

chemical companies, such as “Enamin”, use the concept of click chemistry to produce new compounds. Therefore, we should also expect a further increase in the use of these methods for the research of living systems and the development of new substances.

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ELECTROCHEMICAL DEPOSITION OF COBALT ON COPPER SURFACE FROM PERCHLORATE SOLUTION WITH ADDITION OF METHANOIC ACID

Cobalt is one of the transition metals widely used in various industrial sectors. It is a good construction material, and therefore, wear-resistant coatings based on it are of practical interest. One of the promising methods for obtaining materials with desired properties is electrochemical methods.

However, the kinetic features of cobalt electrodeposition are not well studied, which makes the topic of my research relevant.

The aim of the work was to study the peculiarities of the cobalt electroplating process from perchlorate electrolyte in the presence of methanoic acid on the copper surface.

The object of the study was an electrolyte with the addition of methanoic acid for the electroreduction of cobalt (II) cations and the cathode surface.

The subject of the study is the process of electrochemical deposition of cobalt coatings from perchlorate electrolyte in the presence of methanoic acid on the copper surface.

The following research methods were used in the work:

1. Analysis of literary sources.
2. Voltamperometry.
3. Galvanostatic deposition of cobalt.

A perchlorate working solution with the addition of formic acid was used for the study. Polarization measurements were performed using a PI-50-1 potentiostat with a PR-8 programmer and a three-electrode cell. A USB oscilloscope connected to a computer was used as the recording device.

Copper electrodes were used for the polarization measurements. The so-called factory electrode was made of copper wire inserted into Teflon. A gold plate with a layer of copper from a standard copper plating solution was used as the galvanically deposited electrode. To determine the cobalt current efficiency, electrodeposition was carried out in a Hull cell using a system containing a copper coulometer. Factory copper plates with an area of 8 cm² were used as the working electrodes. The quality of the cobalt coating was examined using a MIM-7 microscope.

Our theoretical and experimental studies have shown that formic acid significantly affects the kinetic features of the cobalt (II) cation electroreduction process and changes the conditions for obtaining cobalt deposits on the copper electrode.

The addition of formic acid to perchlorate electrolyte leads to the formation of shiny metallic cobalt at low current densities.

Differences in the kinetic dependencies of the process of electroreduction of Co (II) cations were established between the factory and galvanically deposited copper.

It was shown that formic acid does not affect the current output of cobalt compared to the base electrolyte, but its presence slightly reduces the current output on the galvanically deposited electrode surface.

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GEOLOGICAL STRUCTURE AND MINERALS OF THE DONBASS FOLDBELT

The Donbass Foldbelt (DF) is a very complex folded system bordering the Dnieper-Donets Basin in the north, which separates it from the Voronezh Crystalline Massif, the deep Black Sea Basin in the south, and the Azov Block of the Ukrainian Shield in the southwest. Thus, the DF was formed at the point of collision of the East European platform with the Hercynian structures. Thus, Donbass is a mixed platform-geosynclinal structure, representing the DF, the geosynclinal development of which continued in the Late Paleozoic (Hercynian) time. So, at the base of the DF is a young (Epihercynian) platform, which is situated on the so-called pre-Carboniferous layer of the Late Proterozoic age and is formed by sedimentary and metamorphic rocks.

The thickness of this layer reaches 12 km, it decreases towards the north and disappears at the latitude of Luhansk. Here, the carbon already lies directly on the Precambrian formations. According to geologists, the discovery of a pre-Carboniferous stratum in the bowels of the Donbass shows that its basin has a very ancient origin.