

RAMOS S120

Dual-channel automated Raman confocal microscope

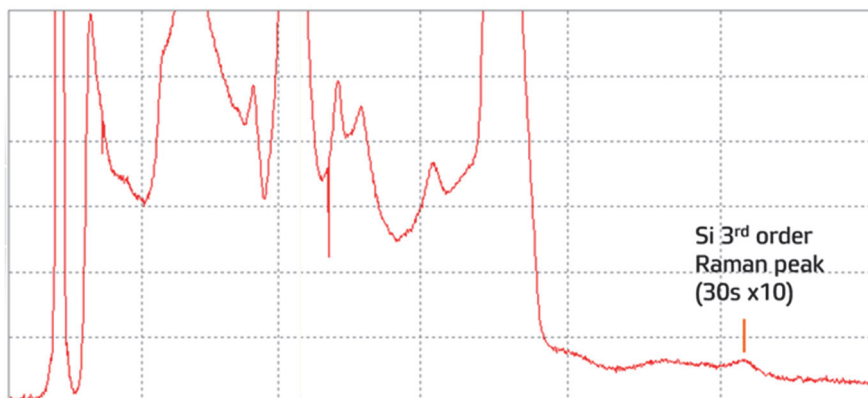
RAMOS S120 compact dual-channel confocal Raman microscope is designed for micro-spectral measurements with capabilities at the level of high-end systems.

RAMOS S120 microscope has a rigid, moving parts-free design that requires no adjustments, has both high sensitivity and high spatial resolution, and can be equipped with two single-mode lasers simultaneously, 488/633 nm or 532/785 nm.

Wide possibilities, high reliability and compactness allow using RAMOS S120 for solving a wide range of scientific and industrial applications.



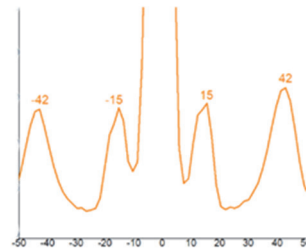
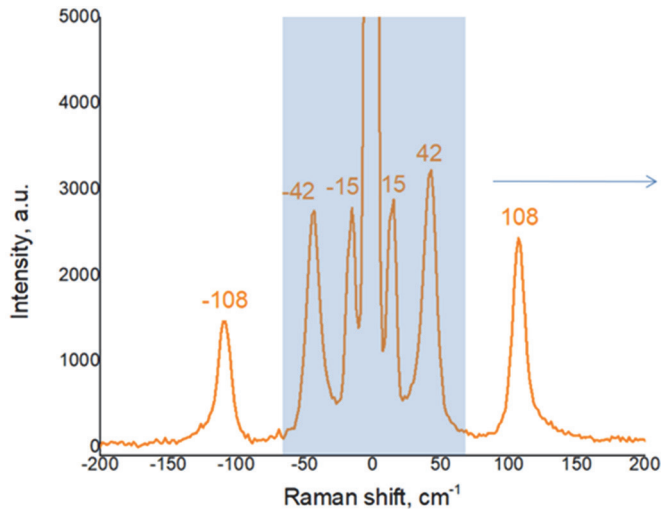
Spectral sensitivity



Main features

- Research level optical microscope with advanced measurement techniques
- Submicron resolution due to confocal design
- One or two integrated single-mode lasers
- Fully automated change of lasers/gratings without additional system alignment
- Compact
- HD video camera
- No moving parts in the spectrometer except laser shutters
- Automatic adjustment of laser radiation power level
- Wide dynamic range and extremely high sensitivity of innovative sCMOS detector
- Fiber optic Raman probe option
- Raman mapping with motorized sample stage
- Edge or Notch filters for Stokes and Anti-Stokes spectroscopy
- Ultra-Low Frequency Raman (THz-Raman) from 10 cm⁻¹
- Automatic switching between Raman, optical and combined Raman-optical modes
- Laser safety Class 3B (Class 1 optional)
- **The most affordable price in the Research Class segment of instruments**

Ultra-low frequency Raman spectroscopy



*Spectrum of CdI₂
with Bragg filters*

Application fields

Biology

Cellular components
visualization with minimum
perturbation

Pharmaceutics

Chemical components and
molecular conformers
identification and distribution in
various drugs

Polymers

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

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

Geology

Components distribution and
their phase transitions in
minerals

Forensics

Unknown substances
identification, different fiber
types, glasses, paints, explosive
materials, inks, narcotic and toxic
substances, documents proof of
authenticity

Material science

Materials with high spectral
resolution – superconductors,
polymers, coatings, composites,
carbon nanotubes, graphene, etc.

Cosmetology

Skin care products composition
and penetration ability

Heritage and Art

Pigments and binding agents'
determination in painting
Archaeological samples
(ceramics, glass, etc.)
spectroscopic analysis for
information on origins and
history

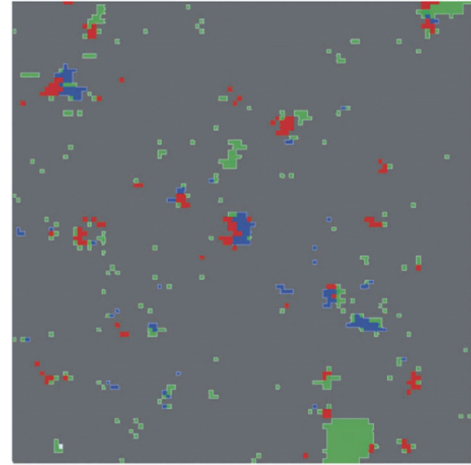
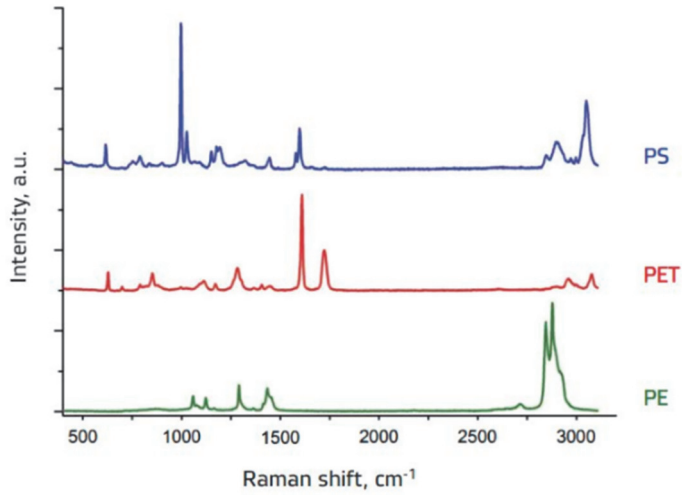
Gemology

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

and many more...

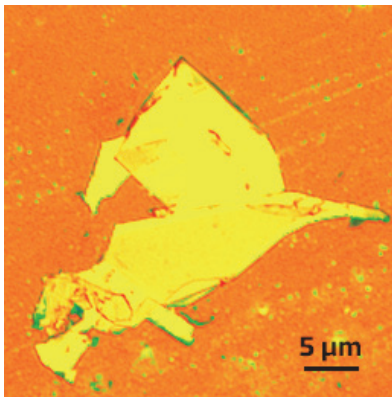


Microplastic particles

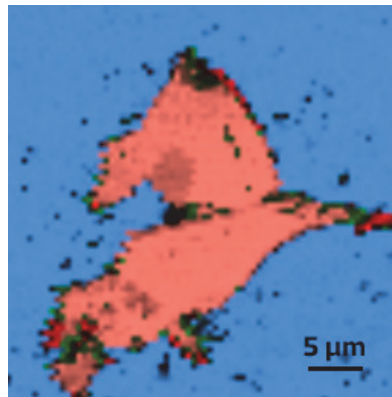


Graphene flakes

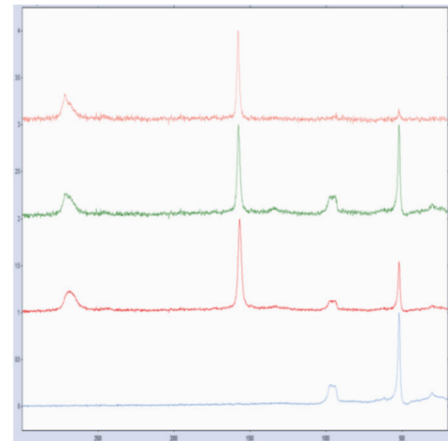
Optical image



Raman image



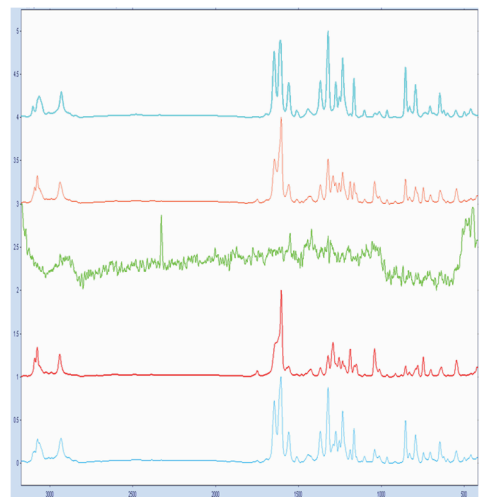
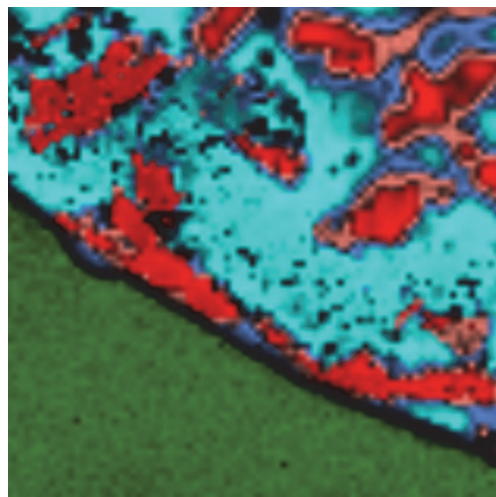
Raman spectra



75x75 μm , 75x75 pixels, 532 nm, 0.1 s/spectrum, 50x

Pharmaceuticals

Ascophenum
Raman spectra
Scan range:
2000x2000 μm ,
80x80 pixels, 6,400
spectra,
0.5 s/spectrum



Specification

	Laser 532 nm *		Laser 785 nm *	
Laser power	50 mW		130 mW	
Laser attenuation	1-100% with 1% step			
Focal length	120 mm			
Entrance aperture	40 μ m			
Grating	1200 l/mm	1800 l/mm	600 l/mm	1200 l/mm
Spectral resolution	~ 7 cm^{-1}	~ 4 cm^{-1}	~ 7 cm^{-1}	~ 3 cm^{-1}
Spectral range				
• Edge/Notch filter	70 – 4 700 cm^{-1}	70 – 3 155 cm^{-1}	50 – 3 200 cm^{-1}	50 – 2 140 cm^{-1}
• Bragg filter	10 – 4 700 cm^{-1}	10 – 3 155 cm^{-1}	N/A	N/A

Detector

Detector type	sCMOS
Pixel number	4096
Pixel size	7x200 μ m
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
Spatial resolution	<1 μ m in the X and Y directions (for 532 nm laser)
Confocal (z) resolution	<2 μ m (for 532 nm laser)
PC connection interface	USB 2.0
Power input	100 – 240 VAC, 50 –60 Hz
Dimensions (L x W x H)	610 (650) x 500 x 650 mm
Weight	~ 25 kg

* – RAMOS S120 can be equipped with either built-in 532 nm or 785 nm laser or both lasers simultaneously. 488/633 nm lasers are available on request

Optical microscope

	Basic model	Advanced model
Type	Upright reflected	Research grade upright
Modes	Bright field	Bright and dark field
Trinocular head	10x eyepiece (diopter adjustable)	
Objective turret	Five-position	Six-position
Reflection illumination	LED sources with Kohler illumination system	12V/100W halogen lamp
Diaphragms	Iris field diaphragm and aperture diaphragm, central adjustable	N/A
Polarizers	Fixed polarizer (reflecting) and 360° rotatable analyzer (reflecting)	N/A
Sample stage	Manual, 76x42 mm (optional: motorized, 75x75 mm, step 0.1 μ m)	Manual, 102x105 mm (optional: motorized, 75x75 mm, step 0.1 μ m)
Sample weight	Up to 5 kg	

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