

Magnetic and magnetocaloric properties of NiMnIn single crystals

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Single crystals of Ni_{48.6}Mn_{22.5}In_{28.7} Heusler alloys have been grown applying Bridgman's method. The sample was found to be single phase as all observed Bragg reflections could be indexed using the cubic L21. The refined lattice parameter was 6.070 Å. The present sample does not undergo a martensitic phase transition and retains its cubic structure down to 5K. A second order magnetic phase transition was shown to be fully reversible. The magnetocaloric effect and magnetic properties of the samples have been investigated by the magnetization M (T, H) measurements in the temperature range 5 – 300K. The magnetic field was applied parallel to the [100] and [110] crystallographic directions. The magnetocaloric parameters, i.e., the magnetic entropy change, refrigeration capacity have been shown to be isotropic. It confirms presence of austenite phase of alloy in the whole temperature range of measurements.

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