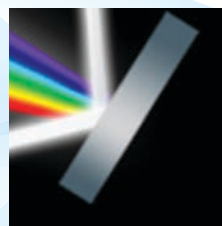


Modular Raman Spectrometers



Flexible Raman Spectrometers from the Raman Experts

horiba.com/scientific



Flexible and Affordable Raman Spectrometers

The new range of modular Raman spectrometers from HORIBA Scientific allows the user to have a flexible Raman system to handle high performance spectroscopy at a price that fits most budgets.

These modular spectrometers can be used with HORIBA Scientific's own range of dedicated Raman sampling options, such as the Superhead Raman probe or Fiber-Microscope system.

- Choice of spectrometer and detector to satisfy almost any spectral resolution, coverage or sensitivity needs
- Manual or optional mapping stage
- Multimodal: Perform Raman + other spectroscopies on the same system
 - Photoluminescence (PL)
 - Time-resolved PL (TRPL)
 - Raman
 - Electroluminescence (EL)
 - Dark field scattering spectroscopy
- Imaging through spectrometer: Use the same camera for imaging and Raman spectroscopy to authenticate signal origin

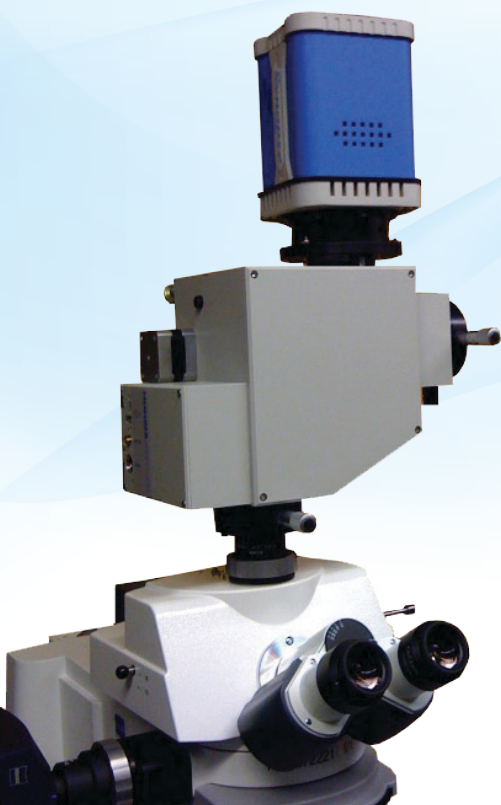
Confocal Modular Raman Microscope

- Confocal Raman microscope
- Fiber- or direct-coupled laser
- Built-in color sample imaging camera
- Choice of lasers (442nm – 830nm)
- Adjustable confocal aperture
- Three objectives (10X, 50X, 100X)
- Manual or optional mapping stage



Standard Microscope: Modular Raman

- Need to use a standard microscope? Not a problem! We can add Raman to it, either as a turnkey system or as an upgrade to your microscope
- Keep key functions of your microscope, and add Raman as another measurement modality
- Fiber- or direct-couple one or more lasers, from 442nm – 785nm



Benchtop Macro and Probe-based Modular Raman

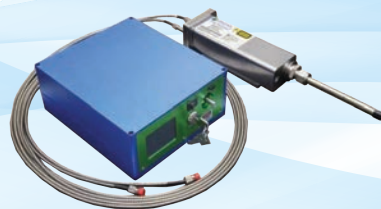
- Easy-to-use benchtop macro modular systems
- Many sampling accessories
- Probe-based systems to measure samples that need to be contained or analyzed in a restricted, or controlled environment



- A variety of probe options to suit any budget, space or performance needs
- Confocal options available for improved SNR and depth profiling
- Options with built-in imaging for micro sampling



- Modular low frequency (THz) Raman probe options measure down to few wavenumbers from laser line ($\sim 7\text{cm}^{-1}$):
 - For structural analyses, crystallinity, isotopic differentiation, phase transitions
 - Available in free space and immersion options

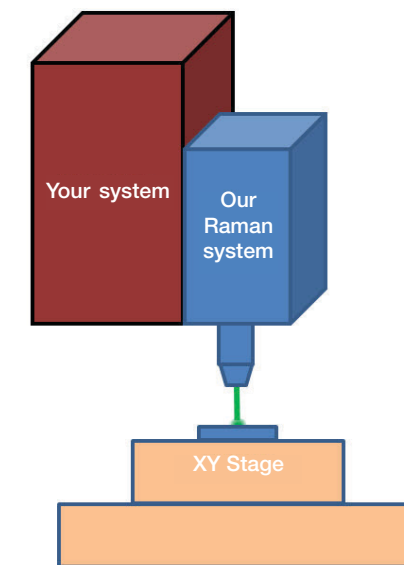


- Specialty probes for:
 - Process monitoring
 - Immersion into corrosive or hazardous environments
 - Polarization Raman
 - And more



OEM Opportunities

- Add Raman to your system and offer more value for your customers
- Work with the experts in Raman spectroscopy, with deep experience and an excellent track record of system integration
- Easy pathway to integrate and take advantage of our products and knowledge in Raman spectroscopy



All on the BEST Raman software...Period!

- With more than half a century of experience in Raman, it shows in our software
- A powerful Raman engine underneath a simple, very easy, and user-friendly interface



Build Your Own!

- The most comprehensive catalog of components for building a custom Raman solution:
 - Spectrometers
 - Single channel detectors
 - Array detectors
 - Turnkey software
 - Custom software (SDK)



CCD Detectors

- The right array detector for every expectation:
 - Spectral resolution
 - Spectral coverage
 - Deep-cooled for high sensitivity
 - Back-thinned CCDs for NIR sensitivity with etalon suppression technology



Single Channel Detectors

- Single channel detectors for:
 - Affordability
 - Multi-spectroscopy systems, such as Raman and PL—extending range into NIR



SDK For Custom Software Development

- Software Development Kit for developing custom software to control all HORIBA components
- Example code for Labview, C, C++, C#, etc.



Spectrometers For Modular Raman



Lumetta

| Specification at Laser Wavelength | 532 nm | 632.8 nm | 785 nm |
|---|------------|------------|------------|
| Spectral Range (cm ⁻¹) | 100 – 9500 | 100 – 6500 | 100 – 3400 |
| Resolution (cm ⁻¹ /pixel) 26µm pixel size | 27.6 | 19.5 | 12.7 |
| Resolution (cm ⁻¹ /pixel) 14µm pixel size | 14.9 | 10.5 | 6.82 |



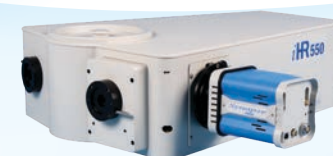
UHR

| Specification at Laser Wavelength | 532 nm | 632.8 nm | 785 nm |
|---------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| Recommended Gratings | 1800 g/mm 1200 g/mm 600 g/mm | 1800 g/mm 1200 g/mm 600 g/mm | 1800 g/mm 1200 g/mm 600 g/mm |
| Spectral Range (cm ⁻¹) | 100 – 9500 | 100 – 6500 | 100 – 3400 |
| Resolution (cm ⁻¹ /pixel)* | 2.53 | 1.54 | 0.70 |



iHR320

| Specification at Laser Wavelength | 532 nm | 632.8 nm | 785 nm |
|---------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| Recommended Gratings | 1800 g/mm 1200 g/mm 600 g/mm | 1800 g/mm 1200 g/mm 600 g/mm | 1800 g/mm 1200 g/mm 600 g/mm |
| Spectral Range (cm ⁻¹) | 100 – 9500 | 100 – 6500 | 100 – 3400 |
| Resolution (cm ⁻¹ /pixel)* | 1.22 | 0.78 | 0.40 |



iHR550

| Specification at Laser Wavelength | 532 nm | 632.8 nm | 785 nm |
|---------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| Recommended Gratings | 1800 g/mm 1200 g/mm 600 g/mm | 1800 g/mm 1200 g/mm 600 g/mm | 1800 g/mm 1200 g/mm 600 g/mm |
| Spectral Range (cm ⁻¹) | 100 – 9500 | 100 – 6500 | 100 – 3400 |
| Resolution (cm ⁻¹ /pixel)* | 0.73 | 0.48 | 0.26 |



FHR1000

| Specification at Laser Wavelength | 532 nm | 632.8 nm | 785 nm |
|---------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| Recommended Gratings | 1800 g/mm 1200 g/mm 600 g/mm | 1800 g/mm 1200 g/mm 600 g/mm | 1800 g/mm 1200 g/mm 600 g/mm |
| Spectral Range (cm ⁻¹) | 100 – 9500 | 100 – 6500 | 100 – 3400 |
| Resolution (cm ⁻¹ /pixel)* | 0.42 | 0.27 | 0.15 |

*For 1800 g/mm grating and 26µm CCD pixel

Custom Spectroscopy Solutions

Light Sources

- Continuous or pulsed broadband illuminators
- Continuous or pulsed tunable illuminators
- Millisecond tunable illuminators
- Fiber or Light Guide illuminators
- Nanosecond pulsed lasers
- Broadband metal halide illuminators



Spectrometers

- Small, mid-range and long focal lengths
- Miniature fiber spectrometers
- Research-grade grating spectrometers
- CCD and PDA USB spectrometers



Cameras

- Front- and back-illuminated
- UV-Vis-NIR
- Scientific
- Deep-cooled
- Low light imaging



Detectors

- PMT
- Single channel
- Solid state
- Ambient/TE/LN-cooled



Optical Accessories

- Filter wheels
- Sample compartments
- Optical fibers
- Collimators
- Laser diodes
- Timing electronics
- Light guides



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