

## ABSTRACT

Thesis: 70 pages, 15 figures, 10 tables, 42 references.

AMORPHOUS AND NANOCRYSTALLINE ALLOYS, THERMAL STABILITY, MAXIMUM INDUCTION LOSSES IN THE CORE.

The object of study: structure, thermal stability and magnetic properties of belt samples of amorphous metal alloys Fe-B-Si-P-Cu.

Objective: To establish the factors determining the conditions of formation of amorphous-nanocrystalline nonequilibrium states and their thermal stability and structural parameters of alloys Fe-Cu-Si-B-P Co alloy due to the level of their electromagnetic properties.

Methods and apparatus: to study the atomic structure of amorphous alloys using X-ray diffraction method (DRON-3). For the thermal analysis and setting intervals of phase transformations of amorphous metal strips used calorimeter «Netzsch DSC 404 F1 Pegasus»

Results and innovation: found that the thermal stability of the amorphous state, defined as reduced early primary crystallization temperature ( $T_{x1}$  /  $T_L$ ), increases with increasing phosphorus content in alloys Fe-B-Si-P-Cu. This behavior  $T_{x1}$  /  $T_L$  due to the formation of impurity-enriched layer on the surface of the primary interfaces crystalline and amorphous matrix embryos. The more phosphorus atoms included in impurity layer that the more they prevent the growth of germs a-Fe.

Found that the core after annealing to improve its magnetic characteristics, namely the loss. This is due to the removal of internal stress and restructuring of the atomic structure of tapes.