

ABSTRACT

Research work: 89 pages, 30 figures, 10 tables, 52 literature sources.

Aim: to study the structure and phase formation in double layer thin film of Ni/Ti system before and after vacuum annealing.

Research methods: electron-beam evaporation, the method of electron microscopy in the lumen (PEM-125K), method of electron diffraction (EMR-100), method of secondary-ion mass spectrometry (MS-7201).

Research subject: Ni/Ti double layer thin films samples sputtered on NaCl substrate.

Scientific novelty: received new experimental data about the phase transformations and changes in the structure in the Ni/Ti film, obtained by electron-beam evaporation and shown that in the system are formed intermetallics Ni₃Ti after annealing in vacuum during 20 minutes at the temperature of 1096 °C.

Practical application: to obtain double layer thin film of Ni/Ti system and defining features of phase transformation, changes in the structure and redistribution components of thickness.

Practical use: these results are important for the development of sensors, microactuators and valves in microelectromechanical systems. Also, the results of this research can be used in the educational process in the disciplines of «Electron Microscopy» and «Probes nanotechnology of surface modification».

NICKEL, TITANIUM, THIN FILM, Ni/Ti, PHASE TRANSFORMATIONS, STRUCTURE, PHASE COMPOSITION, DISTRIBUTION IN LAYERS, ELECTRON-BEAM EVAPORATION, ANNEALING, ELECTRON MICROSCOPY, ELECTRON DIFFRACTION.