Magnetic-Induced Deformation of NiMnGa Alloy With Shape Memory Effect

D. Kuchin,[1] V. Koledov,[1] Yu. Koshkid'ko,[2] and A. Kamantsev[1]

[1] *The Kotel'nikov Institute of Radio-engineering and Electronics (IRE) of Russian Academy of Sciences. Moscow, Russia.*

[2] *The International Laboratory of High Magnetic Fields and Low Temperatures. Wroclaw, Poland.*

The experimental setup for studying thermomechanical properties [1,2] of ribbon samples or plates was placed in the field of the Beater magnet. For the sample of Ni2.16Mn0.84Ga alloy, the bending deformation versus temperature in different magnetic fields up to 10 T was measured. The martensite transformation temperatures shift was approximately 0.5 C/T. Also, the deformation dependencies on the magnetic field were obtained for various constant temperatures. It is established that for a given alloy sample there is almost complete transition back and forth from the austenite to martensitic phase at 41 C when the magnetic field 10 T is switched on and off.

References:

[1] Bruno, Nickolaus M., et al. "High-field magneto-thermo-mechanical testing system for characterizing multiferroic bulk alloys." Review of Scientific Instruments 86.11 (2015): 113902.

[2] Shelyakov, A. V., et al. "Melt-spun thin ribbons of shape memory TiNiCu alloy for micromechanical applications." International Journal of Smart and Nano Materials 2.2 (2011): 68-77.