

Finite element simulation of nickel electroplating process of a revolving part



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Beschreibung

Process simulation and optimization with the help of numerical methods can reduce expensive and time consuming experiments for manufacturing good quality products. Electroplating is a prominent coating process that the quality and uniformity of the deposition are of great importance in this process. In this paper a finite element model has been proposed for evaluation of primary and secondary current density values on the cathode surface in nickel electroplating operation of a revolving part. In addition, the capability of presented electroplating simulation has been investigated in order to describe the electroplated thickness of the nickel sulfate solution. Nickel electroplating experiments have been carried out and the measured thickness in different points have been compared with the predictions. A good agreement between the simulated and experimental results was found. Also the results showed that primary current density can describe the general