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IRsweep

IRis-F1

High-speed infrared spectrometer

Are state-of-the-art spectrometers limiting you?

Are you studying non-repeatable processes or do you require higher time resolution than your FT-IR can deliver? Are your FT-IR measurements taking too long to complete? Are you getting insufficient signal quality at high resolutions?

Spectroscopy of reaction kinetics, protein-folding, photocatalysis or high-throughput applications e.g. in pharmaceutical research and industrial enzyme development require high speed measurement. Today's state-of-the-art instruments are not fast enough for some of those. Are your applications limited by instrumentation as well?

IRis-F1: fast, high resolution spectroscopy.

The IRis-F1 offers an unmatched combination of speed, brightness and multi-color measurements.

Our quantum cascade laser frequency comb spectrometer is the first turn-key frequency comb spectroscopy system. As opposed to conventional single-wavelength laser systems, the IRis-F1 allows for the simultaneous measurement of the whole laser spectrum without requiring tuning of the source, so high spectral and temporal resolution are obtained in a single-shot measurement.

A time resolution of microseconds, combined with multi-color output and high spectral resolution offers new possibilities in various applications such as time-resolved bio-molecular spectroscopy, photocatalysis and high throughput environments. Another advantage is the high brightness of the laser source, allowing for thicker samples and accordingly simpler sample preparation.

APPLICATIONS

- Time-resolved spectroscopy
- Chemical kinetics
- Photocatalysis
- High throughput IR-analysis
- Analysis of chemical composition of gaseous, liquid and solid samples with high spectral resolution

BENEFITS

- High speed (1 µs)
- High brightness (laser source)
- Multi-color

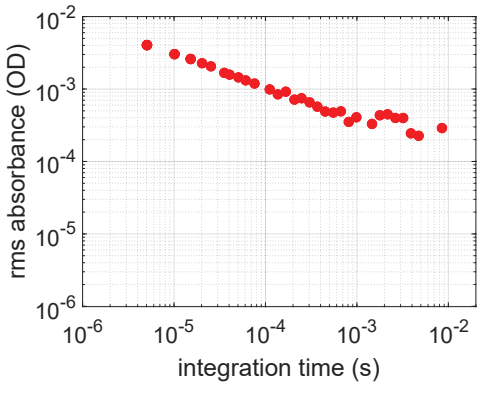
CONFIGURATIONS

- High amplitude sensitivity:
  Both lasers penetrate the sample, leading to maximum absorption sensitivity
- Phase sensitivity:
  Lasers are combined after the sample, enabling phase sensitive measurements
- High resolution:
  User access to sweep the combs for high resolution applications

SYSTEM SPECIFICATIONS

Time resolution	< 1 µs
Signal-to noise ratio	> 100 @ 1 µs integration time
	> 1000 @ 100 µs integration time
	> 1000 @ 10 sec integration time
Light source	Exchangable quantum cascade laser frequency comb sources.
	Laser exchange may require exchange of additional
	system components.
Spectral coverage	typically 60 cm^{-1} per exchangable laser source
Center wavelengths	2200 cm^{-1} (4.5 µm) - 900 cm^{-1} (11.1 µm)
Spectral resolution	< 10 MHz (0.0003 cm^{-1})
Spectral sampling	0.165 cm^{-1} – 0.5 cm^{-1}
User interface	Transmission and absorbance spectrum display
	Data export in open format
Power consumption	110 – 230 VAC, 700 W typical including electronics

ALLAN DEVIATION OF A SINGLE SPECTRAL ELEMENT



Allan deviation as function of integration time. Only a single spectral element (data point in the spectrum) is considered. Even better results can be achieved on broad absorption features extending over multiple data points.

Do you have special needs that our current IRis-F1 might not address?
Let us know so we can work together to find a solution for you.

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