ABSTRACT

Thesis: 118 pages, 42 figures, 16 tables, 86 literature.

The object of the study: samples with Au (30 nm) /Cu (50 nm) coatings for Sital.

The subject of the study: to study regularities of structure and phase formation in thin nanoscale layers of Au/Cu system.

The aim of the work: study of structural phase transitions and atomic ordering as well as sequencing phase formation during solid phase reactions in the Cu/Au system with techniques of in situ transmission electron microscopy, electron diffraction and mass spectrometry of secondary ions.

The methods of the research: interferometric method for measuring film thickness (MII-4), the method of electron microscopy to the light (ПЕМ 125-К), the method of X-ray (diffractometer Rigaku Ultima IV) and mass spectrometry of secondary ions (MC-7201M).

***Scientific novelty*:** new experimental data on the superlattice formation after annealing in vacuum. It is found that ordered phase Cu_3Au in solid Au/Cu solution is formed during the process of deposition on samples.

Practical usage: the results of this study can be used to solve technical problems in the manufacture microwave conductors.

THIN FILM, Au/Cu, STRUCTURE, PHASE COMPOSITION, THERMAL EVAPORATION, ANNEALING, X-RAY RESEARCHES, ELECTRON MICROSCOPY, MASS SPECTROMETRY OF SECONDARY IONS.