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# ELECTROCHEMICAL STUDY OF EFFECT OF THE CONCENTRATION OF MONOMER IN THE GROWHT OF POLYANILINE AND ITS CAPACITIVE PROPERTIES.

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Polyaniline (Pani) is an attractive conducting polymer given its wide range of applications such as: battery, supercapacitors, corrosion control, electrochromic and electroluminescent devices [1-4], Pani can be easily synthesized, chemically an electrochemically in both aqueous and non-aqueous solutions [5, 6], however few papers report the influence of monomer concentration on growth of Pani films, it is important to realize a study kinetics growth associated with the concentration of monomer in the electrolytic medium used.

In this work we present a systematic electrochemical study of the grown of aniline on stainless steel 304 substrate using different concentration of monomer (0.1M, 0.2M, 0.3M of aniline) in 1M $H_2SO_4$. Polyaniline films were electrodeposited by using cyclic voltammetry (CV) the deposition of Pani was carried out varying the potential limit anodic ($E_\lambda$) 0.9 V and 1.0 V vs SCE while the lower potential limited was -0.2V vs SCE, Chronoamperometry (CA) upon varying the applied potential ($E_{ap}$) 0.8V and 0.9 V vs SCE (figure 2). Chronopotenciometry (CP) techniques were used varying the current applied between $1E^{-6}$ and $1E^{-2}$ A. The cyclic voltammograms show peaks anodic/cathodic (figure 1) associated at the different stages of growth and its correlation with oxidation states de Pani [7], the analysis of potential and peak currents shows small differences in the concentrations tested. Moreover the electrochemical responses of grown of Pani films show a strongly influence due to hydrolysis reaction at potential more positive and this is manifested in the Pani films morphology obtained. The Pseudocapacitance response was evaluated by cyclic voltammetry and constant current charge/discharge tests.

Keywords: polyaniline films, Cyclic Voltammetry, polyaniline morphology.

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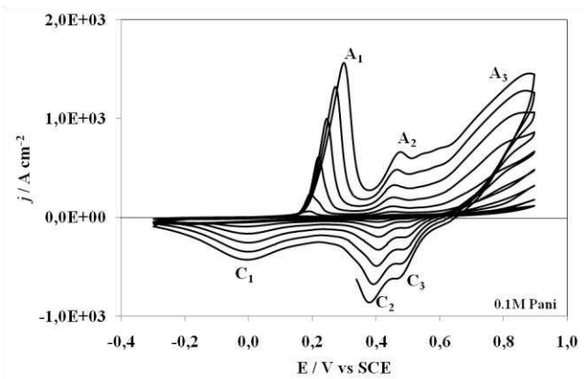


Figure 1. Cyclic voltammograms corresponding to Pani films growth, at scan rate of 50 mV/s, at the potential range -0.3 to 0.9V vs SCE in the system 0.1M Aniline/1M $H_2SO_4$.

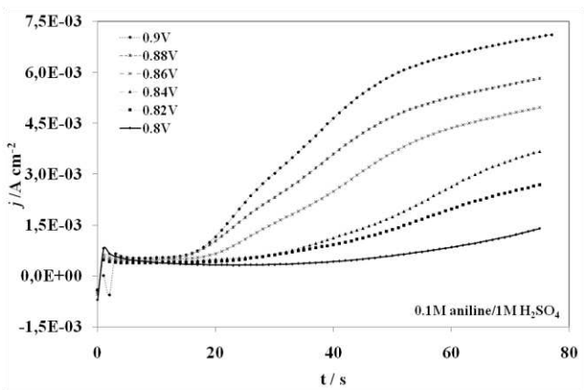


Figure 2. Response current vs. time, after applying different potential pulse between 0.8 to 0.9V vs SCE, corresponding to the system 0.1M aniline/1M $H_2SO_4$.