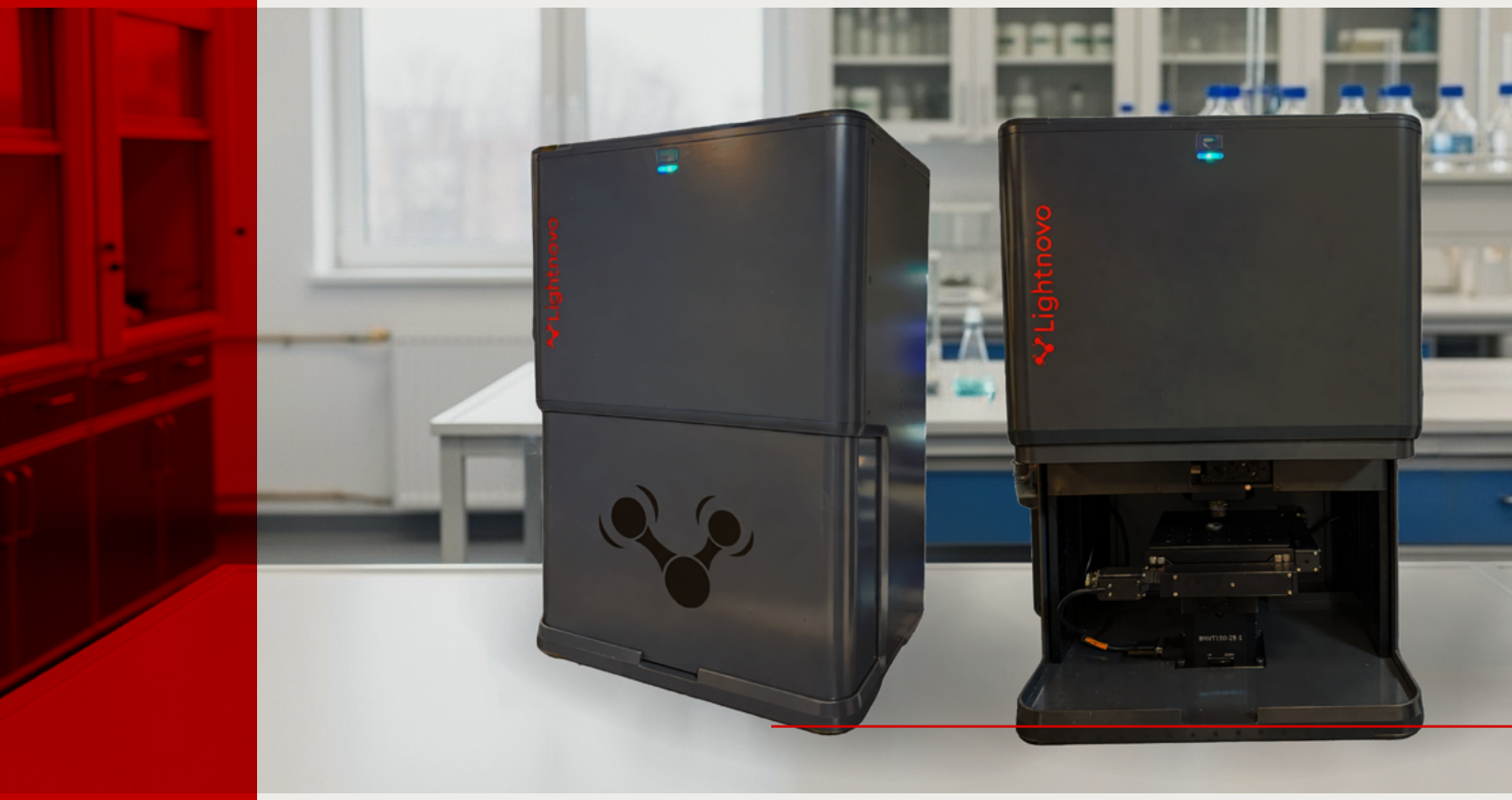
Lightnovo

Research Grade Microscope

Premium RG confocal Raman microscope for Advanced Research



- Long mapping range
- High spectral resolution
- Wide range of lasers
- Dual Microscopy Modes – Upright and Inverted
- Modular design

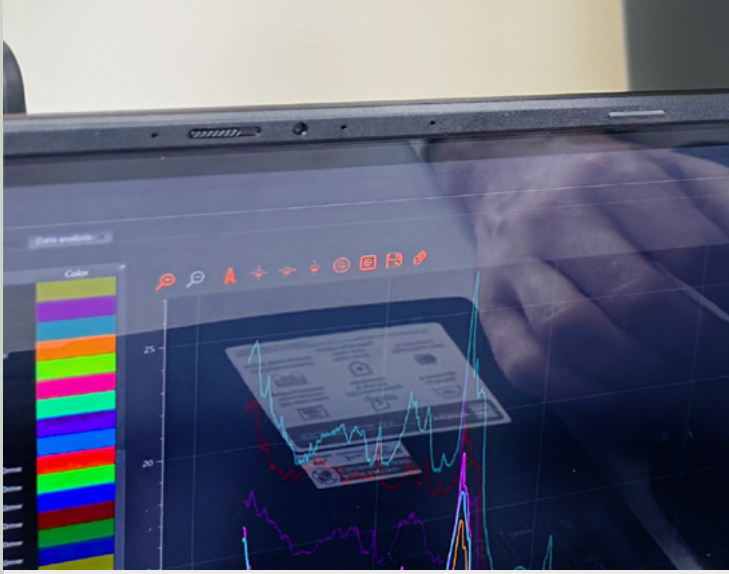
Miraspec

Software for PC (Windows 11) and smartphone (Android)

Data acquisition	**Laser power control** **Exposure time control** **Sensor gain control** **Control of number of repetitions** **Spectral range control**
Data preprocessing options	**Spike correction** (Whitaker-Hayes, moving window) **Spectral smoothing** (Whittaker, asymmetric least squares, Savitzky-Golay) **Baseline correction** (rolling circle, rubberband, least squares, asymmetrically reweighted penalized) **Spectrum normalization** (Z-score, mean, Mean centre, MinMax, Unit Norm L1, Unit Norm L2) **Intensity normalization*** **Laser mode-hop correction*** **Spectral super resolution***
Visual microscopy	**Simultaneous image acquisition** **Visualization of laser spot position** **Panorama sample imaging**
Mapping	**X, Y and/or Z spatial mapping** **Time mapping** **Curvature compensation**
Map analysis	**Peak intensity map using 2 dimensions** (X, Y, Z, time or Raman shift) **Peak area map using 2 dimensions** (X, Y, Z, time or Raman shift)
Chemical mapping methods	**Principal component regression** **Non-negative matrix factorization** (SIMPLISMA-NNLS, MCR-ALS)

**patented feature*

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



Accessories

- Microscope objectives with magnification 10x, 20x, 50x, 100x
- Custom microscope objectives available upon request
- Objective covers
- Magnetic objective adaptors for quick switching
- Adaptors for standard microscopy objective threads (RMS, M25)
- 96 well plate holder
- Microscopy slide holder

Applications

For researchers, industries, universities and general consumers

Life Sciences & Health: Biosciences, pharmaceuticals, skin diagnostics, cosmetics

Materials & Nanotechnology: Polymers, nano-materials, semiconductors, surface enhanced Raman scattering (SERS)

Industrial & Chemical Analysis: Chemicals, geology, forensics

Quality Control & Authentication: Alcohol quality, counterfeit product detection

Technology

The RG Raman Microscope from Lightnovo is a high-performance solution for demanding Raman microscopy applications requiring **high spectral and spatial resolution, broad spectral range**, and **exceptional laser stability.**
Designed for flexibility and precision, this modular microscope delivers:

- **Dual Microscopy Modes – Upright and Inverted**

With its unique flip design, the RG Raman Microscope easily switches between **upright** and **inverted microscopy** modes - no reassembly required.

- **Integrated Optical & Raman Imaging**

Equipped with **reflected visible light microscopy** on a separate camera sensor, the RG system allows simultaneous **optical observation** (size, morphology) and **Raman spectroscopy** (chemical and structural analysis).

- **Modular & Compatible**

Thanks to its modular design, the RG microscope can be paired with either the **RG Raman spectrometer** or the compact **miniRaman spectrometer,** offering scalable performance for diverse research needs

Specification

Feature versus model	RG microscopy platform motorized	RG microscopy platform manual	RG microscopy platform focusing stage
Compatible spectrometers*	miniRaman spectrometers miniRaman Pro spectrometers	RG spectrometers RG Pro spectrometers	
Lateral resolution**	200 - 420 nm		
Axial resolution or confocality**	700 – 2400 nm		
White light microscopy	Real-time camera visualization of the sample Reflected with simultaneous visualization of laser spot and Raman acquisition		Not included
Microscopy configuration	up-right and inverted		
Mapping range in XYZ	102 x 102 x 25 mm	15 x 15 x 15 mm	
Minimum step size	100 nm	5 µm	

* *Restriction on wavelengths that can be interchanged into microscope platform.*
** *Resolution depends on the laser wavelength and spectrometer used. Values represent the use of RG spectrometers, all wavelengths with microscope objective NA = 0.95, 100x magnification*

Extra Features

- Compact size 360x450x685 mm (LxWxH)
- Weight 34-43 kg (depending on configuration)
- White light microscopy (reflected) with simultaneous visualization of laser spot and Raman acquisition
- Microscopy configuration up-right and inverted
- Lateral step size 100 nm
- Axial step size 100 nm
- Motorised door
- Magnetic holding points for additional objective
- Incubator compatible

About Lightnovo

A spin-off from the Technical University of Denmark, Lightnovo was founded in 2019 by an enthusiastic team united by the goal of revolutionizing the field of Raman spectroscopy through innovative, high-performance solutions. Our mission is to develop and commercialize **“Raman for all: democratize the power of high-end Raman spectroscopy for the benefit of mankind”.**

We aim to provide premium performance Raman spectrometers and microscopes with the world’s smallest form factors without compromising the performance. With this innovation, Lightnovo addresses the need for portable, reliable field instruments at an affordable price.

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