Dimensional effects of the electrodeposition rate of the Co-W alloy from the citrate electrolyte

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The interest in obtaining coatings from iron-tungsten metal alloys is associated with the properties and possibilities of use of these alloys [1]. The results of the study of the dimensional effects of the deposition speed under conditions of induced coprecipitation are presented using the example of obtaining Co-W alloys from the citrate electrolyte. For this purpose, the deposition was carried out on electrodes with different surfaces, and the speed was estimated by the mass of the deposited layers based on the amount of electricity spent on their anodic dissolution. In this case, both micro-deposited electrodes and large-area electrodes were used.
Dimensional effects represent the dependence of the electrodeposition speed on the size of the electrode surface. Two types of dimensional effects were observed during the electrodeposition of Co-W coatings from the citrate electrolyte: the macroscopic and the microscopic effects. On one side, the microscopic effect is due to the influence of the size of the microelectrode on the diffusion current density [2]. On the other side, the macroscopic effect is associated with the structure of the inducing agent (cobalt citrate complex) [3].

References

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