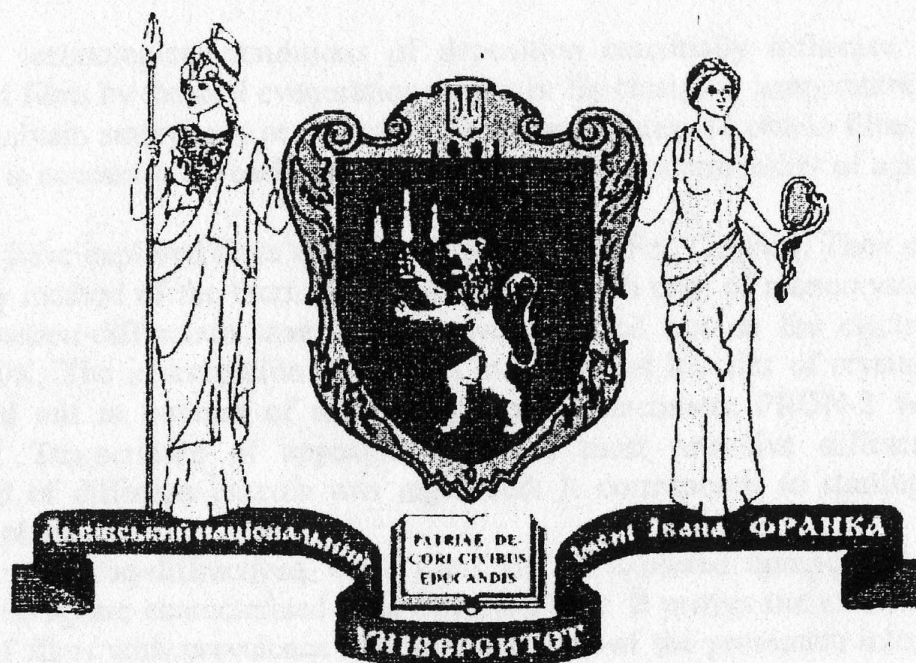


**ЛЬВІВСЬКИЙ НАЦІОНАЛЬНИЙ
УНІВЕРСИТЕТ ІМЕНІ ІВАНА ФРАНКА
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INFLUENCE OF CONDITIONS OF EVAPORATION ON THE STRUCTURE OF CONDENSATES Gd-Fe

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The technological conditions of deposition essentially influence the structure at obtaining of films by thermal evaporation methods. By changing temperature of substrate it is possible to obtain amorphous or polycrystalline condensates. To obtain films with amorphous structure it is necessary to reach intensive nucleating at undermobility of adsorbed atoms and clusters.

We have explored three compounds: GdFe_2 , GdFe_3 , $\text{Gd}_2\text{Fe}_{17}$. Their condensates were obtained by method of the thermal evaporation on fresh chip of monocrystals NaCl at 300 i 500 T_s. Electron-diffraction investigations were carried out on the electronic microscope UEMV-100K. The investigation of thermal stability and kinetics of crystallization of films was carried out in column of microscope using attachment PRON-2 with heat rate of 10K/mines. Temperature of appearance of the most intensive diffraction lines on a background of diffusion aureole was registered. It corresponds to starting temperature of crystalline phase.

The electron-diffractions from films of all explored compounds (temperature of substrate 300 K) are characterized by a diffusion halo. It proves the existence of amorphous structure of films with prevalence of a uniform type of the proximate interatomic ordering. The proximate interatomic distances were determined.

Films were continuous and very fine-dyspersated, without pores and obvious infringements of substructure. The decoration of chips of alkali-haloid monocrystals is not revealed. It proves a low surface diffusion of adsorbed atoms in a precipitation process.

Amorphous films of system Gd-Fe have high spalling resistance. The crystallization of amorphous films GdFe_2 begins at temperature 720 K. Amorphous structure of films GdFe_3 is stable even at temperature 850 K.

Films obtained at temperature of substrate 500 K have a fine-dyspersated polycrystalline structure. The interplanar distances and structures of explored films were determined.