

Green energy Production with the Sediment Microbial Fuel Cell

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ABSTRACT

Microbial fuel cells (MFCs) are considered as one of the main sources of the renewable energy these days. Beside this, the novel kind of electrodes were always on the top concern in the production of green energy from microbial fuel cells. Different type of electrodes were used in many studies and along with this, other factors are also affecting the performance of MFCs such as mediums, microbial colonies and many more. In this study we had used soil as a medium and aimed to show the power production of designed sediment microbial fuel cell (SMFC) with two different types of electrodes designed in laboratory systems. Sediment microbial fuel cells (SMFCs) turned many eyes into their effective application in power generation. SMFC-1 was installed with Stainless steel electrode while SMFC-2 was installed with Stainless steel coated with coal powder. According to electrochemical analysis, SMFC-2 provided the highest voltage with 830 mV value, and the highest power production with 3129.1 mW. According to X-ray diffraction (XRD) and Fourier transform infrared spectroscopy (FT-IR) analysis showed that coal powder intrenched properly with stainless steel anode, and the chemical composition of this electrode were similar with coal and stainless. As a result, we succeed in establishing the coal on stainless steel and obtained expected result.

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