

miniRaman Microscope

The world's smallest confocal and
modular Raman microscope



- Extremely compact
- High mapping resolution
- Up-right and inverted operation
- Modular design

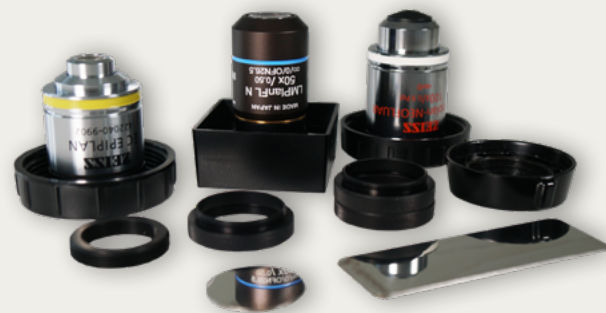
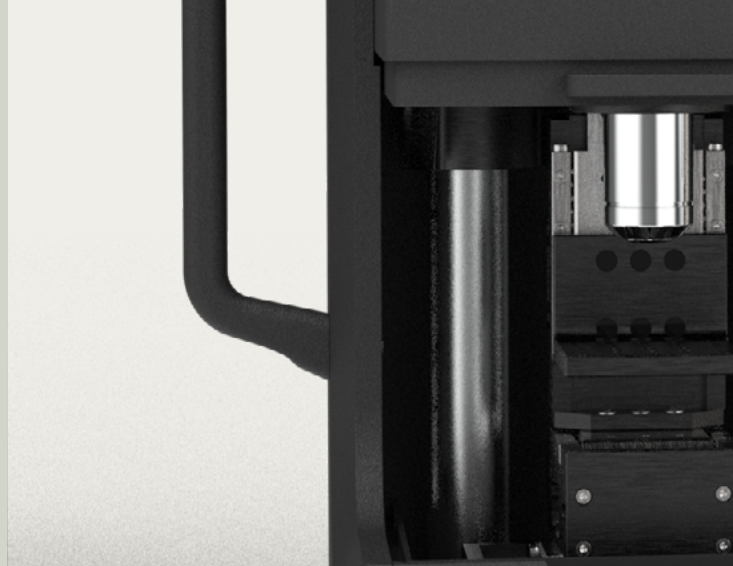
Software

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

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

Data acquisition	Laser power control Exposure time control Sensor gain control	Number of repetitions control Spectral range control
Data preprocessing options	Spike correction (Whittaker-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*

*Patented feature



Accessories

- Microscope objectives with magnification 10x, 20x, 50x, 100x
- Custom microscope objectives available upon request
- Objective covers
- Adapters for standard microscopy objectives (incl magnetic)
- Samples holders

Data analysis features

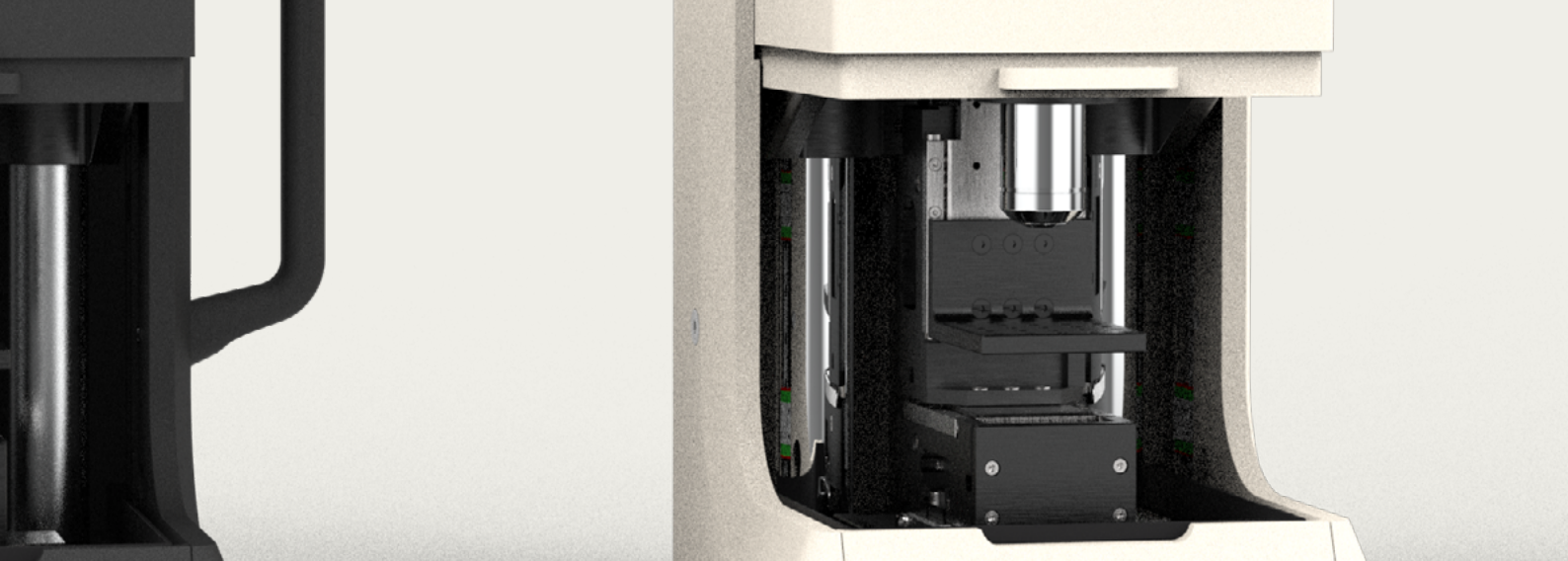
Data Exploration	Principal component analysis Non-negative matrix factorization (SIMPLISMA-NNLS, MCR-ALS)	
Qualitative analysis	Material identification (Pearson correlation, square Euclidean cosine, square first difference Euclidean cosine) Creation of spectral libraries	
Quantitative analysis	Principal component regression Segmented HQI option	Raman peak height/peak area calibration Partial Least Squares (PLS) calibration
Classification	Random Forest, Linear SVM, AdaBoost, Decision Tree, Hoefding Tree, Naïve Bayes, Perceptron, Softmax Regression	

*Patented feature

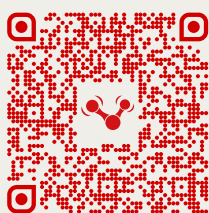
Applications

For researchers, industries, universities and general consumers

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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



Unique Technology



The **miniRaman microscope** is an innovative confocal equipment based on the miniRaman spectrometer, with a patented, integrated **reference channel**. This innovative technology ensures **automatic calibration** by correcting for laser wavelength drift delivering accurate and reliable results. Due to the **unique, patented technology*** miniRaman microscope has very high throughput, perfect wavenumber accuracy and Raman intensity calibration via in-build reference channel.

Specifications miniRaman Microscopy Platform*

Feature versus model*	miniRaman microscopy platform 665 motorized	miniRaman microscopy platform 785/665 motorized	miniRaman microscopy platform 665 manual	miniRaman microscopy platform 785/665 manual
Laser wavelength	665 nm	789 nm and 665 nm	665 nm	789 nm and 665 nm
Lateral resolution**	800 nm	900 nm	800 nm	900 nm
Axial resolution or confocality**	2.5 μ m	3 μ m	2.5 μ m	3 μ m
White light microscopy	Reflected with simultaneous visualization of laser spot and Raman acquisition			
Microscopy configuration	up-right and inverted			
Mapping travel range in XYZ	30 x 30 x 30 mm		10 x 10 x 13 mm	
Minimum step size	NA		5 μ m	

* Compatible with corresponding miniRaman spectrometers. Not included. It can be changed and replaced by the user when necessary.

** Determined at microscope objective NA=0.95 (magnification 100x)

Extra Features

- Small size (130 mm x 130 mm x 300 mm)
- Lightweight (4 kg)
- White light microscopy reflected with simultaneous visualization of laser spot and Raman acquisition
- Microscopy configuration up-right and inverted
- Lateral step size 500 nm
- Axial step size 500 nm



Contact Details

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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.

Distributor in Ukraine



LEM Ukraine

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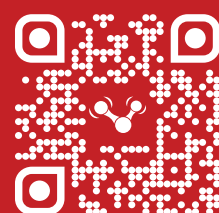
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