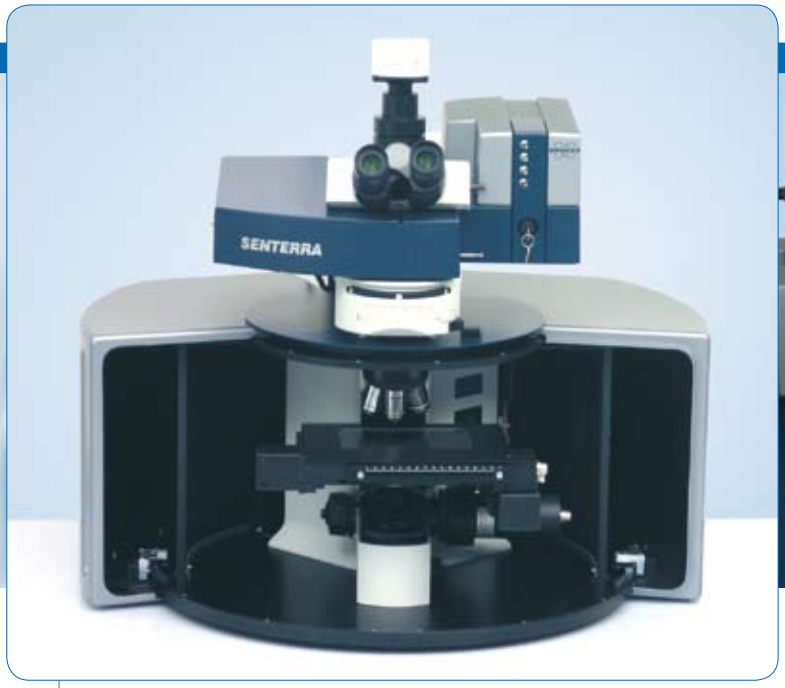


SENTERRA Raman Microscope

The SENTERRA is a high performance Raman microscope spectrometer designed for the most demanding analytical and research applications. SENTERRA Raman microscope combines numerous novel and patented features such as permanent calibration of wavelength, fluorescence rejection methods and on-demand confocal or high throughput mode. The most importantinnovation is certainly its continuous calibration.

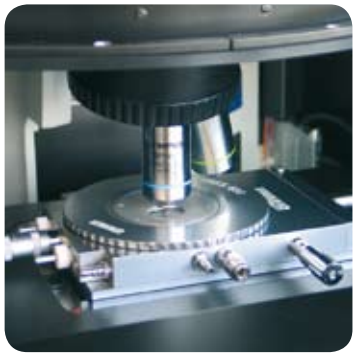
- Continuous calibration with Sure_Cal®
- All-in-one, compact, confocal design
- Class 1 laser safety enclosure
- Multiple wavelengths: 830nm, 785nm, 633nm, 532nm and 488nm
- Confocal depth profiling with FlexFocus™
- High spatial and spectral resolution
- Automatic Fluorescence Rejection using SERDS
- Coupling to Atomic Force Microscopy (AFM)

Sure_Cal® Continuous Automatic Calibration

Stability is a crucial issue for both research applications for highly accurate determination of band shifts, as well as for routine identification in the QA/QC laboratories. SENTERRA is the first Raman microscope to provide hassle-free operation. Sure_Cal® automatically calibrates the system to better than 0.1cm-1 accuracy and precision without the need for daily wavelength calibrations or user intervention of any kind. The detector, gratings, and filters are automatically positioned in seconds.

Compact and Rugged Design

Most commercial Raman microscopes employ spectrographs that are separate from the microscope. Therefore, alignment and maintenance of these devices is time consuming.
SENTERRA integrates a multi-laser Raman spectrometer onto the confocal microscope. The spectrometer part is integrated between the base and the binocular of the microscope. SENTERRA's compact design provides a short beam path, which makes it more robust and stable.



Various accessories including heating/cooling stages are available.

The SENTERRA can be mounted on a z-stage that allows access to large samples.

Combined Atomic Force Microscopy (AFM) and Raman offers both chemical and structural information.

FlexFocus™: Confocal Raman Spectroscopy on Demand

SENTERRA offers a novel method that provides the necessary flexibility to conduct Raman microanalysis without compromise. FlexFocus™ utilizes a hybrid aperture containing an array of pinholes and slits serving as the entrance aperture of the spectrograph, providing either true confocal or high throughput performance on demand.

AFR - Automatic Fluorescence Rejection

The SENTERRA incorporates the patented Automatic Fluorescence Rejection (AFR) method for rejecting fluorescence from many samples. Historically, Raman spectroscopy has been a limited tool for sample analysis, because many samples exhibited fluorescence. With the SENTERRA, sample fluorescence can frequently be eliminated to produce high quality Raman spectra even on the most demanding samples.

Optical Microscopy

As the SENTERRA is based on the Olympus BX series optical microscope, all the necessary tools for sample visualization and contrast enhancements such as Koehler brightfield illumination, polarized light, Nomarski differential interference contrast (DIC), darkfield, fluorescence and many others are available.

Validation

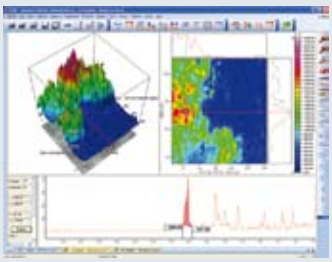
NIST certified standards are used to provide reliable correction of the instrument response function. Complete system validation including software and hardware according regulations such as 21 CFR part 11, GAMP as well as USP and PhEu is available for the SENTERRA.

Technologies used are protected by one or more of the following patents: US 6141095; US 7102746

OPUS Software

OPUS is a comprehensive and intuitive software package for the SENTERRA.

OPUS/Video and OPUS/MAP allow easy selection of the regions of interest and convenient control of data acquisition



Numerous different 2D and 3D plot options for visualization of the data are available as well as multivariate analysis tools.

Bruker Optics is ISO 9001 certified

* Class 1 with safety enclosure, exceeds class 1 without safety enclosure. Depending on accessories adapted the classification of the Raman microscope may equal the classification of the exciting laser and exceed class 1

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