RamanFlex 400

Fiber Optic Raman Analyzer

Reaction monitoring and PAT made easy

PerkinElmer®
precisely.

Reaction monitoring and PAT
made easy

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

All the benefits of high performance Raman spectroscopy are contained in a rugged, flexible and affordable system that is available either in an enclosure or 19 inch rack mounting.

Ease of use

The RamanFlex analyzer has no user-adjustable parts so you can achieve optimum performance without having to re-align the instrument. Simply switch on and capture high quality Raman spectra in seconds.

Use RamanFlex for

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

Echelle advantage

The Echelle detector offers unsurpassed range and resolution, essential for effective reaction monitoring and process control, and a must for Process Analytical Technology (PAT) applications. Neither range nor resolution is compromised with the RamanFlex analyzer offering complete spectral coverage (230-3500 cm^{-1}) at 4 cm^{-1} FWHM resolution, and 1 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. As well as increasing system reliability, the lack of moving parts also minimizes down time and enables 24-hour operation.

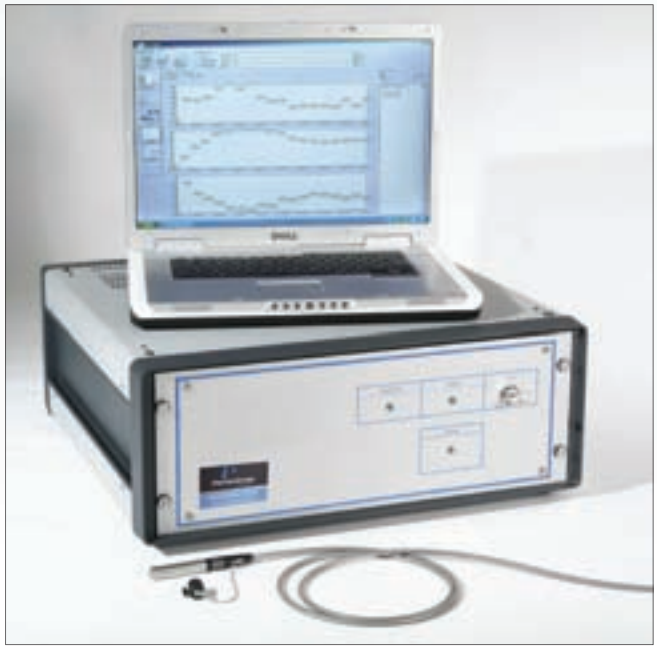

Figure 1. RamanFlex 400 Fiber Optic Analyzer.

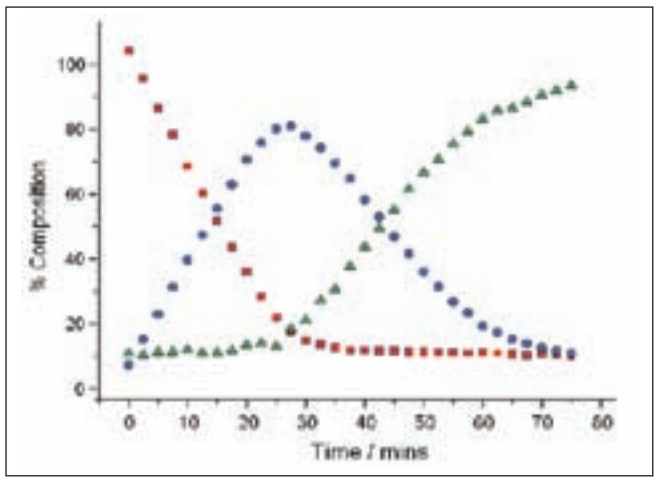

Figure 2. Reaction monitoring showing concentration changes with time.

Simple real-time quantitative analysis

Quantitative analysis

With the RamanFlex analyzer, easy real-time quantitative analysis 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.

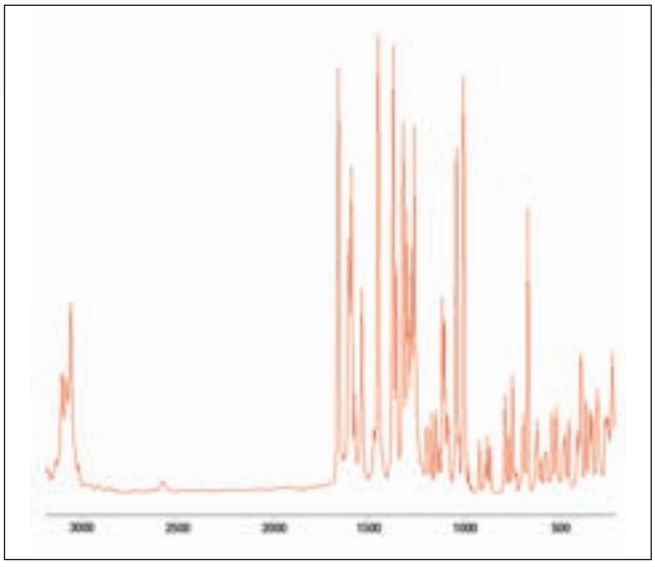

Figure 3. Full range Raman spectrum.

Spectrum and 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 data sets, such as 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 or as a graph. The results of spectral analysis can also be viewed as a Microsoft® Excel® compatible spreadsheet.

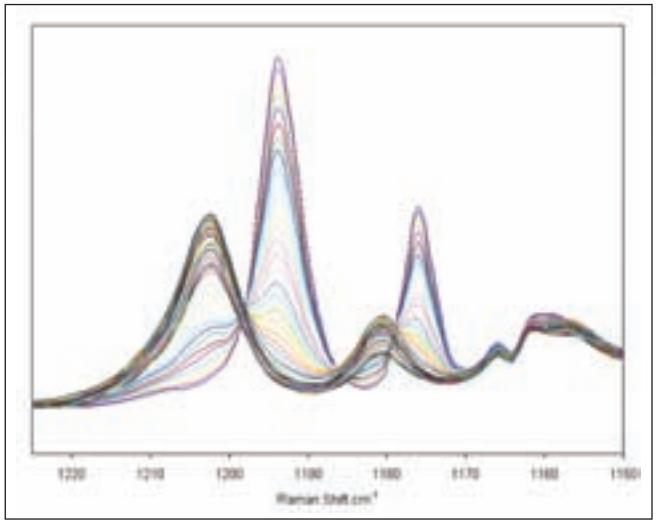

Figure 4. Zoom in on spectra shows high resolution and quality of information.

Automated spectral data processing

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

Third-party control and feedback

The RamanFlex analyzer can be controlled from other hardware and via software such as LabVIEW™ or by using 110V logic or 4-20 mA 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.

Probes in the range are constructed from either stainless steel or hastelloy C and, where sapphire windows are fitted, are capable of working at elevated pressures (3000 psi) and high temperatures (500 °C).

Working over long distances

Probes are supplied with 5 meters of armor-clad stainless steel helicoil. Extension cables up to hundreds of meters are available for sampling over long distances with minimal impact on performance.

A selection of probes

- Hand-held/non-contact
- Liquid immersion
- Pilot production
- Process control

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

For a complete listing of our global offices, visit www.perkinelmer.com/lasoffices

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