

ABSTRACT.

In this paper we present results obtained for energy storage units developed using polyaniline and polythiophene modified electrodes. The voltage potential profiles for recharge/discharge are either linear or exponential. Nucleation over-potential has been observed in some profiles where there is a phase transition. It is observed that hydrocarbon gel: bentonite electrolyte mixtures yielded relatively high initial voltages and that, this voltage also depended on the hydrocarbon: bentonite ratio. The potential decay profile for potential at V_0 , $3/4V_0$, $1/2V_0$ and $1/3V_0$ yielded linear and exponential curves for various hydrocarbon:bentonite mixtures. The capacity (C) were 0.0014 Ah, for the 2:1 energy unit and 0.00035 Ah for the 3:1 energy unit. The electric storage density (ESD) for the 2:1 and 3:1 energy units were 4.7×10^{-4} Ah/g and 8.8×10^{-5} Ah/g Key words: Electronically conducting polymers, Bentonite, Hydrocarbon gel, discharge profile