Accepted Manuscript

Feasible use of microbial fuel cells for pollution treatment

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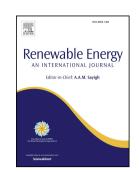
PII: S0960-1481(17)30079-4

DOI: 10.1016/j.renene.2017.02.001

Reference: RENE 8508

To appear in: Renewable Energy

Received Date: 30 December 2016
Revised Date: 28 January 2017
Accepted Date: 1 February 2017



Please cite this article as: Hu J, Zhang Q, Lee D-J, Ngo HH, Feasible use of microbial fuel cells for pollution treatment, *Renewable Energy* (2017), doi: 10.1016/j.renene.2017.02.001.

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ACCEPTED MANUSCRIPT

1	Feasible Use of Microbial Fuel Cells for Pollution Treatment
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16	
17	Abstract: The microbial fuel cells (MFC) can directly transform chemical energy in
18	feed substance to electricity by anodic aspiration pathways. This mini review provides
19	an order-of-magnitude argument that MFC has much lower catalyst density at
20	electrode surface and much higher diffusional resistance for substrates than the
21	chemical fuel cell, the former should not be used as an energy generation unit; rather,
22	it should be applied in low power density level applications such as biofilm
23	wastewater treatment. The literature studies using MFC for pollution treatment are
24	discussed.
25	Keywords: microbial fuel cell; environmental applications; review; technical obstacle
26	
27	1. Introduction
28	The proton exchange membrane (PEM) fuel cells are used to catalytically
29	oxidize hydrogen gas at anode surface and to catalytically reduce oxygen to form
30	water at cathode surface, with the produced excess electrons and protons to be
31	transferred by external circuit and by internal diffusional space across the PEM,
32	respectively [1]. The PEM fuel cells are a power unit with high conversion efficiency
33	and cleanness [2,3]. The microbial fuel cell (MFC) is a device mimicking the

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