

RamanFlex 400

Fiber Optic Raman Analyzer



Fiber Optic Analyzer for
PAT and Reaction Monitoring

PAT and Reaction Monitoring Made Easy

The PerkinElmer® RamanFlex™ 400 Fiber Optic Raman Analyzer is a highly versatile and configurable fiber optic-based Raman analyzer ideally suited for routine analysis, reaction monitoring or process feedback.

The RamanFlex analyzer offers the benefits of high performance Raman spectroscopy in a rugged, flexible and affordable system. The system is available either in an enclosure or in a 19" rack mounting.

Ease of Use

The RamanFlex analyzer has no user-adjustable parts, nor does it require any tedious alignment to achieve optimum performance. This design allows you to focus more time on the experimental results rather than adjusting the spectrometer. Simply switch on the analyzer and take high quality Raman spectra in seconds.

Quick Glance

The RamanFlex at a Glance

- Reaction monitoring
- PAT analysis
- Process control
- Remote analysis
- Medical research

Echelle Advantage

Our unique echelle detector offers unsurpassed range and resolution, essential for effective reaction monitoring and process control, and a must for Process Analytical Technology (PAT) applications. Other Raman instruments compromise on either range or resolution. The RamanFlex analyzer, however, offers complete spectral coverage ($250 - 3500 \text{ cm}^{-1}$) at 4 cm^{-1} FWHM resolution, and 0.75 cm^{-1} pixel resolution. The entire spectrum is acquired simultaneously, essential for analysis of dynamic systems.

When it comes to calibration stability, the RamanFlex analyzer is second to none. In addition to increasing system reliability, the lack of moving parts in the RamanFlex analyzer not only minimizes down time, it also provides rock solid calibration, enabling 24/7 operation.

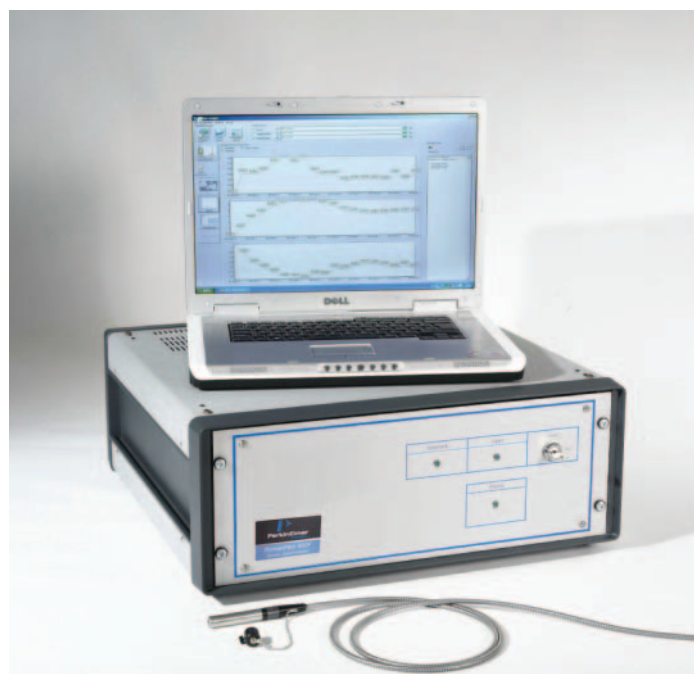


Figure 1. RamanFlex 400 Fiber Optic Analyzer

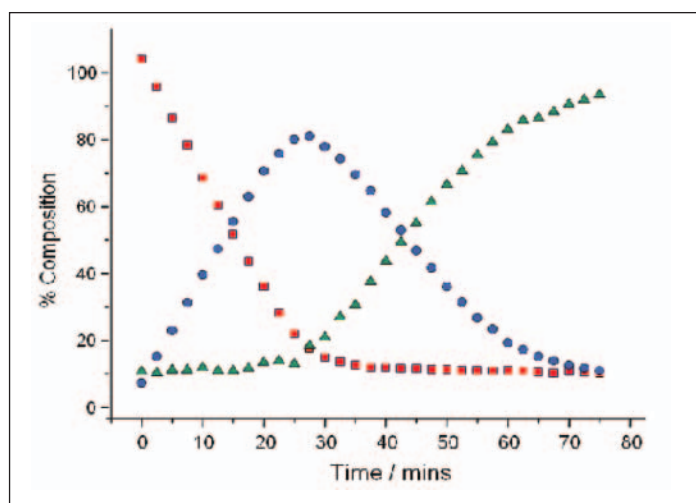


Figure 2. Reaction monitoring showing concentration changes with time

Simple Real-time Quantitative Analysis

Quantitative Analysis

With the RamanFlex analyzer real-time quantitative analysis is easy, and can be used for reaction monitoring or process control.

Quantitative analyses options are provided within the Quant+™ software package. This is a powerful chemometrics package that allows the user to build calibration models based on PLS or PCR algorithms. Once generated, these models can be validated and tested within the software.

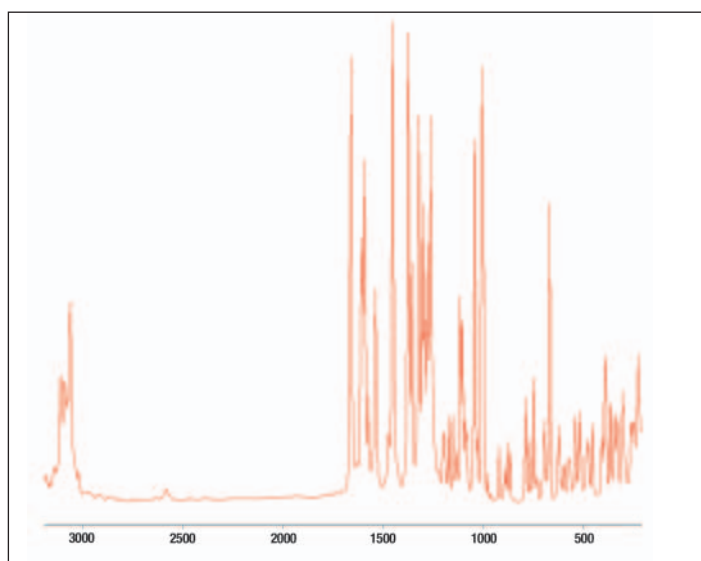


Figure 3. Raman spectra

Spectrum & Spectrum Insight

The combination of Spectrum™ and Spectrum Insight™ software ensures that all types of spectral data can be easily and efficiently collected and processed. Spectrum Insight software provides a visual interface for the analysis of large datasets, for example, real-time reaction monitoring. The concentration changes of the various components in a process can be calculated and displayed in real time. These calculations can be based on univariate (peak height or area) or multivariate (chemometric) measurements. Quantitative data resulting from these measurements can be displayed as a graph or as a Microsoft® Excel® compatible spreadsheet.

For real time quantitative analysis, Spectrum Insight Software is compatible with Quant+. Acquired data can be viewed in single spectrum view, overlaid, as an animation, as a graph or the results of spectral analysis can be viewed as a Microsoft® Excel® compatible spreadsheet.

Automated Spectral Processing

Spectrum Insight software offers unsurpassed ease-of-use, and includes library searching, real-time auto-solvent spectral subtraction, automatic baseline correction, automated exposure time calculation and auto calibration.

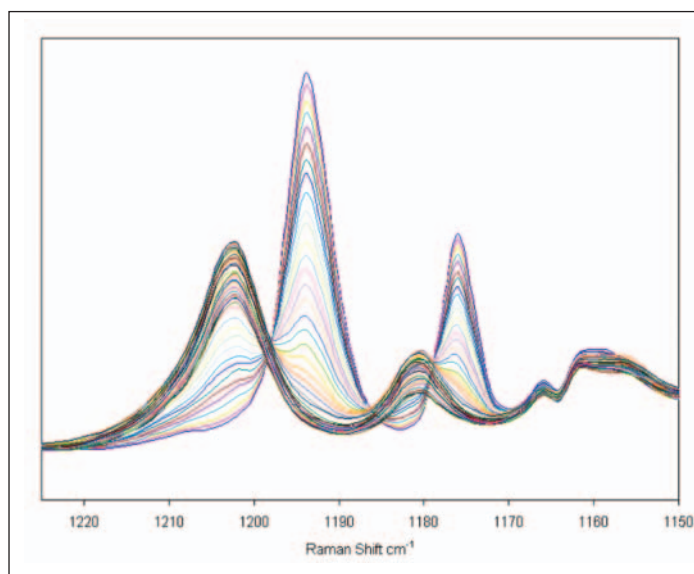


Figure 4. Zoom in on spectra shows high resolution and quality of information

Quick Glance

Automation Data Processing

- Library search/identification
- Real-time solvent subtraction
- Real-time auto baseline correction
- Automated scan time calculation
- Automated calibration

3rd Party Control and Feedback

It is possible to control the RamanFlex analyzer from other software and hardware.

The RamanFlex analyzer can be controlled through National Instruments' LabVIEW™ software. Using our simple LabVIEW™ drivers, it is possible to construct bespoke experiment control software that can control the RamanFlex analyzer, process data and also control other parts of the experiment, such as pH meters, temperature controllers and motorized valves.

It is also possible to control the PerkinElmer RamanFlex 400 using 110V logic or 4–20mA communication.

Probes to Suit Every Environment

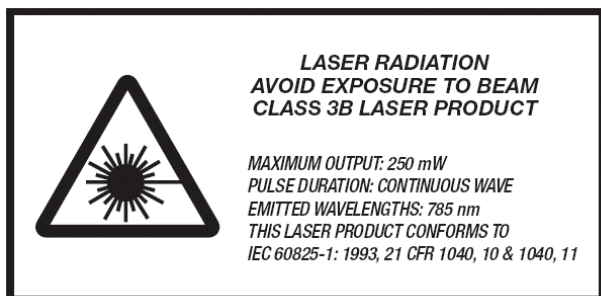
Probes

The RamanFlex 400 analyzer can be fitted with one probe while the RamanFlex 400F can accommodate two probes. If one probe is dedicated to a specific task, the second probe can be utilized for non-routine sampling.

Our range of probes are constructed from either stainless steel or hastelloy C and, where sapphire windows are fitted, are capable of working at elevated pressures (1500 psi) and temperatures (500 °C). The probes are supplied with a 5 meter stainless steel helicoil as standard. Extension cables up to hundreds of meters long can be provided offering a remote sampling option with little drop in performance. From simple laboratory reaction monitoring through process control, to measurements taken in an ATEX environment, we offer a suitable probe to meet your application requirements.

Working Over Long Distances

As standard, our probes are supplied with 5 meters of armor clad stainless steel helicoil. Extension cables up to hundreds of meters can be used to provide sampling over long distances. With the RamanFlex 400 analyzer, there is little drop in performance with long distance cables. Working over long distances has never been so simple.



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Quick Glance

Our Range of Probes

- Handheld/non-contact
- Liquid immersion
- Pilot production
- Process control



Figure 5. The RamanFlex offers a simple and convenient way to monitor reactions

