

عنوان مقاله:

Performance Analysis of a Microbial Fuel Cell Using Different Substrate Materials for Different loads

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خلاصه مقاله:

This research paper analyses the current density and power density of a dual chamber microbial fuel cell using different substrate materials for different resistive loads. Sucrose, sugar and starch were treated as substrate and potassium ferricyanide was used as electron acceptor. The separation of the cathode and anode cell is provided by proton exchange membrane (PEM) in most of the microbial fuel cell (MFC). The most popular proton exchange membranes are nafion, hyflon, zirfon, ultrex CMI-7000 etc. But all of them are not available to use in this part of the world. As an alternate, salt bridge was used in this study as a PEM which is receptive to other ions & chemicals. Different organic materials like sucrose, glucose, starch can be used as substrate as those are available in organic wastage. As the container of bacteria, the sludge of drain of Dhaka was utilized. The voltage and current were measured across 9.81 kΩ and 5.91 kΩ resistors. 716.32 mV was measured as highest voltage across 9.81 kΩ resistor while 4.65 mA/m² and 3.09 mW/m² were recorded as maximum current density and power density respectively across 5.91 kΩ resistor for sucrose as substrate. The anode chamber was maintained in anaerobic condition. The temperature during these experiments was (22±2)^o C.

کلمات کلیدی:

Microbial fuel cell (MFC), Saltbridge, Current Density, Power Density

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