

# ANALYSIS OF THE THERMAL PROCESSING INFLUENCE ON THE MICRO-STRUCTURE OF A METAL-CERAMIC 3D PART CREATED BY THE ADDITIVE TECHNOLOGY METHOD

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Today, the time of production of wear- and corrosion-resistant coatings is a topical task. The coatings with high physical and mathematical characteristics are necessary in many areas of industry (high-strength cutting tools, elements of protection for parts acting in aggressive media, etc.). To solve these problems, metal-matrix composite coatings based on mixed metal powders and ceramics of different chemical content are used [1,2].

The paper deals with the influence of the thermal processing on the micro-structure of a 3D composition created by the additive technologies method. A multi-layer coating is created by the CO<sub>2</sub>-laser; it consists of the WC and Ni powders mixture. The thickness of the grown composition is about 5 mm. Then the samples are put in a furnace for two hours, the temperature regimes 700°C, 800°C, and 900°C. The thermal processing regimes were chosen on the base of [3]. Analysis of the microstructure is carried out on an electronic scanning microscope Zeiss EVO MA 15. The change in the clad micro-structure after the thermal processing is discovered (Fig. 1). The micro-hardness of the clad coating is measured.

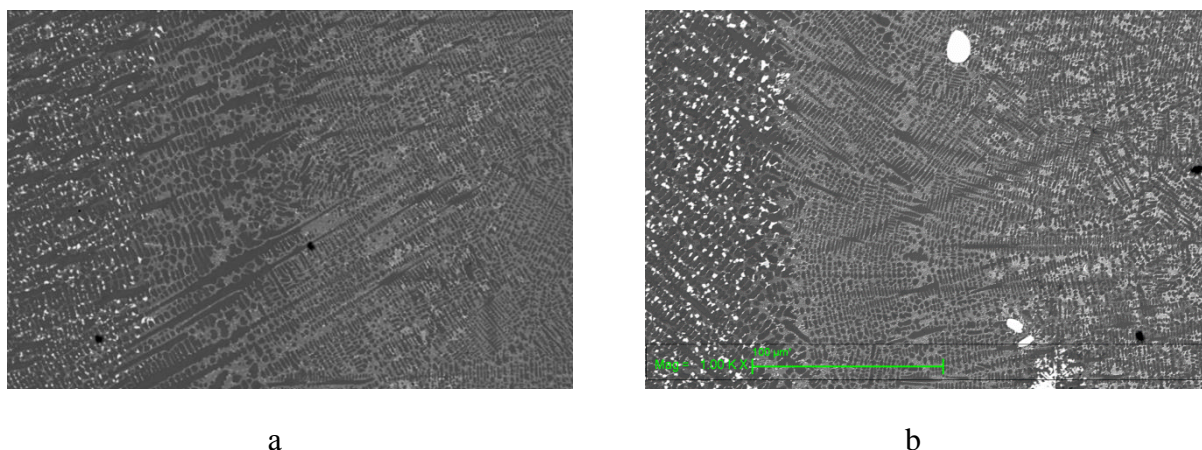


Figure 1. Photos made by the electronic scanning microscope  
a) – the sample without post-processing, b) – the sample after 800°C thermal processing

**Acknowledgements.** This work was supported by a grant of the Russian Scientific Foundation "The physical basis for the creation of heterogeneous materials using additive technologies" №16-19-10300.

## References

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