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Electricity generation from septic waste water using septic tank as microbial fuel cell

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The use of microbial fuel cell (MFC) for electricity generation from septic waste water was carried out for 12 weeks retention period. In this study, the microbial fuel cells were designed and loaded with a 1000 Ω external load (resistor). Electrical voltage, current, power output was measured on weekly basis. Current density and power density were calculated. Wastewater qualities such as Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Dissolved Solids (TDS) and pH of the raw wastewater were determined in the laboratory on weekly basis. pH values were constant (8.2) while the BOD, COD and TSS decreased geometrically. The maximum voltage reading of 3.029V was obtained on the 6th week but gradually decreased due to the formation of biofilm and reduction of substrate (food) in the cell. The linear correlation between voltage and the other parameters (current, current density and power density) have R^2 values of 0.9301, 0.9303 and 0.6274 respectively. The MFC design provides a solution for power generation from wastewater in homes. A single multistage MFC can produce 3.029V of electricity; which implies that four MFCs connected in parallel can produce up to 10.5V of electricity.

Biography

Ihesinachi A. Kalagbor obtained a Ph.D degree in Analytical Chemistry from University of Port-Harcourt, Rivers State Nigeria in 2006. She is a Chief lecturer and Director, Research and Development Centre, Ken Saro-Wiwa Polytechnic Bori. She has carried out a lot of research on heavy metals in water, soil, fruits, vegetables and crops. She is involved with a team of researchers in her institution working on a pilot scheme for the generation of electricity using waste organic materials. She has published 26 papers in reputed journals and four more to be published this year.

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