



**International Conference on Innovations in Science,  
Engineering, Management & Humanities  
(ICISEMH – 2022)  
24<sup>TH</sup> April, 2022, Hyderabad, Telangana, India**

CERTIFICATE NO : ICISEMH /2022/ C0422402

**MICROBIAL FUEL CELLS (MFCS) APPLICATIONS IN  
BIOREMEDIATION**

**JYOTI RAGHAV, DR. HARMANPREET MEEHNIAN**

**M. Tech in Biotechnology,  
Noida Institute of Engineering and Technology, Gr. Noida, U.P**

**ABSTRACT**

Environmental contamination and the diminishing supply of fossil fuels have resulted in a constant need for research and development of renewable energy sources that are more environmentally friendly. As one of the alternative energy sources, Microbial Fuel Cells (MFCs) use microorganisms as catalysts to transform chemical energy into electrical energy. It is the use of organic wastes (food, plant, animal, and human wastes) as an energy source that is the main benefit of MFCs.

Electrochemical Impedance Spectroscopy (EIS) was used to make material selections for MFC manufacturing. The influence of over potentials on MFC performance was explored using EIS analysis. Activated charcoal has a high biofilm development rate, although graphite has higher electrode kinetics. Because of this, graphite-based MFCs outperform activated charcoal-based MFCs in terms of performance. Bioelectricity production in MFCs may be analyzed using EIS studies that investigate the impact of anodic capacitance and individual component resistances. The anodic capacitance owing to mixed biofilm development to play an anode was shown to play a significant role in the power production of MFCs, as predicted by the study. 16srRNA study indicated the 99.5% conversion of Cr(VI) to Cr(III) by *Geobacter metallireducens* present in the anaerobic anode mixed culture bacterium.

**Keywords: 2-Chambered MFCs, Removal of Chromium, Oxidation of Chromium.**