



STUDY OF TEMPERATURE DEPENDENCE OF SPECIFIC RESISTANCE OF NEODYMIUM MONO AND THREEANTIMONIDE FILMS AND HALL CONSTANT

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ABSTRACT

The Antimonides of rear earth elements (REE) attract an attention of the researchers by their interesting and frequently unusual features. They are used as the resistor materials in Microelectronics, in thermal transformers, in the devices of night vision, for receiving the super-low temperatures, etc. A technology for receiving the volume crystals of these materials has been somehow developed what we can't tell about their thin films. For the microelectronic purposes these very thin films have a great application the more so that the properties of thin films differ from those of volume objects. To the less studied materials belong the neodymium mono and threeantimonide films.

A technology of preparation of NdSb and Nd₅Sb₃ films from the two independent sources by means of vacuum-thermal evaporation methods on various substrates – Cital, Leucosapphire, monocrystalline Silicon.

The X-ray-diffraction, x-ray micro-probing and electronographic researches of received films have been carried out which have shown that the received films are of polycrystalline structure. Besides, the NdSb films have a cubic lattice and the Nd₅Sb₃ films – the hexagonal one. The lattice parameters have been calculated the magnitude of which coincides to the parameters of relative volume crystal lattice.

The temperature dependence of specific resistance, Hall constant and thermoelectric moving force of the received films has been studied. It has been shown that all films have an electric conductance and that the Neodymium films by their electric properties are very close to semi-metals, and the threeantimonide films of Neodymium – to the metals.

Keywords: RE; Antimonides; Leucosapphire; Glass-ceramics