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Gurzil RS-TO
Gurzil Raman Microscope
532 – 785 - Dual

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Gurzil Raman Microscope

Models:TO-RM-S-532 | TO-RM-S-785 | TO-RM-S-Dual

Overview

The Gurzil Raman Microscope is an advanced Raman spectroscopic platform integrating a high-resolution spectrometer, a stabilized laser system, the proprietary Raman Cube©, and an optical microscope in a compact, modular design. It provides a versatile and high-sensitivity solution for Raman analysis of solids, liquids, and thin films.

With a Raman shift range of 190 cm^{-1} to 3400 cm^{-1} and spectral resolution of ~9–11 cm^{-1}, the Gurzil system supports high-precision material identification and molecular characterization. Its robust architecture and intuitive software make it suitable for academic research, industrial quality control, and educational applications.

Technical Specifications

Optical System

- Microscope Body: Olympus BX43 with Infinity Optical System
- Raman Cube©: High-throughput, low-stray light optical assembly
- Laser Options:
  - 532 nm (0–200 mW adjustable)
  - 785 nm (0–500 mW adjustable)
  - Dual-mode configuration available
- Spatial Resolution: ~10 µm using high-magnification objectives
- Spectral Range: 190 cm^{-1} to 3400 cm^{-1}

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Spectrometer – ORT1 Model

- Detector: Hamamatsu S11639 CMOS linear image sensor
- Cooling: TEC, active cooling down to ~2 °C (~30 °C below ambient)
- Optical Design: Crossed Czerny–Turner
- Grating: 1200 lines/mm
- Spectral Resolution: ~9 cm^{-1} with 50 µm entrance slit (7–10.5 cm^{-1} typical)
- F-number: f/4
- Wavelength Accuracy: ±1–3 cm^{-1}
- SNR: >1000:1 (without averaging)
- Focal Lengths: Input 77.5 mm / Output 111.6 mm

Laser System

- Laser Type: Turnkey, TEC-stabilized
- Wavelength: 532 nm / 785 nm (based on configuration)
- Output Power:
  - 532 nm: 0–200 mW
  - 785 nm: 0–500 mW
- Linewidth: 0.1 nm
- Stability: <2% over 4 hours
- Control: Software (for 785nm) and manual interface

Raman Probe Assembly

- Probe Type: High-throughput, fiber-coupled Raman probe
- Filters: Space-grade Iridian-coated filters
- Objective:
  - Long Working Distance (LWD)
  - Magnification: 20×
  - NA: 0.40
  - Working Distance: 8 mm
  - Interchangeable objective lenses

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Software – ThunderView

- Data Acquisition:
  - Real-time spectral capture
  - Adjustable integration time
  - Signal averaging
- Processing Tools:
  - Real-time baseline correction
  - Advanced smoothing algorithms
- Database Functions:
  - Custom spectral database creation
  - Support for RRUFF & other libraries
  - Automated identification via reference spectra
- Licensing: Included (free of charge)

Microscope Configuration

Feature	Description
Head	Trinocular, 30° inclined, 360° rotatable
Nosepiece	Backward-facing revolving nosepiece
Stage	140×210 mm mechanical stage, 63×50 mm movement
Focusing	Coaxial coarse/fine focus, fine division 0.002 mm
Illumination	6 V / 20 W halogen, adjustable brightness
Condenser	Abbe NA 1.25 with aperture diaphragm
Camera Adapter	C-Mount 1.0x
Eyepiece	WF10× (WF16× optional), 48–75 mm interpupillary range
Objectives	5×, 20×, 50× (optional: 10×, 80×), Infinite M Plan S-APO

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Power & Dimensions

- Power Supply: AC 100–240 V / DC 5 V 2 A (US/EU adapters included)
- Weight: 18 kg
- Dimensions: 45 × 45 × 65 cm
- Packaging: 10 × 24 × 29 cm (1 pc per box)
- Order Lead Time: 4–6 weeks

Modes of Operation

The Gurzil Raman Microscope offers three operational configurations, enhancing flexibility for multiple applications:

1. Microscope-Integrated Raman Mode
   The Raman probe is affixed to the microscope body. In this configuration, users can visually locate the sample under live video mode, select a region of interest, then seamlessly switch to Raman acquisition to collect spectra from the exact spot.
2. Standard Raman Probe Mode
   The probe is detached from the microscope and fitted with a suitable objective lens. This setup converts Gurzil into a classic Raman probe system for macroscopic sample analysis outside the microscope.
3. Liquid Sample Mode with Cuvette Holder
   A dedicated cuvette holder allows Raman analysis of liquid-phase samples contained in standard cuvettes, ideal for chemical and pharmaceutical testing.