Kinetics of magnetization and magnetocaloric effect in the Heusler alloy $Ni_{50.5}Mn_{33.4}In_{15.6}V_{0.5}$

Karpukhin D A[1,@], Morozov E V[1], Semenov D S[1], Koledov V V[1], Shavrov V G[1], Musabirov I I[2], Aliev A M[3], Gamzatov A G[3] and Abdulkadirova N Z[3]

[1] Kotelnikov Institute of Radioengineering and Electronics of the Russian Academy of Sciences, Mokhovaya 11-7, Moscow 125009, Russia
[2] Institute for Metals Superplasticity Problems of the Russian Academy of Sciences, Stepana Khalturina Street 39, Ufa, Bashkortostan 450001, Russia
[3] Amirkhanov Institute of Physics at the Dagestan Federal Research Center of the Russian Academy of Sciences, M. Yaragskogo 94, Makhachkala, Dagestan 367015, Russia

[@] interceptor1986@mail.ru

The study of caloric effects (CEs) in solids in strong alternating fields is considered promising for the creation of a new technology for efficient solid-state refrigerators. The greatest interest is generated by materials with phase transitions (PTs), which have "giant" CEs. The equations of state near the phase transition have anomalies that describe the CE. Recently, in [1], the effect of a sharp dependence of the magnetocaloric effect (MCE) on the frequency of an alternating strong magnetic field was discovered. The purpose of this work is to experimentally study the dependences of the thermodynamic parameters of temperature and magnetization for solving the equations of state and kinetics in magnetic fields of the order of 1 T in the Heusler alloy $Ni_{50.5}Mn_{33.4}In_{15.6}V_{0.5}$. The Curie temperature was measured experimentally and amounted to 286.5 K. To study the kinetics of the MCE, the technique described in [1] was used to study the kinetics of magnetization near the magnetic phase transition of a $Ni_{50.5}Mn_{33.4}In_{15.6}V_{0.5}$ in pulsed fields an original setup was created. The research was carried out with funds from the Russian Science Foundation (project No. 20-19-00745, https://rscf.ru/project/23-19-45040/).

[1] Aliev A M 2016 *J. Alloys Compd.* **676** 601–605