CONCLUSIONS

Modern intensive development of many industries requires the creation of new high-performance materials and technology. Today one of the most promising and fastest spraying technologies is the technology of layer additive synthesis or additive technology (AM — Additive Manufacturing). Despite the rapid development of technology for 3D-printing, preparation and creation of a new range of high-quality composite powders for them remains one of the priorities of particular interest is titanium-matrix composites due to its unique properties.

To produce the composite powder of Ti-TiB for 3D-printing it is offered to use as a starting matireal not the Ti powder, however the powder of TiH_2 with TiB_2 additives.

Based on experimental data it was determined an optimum grinding time, such as 18 minutes, the mixture of powders to obtain fraction with an average size of 10 − 20 microns, which correspondes to technological conditions of 3D-printing.

It was determined the optimal cutting modes and methods of feeding spraying material and environment. By X-ray and microscopic analysis it is revealed that spraying a jet of plasma in argon provides composite powders with minimal oxidation and spherical forms which meet the requirements of 3D-printing and is much cheaper than imported analogues.

The estimated cost of the planned work was calculated on the basis of costs of all resources, reasonable economic feasibility of work implementation.

There were developed means and security measures aimed at eliminating hazards in the performance of work.