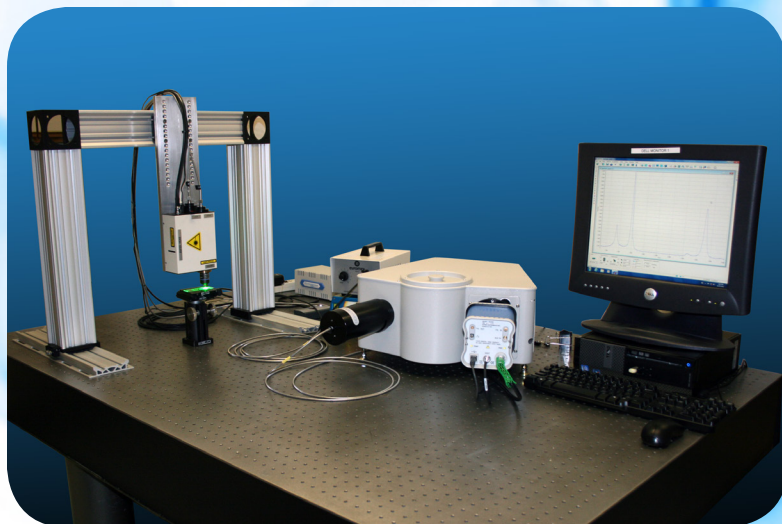


HORIBA

Scientific



MicroHead 3000

ELEMENTAL ANALYSIS

FLUORESCENCE

GRATINGS &
OEM SPECTROMETERS

OPTICAL COMPONENTS

PARTICLE CHARACTERIZATION

RAMAN

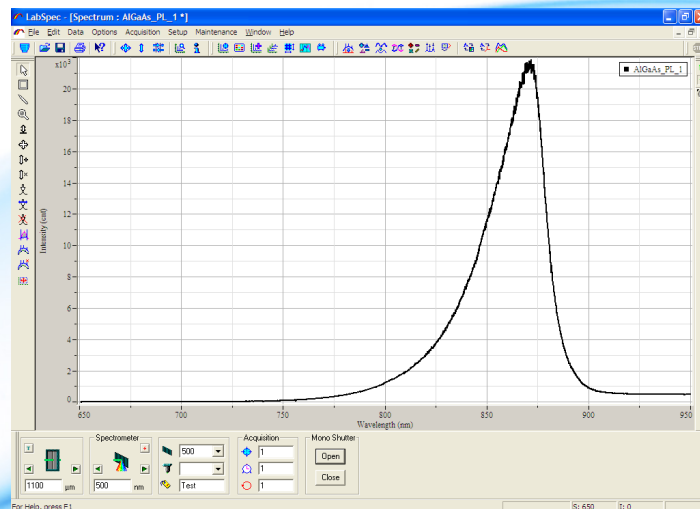
SPECTROSCOPIC ELLIPSONOMETRY

SPR IMAGING



MicroHead 3000

Complete Optical Probe System for Micro Photoluminescence and Raman Spectroscopy



PL Spectrum of AlGaAs

The **MicroHead-3000** from Horiba Scientific is a modular and flexible system designed for recording and analyzing PL and Raman spectra of solid and liquid samples. It enables non-invasive chemical analysis of a wide variety of samples in different environments. The MicroHead-3000 includes an optical probe, fiber coupled excitation laser, high resolution spectrometer, scientific grade CCD, and computer with software for data acquisition and graphical representation. The fiber coupled optical probe provides flexibility for analyzing samples of various shapes and sizes. A standard stage is provided to mount samples.

The MicroHead-3000 includes two optical fibers: one to deliver laser excitation to the sample and the other to collect the resulting optical emission. A set of laser injection/rejection filters corresponding to the excitation wavelength (532 nm, 633 nm and 785 nm are standard options), provide effective laser and signal filtering. The MicroHead-1000 comes with a 40 mm focal length lens and standard long working distance microscope objective, and is compatible with standard RMS objectives.

A mounting stand supports the optical probe, and allows for easy spatial adjustment to accommodate samples of all sizes. Vertical coarse and fine adjustments allow for focusing on the sample under test while the horizontal adjustment provides optimal positioning of the optical probe above the sample. The mounting stand comes in 2 sizes: 250 mm tall and 500 mm tall (500 mm is shown). The vertical crossbar comes in 250 mm, 500 mm standard length, with customized lengths available upon request.

A standard sample stage is provided with the MicroHead-3000. Available options include XY motorized stages, heating and cooling stages, cryostats, and more.

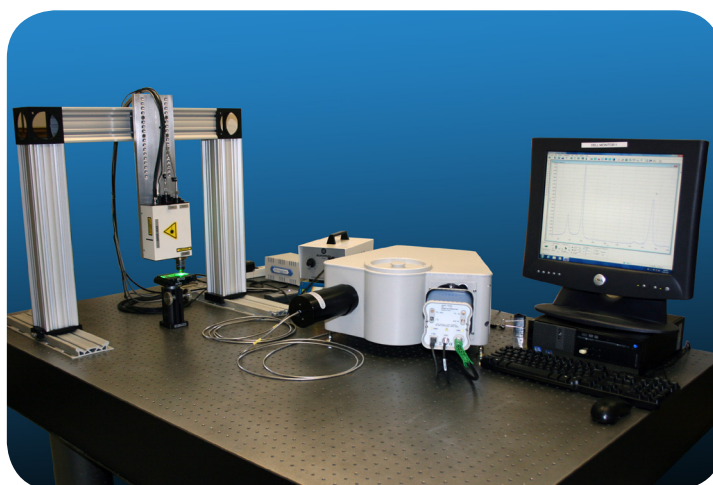


Figure 1: MicroHead-3000 with mounting stand, coupled to iHR320 spectrometer and Synapse CCD.

Here are some examples of Raman spectra obtained with a 532nm laser:

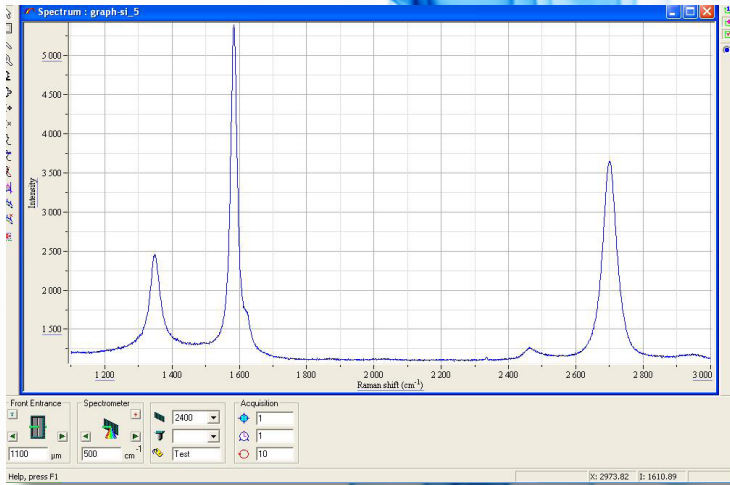


Figure 2. Raman spectrum of Graphene on silicon substrate (D-band at around 1350 cm⁻¹, g-band at around 1583cm⁻¹, D' band at around 1620cm⁻¹ and 2D band at around 2680 cm⁻¹).

Figure 3. Raman spectrum of Aspirin, showing that spectra can be measured as close as 100 cm⁻¹ from the laser line.

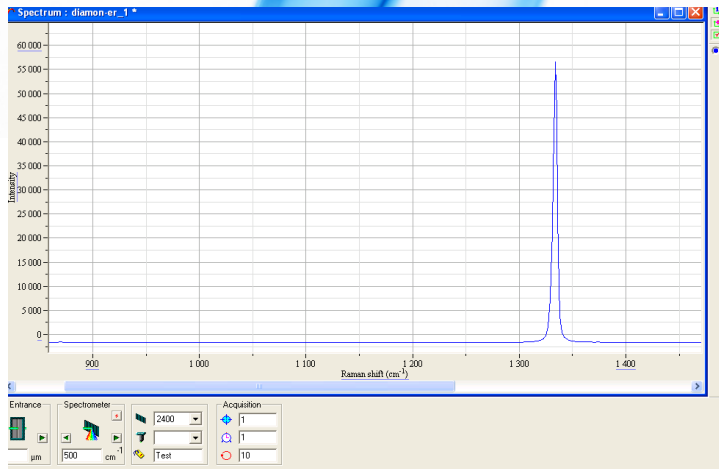
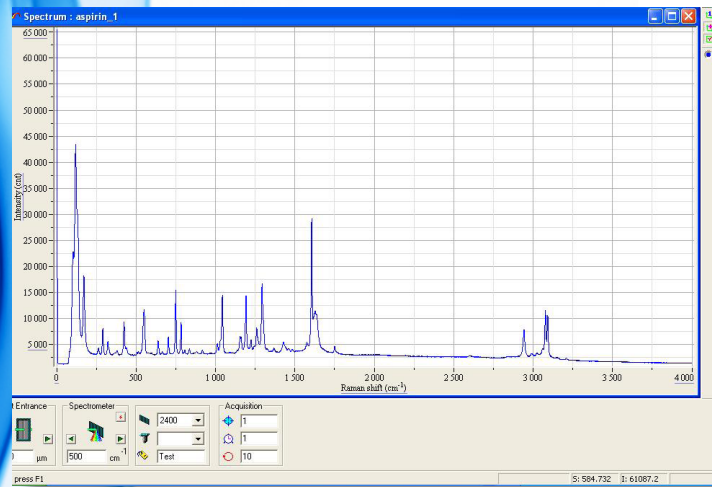


Figure 4. Raman spectrum of diamond, with characteristic peak at 1332 cm⁻¹.

Capabilities

- Specifically designed for PL and Raman spectroscopy
- Measure solid, powder and liquid samples
- Measure sample directly through glass
- Accommodates specialized cells for high and low temperature measurements
- Extensive software tools for mapping and data analysis
- Color video camera for viewing samples
- Macro-lenses or microscope objectives selectable
- Frame size and sample stage selectable

High Performance

- Choice of 532nm, 633nm or 785nm laser
- Choice of fully automated iHR320 or iHR550 imaging spectrometer for standard or ultra high-resolution measurements, with f/# matching optical interface and choice of 3 different gratings
- Choice of TE cooled or LN₂ cooled low noise scientific grade CCD detector for low light measurements
- Raman shift range of 4000 cm⁻¹ to 150 cm⁻¹ (depending on excitation wavelength)
- Wide range of grating selections for extended wavelength coverage
- Optional extension into the IR range

Software and Databases

- LabSpec-V Raman/PL award-winning software
- Available search library with spectral database
- Automated data acquisition and analysis
- Mapping function available with motorized X-Y stage
- Auto scan function to eliminate stitching artifacts
- Cosmic removal routine

Ease of Use

- USB 2.0 interface for plug and play operation
- Automated experiments
- Customizable reports
- Modular expansion capability

Reliability and Maintenance

- The system requires only a routine automatic alignment, which is completely software controlled

Typical Applications:

- Nanotechnology – characterize bulk nanotubes, QC of nanotubes
- Gemology – rapid ID of colored stones, distinguishing natural and synthetic diamonds
- Academic research – useful in material science, biological studies, and many applied research fields
- Semiconductor characterization



HORIBA
Scientific

info.sci@horiba.com

www.horiba.com/scientific

USA: +1 732 494 8660
UK: +44 (0)20 8204 8142
China: +86 (0)10 8567 9966

France: +33 (0)1 69 74 72 00
Italy: +39 2 5760 3050
Brazil: +55 (0)11 5545 1514

Germany: +49 (0) 89 4623 17-0
Japan: +81 (0)3 6206 4717
Other: +33 (0)1 64 54 13 00