

## ABSTRACT

**Report:** 43 pages, 14 images, 3 tables, 41 literature sources

**Aim of work:** to investigate the Au intermediate layer effect on diffusion phase formation in nanoscaled film composition Pt/Au/Fe under low-temperature thermal annealing.

**Investigation methods:** magnetron sputtering, secondary neutral mas-spectrometry, x-ray phase analysis, magnetic investigation.

**Object of work:** structural and phase transformation in nanoscaled film compositions Pt(15 nm)/Au(10 nm)/Fe(15 nm) obtained by magnetron sputtering on Al<sub>2</sub>O<sub>3</sub> monocrystal substrates.

**Scientific novelty:** the introduction of an additional intermediate Au layer leads to an enhancement of the low-temperature intermixing of nanocrystalline Fe and Pt thin films.

**Practical importance:** received results can be used for development new materials for high-density magnetic recording.

NANOSCALED FILM COMPOSITION, MAGNETRON SPUTTERING, LOW-  
TEMPERATURE HOMOGENISATION, GRAIN BOUNDARY DIFFUSION,  
CHEMICAL ORDERING