

# Mono

## Spectroscopy Kit




Thunder Optics

— Science and knowledge for all —

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 **Introducing the Mono Spectroscopy Kit, a comprehensive set of tools designed for researchers and scientists in the field of Spectroscopy. This advanced kit includes the M-Spectrometer, two optical fibers, a cuvette holder, and a halogen light source, offering a complete solution for various spectroscopy applications.**

The advanced functions of the M-Spectrometer allow users to study emitted spectra of various light sources, which can be incredibly useful in different applications. The improved bench performances due to extended depth of focus and accuracy open the door for new research opportunities, enabling users to investigate new phenomena.

The M-Spectrometer is equipped with a high-sensitivity monochrome CMOS detector, covering a wide wavelength range of 350-890nm. With a resolution of less than 1nm at 550nm, it ensures accurate and precise measurements. The spectrometer is sold pre-calibrated ( $\pm 0.5\text{nm}$ ) and features a user-friendly USB 2.0 interface for seamless connectivity.



*The Mono Spectroscopy Kit is a powerful and versatile toolset, enabling researchers to delve into the fascinating world of spectroscopy with precision, ease, and reliability.*



The halogen light source included in the kit provides a broad continuous spectrum from 400nm to infrared, making it ideal for transmission, absorption, reflectance, bacterial growth, and Vis-NIR gemology experiments. With its compact size, low heat generation, and long lifespan, this light source offers exceptional performance and durability.

To facilitate experiments, the cuvette holder features collimators with coated Plano-Convex Lenses for high-efficiency light collection, along with three cuvettes for transmission, absorption, and fluorescence spectroscopy.

Two optical fibers with different core diameters (100 $\mu$ m and 600 $\mu$ m) are provided to facilitate efficient light coupling between the light source, cuvette holder, and the M-Spectrometer.

Overall, the Mono Spectroscopy Kit empowers scientists with high sensitivity, precise measurements, and a comprehensive range of tools, making it an indispensable asset for conducting cutting-edge research and advancing our understanding of the universe.

## FEATURES

- Monochrome CMOS detector of 1200 pixels.
- Wavelength range over 480nm and a resolution of less than 1nm at 550nm.
- M-Spectrometer is sold calibrated ( $\pm 0.5$ nm) and has USB 2.0.
- Replaceable slit 100 $\mu$ m (standard), 50 or 200 $\mu$ m.
- Halogen Light source cooled with an internal fan and can be equipped US or EU plug.
- It provides a broad continuous spectrum between 350nm and 2000nm.
- The Input Power of 10W.
- The current is 800mA.
- The Input Voltage of the product is 12V DC.
- All tools have SMA905 connectors for seamless connectivity.



## BENEFITS

- **Signal Preservation:** The M-Spectrometer utilizes a monochrome detector, eliminating signal decay around 550nm (Bayer filter effect).
- **Superior Sensitivity:** With a three times greater sensitivity than the Guru Spectroscopy Kit, it ensures accurate and precise measurements.
- **Enhanced UV Detection:** With at least five times more sensitivity, it enables efficient detection of UV wavelengths.
- **Wide Acquisition Range:** The kit offers a wider acquisition time range, allowing for reliable detection of weak signals.

## SOFTWARE

**For non-commercial, private, academic, educational use, and for non-profit organizations, Spectragryph is free.**

## DELIVERY PACK

- Pre-calibrated M-Spectrometer with the USB 2.0 cable.
- Halogen Light Source.
- Cuvette Holder with a cover.
- Optical Fiber 100 $\mu$ m wavelength 0.5m long.
- Optical Fiber 600 $\mu$ m wavelength 0.5m long.
- A set of 3 cuvettes.
- Shock-resistance zip-case.

## OPTIONS

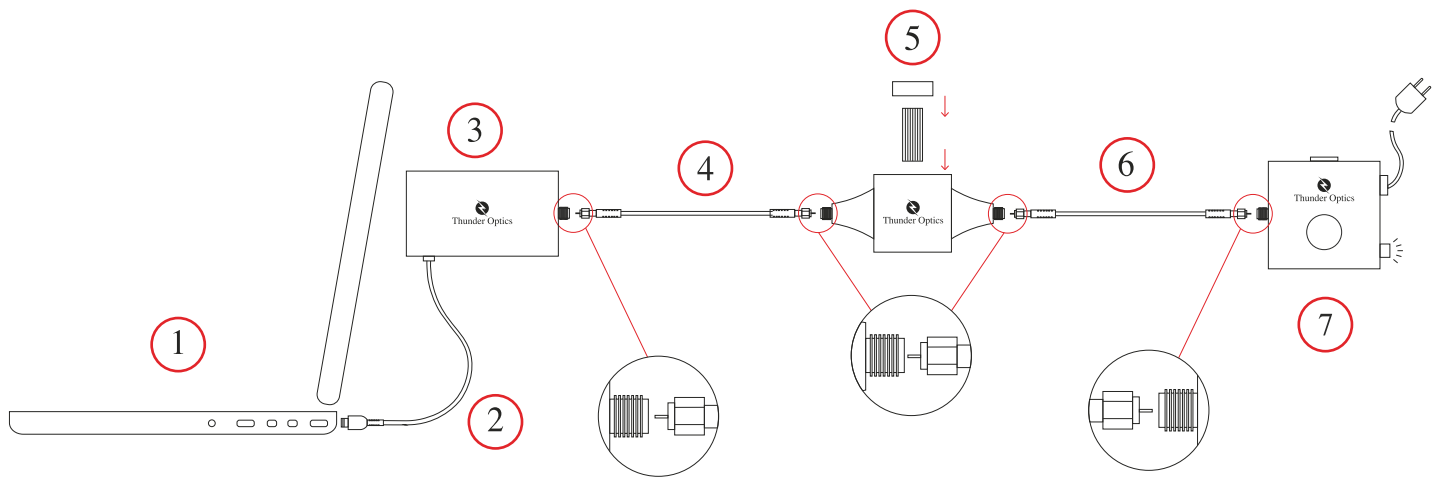
- The M-Spectrometer can have an optional slit from 50, 100 (for higher resolution) or 200 $\mu$ m for higher signal.
- Halogen Light Source can have US or EU plug.

## APPLICATIONS

**With a range of applications including absorption, emission, fluorescence, and reflectance/transmittance spectroscopy, the Spectroscopy Mono Kit finds utility in chemistry, physics, biology, environmental science, gemology, and material science.**



*Unleash the full potential of spectroscopy with the Spectroscopy Mono Kit, empowering scientists and researchers to explore the mysteries of the universe.*



- 1 Computer
- 2 USB cable
- 3 M-Spectrometer
- 4 Optical Fiber 100nm

- 5 Cuvette Holder
- 6 Optical Fiber 600µm
- 7 Halogen Light Source

### M-Spectrometer

Weight (g)	290
Dimensions (cm)	11,1 x 3,8 x 4,5
Wavelength range (nm)	350 - 890
Detector type	Monochrom
Detector	CMOS
Chip Dim (")	1/3
Diffraction Grating (lines/mm)	1000
Slit Width (µm)	100
Optical Connector	SMA 905
Power Supply	USB 2.0
Resolution (nm)	0.5
Software	Spectragryph
OS	Windows
Sensitivity (mV/lux-sec)	1300
Pixels	1800
AD converter	8 bit
Integration time (ms)	50 - 500
Temperature range (°C)	9 - 55

### Halogen Light Source

Weight (gr)	135
Dimensions (cm)	6 x 8,1 x 3,4
Lamp	Halogen-Tungsten
Wavelength range (nm)	350 - 2000
Tension d'alimentation (V)	14
Applications	Absorbance, réflectance and transmission
Optical Connector	SMA 905

### Cuvette Holder

Weight (gr)	300
Dimensions (cm)	4 x 4 x 5
Quartz lens	Yes, 2 pcs
Number of Optical Ports	3

### Optical Fibers

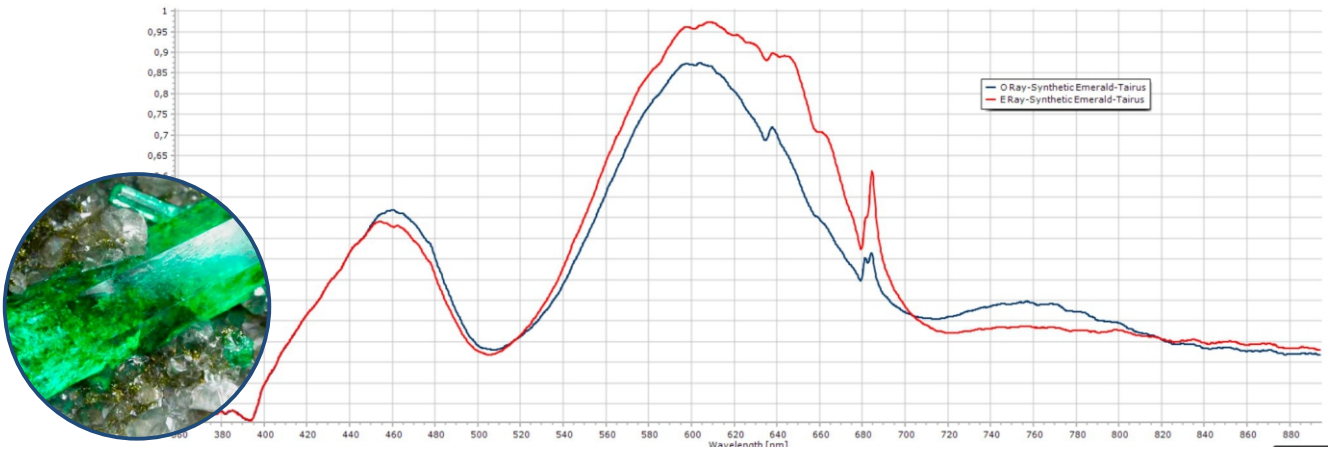
Patch Cord	SMA 905
Care Diameter (µm)	100 - 600
Length (m)	0.5

### \*WARNING

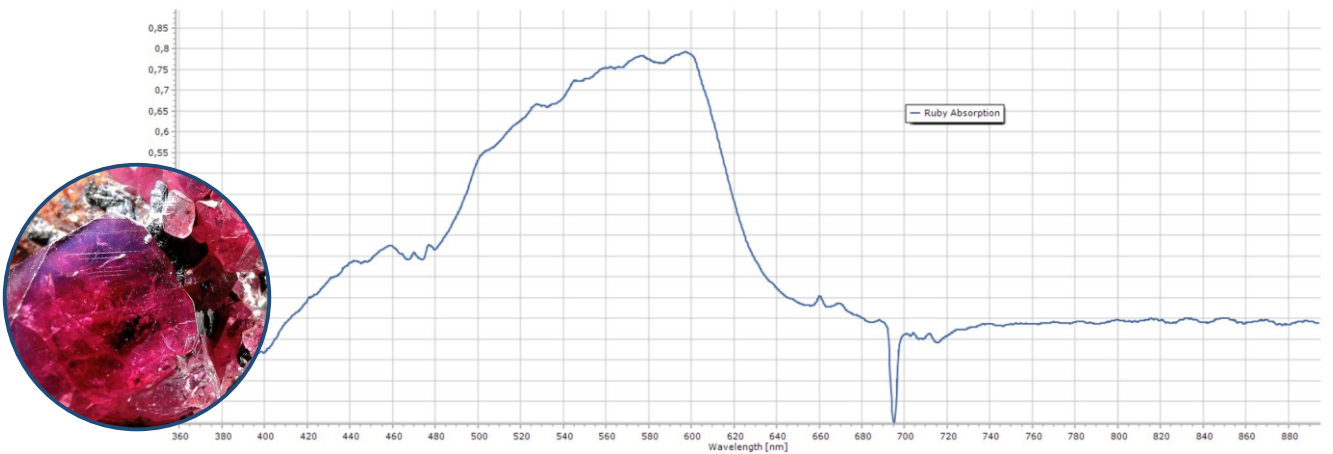
Never look into the light source directly because it can cause severe eye injury. Do NOT open the unit under any circumstance. It does NOT contain any user-serviceable parts inside, and there are dangerous voltages present.

# SAMPLES

## BIREFRINGENT SPECTRA O AND E RAY OF AN EMERALD



## ABSORPTION SPECTRUM OF A RUBY



## EMISSION SPECTRUM OF THE SUN

