Thermo Scientific
DXR2 SmartRaman Spectrometer

Dependable
Raman analysis

Thermo
SCIENTIFIC

The Raman spectroscopy solution

Take advantage of the ease of sample preparation offered by Raman spectroscopy without becoming an expert in the technology. Incorporating patented features to maintain peak performance and deliver answers routinely and reliably, the Thermo Scientific™ DXR™2 SmartRaman spectrometer was built to meet the needs of the multi-purpose analytical lab.

The DXR2 SmartRaman spectrometer and your applications

One of the most versatile characteristics of Raman spectroscopy is its ease of sampling. With minimal preparation, samples are readily analyzed through glass and plastic packaging.

The DXR2 SmartRaman is a true walk-up-and-run Raman spectrometer designed as an analytical tool to give you all the benefits of Raman spectroscopy.

Analyze a wide variety of samples, including:

- *Liquids in clear and brown glass bottles* • *Samples in blister-packs*
- *Powders, liquids, slurries in multi-well plates* • *Tablets*
- *Samples in tubes, vials, cuvettes* • *Powders in plastic packages*

Typical applications for the DXR2 SmartRaman:

- *QC/QA* • *Analytical methods development*
- *R&D* • *Process development* • *Routine analysis*
- *Teaching and chemical education*

Typical industries:

- *Forensics* • *Academic research*
- *Dyes and chemicals* • *Polymers*
- *Food and packaging* • *Pharmaceuticals*

The DXR2 SmartRaman spectrometer

The DXR2 SmartRaman spectrometer is designed for bulk sample analysis in busy multi-purpose analytical labs where the users are looking for reproducible and accurate results from a dependable, low maintenance instrument.

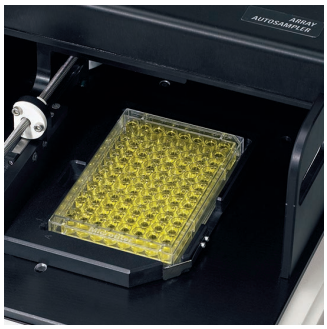
- ***Easily obtained results***
- ***Excellent sensitivity***
- ***Full spectral range***
- ***Interchangeable Smart sampling accessories***
- ***Wide variety of sample formats***
- ***Low maintenance***
- ***Expandable***

Sampling versatility – Smart Accessories for all your needs

Quickly adapt to different sample formats with accessories that are designed for the full range of sample types. The DXR2 SmartRaman sampling accessories use pinned-in-place technology to attach to the DXR2 SmartRaman base, where they are automatically recognized by the Thermo Scientific™ OMNIC™ software using Smart technology.

The Universal Platform Sampling accessory

The Universal Platform Sampling accessory accepts these four pinned-in-place, Smart toolheads, each designed to accommodate a particular sample format.



The **Array Autosampler** automates analysis of multi-well plates and other samples in array formats.

The **Bottle Holder** for analyzing the contents of standard bottles.

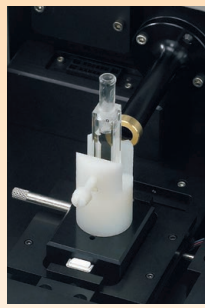
With its iris format, the **Tablet Holder** accepts tablets in a range of sizes.

The **Universal Plate** for samples such as plastic bags and glass vials.

The 180 Degree Sampling accessory

For labs that handle samples in a variety of formats, the 180 Degree Sampling accessory is the best option. Designed as a simple device to accommodate vials, tubes, powders and other samples, the 180 Degree accessory enables the use of specialty cells, including cryogenic, high-temperature, electrochemical and controlled-humidity chambers.

180 Degree Sampling accessory kit.



NMR tube holder for the 180 Degree Sampling accessory kit (left) and Vial holder for the 180 Degree Sampling accessory kit (right).

Remote sampling

For samples too large to fit in the sample compartment, or for remote sampling requirements, the DXR2 SmartRaman spectrometer has the capability to accept optional fiber-optic probes.

Raman spectroscopy for shared academic laboratories

Enhance your academic laboratory instrumentation by providing student easy access to Raman spectroscopy.

Improve interdepartmental research

- Enable various departmental users, from materials engineering to life sciences, geology to pharmaceuticals to collect Raman data
- Increase the value of your departmental research dollar with a flexible instrument

Software to suit your needs and help solve your problems

- Comprehensive OMNIC software suite for full instrument control and data processing
- OMNIC Specta software for highly-efficient management and processing of spectral data for materials identification
- Extensive Raman libraries and easy-to-use search capabilities
- Thermo Scientific™ TQ Analyst™ with chemometric models for comprehensive data analysis

Raman spectroscopy for pharmaceutical and industrial quality control environments

Utilize your DXR2 SmartRaman spectrometer in high throughput and high pressure QA/QC environments to ensure quality and safety of your raw materials and finalized products.

Results you can trust

Thermo Scientific™ ValPro™ System Qualification software provides CFR 21 Part 11 compliance to give you reliable results that you can depend on. The identity and serial number of the accessory are recorded with the results for complete traceability.

Analyze a wide variety of samples

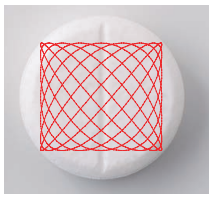
From analysis of raw materials to final products, the DXR2 SmartRaman spectrometer enables you to solve an extensive range of analytical challenges as you can get the answers you need.

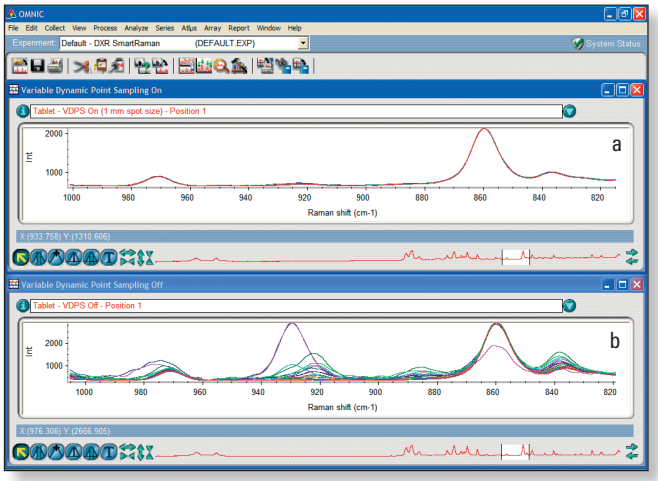
- Confidently monitor quality, composition, and stability of raw materials
- Guarantee safety, verify content, and analyze formulations of finished products

Variable Dynamic Point Sampling

Overcome the challenge of collecting representative spectra from heterogeneous samples. Variable Dynamic Point Sampling (VDPS) technology rasters the excitation laser beam over the surface of the sample without loss of signal.

- The Universal Platform Sampling accessory employs VDPS technology to average the Raman signal from a heterogeneous sample, such as mixed powders or pharmaceutical tablets
- The effective size is user-selectable and software-controlled

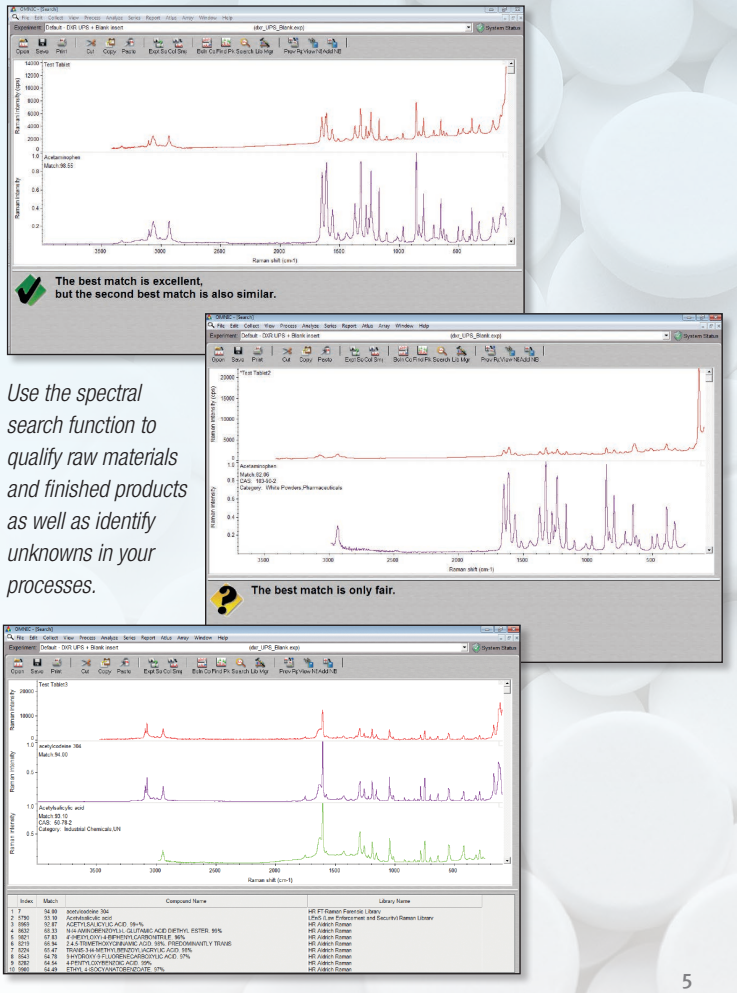




Spectra of painkiller tablet taken at multiple sampling points: (a) with VDPS on; (b) without the use of VDPS.

Extensive spectral libraries

Whether you utilize one of our many commercial libraries or create your own custom libraries, the spectral search feature will give you confidence in your analytical results.



Use the spectral search function to qualify raw materials and finished products as well as identify unknowns in your processes.

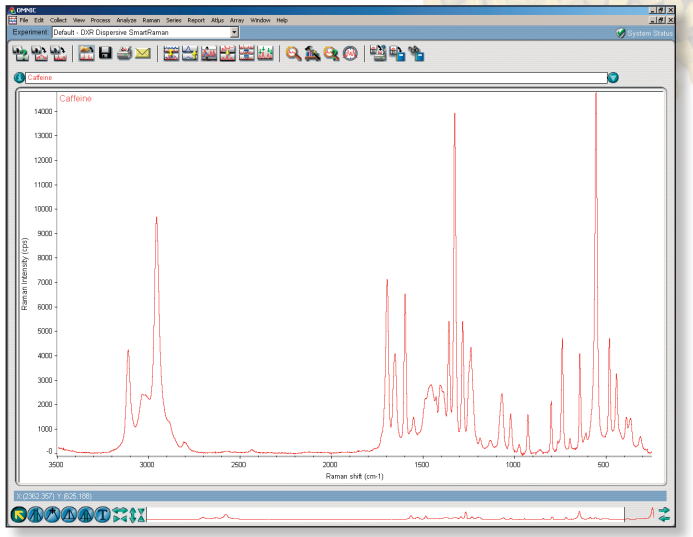
The power of Raman in an easy-to-use format

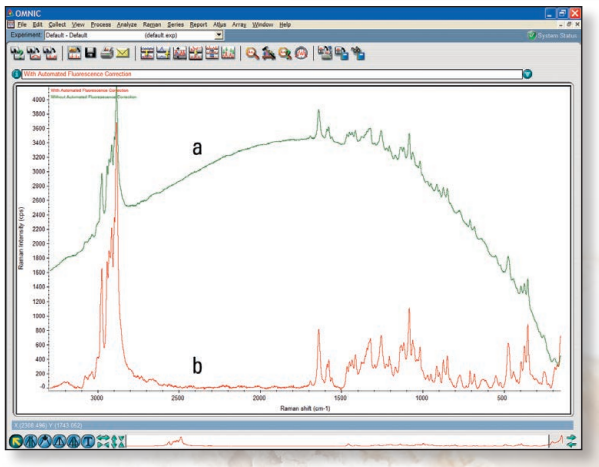
Raman spectroscopy is a powerful analytical tool that can be used to obtain reliable answers. The DXR2 SmartRaman spectrometer provides the best quality data with the OMNIC software platform that makes interpreting results easy.

Collecting quality data

Top quality results are made easy with the unique software features of the DXR2 SmartRaman spectrometer. These features enable you to collect optimal Raman data, without having to become a Raman expert.

- **Autoexposure** – The software calculates the exposure time and number of exposures required to achieve the best possible spectral quality for a wide variety of samples
- **Smart Background** – Collects background data during instrument downtime and selects the appropriate background so you never have to think about background collection
- **Autofocus** – Optimizes the focus to maximize the Raman signal automatically
- **Automatic Intensity Correction** – Compensate for detector wavelength dependence
- **Automated Fluorescence Correction** – Utilizes the software to correct fluorescence interference, regardless of laser frequency used



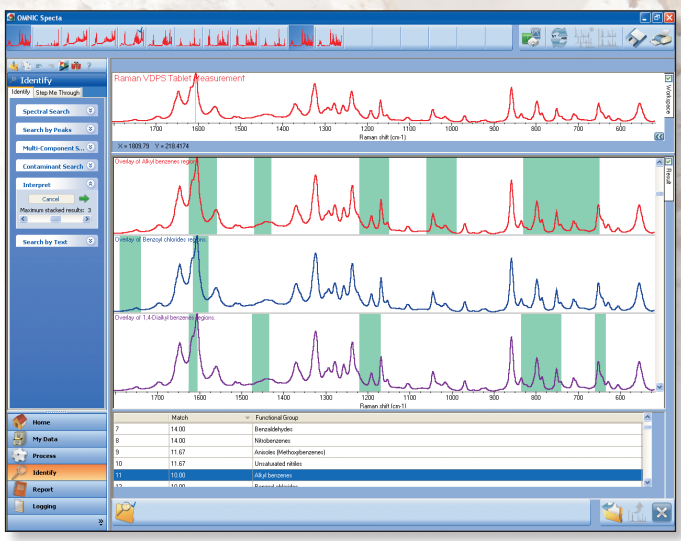


Acquire high quality Raman spectra utilizing the built-in software features in OMNIC software.

Spectrum of an antihistamine: (a) without fluorescence correction; (b) with fluorescence correction.

From spectra to answers

Thermo Scientific™ OMNIC™ Specta™ software provides efficient data management, simplified data processing, and powerful spectral identification. Quickly and effortlessly characterize your spectra using spectral libraries on your system. Reveal the identity of components in mixtures with this unique searching feature.



In a single step, OMNIC Specta determines the identify of the three active ingredient in a mulicomponent table: acetaminophen, acetylsalicylic acid, and caffeine.

Maximize productivity, Maintaining peak performance

With patented autoalignment, calibration and other features, routine instrument maintenance is easily incorporated into standard lab operating procedures.

Choice of Spectral Resolution
For routine analyses, standard spectral resolution will solve most analytical problems. For hard-to-resolve bands, high-resolution gratings are available.

Easy-to-maintain Spectrograph
No moving parts, unique patented design optimizes performance at all wavelengths.

Pre-aligned Smart Components
Pre-aligned and lock-in-place laser, filters, and gratings use automatic recognition and store alignment allowing any user to reconfigure an instrument in seconds. Thermo Scientific OMNIC software checks for component compatibility.

Multiple Lasers
Be ready for any sample. Expand the capabilities of the DXR2 SmartRaman by adding additional excitation lasers. Minimize fluorescence interference or enhance sensitivity with shorter excitation wavelengths. Facilities with more than one DXR2 family instrument can share lasers, gratings, and filters for even greater versatility.

Smart Lasers
Automatically track laser lifetime.

User-replaceable Components
No service calls required to replace a laser.

Fine-adjust Assembly
Software-controlled to maintain peak performance.

USB Connection
Full instrument control from either a desktop or laptop computer through USB ports.

Automated Calibration
Spectrograph, laser and Raman intensity calibrations are completely automated by OMNIC software using standards located in the alignment/ calibration pod.

Patented Autoalignment
Keeps the excitation laser and the Raman scatter beam paths precisely aligned to the same sampling point for maximum sampling precision.

Laser Power Regulator
Guarantees consistent power at the sample.

The Thermo Scientific Raman Family

We have been designing and producing Raman products since 1989. Today, we sell more Raman-based instruments than any supplier in the world. The Thermo Scientific Raman product line represents a culmination of experience in molecular spectroscopy, catering to applications in academic research, materials science, and analytical problem solving for industry. Our innovation is driven by our customers' need to push research boundaries and improve productivity. Being the global leader in Raman spectroscopy means a commitment to designing, building and supporting instruments you can trust.

DXR2xi Raman Imaging Microscope

Highly usable, ultra-fast chemical imaging that speeds scientific investigations across a broad range of disciplines making it ideal for multi-user research facilities.

DXR2 Raman Microscope

Versatile research-grade microscope offering a superior combination of performance and ease of use. Offers high spatial resolution mapping and point-and-shoot Raman for the most demanding analytical tasks.

DXR2 SmartRaman Spectrometer

Built for dedicated bulk sample analysis and designed for busy multi-purpose analytical labs. Provides reproducible and accurate results in a dependable, low-maintenance platform.

iS50 Raman Module

Compact, cost-effective, user-friendly FT-Raman spectrometer for identification, quality assurance, and product development; coupled with the power and innovation of the Thermo Scientific™ Nicolet™ iS™50 FT-IR spectrometer.

FirstDefender RM System and TruScan RM Analyzer

The Thermo Scientific™ FirstDefender™ RM Chemical Identification System and the Thermo Scientific™ TruScan™ RM Handheld Analyzer are innovative and purpose-built tools for immediate answers to critical questions from first response and law enforcement challenges to materials verification.

Thermo Scientific Raman Analyzer Solutions

Raman spectrometer engine tools for integration with complementary analytical techniques, manufacturing equipment, and mobile applications.

www.thermofisher.com/raman

The DXR2 SmartRaman spectrometer, in the default configuration, is a Class 1 laser-safe products. Installation of a fiber optic port and fiber optic probe will convert all DXR2 family instruments to Class 3B laser-safe. The DXR2 SmartRaman spectrometer may be manufactured under or covered by patents found at www.thermoscientific.com/pm_molspec.

Thermo Electron Scientific Instruments LLC, Madison, WI USA is ISO Certified.

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