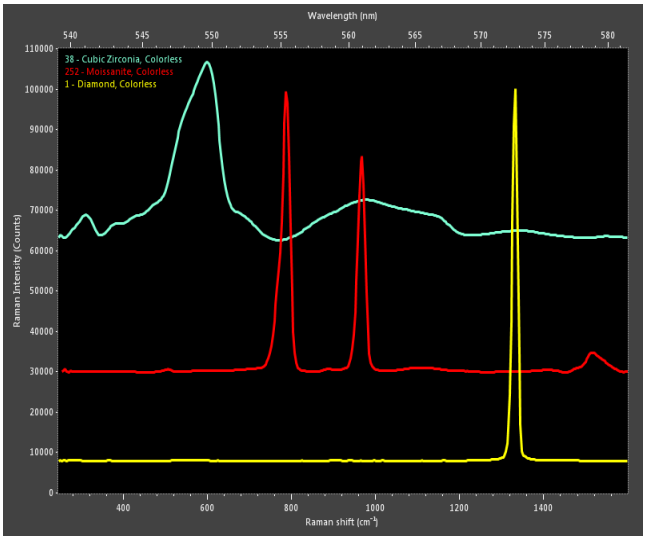
MAGI - M&A Gemological Instruments

GemmoRaman 532

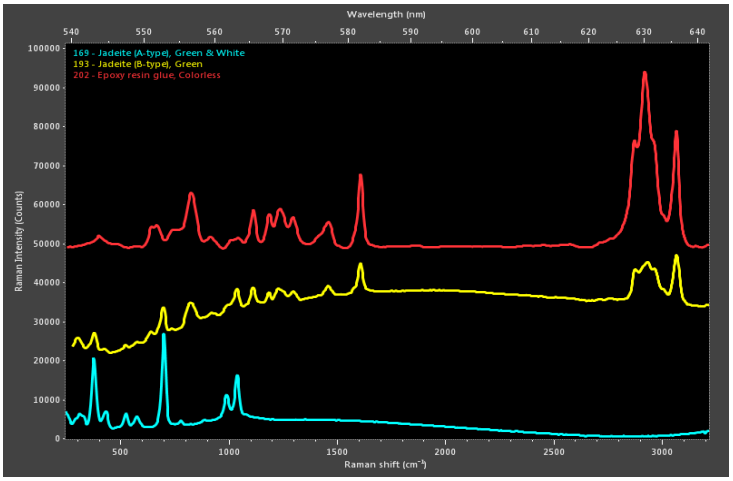
Take out the guesswork and identify gemological materials with a mouse click. GemmoRaman-532™ focuses automatically on a sample, optimizes the acquisition parameters, compares the results with built-in comprehensive spectral libreries and then displays results—all that typically in less than a minute

GemmoRaman-532™ is fully automatic Raman & Photoluminescence (PL) spectrometer for gemological materials analysis. This non-destructive tool is fast, reliable and surprisingly easy to use.

Our free dedicated software does it all - finds best measurement parameters, acquires the spectrum and finds best matches from large spectral libraries. While its main purpose is material identification, it has numerous applications for separating synthetic materials, detecting treatments and colour enhancements.



GemmoRaman-532 is an invaluable instrument for fast gem identification. The above image shows a diamond (yellow) , a synthetic moissanite (red) and a cubic zirconia (light blue).



Type A (light blue) and B (yellow) Jadeite Jade compared to epoxy resin (red), Photoluminescence extended range is very useful in order to ID some synthetics and treatments.

No sample preparation needed. GemmoRaman-532 works on polished, rough and mounted gems. The right image shows the magnetic ring clip accessory in use.

Thank to its lightness (4 kg) and very compact footprint (160 x 255 mm), the GemmoRaman-532 is easily transportable. 12 V power supply allows the use even on the field.

Key Features

- Fully automatic Raman & PL (photoluminescence) based gem identification system
- Identifies gems and imitations rapidly - typically in 20 seconds to 4 minutes
- Non-destructive tool for gemologists, gem labs, dealers, collectors and educational organizations
- Unique AutoFocus feature
- Laser-safety interlocks for safe operation - no need for safety goggles
- Free software with comprehensive gemological Raman & PL spectral libraries
- Automatic spectrum matching against Raman & PL databases
- AutoScan feature - one button click for material identification
- All measurement parameters are adjustable for advanced users
- Built-in update feature installs new library versions automatically via Internet
- Fast USB connection to Windows PC (or Mac with Windows partition)
- Very easy to use in both automatic & manual modes
- Automatic laser calibration procedure ensures error free analysis
- One click export of the spectrum into the CrystalSleuth software (>5000 minerals) for further analysis
- Advanced Zoom & Pan methods, floating & nearest point cursors
- Drag & drop spectra vertically for reading clearance
- Peak Smoothing Algorithms: Boxcar & Savitzky-Golay
- Resolution Enhancement (Peak Sharpening)
- Peak Finder (cm-1 & nm), Derivates, noise etc. advanced analysis methods
- Multi-spectra tools for comparing up to 50 spectra simultaneously

Visit our website for more information: **www.gemmoraman.com**

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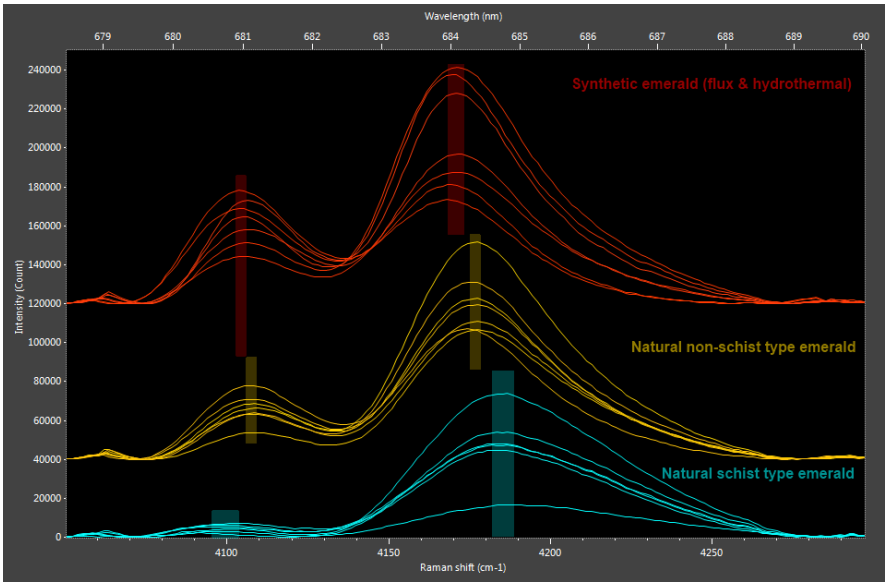
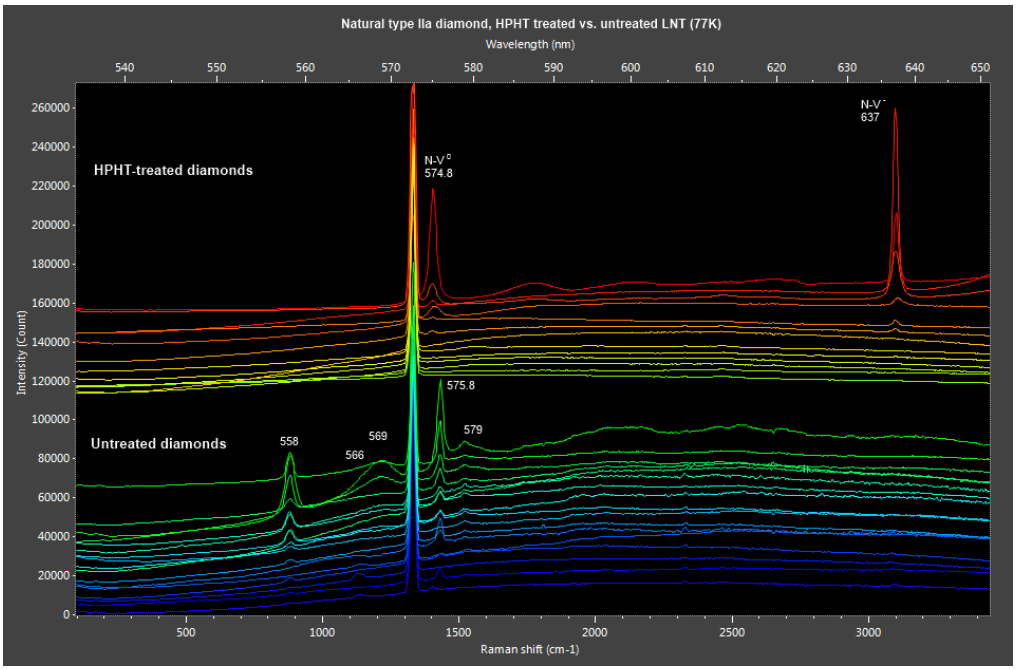
Characterizing emerald types by chromium photoluminescence

Careful observation of exact chromium photoluminescence peak locations allows to make distinction or produces strong evidence in order to discriminate between natural and many synthetic emeralds. Additionally, natural emeralds can be characterized as geologically belonging to schist- or non-schist type.

Synthetic emeralds Most synthetic emeralds contain relative high Cr concentration compared to natural stones. PL peaks for both flux and hydrothermal synthetic emeralds occur at relatively low wavelengths compared to natural stones.

Natural emeralds Natural emeralds can be characterized as belonging to two main types of geological occurrences; schist- type and non-schist type. This method combined with inclusion studies and absorption spectroscopy is very useful in order to determine the geographical origin of emeralds.





Detecting HPHT treatment of natural type IIa colorless diamonds

HPHT (High Pressure High Temperature) treatment can be used to enhance the color grade of brownish or grayish type IIa diamonds to colorless or near colorless. Most of the larger HPHT-treated diamonds has been sold branded as GEPOL, Bellataire, Pegasus or Monarch and can be readily identified by laser inscription located on the girdle of the stone. Unfortunately it is possible to remove these laser markings by repolishing the girdle, and small stones may have entered the market without any inscription at all. Photoluminescence spectroscopy is one of the very few methods available for determining HPHT treatment of colorless type IIa diamonds. However, this method can not be used alone without other instrumentation, because as a preliminary requirement, the sample under study has to be determined as natural type IIa diamond.

Separating natural unheated spinel from synthetic and heat treated spinel

Identifying spinel with traditional gemological tools can be a really easy or an extremely difficult task. If natural spinel contains characteristic inclusions it may be identified by careful microscopic examination. However, if the stone is free of inclusions the job gets really tough. Most Verneuil synthetic spinels can be separated from natural stones by their slightly increased RI, but PL spectrometer gives the answer faster and more conveniently. Flux melt or Czochralski pulled synthetic spinels are whole another story, here Raman/PL spectrometer comes very handy - if not essential.