

The purpose of the research is to evaluate the influence of infiltration parameters of ceramic preforms infiltrated by light metal alloys on their structure and properties. Tests are performed to determine the effect of temperature and the structure of the preforms to infiltrate and to identify the phases and description of precipitates formed on the border of the ceramic-metal alloy of light. The project will be executed study involving the identification phase precipitates using X-ray diffraction (XRD), which will be supplemented with the use of research techniques available in the scanning electron microscope (SEM), including chemical analysis examined the precipitates and the implementation of orientation maps in the analytical scanning electron microscope using electron backscatter diffraction (EBSD). Also, research will be done with the use of transmission electron microscopy (TEM), which allows describing the morphology of the precipitates with nanometric accuracy and allows you to perform tests with the use of diffraction precession. The obtained results will be compared with the results of computer simulations of high-resolution images of precipitates and grains boundary and electron diffraction simulations. The planned studies aimed at the characterisation, understanding and description of the mechanism of formation of precipitates in composite ceramic-aluminium alloy produced by infiltration. These studies will allow optimal selection of infiltration parameters and will allow obtaining optimum structure due to the desired properties of the obtained ceramic-metal alloy composite.