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Early stages of copper microparticles electrodeposition on polypyrrole film

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Abstract: In this work, we studied the electrodeposition of copper (Cu) microparticles on polypyrrole (PPy) ?lms using cyclic voltammetry and chronoamperometry techniques. The initial stages of Cu deposition were investigated by performing current transients. Models based on Scharifker and Hills calculations were established to determine the nucleation and growth type. The results suggest that the deposition of Cu proceeds via an instantaneous nucleation followed by three-dimensional (3D) di?usion-limited growth. The values of the number density of active sites $N_?$ and di?usion coe?cient D were also determined.

Keywords : composites, copper, electrodeposition, polymer, thin film