

## RAMOS RU120 Basic automated Raman spectrometer



RAMOS RU120 basic compact Raman spectrometer is a standalone research instrument designed to perform spectral measurements with capabilities at the level of high-end systems.

Spectrometer RAMOS RU120 has a rigid, moving parts free design that does not require adjustments, has both high sensitivity and high spectral resolution, and equipped with built-in single-mode laser.

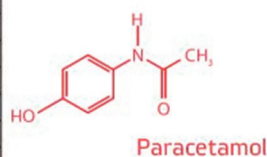
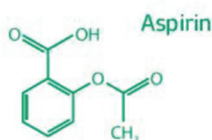
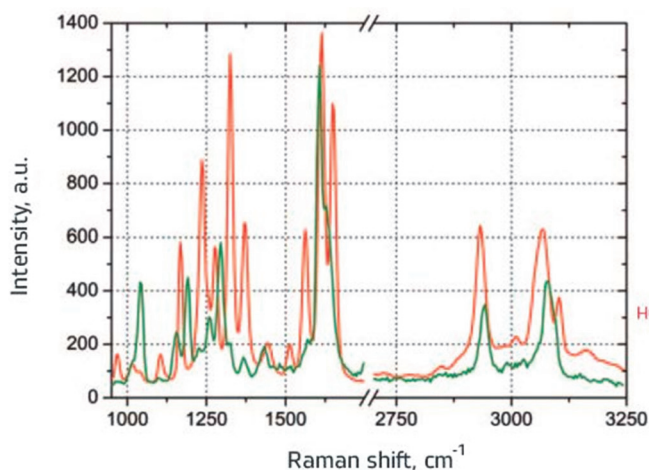
RAMOS RU120 can be equipped with Raman fiber optic probes.

Wide range of capabilities, high reliability and compact size allow using RAMOS RU120 for various scientific and industrial applications.

The objects for complex research can be semiconductors, minerals, polymers, pharmaceutical and biological substances, coatings and other materials.

### Main features

- Research level Raman spectrometer with advanced measurement techniques
- Integrated single-mode laser
- No moving parts in the spectrometer except laser shutter
- Compact
- Automatic adjustment of laser radiation power level
- Wide dynamic range and extremely high sensitivity of innovative sCMOS detector
- Ability to connect fiber optic Raman probes
- Edge or Notch filters for Stokes and Anti-Stokes spectroscopy
- Advanced control software allows to perform various types of measurements
- Library of over 10,000 spectra
- Integration of third-party spectral databases
- **The most affordable price in the Research Class segment of instruments**



The characteristic spectra of aspirin and paracetamol.

The Raman spectrum of paracetamol has characteristic peaks near 1650  $\text{cm}^{-1}$  (C=O stretching vibration) and 1612  $\text{cm}^{-1}$  (N-H stretching vibration)

The Raman spectrum of aspirin has characteristic bands of 1606  $\text{cm}^{-1}$  (C-C stretching vibration) and 1622  $\text{cm}^{-1}$  (C-O vibration of carboxyl group)

## Specification

	Configuration with 532 nm laser*		Configuration with 785 nm laser*	
Laser power	50 mW		130 mW	
Laser attenuation	1-100% with 1% step			
Focal length	120 mm			
Entrance aperture	40 µm			
Grating	1200 l/mm	1800 l/mm	600 l/mm	1200 l/mm
Spectral resolution	~7 cm <sup>-1</sup>	~4 cm <sup>-1</sup>	~7 cm <sup>-1</sup>	~3 cm <sup>-1</sup>
Spectral range				
• Edge/Notch filter	70 – 4 700 cm <sup>-1</sup>	70 – 3 155 cm <sup>-1</sup>	50 – 3 200 cm <sup>-1</sup>	50 – 2 140 cm <sup>-1</sup>
• Bragg filter	10 – 4 700 cm <sup>-1</sup>	10 – 3 155 cm <sup>-1</sup>	N/A	N/A
<i>Detector</i>				
Detector type	sCMOS			
Pixel number	4096			
Pixel size	7 x 200 µm			
Readout noise	16 e- rms			
Dark current	400 e-/pixel/s			
Dynamic range	5000:1			
Peak sensitivity wavelength	700 nm			
Integration time	1 ms – 60 s			
PC connection interface	USB 2.0			
Power input	100 – 240 VAC, 50 – 60 Hz			
Dimensions (L x W x H)	100 x 235 x 56 mm			
Weight	2.0 kg			

\* – Other wavelengths are available on request

## Application fields

### Biology

Visualization of cellular components with minimum perturbation

### Pharmaceutics

Identification and distribution of chemical components and molecular conformers in various drugs

### Polymers

Determination of polymer composition, including qualitative analysis of copolymers, determination of additives and fillers (plasticizers, pigments, colorants, etc.)

Kinetics research: polymerization, destruction processes (chemical or thermal)

### Geology

Characterization of minerals, detection of components distribution and their phase transitions

### Cosmetology

Researching the composition of skin care products as well as their penetration ability

### Forensics

Identification of unknown substances, different types of fibers, glasses, paints, explosive materials, inks, narcotic and toxic substances, proof of authenticity of documents

and many more...

### Material science

Investigation of various materials with high spectral resolution – superconductors, polymers, coatings, composites, carbon nanotubes, graphene, etc.

### Heritage and Art, Gemology

Determination of pigments and binding agents used in painting

Spectroscopic analysis of archaeological samples (ceramics, glass, etc.) gives information on their origins and history

Rapid identification of precious and semi-precious stones, e.g., identification of natural and synthetic diamonds

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