Nanocrystalline Nickel Synthesis by Pulsed Current

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Abstract

The synthesis of nickel by pulse electrodeposition has attracted much attention during the last decades. Pulse electrodepotion has been reported to improve the deposition process and deposit properties such as porosity, ductility, hardness, and surface roughness. It has been reported that pulse plating strongly modifies the properties, the structure, the surface morphology and the macroscopic characteristics of nickel coatings. In the present research, nickel deposits were produced by pulse current electrodepositing from watts bath. The optimization of the conditions of deposition was established and the influence of pulse parameters, on the grain size, surface morphology and crystal orientation was determined. The morphology of the coatings was characterized by observations in scanning electronic microscopy (SEM). X-ray diffraction in symetric mode was also used to evaluate the structure and principal crystallographic orientations of the deposits. The results obtained, showed that the development in pulsed induced a marked improvement in the morphology and grain refinement

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