RENISHAW
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inVia™ research-grade confocal Raman microscopes

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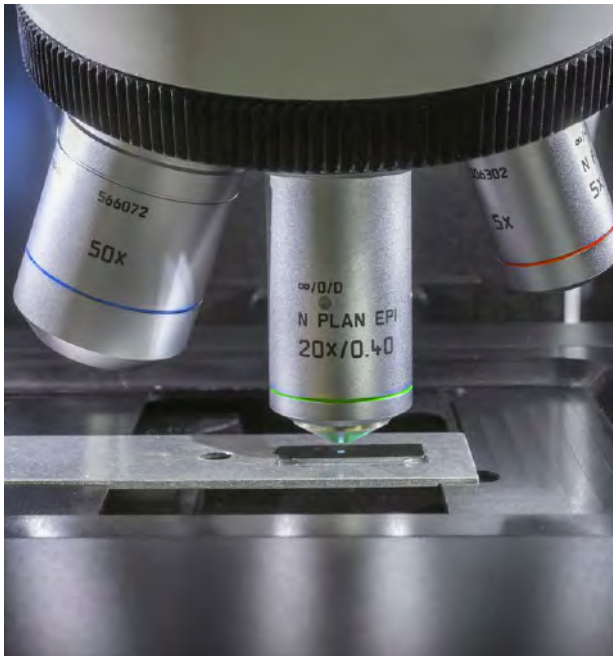
#renishaw

Trust invia™ microscopes for reliable, high-quality results

The world's best selling high-performance Raman microscope

- Designed, developed and refined over more than two decades to make it the most trusted Raman instrument on the market.
- Superior, research-grade Raman microscope for your current and future needs.
- Designed using Renishaw's proven expertise in precision and innovative engineering.
- Built to last: upgrade, reconfigure, or customise - the inVia Raman microscope is a sound investment.
- Available in three models: inVia Basis; inVia Reflex and inVia Qontor®.
- Many options and accessories are available to suit your analytical requirements and budget.



Why our users choose inVia Raman microscopes

Renishaw is a global company with a worldwide network of scientists and engineers who are on-hand to provide you with expert product, technical and applications support

Exceptional, reliable performance

The inVia system comprises a research-grade microscope coupled to a high-performance Raman spectrometer. It is simple to operate yet delivers outstanding performance—high signal throughput, combined with high spectral resolution and stability—giving reliable results, for even the most challenging measurements.

The inVia Raman microscope's highly efficient optical design produces the best Raman data, even from minute traces of material. If you need to easily and reliably produce both rich, detailed, chemical images and highly specific data from discrete points, then the inVia Raman microscope is the ideal system for you.

Unparalleled flexibility and upgradability

The inVia Raman microscope is totally flexible and can be upgraded, modified and customised, without compromising performance. Add accessories, lasers, fibre optic probes or combine Raman with other techniques; whichever configuration of the inVia Raman microscope you choose, you will have the most flexible and sensitive Raman system on the market.

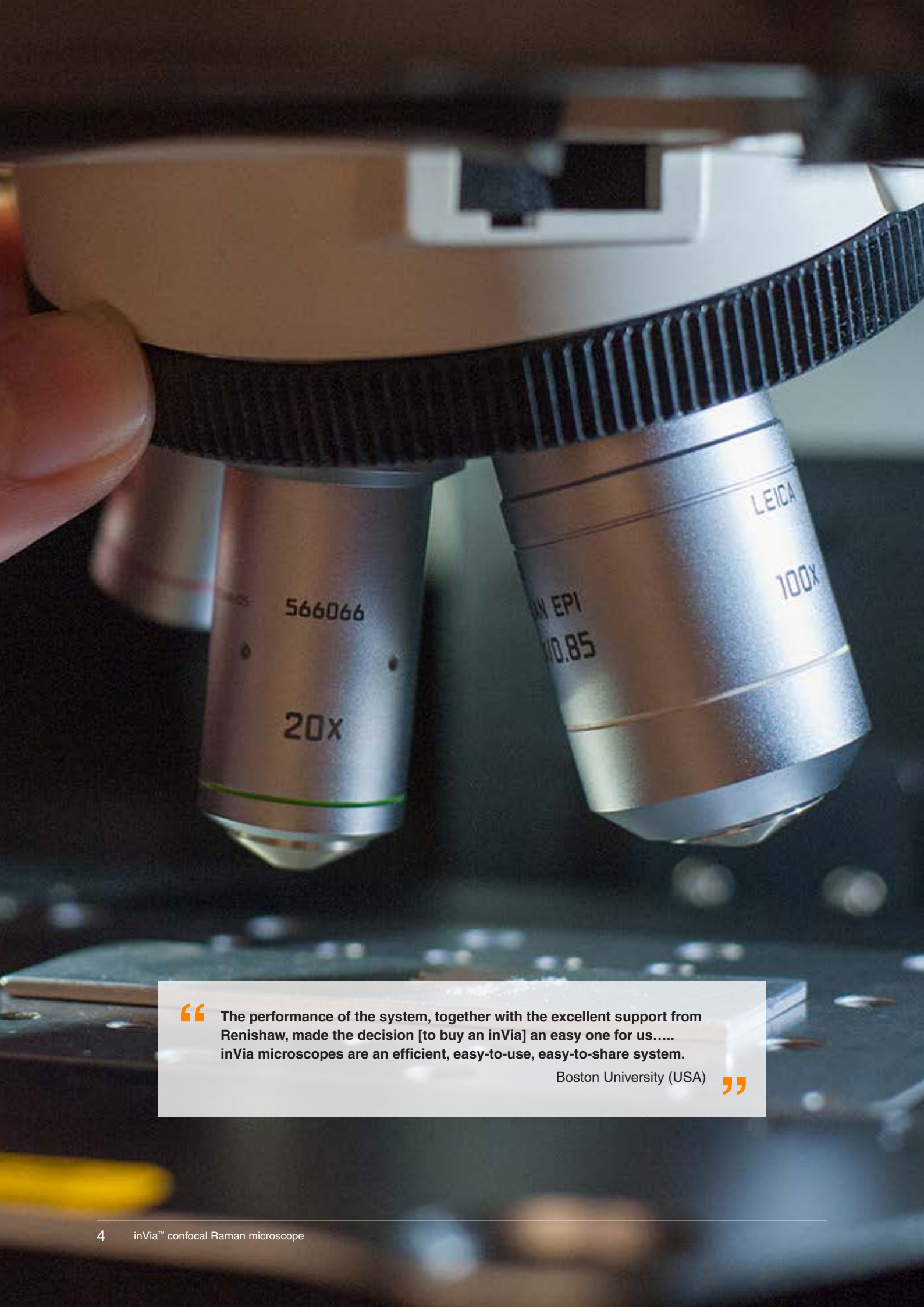
If our standard products don't match your exact needs, then our special products team can develop a custom solution to meet your requirements.

Quality, reliability and longevity

The inVia Raman microscope is designed using Renishaw's vast experience of precision and innovative engineering. The inVia Raman microscope is an exceptional, high-quality, high-performance system that has been developed and refined over more than two decades to make it one of the most trusted Raman instruments on the market. Choosing Renishaw as your Raman partner is a sound investment, and your inVia Raman microscope is built to last.

A Raman system from Renishaw comes with the lifetime of support and service you expect from a specialist provider; instrument diagnostics, servicing and adjustments can be done remotely, or by an on-site visit from a member of our global service team.

No other Raman microscope manufacturer offers the same levels of flexibility and sensitivity in one system.



> **The performance of the system, together with the excellent support from Renishaw, made the decision [to buy an inVia] an easy one for us….. inVia microscopes are an efficient, easy-to-use, easy-to-share system.**
>
> Boston University (USA)

Key benefits

High performance

The inVia Raman microscope delivers outstanding performance, providing you with the best data in the shortest time.

Sensitive

See even the weakest Raman scatterers and get spectra from thin films and monolayers.

Powerful

Use the inVia Raman microscope for both Raman and photoluminescence measurements to obtain information on the electronic and vibrational structure of your materials, or combine with other analytical techniques for a powerful, comprehensive solution.

Automated

The inVia Raman microscope's full automation handles the changing of laser wavelengths, filters and gratings for you. It also maintains focus, system alignment and calibration, so you can concentrate on getting results, not having to adjust your Raman system.

Flexible

The inVia Raman microscope is completely configurable, incredibly flexible and totally upgradable. You can analyse the widest range of samples, under different experimental conditions now and in the future.

Repeatable results

Rely on the inVia Raman microscope to produce results you can trust. With its outstanding performance you can be confident that it will deliver repeatable results time and time again – no matter how challenging the experiment.

Easy to use

The inVia Raman microscope's automation and optional sample enclosure (which eliminates ambient light) maximise operational efficiency, even in busy laboratories with multiple users.

A full range of imaging technologies

The inVia Raman microscope has a comprehensive suite of mapping and imaging techniques. Use these to generate detailed, information-rich Raman images, of both 2D areas and 3D volumes.

Analyse irregular samples

The inVia Qontor system's LiveTrack™ automated focus tracking technology enables the analysis of samples with uneven, curved or rough surfaces and maintains focus in both white light video and Raman modes.

> **"The key benefit [of the inVia Raman microscope] is the ultra-high speed data acquisition system, which results in a higher sensitivity to measuring stresses in the materials compared to other Raman systems."**
>
> Kwansei Gakuin University (Japan)

Key features

High optical efficiency

Fast and sensitive analysis

Renishaw's engineers have used their vast experience of precision and innovative design to make the inVia Raman microscope the most sensitive Raman instrument available. They use a stigmatic on-axis spectrometer which gives highest optical efficiency, excellent stray light rejection and exceptional sensitivity. With the inVia system you can study very weak Raman signals and rapidly analyse even minute traces of material.

High spectral resolution

Analyse a wide range of samples

Configure the inVia system to resolve narrow spectral features, so you can distinguish between close Raman bands and differentiate very similar materials, such as complex mixtures.

Extensive laser and spectral range configurability

Performance, without compromise

The inVia Raman microscope's operating range can extend from the ultraviolet to the infrared. Choose the best combinations of lasers, detectors, filters and gratings, to give you the best Raman data in the shortest possible time.

High spectral stability

Get consistent, reliable data

With its rigid, lightweight baseplate, and precision kinematic mounts, the inVia Raman microscope provides the highest levels of instrument stability, enabling you to monitor minute shifts in Raman band position.

Broad-range artefact-free spectra

Raman and photoluminescence measurements

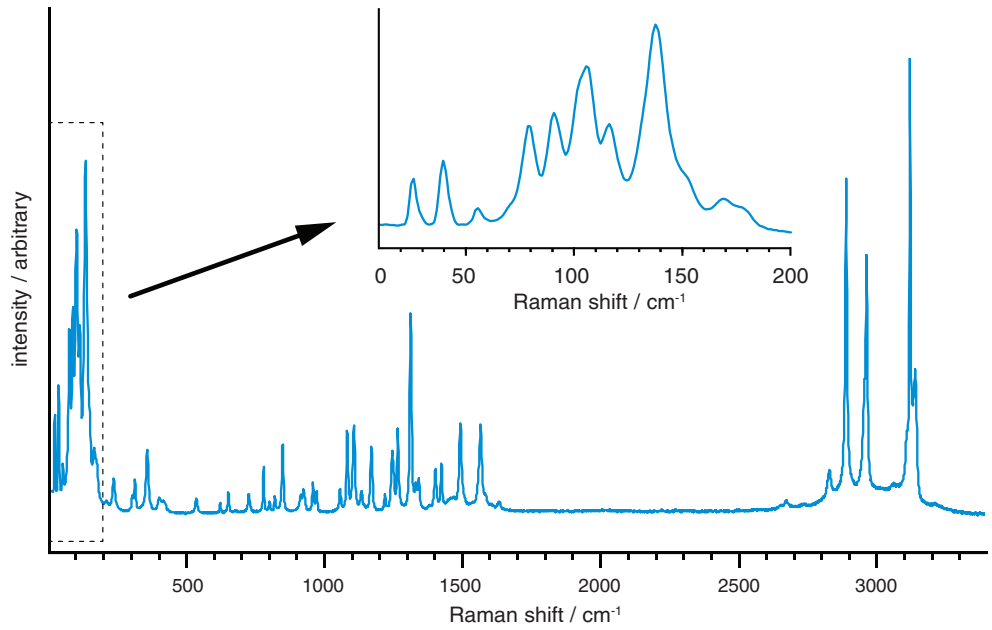
Achieve extended coverage with Renishaw's SynchroScan™ technology. This enables the collection of light over a very wide spectral range, without artefacts and without sacrificing resolution. The inVia system can, for example, acquire a high resolution spectrum from across the entire visible/near infrared region in one single continuous acquisition.

Low wavenumber performance

Analyse close to the laser line

The inVia Raman microscope supports a wide range of Rayleigh filters, including filters that you can use to study low wavenumber Raman features efficiently and easily.

> **"We like the ergonomic design and the ease of operation; inVia microscope's high efficiency; the ability and speed to change a laser line without moving the sample under study. We like the internal calibration of frequency, the possibility of automatic adjustments, the different imaging modes – from the traditional point-to-point to the rapid StreamLine™ mode. I have also to stress the high efficiency of the Renishaw team, to solve any problem or question we have on the machine."**
>
> CNRS Orléans (France)"



A Raman spectrum of l-histidine, showing the lattice modes (inset), fingerprint and C-H ranges, at high spectral resolution. It was acquired in a single spectral collection using SynchroScan™ technology.

Key features

The inVia Raman microscope supports a wide range of environmental and sampling accessories. Here, a mapping experiment is being performed at high temperature.

Highly sensitive detectors

Cutting edge technology

The inVia Raman microscope's use Renishaw's own ultra-low noise, ultra-high sensitivity CCD cameras so you get the best results in the shortest possible time. Should you wish to add more, the inVia system can be fitted with up to four detectors, such as electron multiplied (EM) detectors and InGaAs arrays.

Truly confocal performance

Configure exactly to your needs

Achieve the highest spatial resolutions possible, limited only by the inherent diffraction limit of light. The inVia Raman microscope's EasyConfocal™ optical system offers a truly confocal capability with high spatial resolution, without compromising ease-of-use, stability, and optical efficiency. Switch, with ease, from sub-micrometre high-resolution measurements to large scale averaging of bulk samples.

High performance microscope

Leica for quality, efficiency and reliability

Leica Microsystems' research-grade microscopes are the standard option for the inVia system. We carefully choose a selection of the highest performing Raman compatible objective lenses. These give both great Raman data and quality optical imaging performance.

We know optical imaging can be important, and provide different live video options and viewing control. You can view your samples at high resolution and benefit from high sensitivity. Choose between bright field, dark field, and polarised viewing to ensure you view your sample in the way that you need.

Extended sample viewing

Clearly see your sample

Many users prefer to view their samples directly using stereo eyepieces, so all inVia Raman microscopes come equipped with binoculoars as standard.

When the inVia system is equipped with a sample stage, such as Renishaw's high speed encoded stage (MS30), it can generate an image of the sample that covers an area much larger than the field of view of the microscope. You can use this image to easily define locations for subsequent data collection.

Multiple lasers

Get the best data, whatever your sample type

The inVia Raman microscope's wide range of directly coupled laser excitation options, from the near-infrared to the deep ultraviolet, ensures you can tailor your instrument to match your needs.

For example, you may wish to minimise fluorescence or induce resonance. The inVia Raman microscope normally accommodates two or three lasers as standard but can be configured to use many lasers. Optimised laser delivery paths ensure you achieve the best results from each laser.

Renishaw's patented motorised stage uses linear encoders to keep track of its position, even when you move it manually.

Key features

Generate high quality Raman images

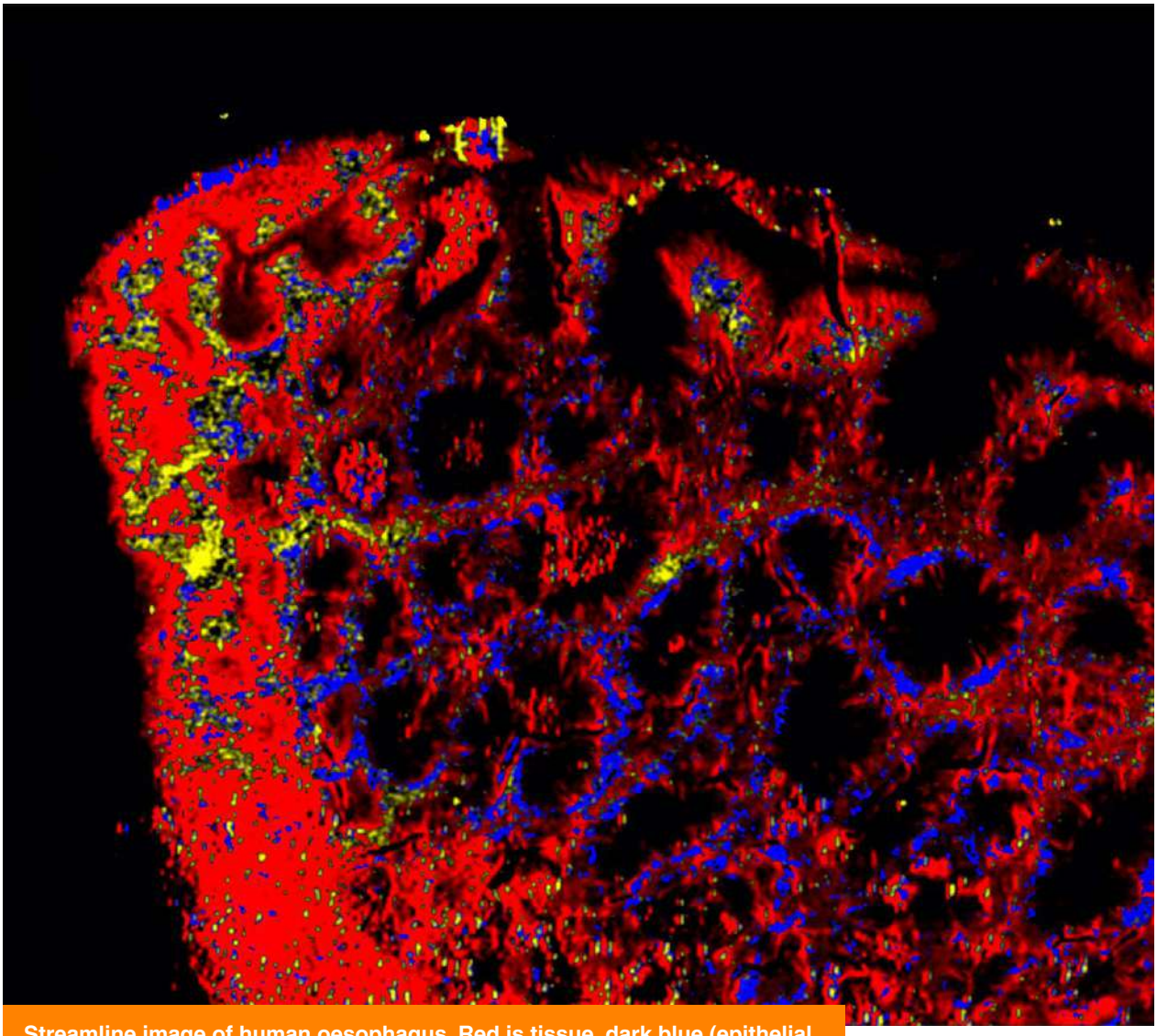
Crisp, clear chemical images

The inVia Raman microscope offers a complete range of imaging technologies that enable you to acquire data from points, lines, areas, and even volumes. StreamLine™, StreamHR™ and True Raman Imaging™ technologies are unique to Renishaw and generate outstanding Raman images.

Fully automated

The inVia system is easy to use and maintain

The inVia system's automation removes the need for manual intervention. When you change key components, like filters, lasers and gratings, it will automatically reconfigure its optics and optimise its alignment. This makes analysis more efficient, which is perfect for busy laboratories with multiple users.



Streamline image of human oesophagus. Red is tissue, dark blue (epithelial cells) / yellow (lamina propria). Sample courtesy of Catherine Kendall, Gloucestershire Hospitals NHS Foundation Trust, UK.

Maintain focus in real time

Sample surface/interface tracking technology

Use LiveTrack™ automated focus-tracking technology to acquire, in real-time, accurate and repeatable spectra and topography from samples with extensive variations in height. Create stunning 3D images of uneven, curved or rough surfaces without the need for pre-scanning.

Sampling flexibility

Access and control your sample, whatever your experimental needs

The inVia Raman microscope offers the widest range of configurations and accessories on a single Raman system.

- A range of objective lenses and environmental cells ensures your samples can be analysed under different environmental conditions.
- For samples that are too big to fit under the microscope, the flexible sampling arm lets you position your objective exactly where you need it.
- The inVia system supports both research-grade upright, inverted and open frame microscopes, as well as fibre optic probes for long distance remote analysis.

Combine for even more power

Add AFM, SEM, CLSM…

Combine the power of Raman with other analytical techniques, such as scanning probe microscopy (AFM and TERS), scanning electron microscopy (SEM), or confocal laser scanning microscopy (CLSM). The inVia system's flexible design also allows it to be combined with numerous other specialist techniques, including X-ray diffraction systems at synchrotrons, and neutron diffraction systems at beamlines.

You can use Renishaw's Correlate™ software module to simplify working with these multiple microscope systems. It transforms coordinates between them and accurately overlays images. You can then use the images to indicate where you want the inVia microscope to make automated measurements. This makes it easy to combine complementary data from different systems.

Raman polarisation option

For analysis of the symmetry and orientation of samples

Optional polarisation enables the control of both laser and spectrometer polarisation (polariser/analyser). With these options you can determine the orientation of crystals (such as microcrystals) and also depolarisation ratios for liquid samples.

Powerful software

Acquire, analyse and display high quality Raman data

Renishaw's WiRE™ (Windows®-based Raman Environment) software is tailored specifically for Raman spectroscopy. It controls sample positioning, the acquisition of spectra and provides a full suite of data processing and analysis functions.

Complementary mapping options

Create supplemental images for deeper understanding

The inVia Raman microscope can also generate images from photocurrent data and Rayleigh scattered light. These images enable you to rapidly survey samples, guiding and supplementing Raman measurements. Photocurrent imaging gives electronic information about semiconductor materials. Rayleigh imaging is ideal for locating particles, such as microplastic fragments and graphene flakes, prior to full Raman analysis.

Safety

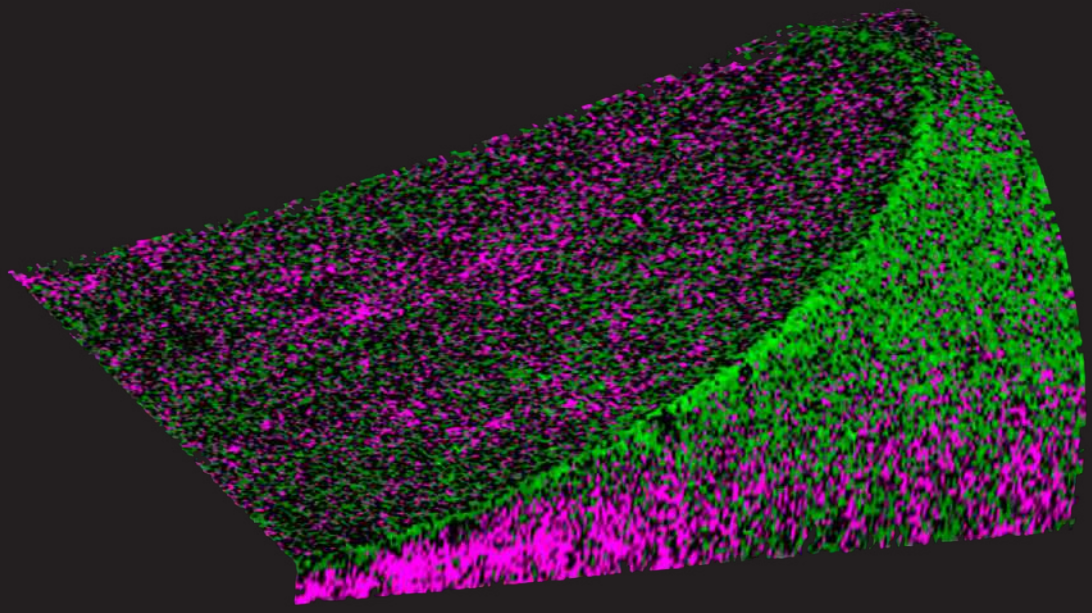
Safe to use, without compromising simplicity or ease-of-use

The inVia Raman microscope is fully equipped with laser safety interlocks and an optional sample enclosure. Depending on the configuration and lasers used, it is Class 1, Class 3B, or Class 4 laser safe.

> **"We are impressed with the sensitivity of the system, the reproducibility of the results and the stability of the 532 nm laser."**
>
> Rijksmuseum (Amsterdam)

LiveTrack™ focus-tracking technology

(a)



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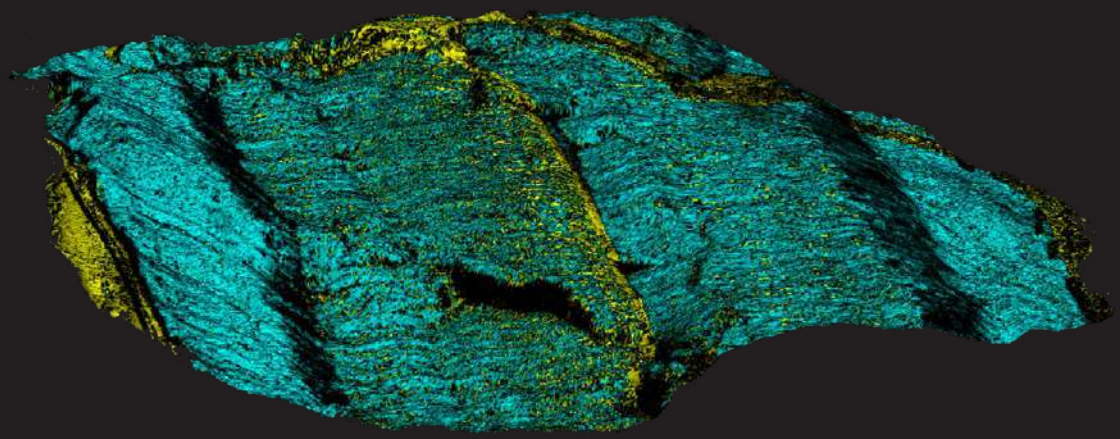


(a) Analysis of a coated flat-head screwdriver bit. The image reveals the distributions of TiN (green) and TiO_2 (magenta). The imaged surface is 8.1 mm wide, 5.1 mm deep and 3.6 mm high.

(b) Quartz-dominated rock (Tiger's Eye). The Raman image shows quartz (cyan) and inorganic carbonates (yellow). The imaged surface is 47 mm wide, 26 mm deep, and 3.0 mm high.

Maintain focus in real time

LiveTrack™ focus-tracking is available on the inVia Qontor. Focus is maintained automatically in real time during data collection and white-light video viewing.

- Keep your view of the sample in focus while you move around under manual control.
- Raman-image rough, uneven, and curved surfaces.
- Little or no sample preparation is required.
- View Raman chemical images in 3D and see both the chemistry and the topography.
- No need for time-consuming set up or a pre-scan.
- Maintain focus during dynamic measurements, such as sample heating/cooling and during very long measurements when the environmental conditions are varying.

LiveTrack focus-tracking technology

LiveTrack focus-tracking technology maintains focus by combining precise vertical motion control of the sample stage with optical focus-monitoring. It works in both white-light video viewing and Raman acquisition modes, offering significant advantages over alternative techniques.

With LiveTrack focus-tracking technology, focus is maintained in real-time as the sample:

- is moved under user command (using trackball).
- is scanned during Raman data collection.
- expands or contracts (for example because of temperature or humidity changes).

The LiveTrack system can incorporate a vertical offset, enabling Raman data collection at a fixed height above or below the interface being tracked.

LiveTrack focus-tracking saves you time during white-light video viewing

Put your sample on the microscope stage, manually focus using the video viewer, activate the LiveTrack focus-tracking option, and you are done. Focus will be maintained as you use the trackball to move the stage around to survey the sample.

This saves you considerable time as manual 'move-focus-move' operations are replaced with just 'move'. You can concentrate on the features on your sample, rather than continual refocusing.

Use with dynamic samples

The LiveTrack focus-tracking system will keep the sample in focus even if the sample height is changing because of humidity, temperature or creep changes. LiveTrack focus-tracking can work though optical windows so you can, for example, use it to keep focus on a sample in a hot-cold stage during a series of measurements, made as the temperature is changed.

Raman-map rough, uneven, and curved surfaces

With LiveTrack focus-tracking you can acquire Raman data from irregular surfaces. This not only saves time (you no longer need to section, microtome or mill to make flat) but also enables you to study the physical and chemical state at the surface, rather than in the bulk.

As data collection progresses, LiveTrack focus-tracking continuously adjusts the sample height to keep the sample in focus. The resulting data can be displayed as 2D ('top-down') images or as 3D rotatable surfaces which convey not only the chemical structure of your material, but also its topography.

A technology for all samples

You can not only study your existing samples in more detail and more efficiently, but you can also analyse a whole new range of uneven, rough, and curved samples. Maintain sub-micrometre focus even on samples that have height variations of many millimetres. Analyse samples that were previously impractical to study, or would have required extensive sample preparation. Generate Raman images and layer these onto 3D views of the sample topography.

Using LiveTrack focus-tracking to maintain focus on the surface of a sample in a high temperature cell.

Generate high quality Raman images

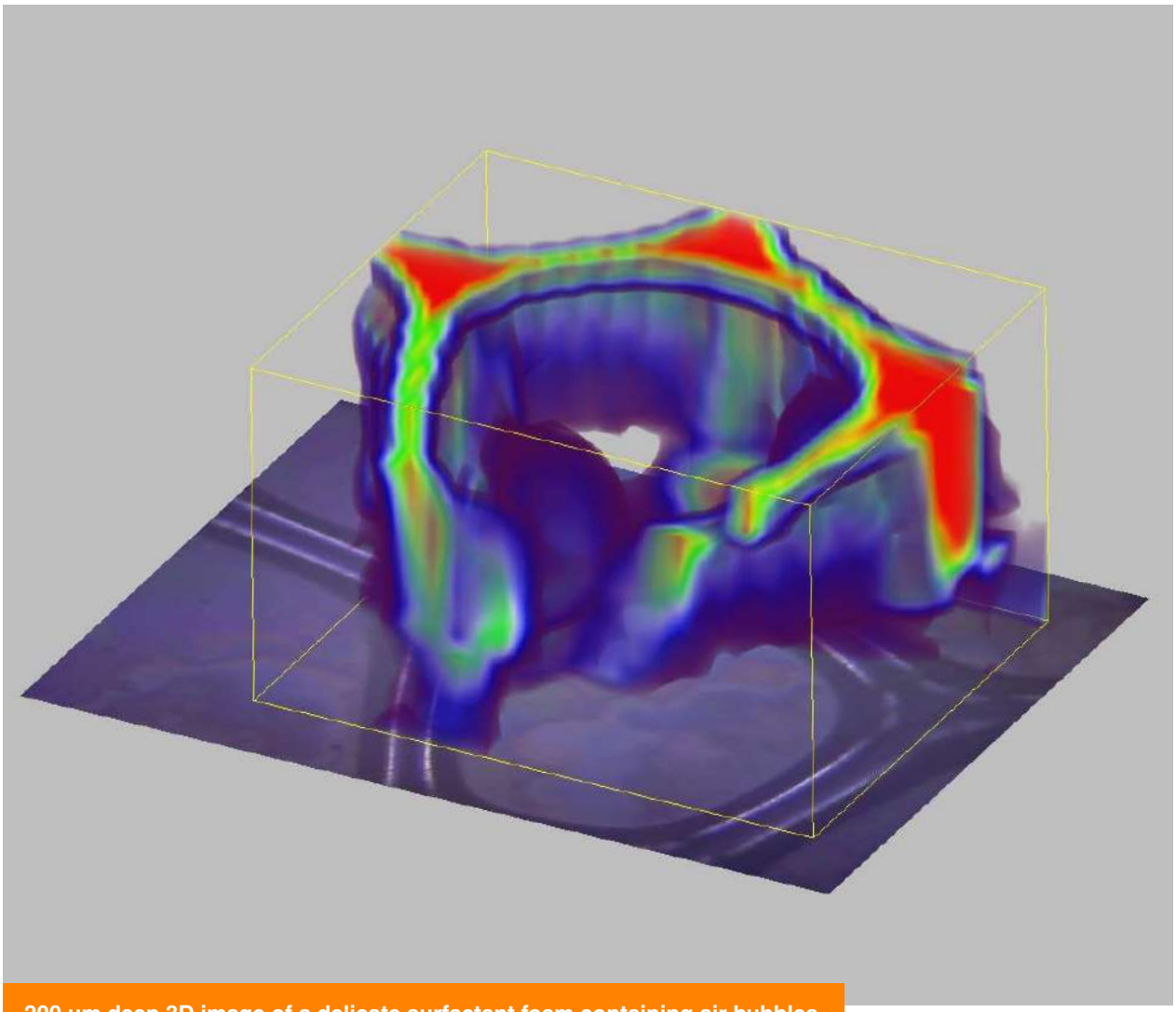
Raman images reveal spatial information about materials and their properties

Produce chemical images with the detail you need

The inVia Raman microscope supports the broadest range of advanced Raman image generation techniques so that you can study the widest range of samples. Raman analysis is non-contact and non-destructive, and doesn't require dyes or labels, making it suitable for the study of biological samples. Choose the most appropriate technique, or combination of techniques, for your samples.

Optimal images of your samples

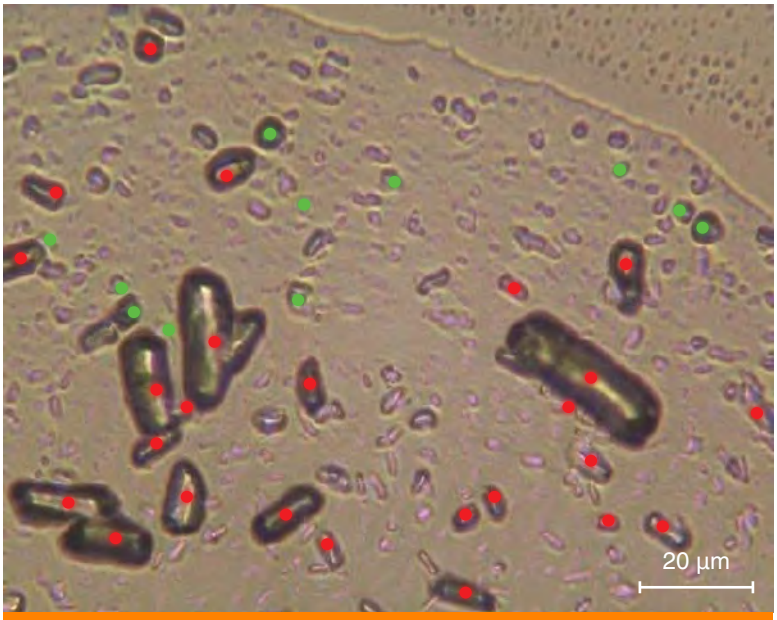
Raman images illustrate the spatial variation of Raman data, and reveal chemical and physical (e.g. stress) information about samples. The inVia Raman microscope can generate Raman images from data acquired by mapping (acquiring many complete spectra and processing them to generate images) and by direct imaging of spectral features in a single exposure.



200 µm deep 3D image of a delicate surfactant foam containing air bubbles.

A high definition Raman image of a volcanic rock section from Mount St Helens generated from 2.7 million spectra. The colours indicate the many different minerals present. Rock section courtesy of Dr Claire Horwell and David Damby, University of Durham, UK.

Understanding complex samples

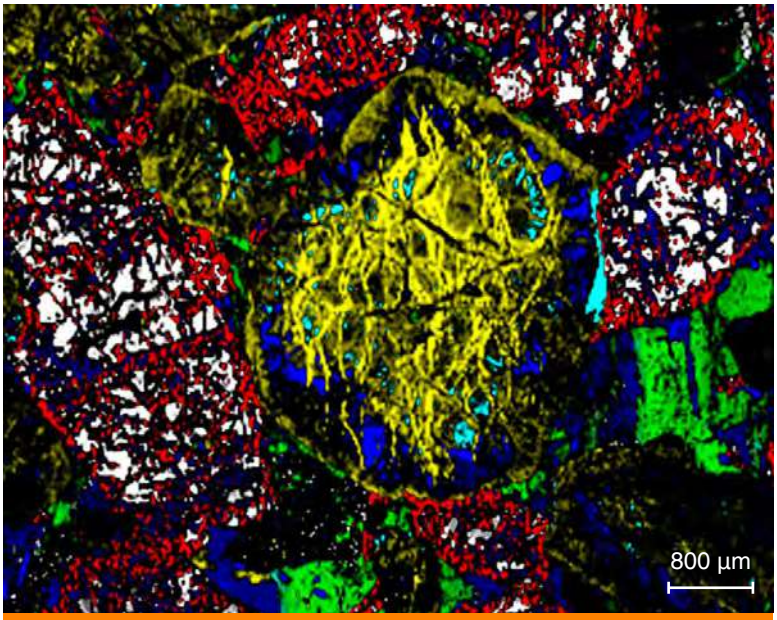


Discrete points map; fast, targeted analysis of single particles within a nasal spray droplet. The image reveals the drug and excipient location relative to the white light image.

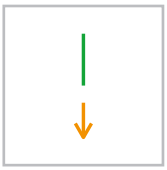
Point analysis

In addition to acquiring information-rich Raman chemical images, the inVia Raman microscope can acquire spectra from single points on a sample and display them on a traditional white-light microscope image.

- Providing 1D, 2D and 3D options, point analysis is highly flexible and ideal for single point and irregular array work.
- Ideally suited to analysing materials with very weak Raman scattering, where data collection times are long (>10 s).
- You can use Renishaw's particle analysis module to focus on chemically identifying and analysing multiple particles.



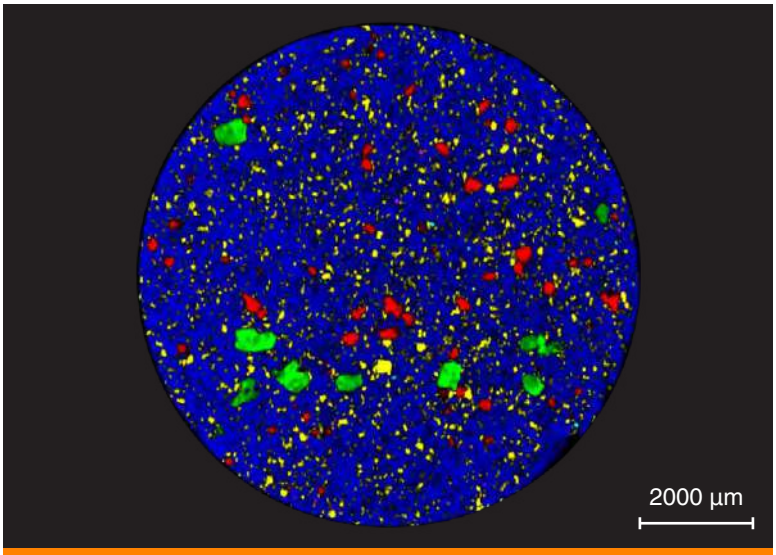
A detailed Raman image of a polished section of igneous rock from Tibet revealing its complex mineral composition. StreamLine was used as it helps prevent transformation of sensitive minerals.



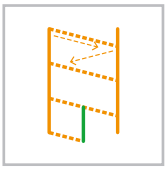
StreamLine™ imaging

This uses laser line illumation to rapidly generate 2D (XY) images.

- A line-focused laser minimises power density. This enables you to use higher laser powers without harming sensitive or delicate samples.
- Ideal for analysing domains from 1 µm to many centimeters across.



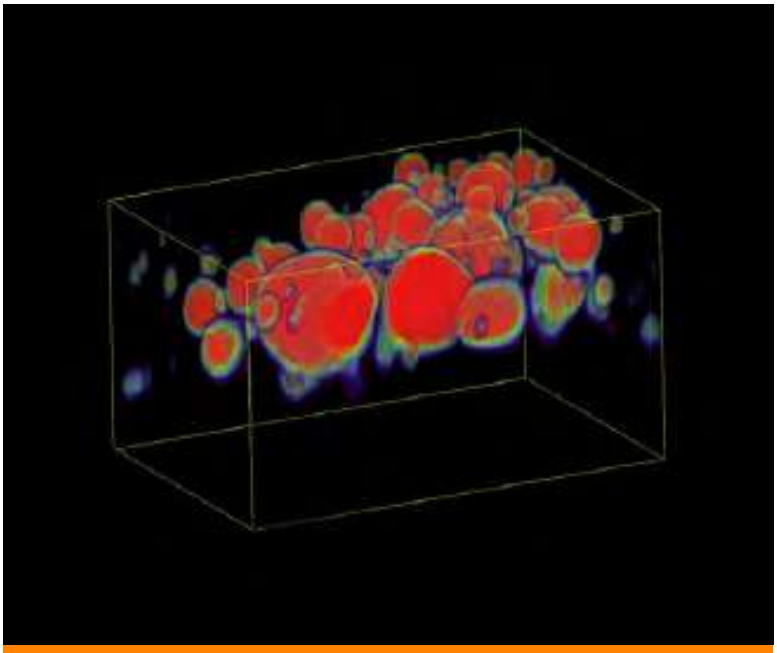
Raman image (generated with StreamLine Slalom imaging) of a pharmaceutical tablet showing the distribution and domain sizes of multiple active ingredients and excipients. StreamLine Slalom provides complete area coverage, resulting in accurate fraction estimates.



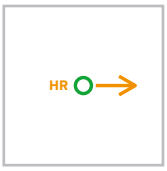
StreamLine™ Slalom imaging

The StreamLine Slalom imaging option uses a novel sample motion in conjunction with line illumination.

- Ensures complete sample coverage, even when using a large step size.
- Use it to survey very large areas quickly and find key regions of interest.



A confocal StreamHR 3D image of a cosmetic cream comprising oil in water. The vesicles range from 0.4 µm to 7 µm in diameter.

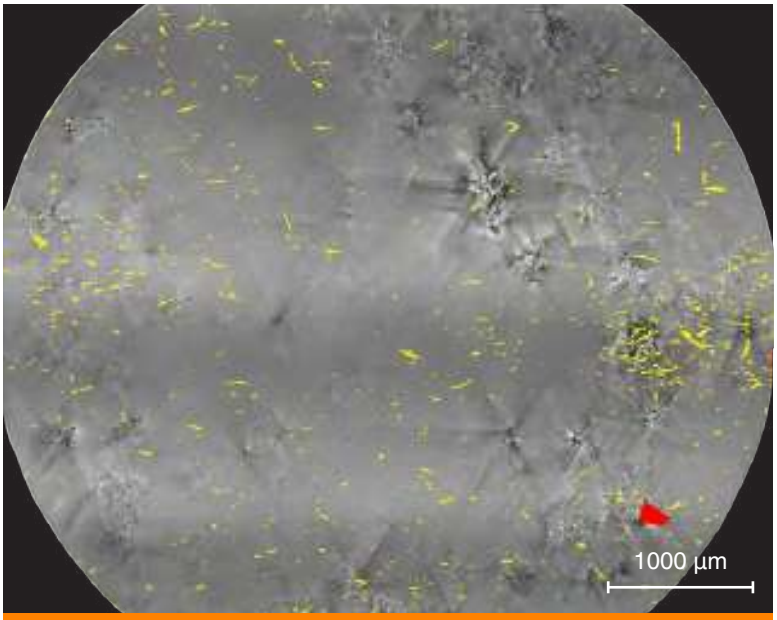


StreamHR™ imaging

This uses a laser spot to quickly generate high spatial resolution confocal 2D and 3D images.

- Generates Raman images with pixel sizes down to as low as 50 nm (feature resolution ~300 nm).
- Ideal for 3D images.

Understanding complex samples

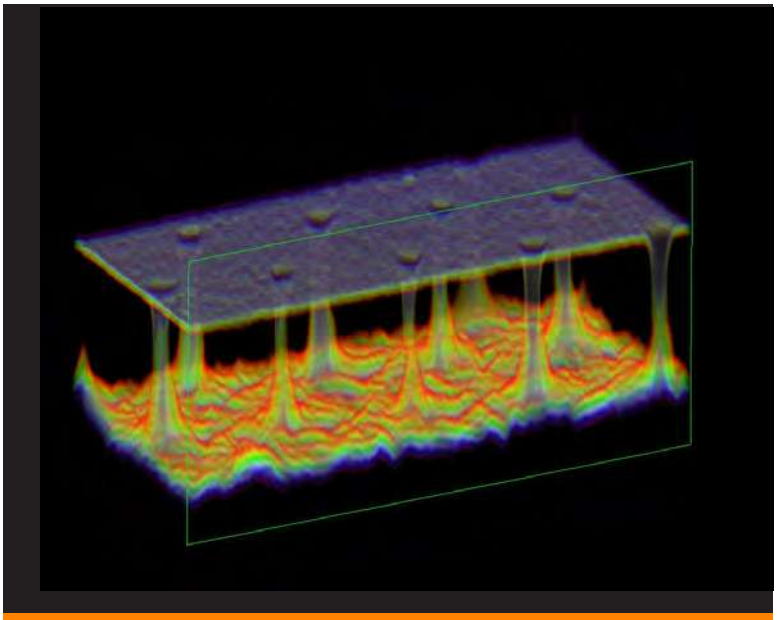


A StreamHR Rapide Raman image of a SiC wafer derived from 900,000 spectra. The image shows stress (grey), defects (yellow), and an inclusion (red).

Rapide imaging

This boosts StreamHR and StreamLine to provide ultra fast Raman data collection.

- This rapidly images by combining fast detector readout and novel constant-velocity stage motion.
- Rapide imaging can be combined with an optional electron multiplied (EM) detector to enhance weak Raman signals when signals and backgrounds are low.
- Ideal for 2D and 3D imaging when speed is essential.

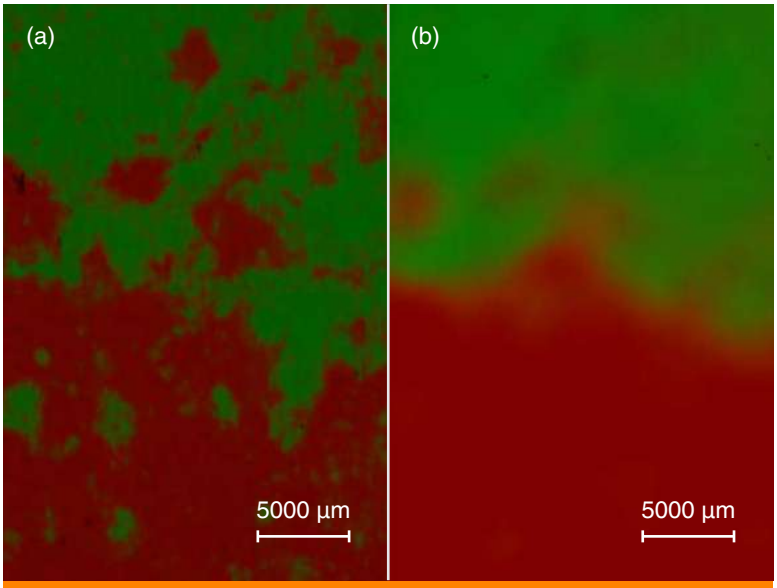


Confocal StreamHR image of an 8 µm thick gallium nitride layer grown epitaxially on a patterned sapphire substrate. The patterning improves layer quality during growth by concentrating dislocations into small regions.

Confocal depth imaging

Provides sub-surface confocal Raman information.

- Determine detailed chemical and property information from different depths within suitable samples.
- Use EasyConfocal™ to generate high spatial resolution profiles and slice and volume images.
- Create stunning 2D and 3D images that clearly illustrate your scientific results.

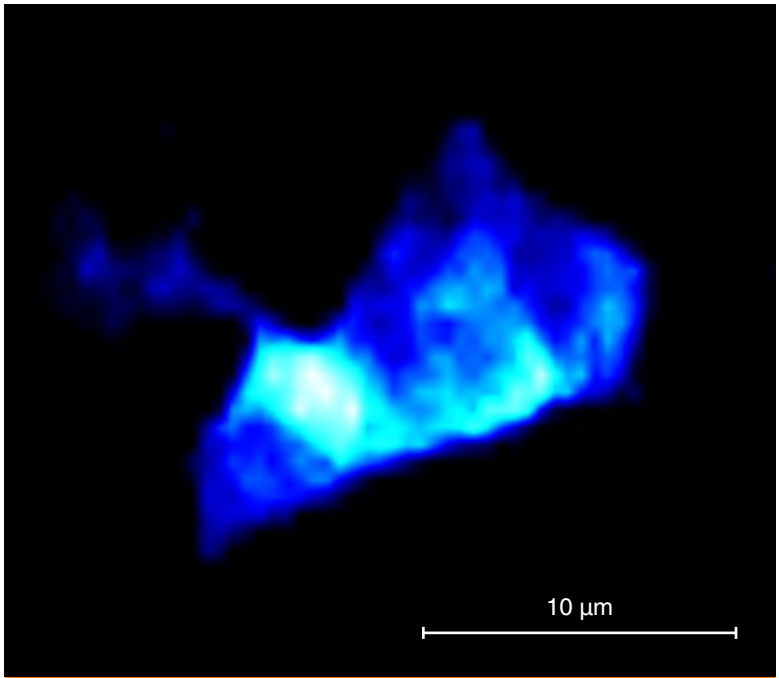


Backscattered and transmission Raman images of a caffeine and acetaminophen powder blend. The backscatter image (a) reveals the surface composition; the transmission image (b) reveals information averaged through the whole depth.

Transmission mapping

This combines transmitted light collection and sample movement to provide Raman images through the entire sample depth.

- Uses a collimated laser beam for the fast, quantitative analysis of bulk materials, mixtures and blends.
- Ideal for studying blend uniformity, studying samples in containers, monitoring samples with coatings and quantifying large volumes.
- Generate distribution and global average information from very large powder blends.



A True Raman Image, acquired in only one minute, reveals a graphene flake.

True Raman Imaging™

Directly images Raman scattered light from a defocused laser spot to provide a chemical photograph of your sample.

- Uses a filter to rapidly acquire a Raman image from just one Raman band in a single exposure.
- Determines the spatial distribution of chemical species.
- Study the spatial variations of samples that change rapidly with time.

Powerful Raman software

Renishaw's WiRE™ software, the power behind inVia

The WiRE (Windows-based Raman Environment) software controls the acquisition of spectra and provides dedicated data processing and analysis options. You can, for example, identify an unknown spectrum, remove its background, or even determine the distribution of particles in megapixel-sized Raman images.

Easy setup. WiRE software automates:

- Switching of laser wavelength
- Rayleigh filter switching from
  - Raman spectral range to broad band photoluminescence (PL)
  - Conventional Stokes to anti-Stokes
  - Standard range Raman filters to ultra-low wavenumber Eclipse filters
- Selection of diffraction gratings that govern spectral coverage and resolution
- Switching between sample viewing and Raman acquisition modes
- Microscope control
  - White light intensity
  - Aperture stop
  - Focus stop
  - Objective parcentricity option
  - Objective parfocality option
  - Bright field and dark field optical viewing modes
- Automatic alignment of laser position on sample, or manual movement for spatially offset Raman spectroscopy (SORS) measurements

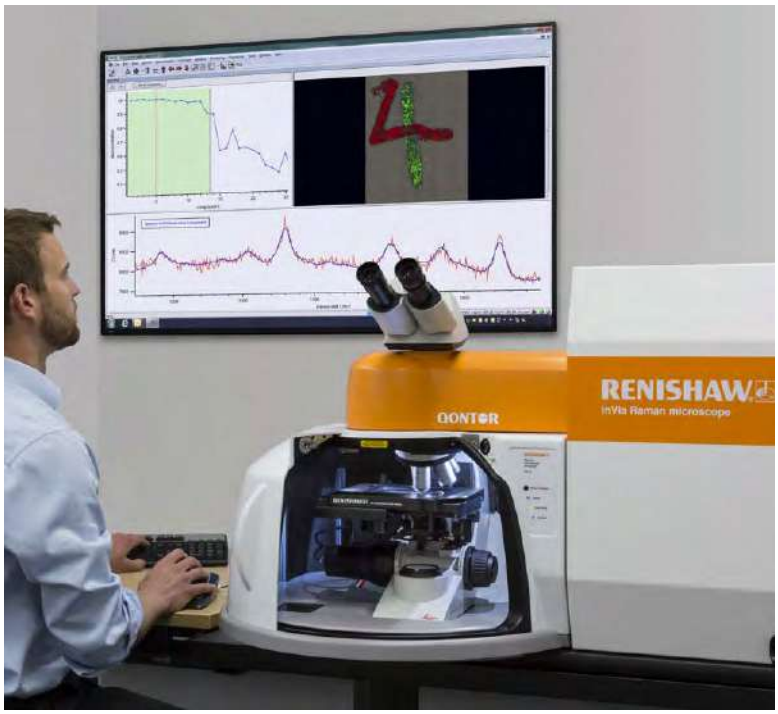
Spectral libraries

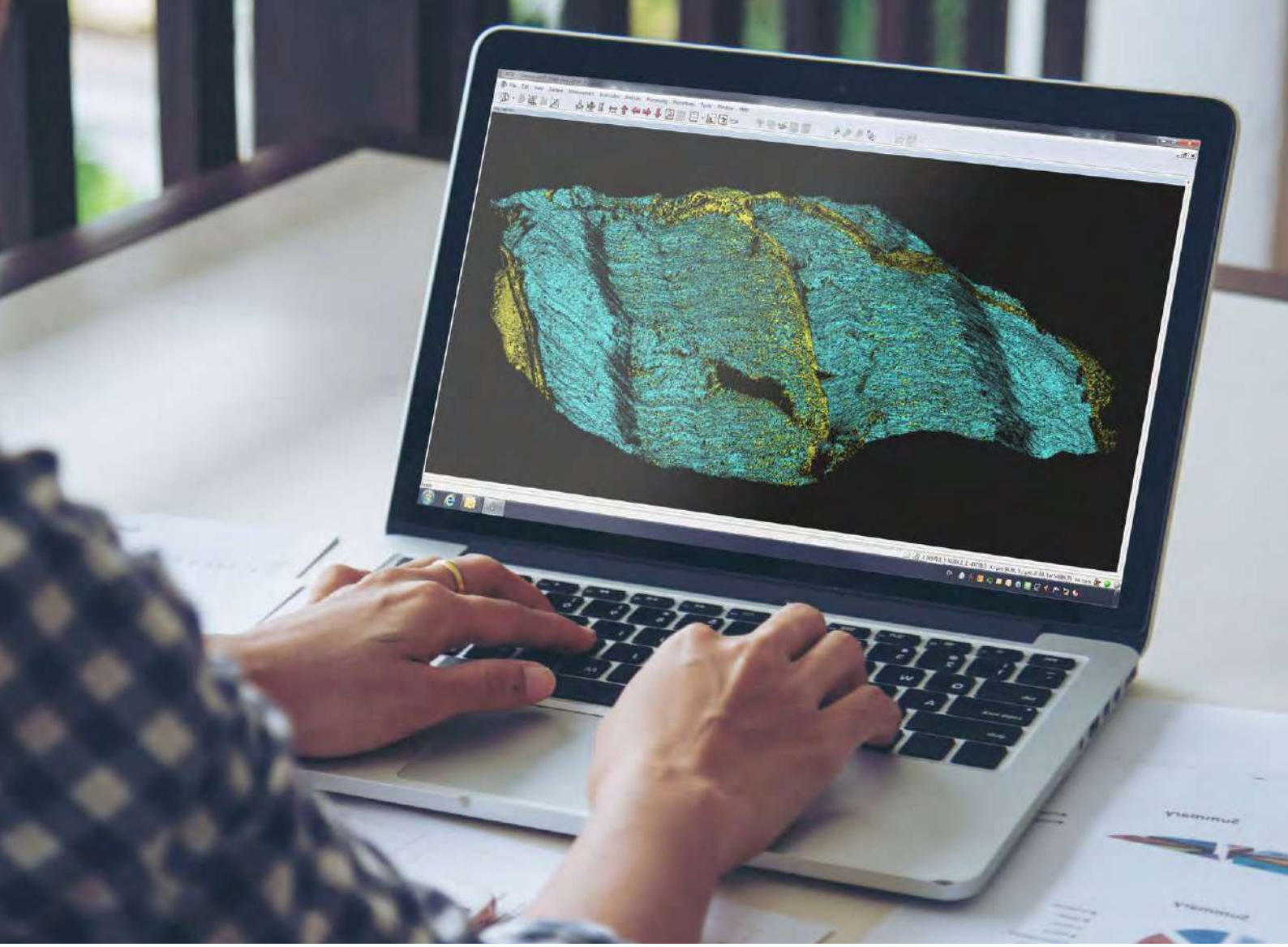
Renishaw has developed an extensive range of Raman spectral libraries for the identification of materials. This simplifies analysis by enabling the automated, computer-aided spectral identification of unknowns and mixtures.

Databases include inorganic materials and minerals, polymeric, excipient and forensic materials. Most other 3rd party libraries can also be used.

Empty modelling™ technique

Renishaw's proprietary empty modelling technique automatically analyse mixtures and indicates the components present. This can be achieved without any prior sample knowledge.





Data processing and analysis

The WiRE software contains dedicated features for processing and analysing data.

- Fast and targeted removal of cosmic ray features during and after data collection.
- Automatic removal of spectral backgrounds.
- Advanced noise removal techniques for enhancing data quality.
- Map data masking to target a subset region for processing analysis.
- Univariate and multivariate image generation, with supervised and unsupervised analysis options.
- Particle statistics to quantify species, domain size, and distribution, from both white light or Raman images.
- Dynamic generation of Raman images from 2D map data.
- Whole volume processing and analysis of 3D data using chemometrics.

Simplified workflow

Save time by storing specific measurement configurations for subsequent access. WiRE software enables you to define and execute measurement templates and workflows. These guarantee reproducibility of all parameters, such as laser excitation, laser power, laser quenching and spectral range.

Use WiRE software's queuing capability to configure measurements and leave the software to run them for you. Export results, spectra and images to other applications for additional analysis and report generation.

3D volume viewing

Use Renishaw's 3D volume viewer to review 3D data. This has full control over viewing angle and transparency so you can present the results clearly.

Monitor software module

Monitor software performs complex spectral analysis, giving simple readouts of concentrations and trends during experiments. This makes it easy for you to monitor changes and reactions in real time and pass them to third party applications.

The range of inVia Raman microscopes

The inVia system is available in three models

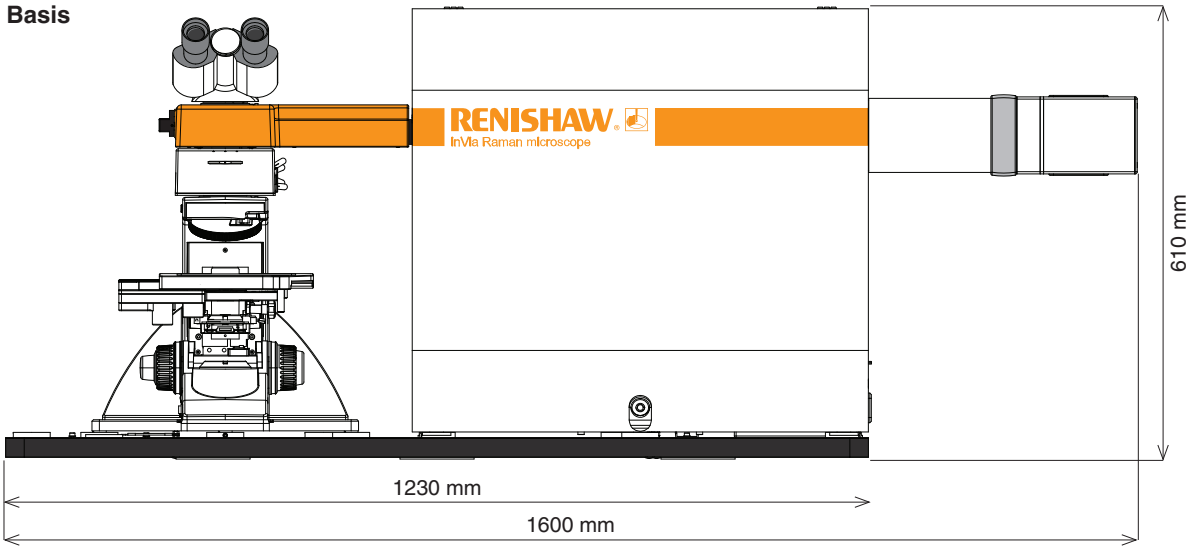
From the flagship inVia Qontor system, with full automation and LiveTrack focus tracking technology, to the entry level inVia Basis system.

Not available	Option	Included
-	o	●

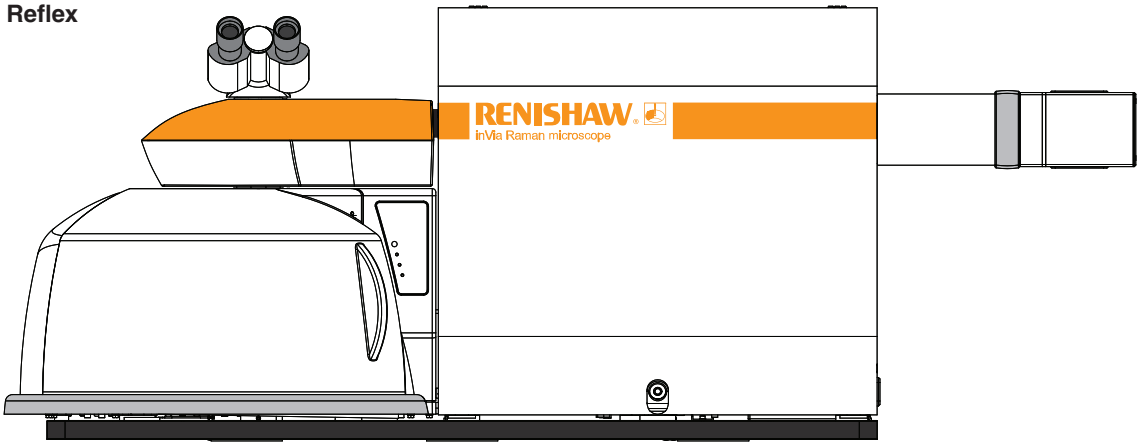
Instrument features

	inVia Basis	inVia Reflex	inVia Qontor
Sample viewing			
Stereo viewing (binocular eyepieces)	o	●	●
Memorised and automatic post collection viewing	-	●	●
Software microscope control	-	●	●
Automatic white light/Raman switching	-	●	●
Automatic white light saving with data	-	●	●
Combined white light and laser video viewing	-	●	●
White light auto-focus (LiveTrack focus-tracking)	-	-	●
Raman data collection			
Automated measurement queuing	●	●	●
Automatic focus tracking (LiveTrack focus-tracking)	-	-	●
Alignment and performance checking			
Internal neon wavelength calibration source	-	●	●
Internal reference standards for auto-calibration	-	●	●
Automated Raman calibration correction (quick calibration)	●	●	●
Laser auto-align	●	●	●
Raman signal auto-align	●	●	●
Performance health check	-	●	●

inVia Basis

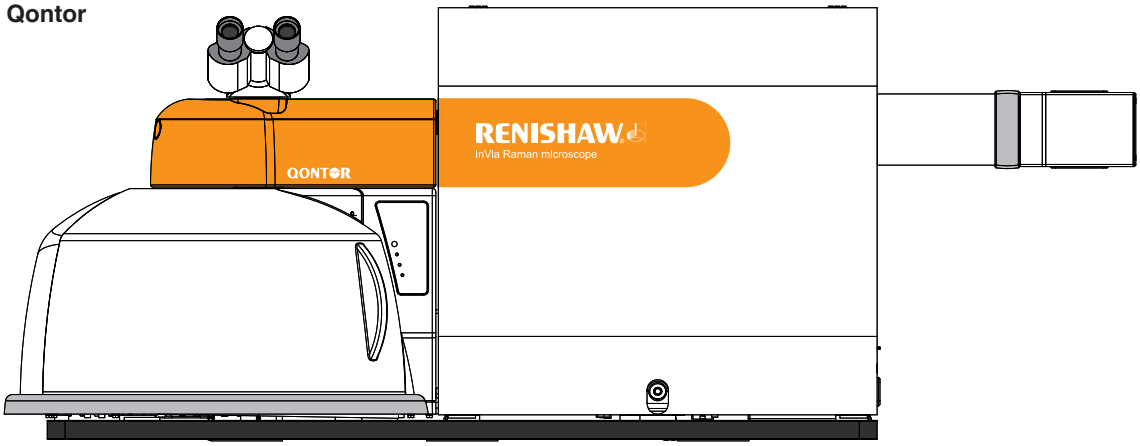


inVia Reflex



Shown with optional microscope enclosure

inVia Qontor



Shown with optional microscope enclosure

Renishaw Raman Assist

Get the most from your inVia Raman microscope with our comprehensive training and support package. We help you to explore all of the advanced features and capabilities of your system to ensure it produces the best data.

This package is available to all users, following the purchase of a Raman system from Renishaw. It offers the following benefits:

- Support from our global network of highly qualified Raman applications scientists, via a dedicated email address. The team can help you interpret and optimise your data.
- Access to our comprehensive online library of training modules and videos.
- Access to Renishaw's Raman Revealed training sessions.
- Invitations to our worldwide Inside Raman seminars, where you can find out about new system capabilities and software, and hear from other users.
- Online remote-access support and diagnostic checks from your support team.
- Free point release software updates.

Technical highlights: inVia Raman microscope

Wavelength range	200 nm to 2200 nm	
Lasers supported	From 229 nm to 1064 nm	
Spectral resolution	0.3 cm^{-1} (FWHM)	Highest typically necessary: 1 cm^{-1}
Stability	< ±0.01 cm^{-1}	Variation in the centre frequency of curve-fitted Si 520 cm^{-1} band, following repeat measurements. Achieved using a spectral resolution of 1 cm^{-1} or higher
Low wavenumber cut-off	5 cm^{-1}	Lowest typically necessary: 100 cm^{-1}
High wavenumber cut-off	30,000 cm^{-1}	Standard: 4,000 cm^{-1}
Spatial resolution (lateral)	0.25 µm	Standard: 1 µm. Dependent on objective and laser
Spatial resolution (axial)	< 1 µm	Standard: < 2 µm. Dependent on objective and laser
Detector size (standard)	1024 pixel × 256 pixel	Other options available
Detector operating temperature	-70 °C	
Rayleigh filters supported	Unlimited	Up to 4 filter sets in automated mount. Unlimited additional filter sets supported by user-switchable accurately-locating kinematic mounts
Number of lasers supported	Unlimited	1 as standard. Additional lasers beyond 4 require mounting on an optical table
Windows® PC controlled	Latest specification Windows® PC	Includes PC workstation, monitor, keyboard and trackball
Supply voltage	110 V AC to 240 V AC +10% -15%	
Supply frequency	50 Hz or 60 Hz	
Typical power consumption (spectrometer)	150 W	
Depth (dual-laser systems)	930 mm	Dual laser baseplate
Depth (triple-laser systems)	1116 mm	Triple laser baseplate
Depth (compact)	610 mm	Up to three lasers (laser type dependant)
Typical mass, excluding lasers	90 kg	

System performance depends on individual configuration and options. Due to the range of options and configurations of the inVia Raman microscope this information is given as a guide to performance. For more detailed and specific performance and specifications please contact your local Renishaw representative.

RENISHAW
apply innovation™

When performance really matters, choose Renishaw

We launched our first Raman spectroscopy product in 1992, and have been continuously developing Raman instrumentation ever since. Decades of experience ensure that our products can be trusted to deliver the results you need.

Our Raman systems are built with many parts manufactured in-house. These are put through extensive and rigorous testing to ensure they are highly stable and reliable.

To find out more about the inVia confocal Raman microscope, please contact your local representative or visit **www.renishaw.com/invia**

Laser safety

Class 3B laser product - Standard system for operation with laser wavelengths from 320 nm to 1064 nm

Class 1 laser product - This option is available (subject to system configuration) for systems operating with laser wavelengths in the range 320 nm to 1064 nm

Class 4 DUV laser product - System with at least one path configured for operation at laser wavelengths in the range 180 nm to 315 nm. (Dependent on configuration, these systems may also operate at laser wavelengths from 320 nm to 1064 nm)

Class 4 Vis/NIR laser product - Systems operating with Class 4 (visible) lasers can be provided as a custom solution tailored to meet customers' requirements subject to the laser power(s) not compromising the integrity or function of the system.

www.renishaw.com/raman

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BR010(EN)-04-C