



Analysing liquids with the Virsa™ Raman analyser

Renishaw's Virsa Raman analyser is a flexible, fibre-coupled system that is excellent for monitoring liquids in R&D and process development settings.

The Virsa analyser has many features that make it ideal for studying liquid samples

- It has high throughput and gets intense, low-noise Raman signals from liquids.
- The rugged fibre-optic-coupled Raman analyser can be operated in industrial environments, as well as in laboratories, and is easy to couple to chemical reactors.
- It has a high sensitivity, comparable to Renishaw's inVia™ Raman microscope, making the two instruments ideal for transitioning laboratory-developed solutions to in-field and production line use.
- It can be coupled to a variety of immersion and through-window probes, giving great sampling flexibility.
- It is compatible with a wide range of probes specifically designed for harsh chemical environments and at elevated pressures and temperatures.
- The dual excitation wavelength capability of the Virsa analyser enables it to probe a wider range of samples than a single-wavelength system.

Analysis of liquids

Here we illustrate data collected from the common industrial liquids cyclohexane and ethanol using both immersion and through-window sampling. Figure 1 is a Raman spectrum of cyclohexane collected with a 785 nm laser; the acquisition time was 1 second.

One of the strengths of the Virsa Raman analyser is its extended scanning capability that enables spectra to be collected over broad spectral ranges, such as from 50 cm^{-1} to 4000 cm^{-1} . This is demonstrated in Figure 2 where both immersion and through-window probes have been used to collect broad range Raman spectra from ethanol. In these spectra we can see not only the C-H stretch region at about 3000 cm^{-1} , but also the whole of the fingerprint region below 1500 cm^{-1} .

Versatile and flexible

The two probes give comparable signal levels, with a slightly higher background from the immersion probe. This highlights how well the Virsa Raman analyser performs with both probe types and enables the user to select the probe most suited to their experiment.

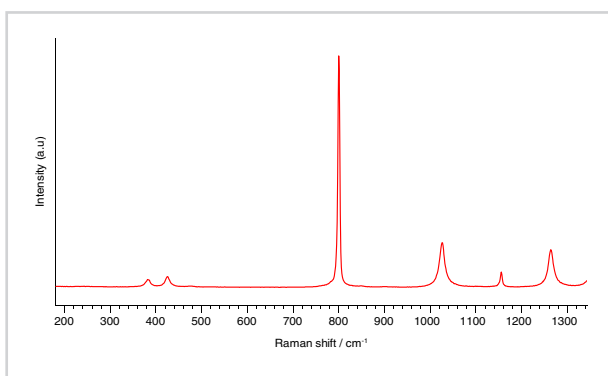


Figure 1. Raman spectrum of cyclohexane collected in 1 second.

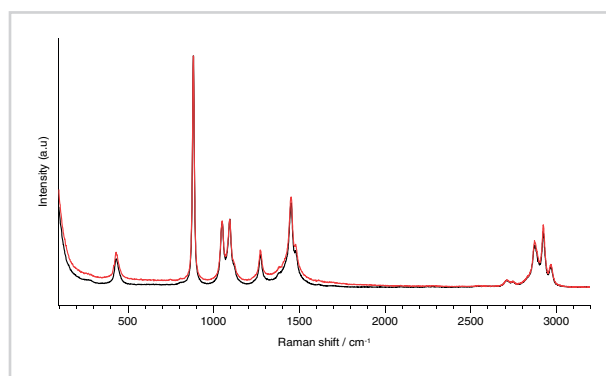


Figure 2. Raman spectra of ethanol collected using an immersion probe (red) and through-window probe (black).

Summary

- The Virsa Raman analyser is a powerful tool for process development.
- It can be coupled with a wide range of fibre probes making it suited to diverse applications.
- The Virsa Raman analyser's highly sensitive design makes it ideal for measuring difficult Raman samples quickly and with high signal-to-noise ratios.

To discover how the Virsa Raman analyser can help you analyse your liquid samples, please visit www.renishaw.com/virsa

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