

Although the nucleon acid oscillatory spectra have been studied for a long period of time, many of oscillating modes have not been properly explained regarding their geometric sensitivity and weak binding. One of the possibilities how to acquire experimental data for interpretation of these modes is to confront oscillating spectra of isotopes. The simplest is proton - deuteron exchange. When molecules dissolve in heavy water they rapidly exchange the heteroatoms, but this is simultaneous for more stages, which leads to dynamic equilibrium state among various isotope forms. Statistic analysis of temporal progression of Raman spectra give us the possibility to analyze the spectra and to obtain unique experimental data. This technique is very promising for more complex nucleon acid segments to gain more structural information.

This diploma thesis represents pilot study of introduced methodics. The objective is to implement adaptation of Raman spectrometr for given types of expiments and undertake first series of measurements. The results should clarify application bounds of proposed method refering to sensitivity, time constant of incident isotope exchange, severity of read-out in comparasion of achieved accuracy of the measurement.