

Absrtact of the diploma of Indukaev A.K.  
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### **Diffuse scattering of the ultrashort pulses in the strongly scattering media**

In the work was performed the investifgation of diffuse scattering of ultrashort laser pulses from strongly scattering media in problem of measurement of glucose concentration in biological tissues. The measurements were made on two different setups, created on the basics of femtosecond lasers in ILC MSU and in Optoelectronics and Measurement Techniques Laboratory of Oulu University, Finland. On the first setup the optics, processing and capturing systems are modified. Those modifications lead to the decreasing of measurment error in 3 times. The sensetivity of the parameters of scattered pulse (pulse energy and peak intensity) to the alterations of glucose concentration in artificial media is studied. The variability of the diffuse scsttering signal during the *in vivo* measurement is studied. There was made a conclusion, that the sensetivity of the created setups is not sufficient for in vivo detection of glucose concentration in the human tissues within physiological values.