CONCLUSIONS

Prospective directions for the production of electrodes are the methods of powder metallurgy, with the help of which composite materials are created, which are an electroconductive matrix with dispersed particles of refractory compounds.

In this work, new heterophasic composites with a conductive matrix (Cu), penetrated by a refractory frame (LaB_6-TiB_2) were created. The use of the composite system LaB_6-TiB_2 as a refractory frame is due to its high values of strength, hardness and electrical conductivity. It is important to note that a solid frame consists of particles of the composite LaB_6-TiB_2 eutectic composition (matrix with LaB_6, reinforced with single crystal TiB_2 fibers, 0.1-0.3 μm in diameter).

It was established that with increasing dispersion of the powder, the residual porosity decreases and a continuous copper frame with the inclusion of a refractory compound LaB6-11% TiB2 is formed. It has been established that the porosity before and after sintering increases with an increase in the dispersion of LaB6-11% TiB2 powders due to an increase in the specific surface, which leads to an increase in the internal contact friction between the particles. It was established that the billets, additionally impregnated with copper, are denser and more porous and can yield porosity less than 30%.

A dyarametric analysis showed that the highest values of Vickers hardness are alloys, additionally impregnated with copper with particles of LaB6-11% TiB2 powder in a dispersity of 100 μm, which is satisfactorily consistent with the structure and porosity of the composites.

It is shown that the specific electrical resistance with decreasing fraction of the powder of eutectic composition of the alloy of the system LaB6-TiB2 decreases. This phenomenon is associated with a larger area of contact between particles of powder composites with a dispersion of 63 microns relative to others.