

## **Diploma thesis abstract**

### **Femtosecond nonlinear spectroscopy of molecular aggregates using tools of transient absorption and pump third harmonic generation**

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In this paper nonlinear-optical response of J-aggregate has been investigated using technique of transient absorption and pump third harmonic generation. Signals of second harmonic of Cr: forsterite has been used as pump pulse in transient absorption experiments and signal from photonic-crystal fiber has been used as probe signal. The probability of using emission from photonic-crystal fiber for investigation of time-dependent nonlinear response of materials has been demonstrated. In analysis of results the response time of J-aggregate has been found out, the energies of excitons levels has obtained and the rising of nonlinear susceptibility of J-aggregate excited levels has been demonstrated.