

## ABSTRACT

**Diploma work:** 76 pages, 8 tables, 18 figures, 35 references.

**The object of research:** Pt(15 nm)/Fe(15 nm), Pt(15 nm)/Au(10 nm)/Fe(15 nm) and Pt(15 nm)/Ag(10 nm)/Fe(15 nm) thin-film compositions on SrTiO<sub>3</sub>(001) and MgO(001) monocrystalline substrates, obtained by magnetron sputtering.

**Subject of research:** influence of monocrystalline substrate type and introduction of Ag and Au intermediate layers on the structure and phase composition of Pt/Fe thin films.

**The purpose of research:** investigate and describe the structural and phase transformations in Fe/Pt of thin films based during annealing in vacuum.

**Research methods:** Electrical resistivity measurements (four-probe method) *in situ* while annealing in vacuum, X-ray diffraction analysis.

**Research results and novelty:** it was determined that the Fe/Pt based thin films on with the Ag (10 nm) intermediate layer, deposited onto SrTiO<sub>3</sub>(001) monocrystalline substrate shows lowest temperature of disordered *A1*-FePt phase formation and better values of the ordered *L1<sub>0</sub>*-FePt phase structural characteristics (degree of preferred grains orientation in [111] direction, ordering degree and the degree of tetragonal lattice distorsion).

**Field of application:** ultrahigh density magnetic recording medium.

THIN FILMS, INVESTIGATION, VACUUM, THERMAL ANNEALING,  
SURFACE RESISTIVITY, DIFFRACTION PATTERNS, STRUCTURE,  
ANALYSIS, GRAIN TEXTURE.