

CHARACTERIZATION OF BANANA PITH AS ELECTROLYTIC MEDIA OF A BIO-BATTERY USING ELECTROCHEMICAL TECHNIQUES

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A bio-battery made from the pith of ambun banana variety has been used to characterize its material using Cyclic Voltammetry (CV) and Impedance Spectroscopy (IS) to have an expanded knowledge about reversible behaviour of its electrolyte apart from its ionic and electronic conductivity. The current flow through the banana pith sandwiched between two plates of Pt plates connected to a constant voltage of 2 V dropped in the first 15 minutes and remained almost constant afterwards for four hours indicating an initial polarization of the media and mainly electronic conductivity at

the rest of the period with a visible browning of separate layers near the electrodes. The IS curves supported the particular behaviour by indicating a drastic increase in the charge transfer resistance into 120 k Ω . The obtained CV curves under different scan rates provided sufficient evidence to support possible electrochemical reversibility of the electrolyte with an average redox potential (E_0) of 0.58 V and a diffusion coefficient of 1.01.

Keywords: Bio-battery, Cyclic voltammetry, Impedance spectroscopy