ICES 2024

TITLE OF PROJECT: **SIMULTANEOUS PROCESS OF BIO ENERGY HARVEST AND EFFLUENT TREATMENT USING MICROBIAL FUEL CELL**

NAME OF ALL AUTHORS: *TYLER HUGGINS , ARASH ADHAMI , PIMRAPA CHAIJAK*

NAME OF YOUR MENTOR: Dr. M. NAVEEN KUMAR

NAME OF YOUR COLLEGE: SRM EASWARI ENGINEERING COLLEGE

ABSTRACT (150-300 words):
Refer Website for Guidelines
Microbial fuel cell (MFC) has exhibited great potential in sustainability of environment by converting organic waste into electricity thereby providing solution to energy scarcity, environmental pollution and waste water management. MFC is one of the better technological developments for simultaneous energy generation and waste degradation. The main elements of MFC are electrode material and its performance in improving biofilm formation in anode. Carbon based electrode derived from waste are used as electrode due to its conductivity, durability and low cost. In this study, the use of biochar derived from Palm fruit seed (PFS) is used as anode electrode material in Microbial Fuel Cell (MFC) to study bio-energy generation and treating effluent and the electrochemical performances and microbial activity within the MFC using biochar of PFS as anode. We investigate the chemical properties of the effluent for better the design of anode. We examine the carbon content of PFS due to its necessity for microbial reaction. Initially, PFS is sun-dried to rid of moisture content then the shell of PFS is extracted and cut into small pieces. The material is collected and carbonised using Muffle furnace at a high temperature of 500 °C at a rate of 10 °C min rise for an hour. The biochar is cooled down at room temperature. The anode is molded in circular form as to optimize microbial activity through its large surface area. Results indicate PFS biochars has potential as sustainable and cost effective anode material, paving way on using agricultural waste-derived biochars for energy generation and efficient treatment of fishery effluent by using MFC.

KEYWORDS: BIOENERGY , WASTE WATER ,BIOMASS , MFC(microbial fuel cell)

CATEGORY: ENVIRONMENTAL ENGINEERING