

EFFECT OF IONIZING
RADIATION ON MAGNETIC
PROPERTIES AND STRUCTURE
OF Fe₈₀Si₆B₁₄ AMORPHOUS ALLOY

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S u m m a r y

Effect of gamma- (radiation source – ⁶⁰Co, energy of γ -quanta – 1.2 MeV) and electron (electron energy – 1 MeV) irradiation on the dynamics of primary crystallization processes and initial magnetic permeability μ_i in Fe₈₀Si₆B₁₄ alloy has been studied using the methods of X-ray structure analysis and magnetometry. Both γ - and electron irradiation are found to give rise to a reduction in μ_i . It is shown that, in the specimens of Fe₈₀Si₆B₁₄ amorphous alloy annealed at 420°C, a fraction of the crystalline phase increases by a third after a subsequent electron irradiation at room temperature. Influence of preliminary irradiation of the amorphous alloy on behavior of μ_i in the course of a further thermal treatment within the temperature range 380 – 470°C is analyzed from the viewpoint of the role of radiation in both the structure relaxation and primary crystallization processes. It is concluded that the principal reason for the μ_i reduction observed after irradiation of partly crystallized Fe₈₀Si₆B₁₄ alloy is radiation-enhanced crystallization at room temperature.