



1300 nm AFM laser feedback



High efficiency top down and side coupling



Compact holder for easy probe exchange



High resonance scanner, auto tip-alignment and tuning



Closed-loop, short path-length Raman laser alignment for long-term stability



Dual optical scheme, easy switching



High performance without active vibration isolation



Visual confirmation of Raman laser alignment in all modes

Powerful

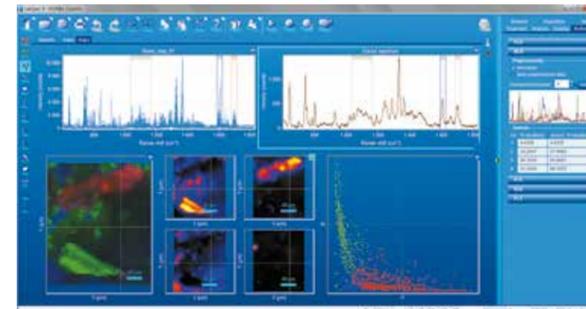
- High numerical aperture objectives from both top and side for best co-localized spatial resolution and best TERS collection efficiency.
- High-throughput optics and spectrometer.
- High spectral resolution with the LabRAM HR spectrograph.
- Broad range of detection wavelengths, from deep UV to Infrared.
- Simultaneous SPM and spectroscopic measurements.
- Powerful processing software suite for both SPM and spectroscopic data, including Multivariate Analysis and spectral database lookup.

Integrated Software

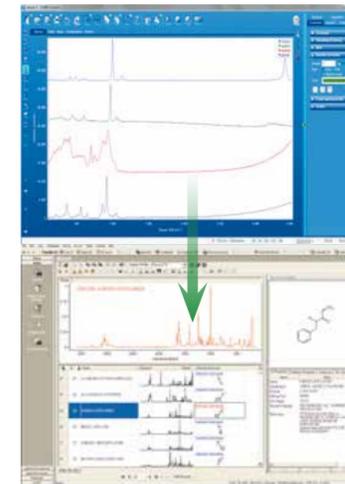
Seamless system control and data acquisition, and the most advanced data analysis and processing suite



Integrated Multivariate Analysis module. High level analysis at a touch of a button. PCA | MCR | HCA | DCA.



Powerful data acquisition and system control interface with scripting and methods definition capabilities.



KnowItAll® HORIBA Edition. Fast chemical identification with HORIBA spectral database (>1750 spectra).

Simple and Fast

- One-click cantilever alignment, frequency tuning and optimization, requiring no manual adjustments.
- Easy cantilever exchange without affecting the sample.
- Fast and intuitive Raman laser to AFM tip alignment.
- Ultra-fast simultaneous SPM and Raman measurements.

λ = (325 nm - 1064 nm) P ≤ 500 mW
VISIBLE AND/OR INVISIBLE LASER RADIATION
AVOID EXPOSURE TO BEAM
CLASS 3B LASER PRODUCT



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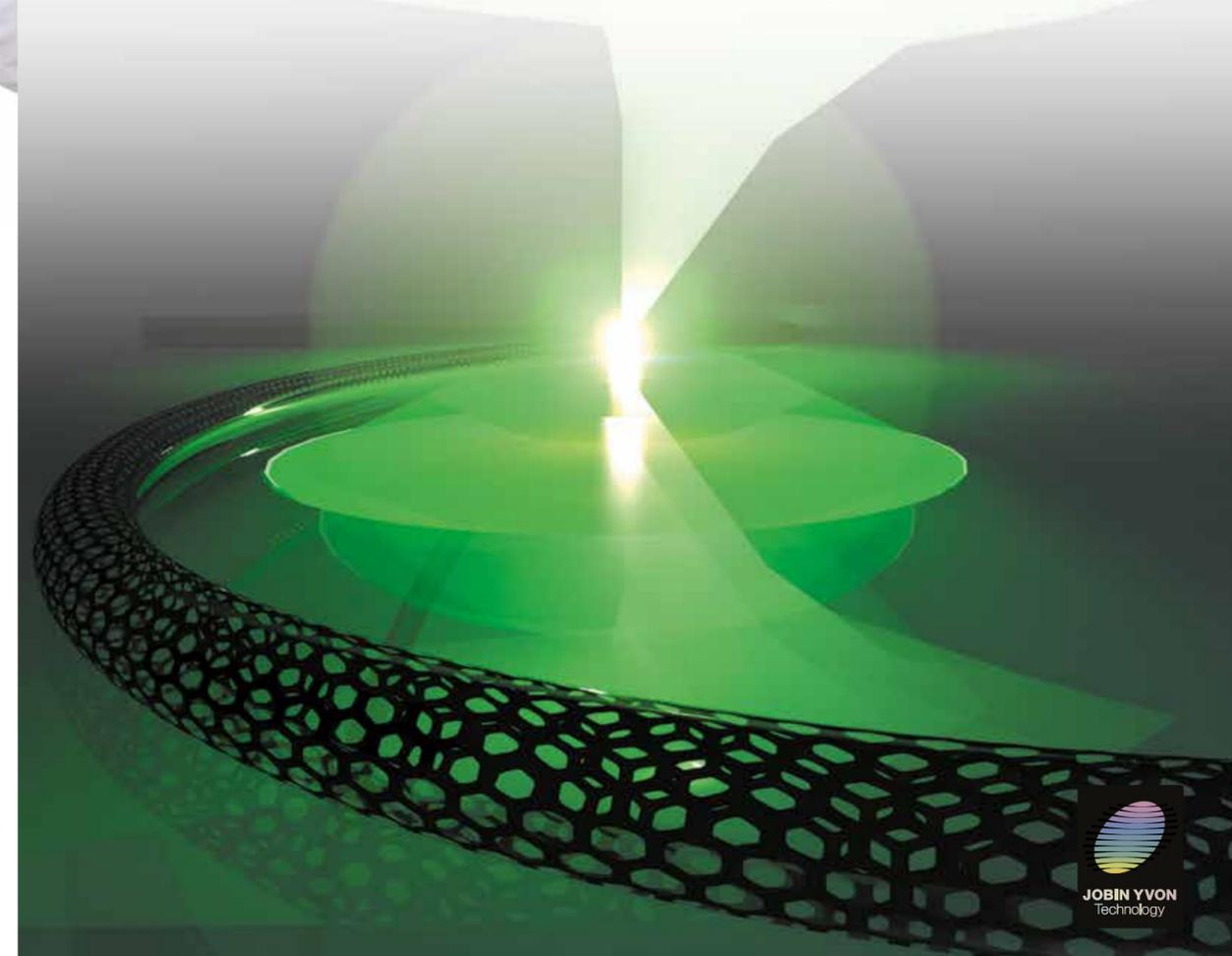
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HORIBA
Scientific

AIST-NT
Advanced Integrated Scanning Tools for Nano Technology

Nano-Spectroscopy Solutions

AFM-Raman, TERS, NSOM
Chemical imaging at the nanoscale



Explore the future

Automotive Test Systems | Process & Environmental | Medical | Semiconductor | Scientific

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Since its introduction in the early 80's, Scanning Probe Microscopy (SPM) has quickly made nanoscale imaging an affordable reality. The technique provides a continuously growing variety of surface analysis methods for the physical characterization of materials, yet label-free chemical sensitivity is still challenging.

On the other hand, optical spectroscopy has provided a unique way to determine the structure and chemical composition of molecules for decades and is a method of choice for the analysis of nano-materials despite its diffraction-limited spatial resolution.

The two techniques together make up an attractive and unique tool, yet integrating such different instrumentation is challenging. Today, with over a decade of experience in this exciting field, we have refined the technique to its utmost with uncompromised performance to bring you a tool that is not only extremely powerful and versatile, but is also so easy to use, fast and reliable that generating outstanding data is virtually effortless.

Raman-AFM and TERS Made Easy!

Reliable Results

- Fully automated cantilever alignment insuring reproducible optimization of the AFM parameters from one tip to the next and from one user to another. (1) (5)
- Reliable repositioning of the probe on the sample within seconds. (1) (8)
- Drift compensated sample scanner with high resonance frequency brings reproducible images over long periods of time thanks to low vibration sensitivity. (5)
- Raman laser alignment by piezo-driven closed-loop objective scanner: shortest distance to the focus point for minimum drift. (6)
- Visual confirmation of the Raman laser alignment with independent video imaging, SPM detection and Raman mapping. (8)

Versatile

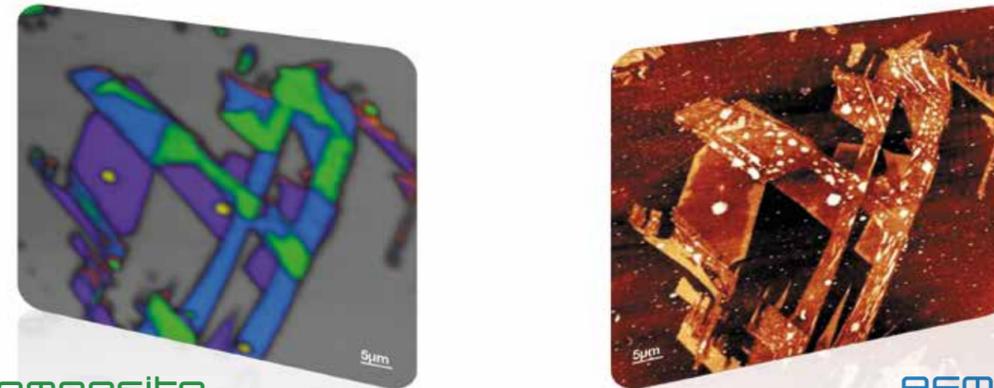
- Numerous SPM modes including AFM, STM, tuning fork, NSOM.
- Full range of Raman excitation lasers, including red and NIR, without interferences, thanks to a 1300 nm AFM feedback diode. (1)
- Up to 3 spectroscopic detectors and 20 SPM channels.
- High resolution sample scanner from nanometers to full scan range. (5)
- Top down and oblique Raman detection for optimum resolution and throughput in both co-localized and Tip-Enhanced measurement modes. (2)
- Full control through one workstation, or, SPM and spectrometer can be operated independently.



The Ultimate Tool for Physical and Chemical Characterization

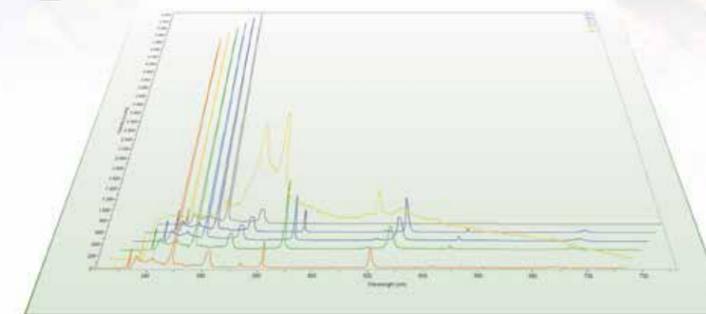
Raman-AFM

Full range of SPM modes and simultaneous spectroscopy



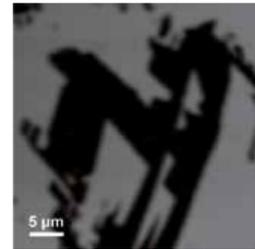
Composite Raman image

AFM Topography

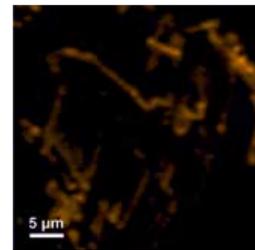


Graphene CLS Spectra

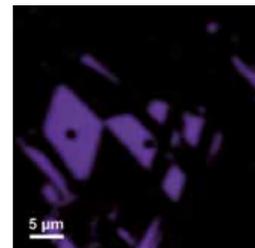
Raman Silicon



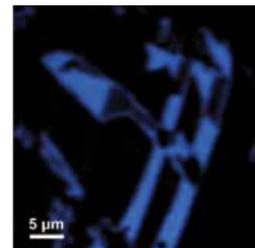
Raman Graphene with Defects



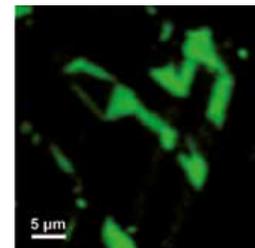
Raman Single Layer Graphene



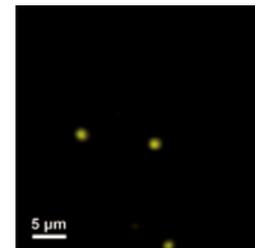
Raman 2-layer Graphene



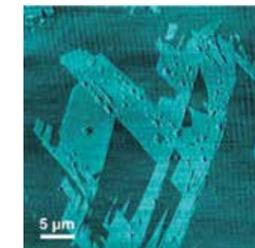
Raman 3-layer Graphene



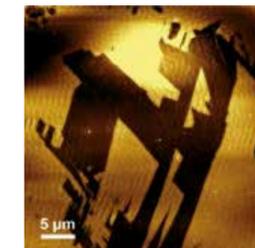
Raman Amorphous Carbon



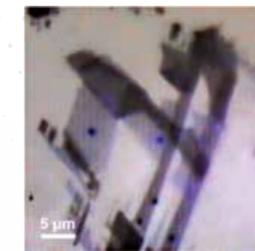
AFM Phase



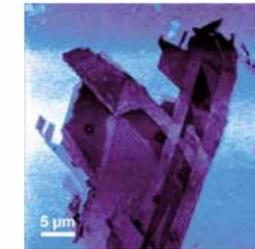
AFM Friction



AFM Optical Image 100 %



AFM Contact Potential Difference



AFM Capacitance



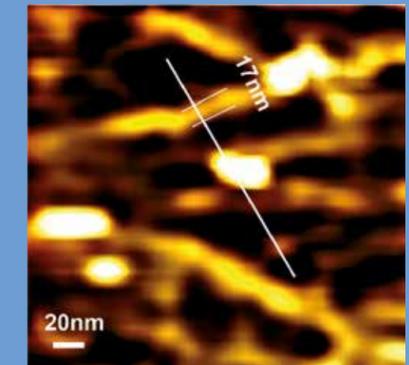
Main Applications

- Biological structures
- Graphene
- Carbon nanotubes
- Nanowires
- Polymers
- SERS substrates
- Semiconductors

TERS

Label-free chemical characterization with nanoscale resolution

SWCNT STM Image



SWCNT TERS Image G Band

