

Performance of air-cathode microbial fuel cell with wood charcoal as electrodes

ABSTRACT

A cheap and locally available wood charcoal was used as the main electrode component of an air cathode MFC. The air cathode was built with fine charcoal powder and cement plaster as binder; while anode is a packed bed of charcoal granules. Mangrove estuary brackish water was inoculated in the anodic chamber as the fuel and source of exoelectrogens. The constructed fuel cell was monitored by measuring the potential. The MFC generated a stable power density at 33mW/m² (0.5V) under load 200 Ω after 72 hours operation. An open circuit voltage (OCV) of 0.7mV was obtained after 15 hours operating under open circuit. The result of power generation by the constructed fuel cell indicating that wood charcoal was able to be used as electrode in MFC and brackish water contained potential exoelectrogens. Further investigation and modification is required to increase the performance of the fuel cell.

Keyword: Air-cathode; Brackish water; MFC; Wood charcoal