ABSTRACT

Report thesis: 81 p., 5 Sec., 22 fig. 39 sources.

THIN-FILM SYSTEM; PHASE TRANSFORMATIONS; HEAT TREATMENT; HIGH ENERGY ELECTRON DIFFRACTION; TRANSMISSION ELECTRON MICROSCOPY; RESYSTOMETRY.

Object of study – phase composition and other characteristics of thin-film Al-Cu system at different heat treatment temperatures.

The goal of the study is to determine the influence of one of the heat treatment methods (annealing in vacuum) on the phase composition and the properties of thin Al-Cu films at different temperatures.

Methods – a number of techniques, that combines the use of high energy electron diffraction, transmission electron microscope and resystometry.

The study of thin films parameters by applying a variety of techniques is an important step in the microdevices production for the reason that film characteristics can significantly affect their parameters (properties of the material). Parameters, such as the thickness or film phase composition, for example, define key performance properties and methods of their application. Optical coatings are used in reflecting and refracting systems or for the purpose of protection, which are applied to protect the details from the various types of corrosion and other factors that can reduce the exploitation time of the devices.

These data confirm the presence of phase transitions and the resulting change in the properties of the sample, allowing to manage the characteristics of the material in desirable way and to determine the methods thin films can be applied.