Lightnovo

miniRaman PRO Spectrometer

Lab-level performance into handheld systems



- Temperature-stabilized laser performance
- High sensitivity in a compact handheld format
- Reliable spectra for identification and quantitative analysis
- Extended Spectral Range

Miraspec

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

Data acquisition	**Laser power control** **Exposure time control** **Sensor gain control** **Number of repetitions control** **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***
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) **Compatible libraries** (>20,000 spectra)** **Creation of spectral libraries**
Quantitative analysis	Principal component regression 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*
***various library options available upon request*

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



Accessories

- Short/ Middle working distance probe, f=15 mm
- Long working distance probe, f=30 mm
- Contact probe
- Disposable silicone heads
- Sample/Vial holders
- Axial focusing accessories
- Light protection sample cover
- Power bank
- Belt Holder
- Docking station

Use Cases & Applications

- **Life Sciences & Health**
- **Materials & Nanotechnology**
- **Industrial & Chemical Analysis**
- **Quality Control & Authentication**
- **Explosives**
- **Chemical Weapons**
- **Precursors**
- **Illegal Drugs**
- **Toxic Industrial Chemicals**



Unique Technology

The **miniRaman Pro** builds on Lightnovo's patented miniaturized Raman technology, combining compact design with advanced optical performance and high measurement stability. The miniRaman Pro further enhances performance through improved laser quality and temperature stabilization, delivering highly accurate Raman shift calibration and excellent spectral stability.

Specification

Feature versus model	PRO miniRaman spectrometer 785	PRO Dual miniRaman spectrometer 785/660	PRO miniRaman spectrometer 830
Laser wavelength	785 nm	785/660 nm	830 nm
Power on Sample	5* – 400 mW 0.5** – 70 mW	5* – 400 mW (785) 5* – 60 mW (660) 0.5** – 70 mW (785) 5-60** mW (660)	5 – 400 mW
Spectral Range	100 – 3100 cm^{-1}	100 – 3100 cm^{-1} (785) 2700 – 3700 cm^{-1} (660)	80 – 2400 cm^{-1}
Spectral slit size	20, 35, 50µm	20, 35, 50µm	20, 35, 50µm
Spectral Resolution	0.25nm/px, 5 – 8 cm^{-1} / 7 – 10 cm^{-1} / 9 – 12 cm^{-1} ***	0.25nm/px, 5 – 8 cm^{-1} / 7 – 10 cm^{-1} / 9 – 12 cm^{-1} (785) 0.36nm/px, 12 – 15cm^{-1} / 13 – 17 cm^{-1} / 15 – 18 cm^{-1} (660)***	0.24nm/px, 6 – 9 cm^{-1} / 7 – 11cm^{-1} / 9 – 12 cm^{-1} ***
Signal-to-noise ratio	2500:1	2500*:1 (785) 600*:1 (660) 1000**:1 (785) 600**:1 (660)	2000:1

* *multimode*
** *confocal*
*** *corresponding to slit sizes 20/35/50µm*

Extra Features

- Small Size 134x75x47 mm
- Lightweight 580 g
- One Button Operation
- Low Power Consumption
- Connectivity Bluetooth and USB



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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 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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