

## ABSTRACT

Report on research practice: 38 p., 15 fig., 3 tables, 23 sources.

Object of study - Iron thin film on various substrates.

Purpose – investigation of the reliability and mechanical properties of thin-film sandwich structures based on Fe/MgO/Fe, by investigating adhesion, thermal conductivity and nanohardness of Fe films, deposited on various substrates.

The work analyzes different methods of investigation of the mechanical properties of the first Fe layer of three-layer structures based on Fe/MgO/Fe. According to existing equipment, methods for investigating the adhesion nanohardness and thermal conductivity of thin film structures were selected. With the installation VUP5-M, samples for the study of mechanical properties and reliability of the chosen film were obtained. To study the adhesion by separation, a special installation was assembled, which consists of modernized laboratory scales. It was found, that the adhesion of 200 Å Fe film to glass-ceramic substrate is 162 g/mm<sup>2</sup>.

IRON, MTJ, NANOFILM, ADHESION, THERMAL CONDUCTIVITY,  
NANOHARDNESS