Physics of Metals and Metallography 2011 vol.111 N1, pages 38-44

Mössbauer study of the process of the room-temperature aging of the alloy Cu79Ni14Fe7

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Abstract

Mössbauer spectroscopy was used to investigate the initial stage of the phase separation in the quasi-binary system Cu79Ni 14Fe7 and the subsequent transformation of the alloy structures as a result of prolonged aging at room temperature. For describing the Mössbauer spectra of ferromagnetic particles, which appear upon the spinodal decomposition in a paramagnetic matrix, a model was proposed and approved, which uses particle-size distribution in the approximation of the generalized Lifshitz-Slezov-Wagner (LSW) model and of the linear decrease of the hyperfine field at the 57Fe nuclei in the near-surface layers of spherical particles. © 2011 Pleiades Publishing, Ltd.

http://dx.doi.org/10.1134/S0031918X11010108

Keywords

alloys, Mössbauer effect, spinodal decomposition