Electricity generation in a microbial fuel cell using Geobacter Sulfurreducen ATCC 51573

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Microbial fuel cells (MFC) can convert cheap organic matter, such as organic acid, sugar, and even organic waste, into electricity. Most of MFCs are consisting of an anode, a cathode, and proton exchange membrane (PEM), which is similar to a chemical fuel cell system. Recently, to develop a cost-effective system, new technologies have been focusing on eliminating a PEM, which is the highest cost of MFC. In this study, we studied electricity production both two chambers MFC system using Nafion membrane and single-chamber air-cathode MFC system exposed cathode electrode in air with acetate as electron donor at the fed-batch condition. Geobacter Sulfurreducen immobilized on anode electrode was used as biocatalyst. Power density output was 14mW/m2 of two chambers MFC in 22 hours and 55mW/m2 of single-chamber air-cathode in 10hours. We also have studied effective of temperature from 20 to 40oC and external resistor from 0KΩ to 6KΩ to obtain optimal operation condition