

EFFECT OF ELECTRON AND  $\gamma$ -RADIATIONS  
ON THE STRUCTURE OF Fe–Si–B  
AMORPHOUS ALLOYS

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S u m m a r y

By X-ray diffraction and thermal magnetic methods, we have studied the effect of electron ( $E = 1$  MeV) and  $\gamma$ -radiations ( $E = 1.17$  and  $1.33$  MeV) on structural changes in amorphous alloys of the Fe–Si–B system. The dependences of the height of the first maximum of the structural factor  $i(s_1)$ , the Curie temperature  $T_C$ , and the crystallization temperature  $T_X$  on the dose are investigated. It is experimentally shown that the mechanisms of the effect of electron and  $\gamma$ -radiations on the structure of amorphous metallic alloys of the Fe–Si–B system are identical. It is established that the doping of these alloys with Ni and Mo atoms leads to a decrease of the sensitivity of their characteristics to radiation. The sign and value of the radiation-induced changes of the Curie temperature and the crystallization temperature of undoped alloys significantly depend on the ratio of the concentrations of Si and B in their composition. We have proposed two mechanisms of the effect of radiation on the structure of amorphous metallic alloys and a qualitative model of the effect of radiation-stimulated diffusion of Si and B on  $T_C$  and  $T_X$  of amorphous alloys of the Fe–Si–B system.