



- HIGH SPECTRAL RESOLUTION
- HIGH SENSITIVITY (VERY LOW LIMIT OF DETECTION)
- CAPABILITY TO CARRY OUT LOW-FREQUENCY RAMAN MEASUREMENTS
- EXTREMELY STABLE LASER WAVELENGTH AND LASER POWER
- EXTENDED SPECTRAL RANGE

RG Raman spectrometer

Extremely compact research-grade Raman spectrometer

TECHNOLOGY

RG Raman spectrometer perfectly suits for any kind of demanding Raman spectroscopy applications that require high spectral resolution, extremely stable laser power, high sensitivity and broad spectral range (from low frequency to high frequency Raman shift).

Technology is based on high throughput transmittance diffraction optics with up to 85% efficiency from sample to detector.

Four different lasers:

405 nm, 532 nm, 633 nm and 785 nm.

*Extremely stable laser wavelength and laser power
(0.02% fluctuation during 8 hours of operation).*



SPECIFICATIONS

Feature versus model	RG Raman 405 / 405 HR*	RG Raman 532 / 532 HR	RG Raman 633 / 633 HR	RG Raman 785 / 785 HR
Laser wavelength**	405 nm	532 nm	633 nm	785 nm
Power on sample	from 0.1 to 30 mW	from 0.1 to 75 mW	from 0.1 to 50 mW	from 0.1 to 65 mW
Spectral Range	80-3750 cm ⁻¹ (405) 80-1900 cm ⁻¹ (405 HR)	60-3750 cm ⁻¹ (532) 60-1900 cm ⁻¹ (532 HR)	80-3750 cm ⁻¹ (633) 450-1800 cm ⁻¹ (633 HR)	90-2500 cm ⁻¹ (785) 450-1800 cm ⁻¹ (785 HR)
Spectral Resolution	4-6 cm ⁻¹ (405) 2-4 cm ⁻¹ (405 HR)	4-6 cm ⁻¹ (532) 2-4 cm ⁻¹ (532 HR)	4-6 cm ⁻¹ (633) 2-4 cm ⁻¹ (633 HR)	3-5 cm ⁻¹ (785) 1.5-3 cm ⁻¹ (785 HR)
Signal-to-noise ratio at***:	1000:1	1200:1	900:1	900:1
Physical dimensions	145 mm x 120 mm x 50 mm (LxWxH)			
Weight	1.3 kg			

* HR - high resolution model

** Custom laser wavelengths available upon request.

*** Determined as peak signal-to-noise ratio of polystyrene spectrum at maximal laser power, integration time 0.3s, number of repetitions 10.

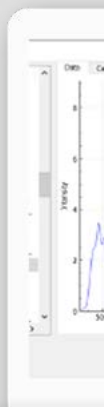
* Pinhole size dependent. pinhole size can be customised.

SOFTWARE

Miraspec for PC (Windows 7, 10, 11) and smartphone (Android)

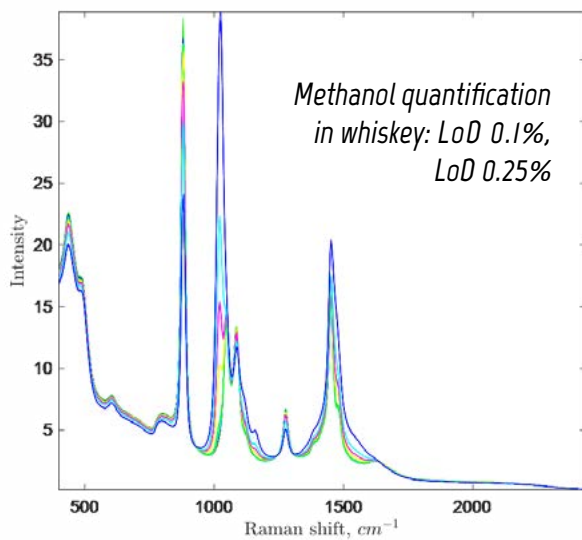
System controlled by smartphone or PC via Bluetooth or USB-C cable.

Data acquisition	<ul style="list-style-type: none"> laser power control exposure time control 	<ul style="list-style-type: none"> sensor gain control number of repetitions control
Data preprocessing options	<ul style="list-style-type: none"> spectral smoothing using Savitzky-Golay filter and Asymmetric Least Squares spectral background correction using rolling circle and Asymmetric Least Squares 	<ul style="list-style-type: none"> spectrum normalization (unit norm, unit area)



ACCESSORIES

- long working distance probe, $f=30$ mm
- middle working distance probe, $f=15$ mm
- short working distance probe, $f=6.25$ mm
- contact probe; ideal for in-vivo skin measurements, direct contact measurements of powders and liquids
- sample holders
- axial focusing accessories
- light protection sample cover
- objective covers
- adapters for standard microscopy objectives



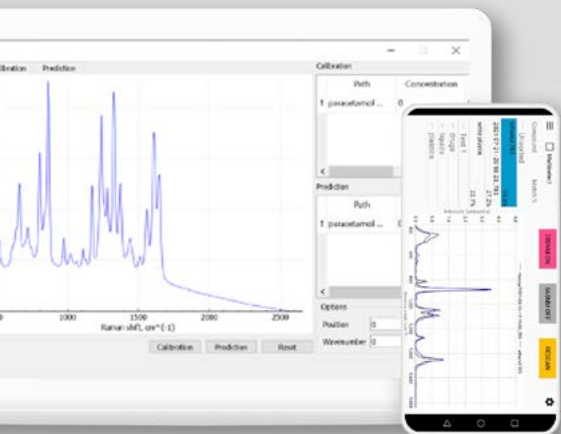
APPLICATIONS

- Pharmaceuticals
- Chemicals
- Surface Enhanced Raman Scattering
- Polymers
- Nano-materials
- Semiconductors
- Forensics
- Alcohol quality and counterfeit product detection
- Cosmetics
- Geology
- Skin diagnostics

RG Raman spectrometer covers **high resolution** Raman applications that may include gas measurements, inorganics, crystals and semiconductor applications, etc.

RG Raman spectrometer is **perfect for low frequency** Raman range studies of inorganics and semiconductors, structural and intermolecular analysis of organic samples in low frequency Raman range.

RG Raman spectrometer **has improved performance** for quantitative analysis and long-time kinetic studies due to extra stable laser power.



Data analysis features:

Qualitative analysis

- materials identification
- creation of spectral libraries

Quantitative analysis

- Raman peak height/peak area calibration
- Partial Least Squares (PLS) calibration
- Multivariate Curve Resolution calibration
- Non-Negative Least Squares quantification of mixtures

*Harness the power
of Raman spectroscopy
and make it widely
accessible for the
benefit of mankind.*

- Lightnovo's mission



Lightnovo has been founded in 2019 by a team united by the belief in making a difference with innovative Raman spectroscopy solutions.

Our goal is to provide premium performance Raman spectrometers and microscopes with the world's smallest form factor at a price that democratizes access and opens new application areas.

It is our vision to become the recognized leader in providing the highest value Raman spectroscopy and Raman microscopy solutions for research, industry and healthcare.



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