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**Electrochemical polymerization of polyaniline and polypyrrole modified carbon cloth anode for generation of bio-energy and waste water treatment****Praveena Mishra**

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Polyaniline/Polypyrrole/Carbon Cloth (PANI/PPy/CC) composite-supported Multi Walled Carbon Nanotubes-Manganese dioxide (MWCNT-MnO<sub>2</sub>) (PANI/PPy/MWCNT-MnO<sub>2</sub>/CC) has been investigated as anode with improved power production and bio-compatibility for waste water treatment and bio-energy production for Microbial Fuel Cells (MFCs). The modification of CC anode is accomplished by electrochemical deposition of aniline and pyrrole with multi walled carbon nanotubes functionalized with MnO<sub>2</sub>. CC offers conducting porous surface for the development of the macroporous polymer composite network. Biocompatibility of modified electrodes has been evaluated and compared with unmodified carbon cloth electrode in a microbial fuel cell setup as anodes. A mediatorless dual-chamber MFC reactor filled with sewage waste water as substrate has been used in the comparative study of current and power production using different anodes. During MFC experiment with the PANI/PPy/MWCNTs-MnO<sub>2</sub> anode achieved a maximum power density of 2768.37 mW m<sup>-2</sup>, which is higher than the corresponding values of the MFC with other anodes. The SEM images taken after 45 days of the experiment confirm biocompatibility of modified anodes. Evidence from the electrochemical tests confirmed that the electrochemical activity of the modified anode is enhanced. Stability and charge transfer is facilitated by Polyaniline (PANI), Polypyrrole (PPy) and MWCNT modification. All the illustrated results indicate that the PANI and PPy modification of the carbon cloth surface is an efficient approach for enhancement of the performance of MFCs, while the chemical composition, size and shape of the nanocomposite determine the extent of the enhancement.

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