

In this bachelor thesis we are interested in studying the properties of Ni<sub>2</sub>MnGa alloy and their development with the other element substitution, for example with iron. Overall, we were studying five samples with four different compositions described by the formula Ni<sub>50</sub>Mn<sub>25</sub>Ga<sub>25-x</sub>Fe<sub>x</sub> where the concentration of iron was in the interval . Consequently we performed on the prepared single crystals an extensive characterization by the methods of x-ray and electron diffraction, differential scanning calorimetry and dilatometry. Special emphasis was devoted to measuring the magnetization with vibrational magnetometer. The obtained data enabled us to confirm the quality of the prepared single crystals and to observe a development of Ni<sub>2</sub>MnGa properties, especially the temperatures of the phase transformations.