



Research & Technology

Introducing the GL Gem Spectrometer™

GL Gem Spectrometer™



We are proud to offer this economically priced and portable spectrometer (UV-VIS-NIR, 300 – 1,000 nm) which can be operated from the USB port of a laptop computer.

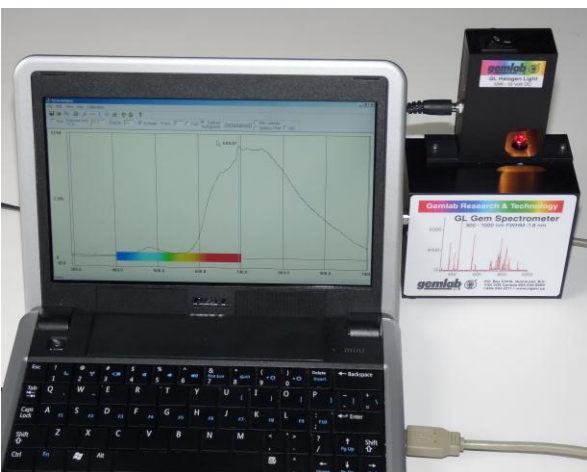
No additional drivers are necessary; the easy to learn GLGemSpec software displays both absorbance and transmittance spectra.

The GL Gem Spectrometer™ system is an innovative tool for experienced gemmologists, gem dealers, mineral collectors and others. It replaces the traditional hand-held spectroscope and avoids potential eye damage if the latter is used with a strong incandescent light source.

The unique gem holder with halogen light source (VIS-NIR, 400 – 950 nm) is mounted directly onto the spectrometer allowing fast real-time spectral analysis and bulk testing of both rough and faceted gemstones.

Compact size: 170 mm x 100 mm x 50 mm – Weight: 510 grams

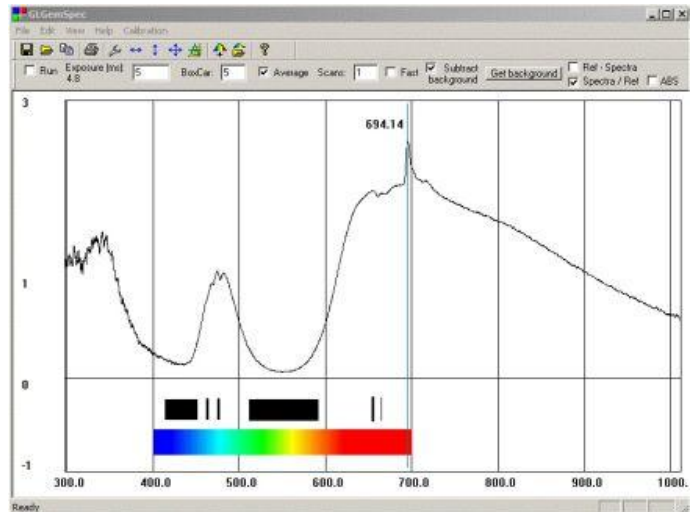
The spectrometer can be used with a laptop/netbook.



The GLGemSpec system is a “digital spectroscope” with much higher sensitivity and range than the diffraction grating hand spectroscope used by many gemmologists.

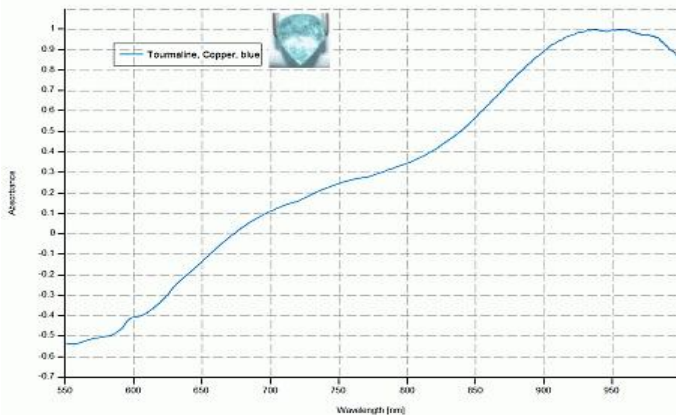
It measures transmittance (NOT absorbance or absorption) though the spectra can be converted in real-time with the GLGemSpec program or edited in various formats with the free Spekwin32 spectroscopy software.

It will require some practice and re-thinking to set the proper parameters and to analyze the obtained spectra.

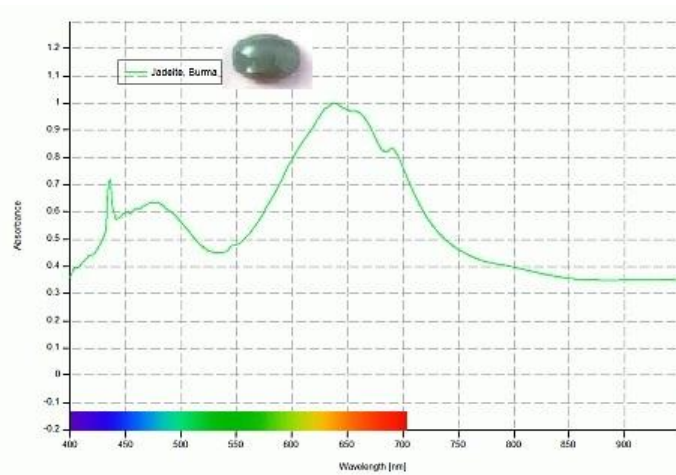


Spectra obtained with the GL Gem Spectrometer (see above flame fusion ruby) look different from spectra seen through a traditional hand-held spectroscope when observed in a graph; in publications terms such as “relative absorption”, “reflectance”, “transmission”, etc. are often being used.

The spectra obtained after clicking “Spectra/Ref” show transmittance; for example if transmission for certain wavelengths (in nm) is LOW absorbance for those wavelengths will be HIGH (in a conventional spectroscope one would see dark lines or bands at these positions; see diagram).



Typical absorption in the 920 – 940 nm range of copper bearing tourmaline.



Jadeite, Burma – naturally coloured with typical absorption lines at 437 nm, 630 nm, 655 nm and 690 nm

Specifications of the GL Gem Spectrometer™

- Weight: 510 grams
- Dimensions: 170 mm x 100 mm x 50 mm
- Detector: Toshiba TCD1304AP linear array
- 200 – 1100 nm , 3648 pixels
- Signal-to-noise ratio: 300:1 A/D resolution: 14
- Wavelength and Optical resolution: 300-1000 nm
- < 1.0 nm with 50 um slit**
- Exposure time: 2.5 ms-10 s
- CCD reading time: 14 ms
- Data transfer speed: 200 ms / 100 ms (2 points binding)
- Power consumption: 200mA @ 5V from computer interface: USB 2.0, HID 2.0
- Operational system: Windows XP/Windows 7 and others; delivered with proprietary firmware for GL Halogen 10W Gem Holder.

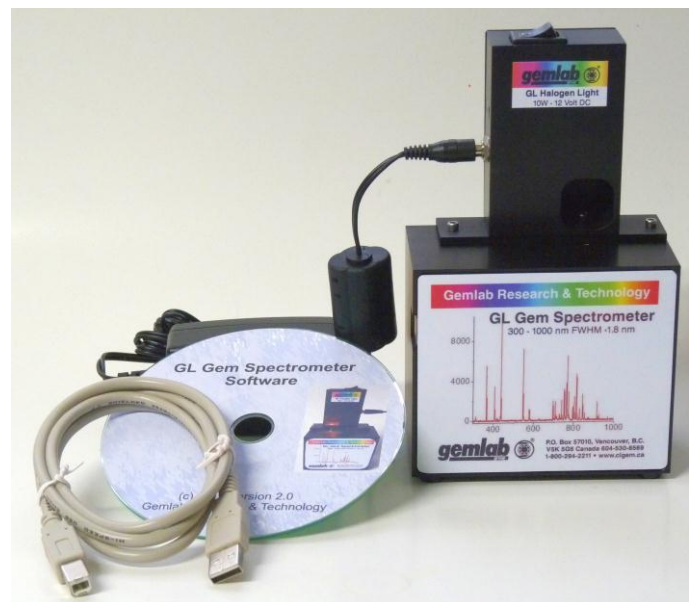
Specifications of the GL Halogen Gem Holder

GL Halogen 10W Gem Holder with built-in cosine corrector, cooling fan, includes 12/15 V power adaptor. Similar to an integration sphere the built-in halogen light source is internally diffused by the holder's black matte finish; the GLGemSpec software optimizes the spectrometer system in for the important VIS-NIR 400 – 950 nm range.

Measurements: 75 x 50 x 27 mm; weight 80 gr; spectral range (300 – 1000 nm) depending on bulb used - Size of opening: 20 x 20 mm

Portable GL Gem Spectrometer system with GL Halogen 10W Gem Holder, USB cable, 12 Volt power supply for light holder (110 – 240 V, includes international adaptor plugs), software with single user license, operating manual, book “Pragmatic Spectroscopy for Gemologists”, access to data-base with 350 reference spectra and 100 image on-line gallery

Price: Can/US\$ 1,595.00



Optional Accessories

- GL Fiber Probe – 1 m laboratory grade, cosine corrector
- GL Fiber Holder for GL Fiber – stainless steel

For more info or to order call (604) 530-8569 or visit the on-line store at www.cigem.ca/store/instruments;

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