E1-08 : AC IMPEDANCE STUDIES OF ELECTROCHEMICALLY GROWN POLYANILINE FILMS

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Aniline was polymerized on platinum surface (Disc electrodes,1 cm diameter) in aqueous solutions in the presence of a background electrolyte ($NaClO_4$) at potentials above 0.7V with respect to a Saturated Calomel Electrode.

Current voltage (I-V) measurements were carried out for solutions of 0.lM $NaClO_4$, O.lM NaCl, O.lM Na_2SO_4 and (O.lM NaCl + O.lM Na_2SO_4) solutions. I-V data obtained in these experiments reflect the conductivity of polyaniline at various applied voltages. The sharp steep decline of current in the reverse bias of potentials from positive side to negative side indicates the loss of conductivity whereas similar type of current rise in the forward scan shows the change in morphology of the polymer from non-conducting form to a conducting form. The magnitude of the conductivity depends strictly on the pH of the medium.

Mott-Schottky plots (C^{-2} vs, V wrt. SCE) at lKHz of the samples indicates n-type behaviour.

AC impedance measurements were carried out and the data obtained agree well with such measurements on other conducting polymer materials. This data has been

analyzed using "Transmission Line" model and the analysis reveals structural aspects of polyaniline.