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Feasible Use of Microbial Fuel Cells for Pollution Treatment

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Abstract: The microbial fuel cells (MFC) can directly transform chemical energy in feed substance to electricity by anodic aspiration pathways. This mini review provides an order-of-magnitude argument that MFC has much lower catalyst density at electrode surface and much higher diffusional resistance for substrates than the chemical fuel cell, the former should not be used as an energy generation unit; rather, it should be applied in low power density level applications such as biofilm wastewater treatment. The literature studies using MFC for pollution treatment are discussed.

Keywords: microbial fuel cell; environmental applications; review; technical obstacle

1. Introduction

The proton exchange membrane (PEM) fuel cells are used to catalytically oxidize hydrogen gas at anode surface and to catalytically reduce oxygen to form water at cathode surface, with the produced excess electrons and protons to be transferred by external circuit and by internal diffusional space across the PEM, respectively [1]. The PEM fuel cells are a power unit with high conversion efficiency and cleanness [2,3]. The microbial fuel cell (MFC) is a device mimicking the

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