

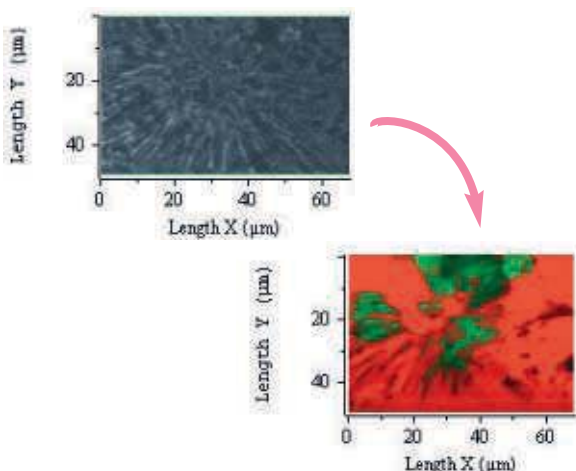
# Software

## Available for Windows 98, 2000, XP, NT (21CFR11 version available)

The **LabSPEC** Spectral Software has been designed and written in-house specifically for Raman and luminescence measurements. This highly sophisticated software offers an efficient and easy-to-use tool for both the research and analytical operator. Icon driven screens control the different instrument functions and data acquisition and analysis procedures within the Windows format. It does not rely upon third party software - and hence can be customised for specific requirements and is not restricted in its scope of data acquisition and manipulation.

### Raman Image Generation :

The powerful Raman imaging functions of LabSPEC enable Raman mapped images and localisation maps to be produced from a range of parameters including band position, integral, FWHM, correlation fit to models and so on. Specialised band fit routines enable de-convolution, Gaussian/Lorentzian properties and customised fitting functions to be used.

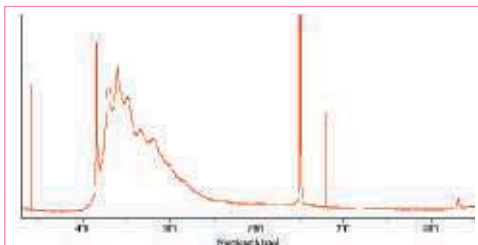


*Investigation of As trapping in sulfate minerals : Video and phase distribution image.*

*Data courtesy of F. Bodenan, C. Beny (BRGM-Orleans France and V. Laperche 9CNRSSP-Douai France).*

### Advanced Data Capabilities

The **LabSPEC** software incorporates the widest range of data acquisition modes, enabling different functions and sampling to be optimised. Single window acquisition, automated full range and advanced CREST (Continuous Rapid Extended Scan Technology) scanning modes can each be used.



*The CREST system continuously scans the grating and hence, the Raman spectrum over the CCD detector field of view to enhance S/N and band definition for certain types of acquisitions, samples and detectors. The spectrum above illustrates the utility of the CREST scan for broad spectral range.*

### Full control over system functions

- Motorised entrance slit, ND filterwheel gratings, filter accessories
- Confocal pinhole aperture, with CCD detector binning and readout
- Spectral range scanning
- Line scanning and laser control
- Video image capture and digital storage

### Full control over system peripheral functions

- Motorised X,Y and Z axis mapping
- Fast feedback Autofocus
- Piezo precision translation system
- Additional detection systems
- External triggering
- Many accessories (eg. Heating/Cooling stages)

### Full control over spectral acquisition

- Real time display update
- Multi spectra accumulations
- Spectral range scanning
- High definition accumulation
- Kinetic time functions and array profile update
- CREST/Kiefer extended scanning

### Extensive data treatment and manipulation

- Band fitting and de-convolution
- Spectral subtraction and baseline correction
- Mathematical functions
- Linear and non linear filtration
- On-line integrals
- Data file export/import and compatibility with commercial spectral searches (e.g. direct data links with Spectral ID module)

### Spectral libraries and databases

The **LabSPEC** Software has an add on module to enable spectral libraries and searches to be accessed. A direct data link to the library module provides a powerful and seamless front end, easy to operate and with a scored 'hit list' indicator for sample identification.

The software can be used with many commercially available libraries and with the Jobin Yvon specialised databases.

## Microscope Options :

The LabRAM microscopes can include a range of microscope sampling and illumination options :

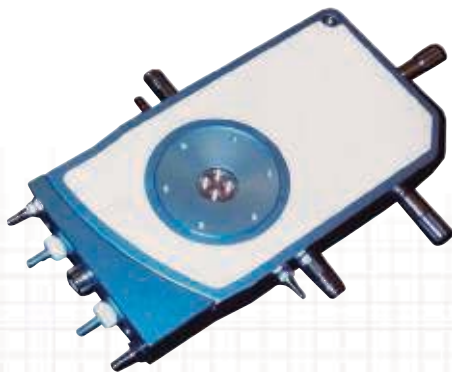
- FSM free space microscope for large cryostat sampling
- Specially optimised LWD, UV and NIR microscope objectives
- High sensitivity white light imaging modes
- Macro and cuvette cell holders
- Class (1) laser safety enclosures
- HTS multiwell plate handling for automated screening.



## Mapping and Microscope Stages :

The LabRAM microscopes can include a range of mapping and microscope stage options :

- 0.1  $\mu\text{m}$  high precision step XY translation stage for Raman confocal mapping with ultimate spatial resolution
- Fast (AF) autofocus system
- High precision Z axis piezo, sub micron resolution
- Large Z-axis translation drive – (mm translation at high resolution)
- Heating / cooling stages up to 1500°C down to 4 K
- Controlled humidity (vapour pressure) stages.



## Remote Sampling Accessories :

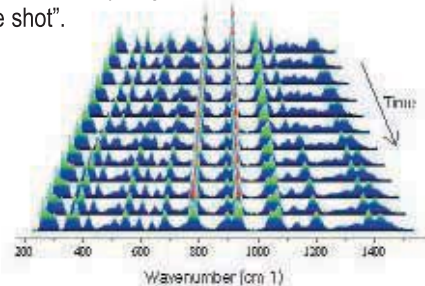
The LabRAM microscopes can couple to a range of remote sampling accessories :

- Superhead fibre coupled probe.
- Specially optimised immersion probes
- Camera probe with white light imaging
- Full remote fibre-linked microscope
- Various Macro sampling options and accessories.



## Detection Options :

The LabRAM systems can offer a large range of detectors (backthinned, open electrode, front illuminated CCD chips) all equipped with high grade 1024 pixel 1" CCD chip as standard. A very large spectral window can be obtained in "one shot".



- Peltier (-70°C) or liquid nitrogen (-133°C) cooling
- UV, visible or NIR enhanced CCD chip formats
- Large high resolution 2048 x 512 pixel CCD chip option
- Dual detection options
- IR array (InGaAs) detection for measurements up to 1.6  $\mu\text{m}$
- Specialised single channel or time resolved detectors, IR detection with single element > 2  $\mu\text{m}$  PL.

