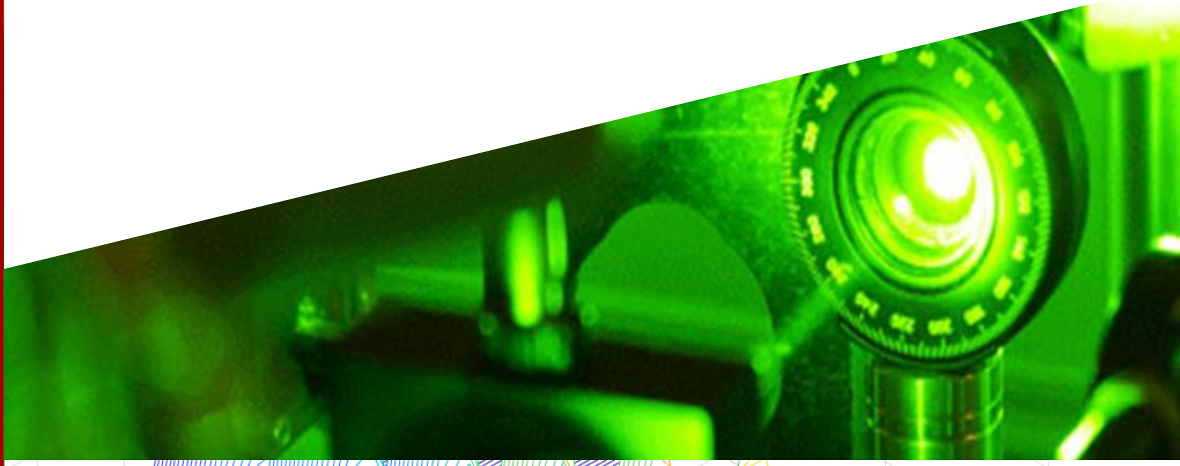
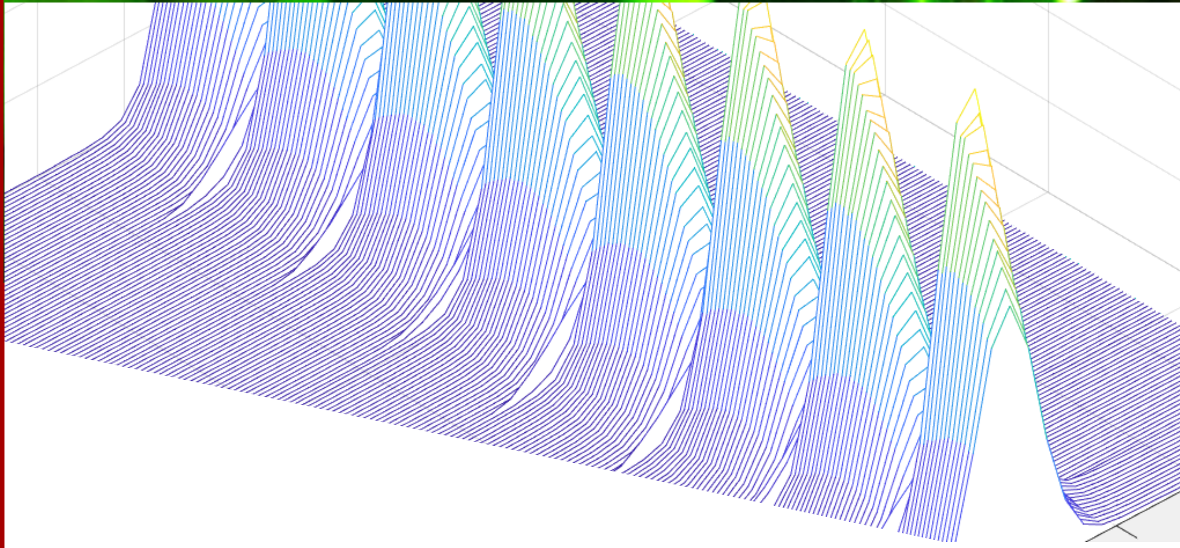
NLIR | Mid-Infrared Sensors





# CHARACTERIZATION OF PULSED LASERS

NLIR | Mid-Infrared Sensors

**Don't let conventional spectrometers slow you down.**

**Upgrade to a fast and sensitive infrared spectrometer and start achieving accurate and efficient results in no time.**

**Contact us today to learn more about our cutting-edge technology and easy-to-use optical interfaces.**

info@nlir.com | www.nlir.com | +45 71 74 78 70

NLIR | Mid-Infrared Sensors

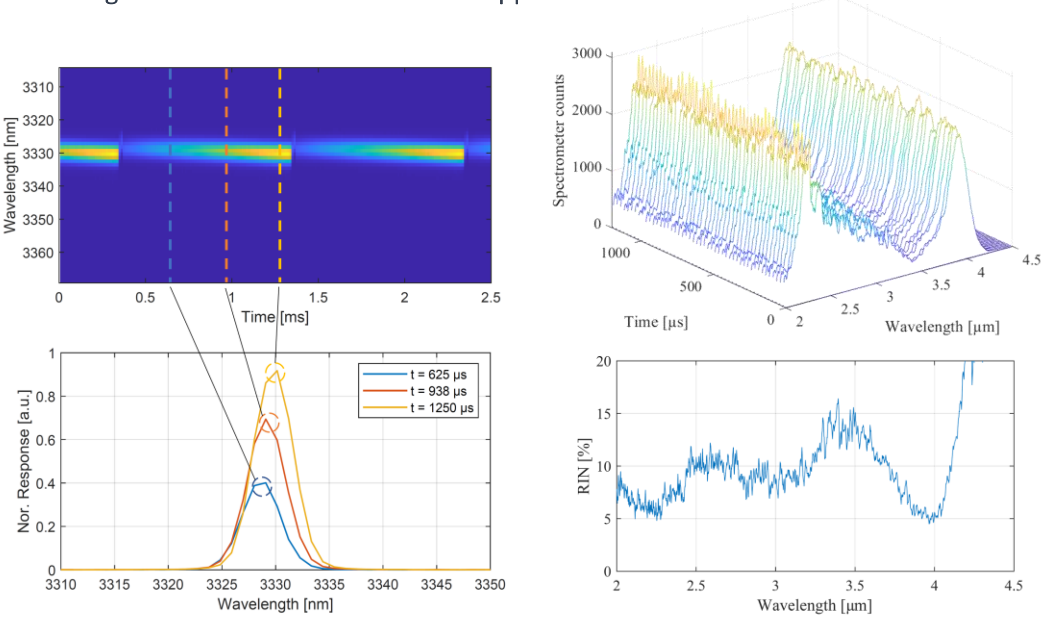
## SPECTROSCOPY FOR PULSED LASER SOURCES

Our infrared spectrometer is a great tool for inspecting the emission spectra of pulsed mid-infrared lasers. Unlike conventional FTIR or monochromator spectrometers, which typically move a mirror or a grating to obtain a spectrum and therefore are challenged by the timing of scanning through pulses, our fast and sensitive infrared spectrometer captures the whole pulse at the same time and can be triggered by a drive laser with up to 130 kHz. There are therefore no problems related to pulse timing. Together with a bandwidth of 2.0 – 5.0 µm and a resolution of down to 2.5 $cm^{-1}$, our infrared spectrometer is a reliable and efficient solution for pulsed laser source characterization.

## ULTRA-FAST CHARACTERIZATION OF LASERS

With the ability to capture spectra with up to 130 kHz, our spectrometer is well-suited for ultra-fast spectral characterization of laser sources. A few examples are shown in the graphs below: to the left, the drive current of a 3330 nm laser was modulation at 1 kHz and spectra were measured at 80 kHz; the data shows how the laser output increases and chances wavelength at the same time. The spectrometer is also capable of single-pulse measurements; to the right in the figure below, spectra from a mid-infrared supercontinuum source driven at 40 kHz are shown measured at 80 kHz. The top figure shows 50 consecutive pulses from the laser source in the bandwidth 2 µm – 4.5 µm; the time axis is shown in µs; every second spectrum is empty and not shown. This data can be used to easily calculate the spectral density of the relative intensity noise (RIN) as shown in the bottom right plot.

With its high sensitivity and fast readout rate, the spectrometer is a versatile tool for a wide range of fast laser characterization applications.




*(left) Data shows the spectra of a 3330 nm laser under 1 kHz modulation of the drive current; during one cycle, the amplitude of the emitted light increases and the center wavelength changes; (right, top) Consecutive single-pulse spectra of a pulsed mid-infrared supercontinuum laser with a repetition rate of 40 kHz; each line is a single pulse; (right, bottom) Calculated relative intensity noise (RIN) calculated from the data above.*

info@nlir.com | www.nlir.com | +45 71 74 78 70