

Abstract: In this thesis, the focus is set on studying the properties of Ni-Mn-Ga magnetic shape memory (MSM) alloys, ferromagnetic Heusler compounds, codoped with Fe and Cu. Codoping Ni-Mn-Ga MSM alloys with Fe and Cu had previously been studied due to a synergy in increasing the martensitic transformation temperature - a key parameter for practical applications of the magnetic shape memory effect. We present the preparation process of five Ni-Mn-Ga-Fe-Cu single crystals using the optical floating zone method, as well as the analysis of their composition, crystal structure and magnetic properties, performed following the growth. The results obtained from our single crystals were finally compared with the data from the previously studied polycrystalline Ni-Mn-Ga-Fe-Cu alloys, showing similar trends in increasing the martensitic transformation temperature, the Curie temperature and the saturation magnetisation.