

Comparative study on electrodeposition and characterization of Ni, Co and Ni-Co thin layers on platinum substrate

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Abstract. The aim of this work is to develop thin layer deposits of nickel, cobalt and nickel/cobalt-alloy on a platinum substrate. The experiments are performed in a sulphated bath using electrochemical techniques. The influence of the concentration, pH, time, current density and applied potential on the electrodeposition process has been demonstrated by cyclic voltammetry, chronoamperometry and chronopotentiometry. The best deposits are obtained under diffusion regime for 120 s. The diffusion coefficients of Ni^{2+} and Co^{2+} were evaluated by chronoamperometry. The μ -XRF revealed a deposit of anomalous type for Pt-Ni/Co with lower nickel content.. The SEM characterization revealed a homogenous solid phases formed by very fine particles.

Keywords : Thin layer deposit, electrodeposition, nickel-cobalt deposits, anomalous deposit.