

MARTENSITIC TRANSFORMATION WITH DOUBLE KINETICS IN Fe-Ni INVAR ALLOYS IN A HIGH MAGNETIC FIELD

Contact Phone

Abstract

The discrepancy between the calculated and experimental values of the phase transformation start temperature displacement in Fe-Ni invar alloys under the influence of a high magnetic field is discussed. Replacement of a part of nickel with manganese enhances the efficiency of the field effect. It is assumed that the observed effect is associated with the inhomogeneous magnetic structure of the fcc phase (austenite) due to the competition of positive and negative exchange interactions between the components of the alloy. Magnetic inhomogeneity obviously leads to heterogeneity of the austenite composition and the appearance of regions of preferred nucleation of the bcc phase (martensite) which occurs according to the “athermal” kinetics when the temperature decreases.

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