

This diploma thesis is devoted to systematic study of structural transformations of Heusler alloys by means of spectroscopic ellipsometry and magneto-optical spectroscopy. Structural transformations in these alloys are induced by different microscopic mechanisms. Obtained experimental results were confronted with theoretical calculations. This allowed the discussion of obtained results and suggestion of their interpretation. In the case of Co-Fe-Si alloys, changes in optical and magneto-optical properties with change of Co-Fe ratio were observed. This was explained by lowering of the gap for minority spins with increasing Fe concentrations. Temperature dependent optical and magneto-optical properties of Ni-Mn-Ga alloy showed the presence of so-called Martensitic transformation from cubic to tetragonal phase. A study of Mn-Rh-Co-Sn alloys did not show a clear dependence of physical properties upon the concentration of Rh and Mn. This was explained by strong strain inside the samples, which distorted obtained results.