

*Title:* Detection of light in the near infrared spectral range

*Author:* Jan Salava

*Department:* Department of Chemical Physics and Optics

*Supervisor:* doc. RNDr. František Trojánek, Ph.D., Department of Chemical Physics and Optics

*Abstract:* In the presented work is studied the ability of a photovoltaic InAs diode to detect light from the infrared spectral range. The goal is to verify the eligibility of the photodiode for the work in laboratory by measurement of the spectrum of photosensitivity, which is proportional of the ratio of output signal detected by the diode and energy in the laser pulse. The principle of this experiment is to tune the laser beam with a wavelength of 800 nm to the wavelengths corresponding to the near infrared region using nonlinear optical phenomena (namely the optical parametric amplification). According to the fact that the factory setting of laser system is not configured for work with such high values of wavelengths, the next task is to ascertain whether the laser system actually produces the desired wavelengths. Verification is achieved by measuring the spectra of the second harmonic of the signal beam coming from the parametric amplifier.

The opening chapter is a brief introduction to infrared radiation and its use. The next chapter is devoted to describe the laser assembly, with which the measurements were made. Chapter 4 is reserved for the results.

*Keywords:* infrared light, photovoltaic diode, optical parametric amplification, optical parametric generation