Influence of Constant Magnetic Field on Electrodeposition of CoW/Cu/CoW Composite

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Magnetic field influences the process of electrolytic deposition of materials, including metal composites. Numerous studies have shown that the magnetic field interferes in the rate of deposition, surface morphology, corrosion resistance, and hardness of the obtained coatings. The purpose of the study was to investigate the effect of a constant magnetic field on the processes of electrodeposition of the gradient metallic composite CoW/ Cu/CoW, and to compare the morphology of the surface of the composite obtained in and without the involvement of a constant magnetic field. Another step to achieve the objectives was to study the giant magnetoresistance (GMR) phenomenon, involving a change in the material resistance occurring in gradient metallic composites exposed to an external magnetic field. The percentage changes of resistance in constant magnetic field of magnetic induction $B = 1\text{T}$ were estimated for CoW/Cu/CoW composite as well as for a reference composite Fe/Cr/Fe, known from the literature.

Keywords: Constant magnetic field (CMF), Electrodeposition, Composites, Lorentz force, Giant magnetoresistance (GMR)

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