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REUSE OF EXPIRED CEFORT DRUG IN NICKEL ELECTRODEPOSITION FROM WATTS BATH

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Abstract. In this paper, the possibility to use ceftriaxone (CEFTR) active compound from expired Cefort® drug as additive in nickel electrodeposition from Watts bath has been investigated. Electrochemical behaviour of CEFTR and preliminary information about its influence on nickel electrodeposition process were obtained using cyclic voltammetry technique. Cyclic voltammograms have been drawn on platinum electrode at scan rates between 5 and 500 mV s^{-1}. Linear voltammograms recorded at low scan rate emphasized the influence of the drug concentration in 5 g L^{-1} Ni^{2+} electrolyte solution. Kinetic parameters such as exchange current density and cathodic transfer coefficient have been calculated using Tafel polarization plots at different temperatures in the range of 25÷65°C. Further, activation energy has been determined from Arrhenius plots. Electrochemical impedance spectroscopy technique was used to study the charge transfer resistance and surface coverage degree in the same solutions at different deposition potentials.

Keywords: expired Cefort® drug, electroplating additive, nickel electrodeposition, Watts bath.

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