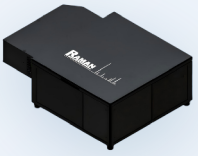
OPEN-PATH TEACHING RAMAN SPECTROMETER

EDURAMAN TEACHING RAMAN SYSTEM

Research-grade sensitivity meets open, safety-engineered architecture. Students see the laser, gratings, and detector in real time — transforming abstract optics into tangible science.

>2000:1	<6	4-in-1	-15°C
SNR RATIO	CM^{-1} RESOLUTION	DETECTION MODES	COOLED DETECTOR

EDURAMAN PRO



EDURAMAN

Open Optical Path
Visible beam path demonstrates optical principles in real time

Multi-Modal Platform
Raman, Fluorescence, Absorption & Microscope in one instrument

Teaching Software
Integrated control software with guided experiments & tutorials

Self-Assembly Design
Students assemble optics, learn structure & alignment hands-on

APPLICATIONS

TEACHING & RESEARCH

Designed for university chemistry, physics, and materials science labs. From molecular vibration theory to real-world characterization.

- Physical chemistry & molecular vibration theory
- Gemstone identification (diamond, moissanite, CZ)
- Forensic document & ink analysis
- Carbon nanomaterials characterization
- Pharmaceutical polymorphism studies
- Polymer stress & strain analysis

TEACHING MODULES

CURRICULUM-READY

Four guided experiment modules with step-by-step software tutorials, lab manuals, and training videos.

SERS Module
Explore surface-enhanced Raman scattering with enhancement reagents

Principle Module
Study factors affecting Raman velocity and spectral peak position

Qualitative Module
Identify real vs fake diamonds, explore spectroscopy charm

Quantitative Module
Explore relationship between ethanol concentration and Raman intensity

MODEL COMPARISON

PARAMETER	EDURAMAN	EDURAMAN PRO
Raman Spectroscopy	✓	✓ (6 cm^{-1})
Microscope Imaging	✓	✓
Fluorescence Spectroscopy	✗	✓ (2 nm)
Visible Absorption	✗	✓ (450-950 nm)
Diffraction Grating	Fixed 1200 g/mm	Adjustable 1200/150 g/mm
Spectral Range (Raman)	150-3900 cm^{-1}	150-2400 / 2400-4000 cm^{-1}
Spectral Range (Absorption)	-	450-950 nm
Laser Options	532 nm or 785 nm	532 nm or 785 nm
Laser Power	100 mW (532) / 100 mW (785)	100 mW (532) / 100 mW (785)
Detector Cooling	-15°C below ambient, SNR >2000:1	
Objective Focal Length	50 mm	
Neon Calibration Lamp	External	
Software	Integrated teaching & control software	
Dimensions	41 × 28 × 13 cm	52 × 28 × 13 cm
Weight	12 kg	15 kg

Open-Path Design

Unlike traditional black-box spectrometers, the EduRaman exposes the complete optical path. Students observe the laser beam, grating dispersion, and detector alignment in real time.

Partitioned safety architecture separates the excitation region from the detection path, ensuring safe classroom operation while maintaining full optical visibility.

Every optical component is labeled and accessible — turning instrument assembly into a hands-on learning experience.