

## ABSTRACT

**Master thesis:** 94 pages, 23 figures, 14 tables, 80 references.

NANOSCALED FILM COMPOSITIONS, CHEMICAL ORDERING, *L10*-FePt PHASE, ULTRAHIGH-DENSITY MAGNETIC RECORDING, *IN SITU* RESISTOMETRY

**Object of investigation:** nanoscaled film compositions Pt(15 nm)/Ag( $x$  nm)/Fe(15 nm),  $x = (0 - 25)$  nm deposited by dc magnetron sputtering onto thermally oxidized monocrystalline Si(001) substrates.

**Aim of work:** to determine temperature intervals of phase transformations in bilayered Pt/Fe thin films and Pt/Fe thin films with additional intermediate Ag layer.

**Investigation methods:** magnetron sputtering, thermal treatment (annealing), *in situ* resistometry, X-ray analysis, secondary neutral mass spectrometry.

**Results and scientific novelty:** formation of disordered *A1*-FePt phase in Pt(15 nm)/Fe(15 nm) thin films started at annealing temperature  $> 210$  °C, and following chemical ordering was promoting at temperature of 360 °C. Introduction of Ag intermediate layer with different thickness into Pt/Fe films leads to increase of phase transformations temperatures.

**Practical importance:** received results have practical importance for development of new materials for high-density magnetic recording storage.

**Scope of application:** high-density magnetic recording storage material.