Abstract

The aim of this thesis is a study of NV centres in crystalline and nanocrystalline diamond by laser spectroscopy methods. In the theoretical part we discuss the laser spectroscopy methods, the studied material – diamond and the NV colour centres.

In the experimental part we discuss the influence of nanoparticle size on luminescence spectra. We measure the luminescence of samples at room and also at low temperatures depending on the intensity and wavelength of the excitation. We study the photo-conversion of negatively charged state of NV centres to the neutral in detail.

We make the time resolved measurements of the luminescence on streak camera for characterization the dynamical properties of the studied samples. The result is the comparison of lifetimes of the states in NV centres in selected samples.