction
2. Microbes used in Microbial Fuel Cells
3. MFC configuration and operation
4. Cell performance
 - 4.1 Calculation
 - 4.2 Electrochemical Analysis
5. Effect of operational parameters
 - 5.1 Effect of concentration of dye
 - 5.2 Effect of pH
 - 5.3 Effect of dye structure

Download English Version:

<https://daneshyari.com/en/article/7084349>

Download Persian Version:

<https://daneshyari.com/article/7084349>

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