PHASE TRANSFORMATIONS IN Fe0,96Ti0,04(10 μm) – Ti(2 μm) LAMINAR SYSTEM AT ISOCHRONOUS THERMAL ANNEALINGS

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The thermically induced processes of diffusion and phase transformations in lamellar system $Fe_{0,96}Ti_{0,04}$(10 μm) – Ti(2 μm) at gradual two-hour annealings with temperatures from 20° to 1000°C were investigated using methods of Mössbauer spectroscopy and X-ray diffraction. The initial sample represented a solid solution of titanium in α-Fe with concentration $C_{Ti} \sim 4$ at.%. The sample annealing at temperature up to 600°C did not result in significant changes in Mössbauer spectra and X-ray. The changes of phase composition of samples are observed after annealing at temperature 650°C and higher. At temperature 650°C a solid solution of iron in α-Ti and intermetallide FeTi is formed, which quantity achives maximum at temperature of 700°C. The further annealing leads to decay of these phases, formation of intermetallide Fe_2Ti and increases of titanium concentration in solid solution α-Fe(Ti). Up to 950°C the relative content of intermetallide Fe_2Ti in alloy increases.

The sequence of phase transformation in lamellar system $Fe_{0,96}Ti_{0,04}$(10 μm) – Ti(2 μm) subjected to gradual isochronous annealings was determined; the information of relative phase content formed in surface layer of a sample at each stage of annealing was received; maximum concentrations of titanium in solid solution based on α-Fe were determined; it was shown that the direction of phase transformations is determined by change in local concentration of components in a sample during diffusion.