

Nanoobjects microscopy

Influence of requirements of formation on magnetic properties of thin films of Gd-Fe system

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Thin films of binary compounds of Gd-Fe system and three-layer Fe/Gd/Fe films were obtained by means of a thermal vacuum evaporation (VUP-5) of polycrystalline mix material of a corresponding composition. The films with by thickness of 5-50 nanometres were evaporated on splitting of NaCl, then NaCl dissolved in water. The temperature of substrates had two values 300 and 500 K. For structural investigation the electron microscope UEMV-100K and high-temperature attachment PRON-2 were used. Angle dependence of atomic factors of electron scattering was considered by atoms of gadolinium and iron. For magnetic studies the modernised vibrating magnetometer was used.

Formation of structure of three-layer Fe/Gd/Fe films and films of compounds of system Gd-Fe, depending on sedimentation and thickness requirements is in a complex explored.

Magnetic researches of these films have found out correlation of magnetic properties and a structurally-phase composition. Value of a coercive force influence: thermal annealing, a thickness of a stratum of rare-earth metal and a thickness of the upper layer of a ferromagnetic, a crystallinity or an amorphism of a layer of rare-earth metal, substrate temperature, a chemical compound of films, velocity of deposition.