



Thermo Scientific

DXR2 Raman Microscope and
DXR2xi Raman Imaging Microscope

Do more with

Raman microscopy today

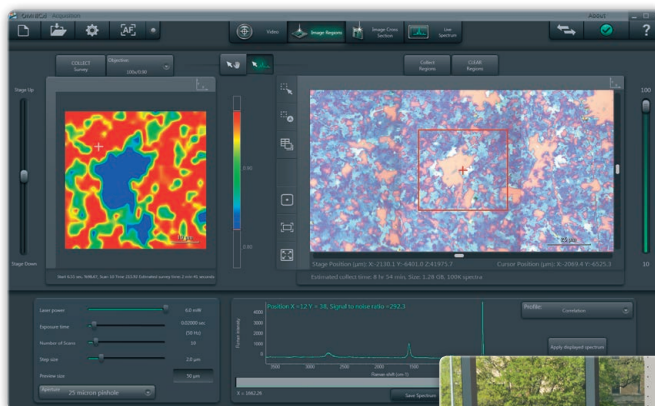
Thermo
SCIENTIFIC

DXR2 microscopes do more for your organization when you need it most. Now.

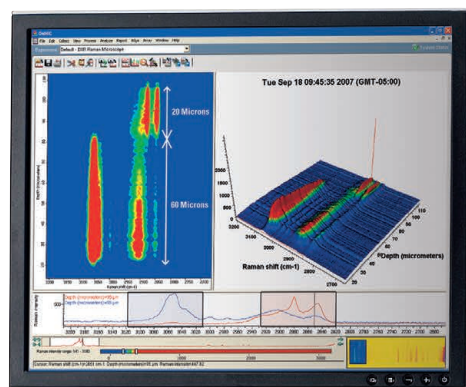
We've completely redefined the Raman microscope so that it lets you focus on your work rather than the tools you use to do it. Without sacrificing performance, we've built an instrument family around reliability, confidence, and usability. The Thermo Scientific™ DXR™2 Raman microscope and the Thermo Scientific™ DXR™2xi Raman imaging microscope help you solve practical application problems with innovations that improve your ability to get quality information quickly. We've put expertise into the software, real world problem solving into the design, and support everywhere in the world.

More results. Faster.

- Walk up and run ease of use
- Intuitive software moves quickly from data to answers
- Expertise built-in for data optimization
- Previews and system checks eliminate trial and error



DXR2 Raman microscope with the powerful and intuitive Thermo Scientific™ OMNIC™ Software Suite



**DXR2xi Raman imaging system including
visually driven Thermo Scientific™
OMNIC™xi Raman imaging software.**



Stability, precision, and simplicity

- Three-path fine beam autoalignment maintains peak performance and sampling integrity
- Laser power regulation ensures consistent sample excitation over the lifetime of the laser
- Advanced spectrograph design with no moving parts simplifies use and make the detection system and calibration robust
- Single piece cast optical frame mimics the robust philosophy of an optical table, eliminating connection points that can flex and shift with vibration or temperature change and degrade performance

Rapidly adaptable to new challenges

Adding new Raman capability to your site is economical, as components are readily interchangeable with other DXR2 instruments.

- Pre-aligned and lock-in-place components use automatic recognition and stored alignment, allowing any user to reconfigure an instrument in seconds
- Lasers and other components can be interchanged and shared with every instrument in the DXR2 Raman family
- Optional, automated polarized Raman capabilities provide structural information that complements chemical information
- Add new wavelengths without tools or service engineer visits



Get ahead of analytical challenges

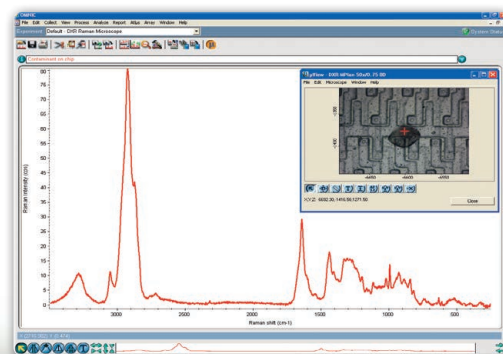
Expect exceptional sensitivity and spatial resolution with the **DXR2 Raman microscope**. Without sacrificing performance, the DXR2 microscope is a reliable and easy-to-use point-and-shoot instrument providing research-grade results. Thermo Scientific DXR2 Raman instruments are ready to meet the demands of busy laboratories in academia, industry, and government.

Research performance without research complexity

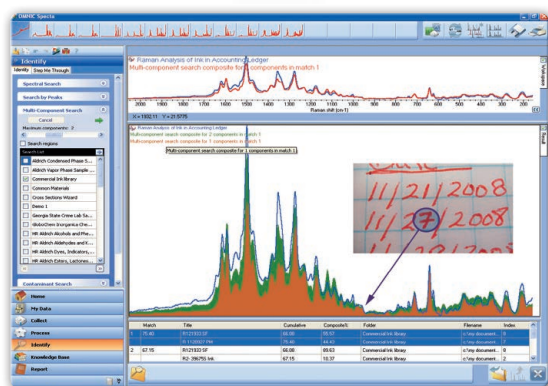
- High-performance confocal Raman microscopy in a robust, integrated design
- Autoalignment and calibration ensures scientifically accurate measurements, without tools or manual procedures
- Increase frequency of publications because the learning curve has been reduced

Walk up and use with confidence

- Real-time preview, automated fluorescence correction, autoexposure, and cosmic ray rejection are examples of the expertise built in to the software, which enable any user to obtain quality Raman data
- System status indicator shows the user at a glance that the system is optimized and ready to collect data
- Automated alignment maintains peak performance and guarantees data and visual target correlate without compromising laser safety



Defects and small foreign objects are readily identified with excellent spatial resolution and with the aid of OMNIC software.



Software focused on answers

- Identify unknowns and multicomponent compounds automatically
- Interpret molecular structure effortlessly
- Verify or classify materials and automate complete analyses

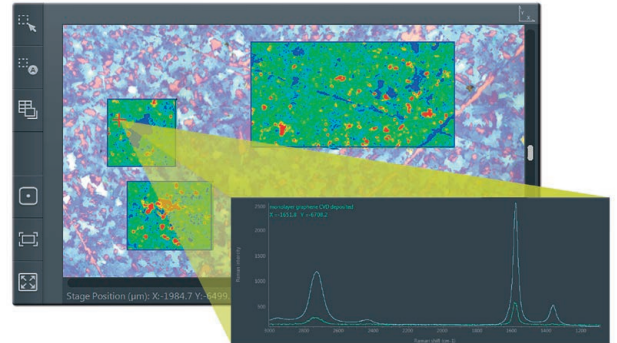
Thermo Scientific™ OMNIC™ Spectra™ software revolutionizes how spectral searching is done, automatically decomposing multi-component materials into their constituents.

Broaden your materials knowledge

The **DXR2xi Raman imaging microscope** rapidly explores the entire sample area and finds exactly what you are looking for, using our intelligent approach to chemical imaging and data collection. The DXR2xi reveals visual information with speed and simplicity, ideal for multi-user labs. Spend less time concentrating on the technique and more time applying your skills and imagination to advancing scientific research.

Visually driven imaging

- Optimize data collection at the image level
- Preview results instantly while adjusting data parameters
- Single click image collection modeled after scanning microscopy techniques



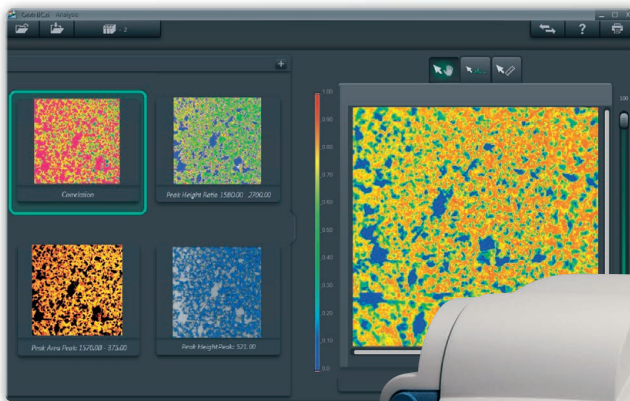
Live spectral search and component identification aids multiple region selection.

Reveal meaning in seconds

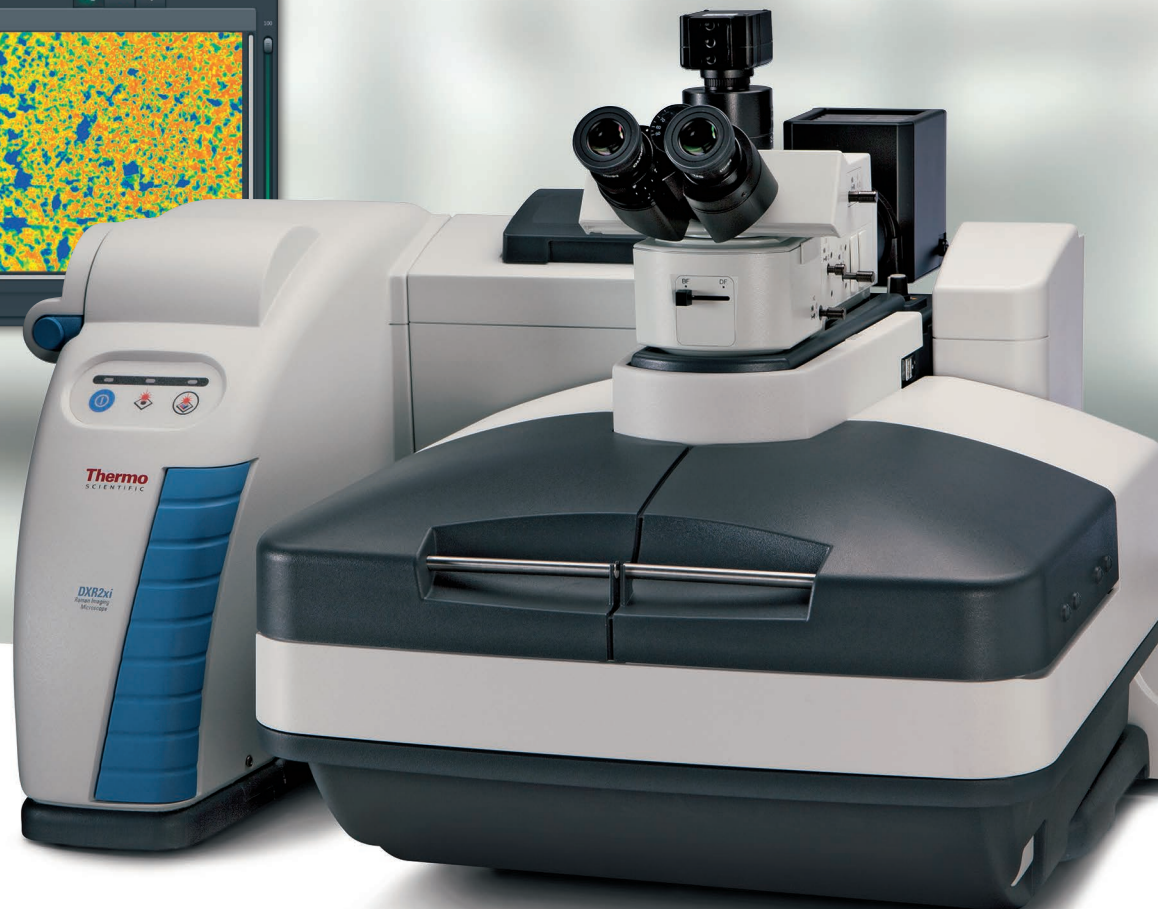
- Statistical processing, including automatic component identification and correlation analysis enables you to quickly elucidate components, structures, or traits
- Find the hidden answer to your problem immediately with spectral interpretation tools and our vast array of spectral databases
- Visualize differences automatically without methods or prior knowledge of sample

Capture the smallest detail in the biggest picture

- Sub-micron spatial resolution with ultrafast data processing
- High-speed imaging allows near instant data previews and multiple region surveys
- Image large areas with near unlimited data set size processing



Analysis window displaying multiple material traits (Correlation, Peak Height Ratio, Peak Area, Peak Height) in independent images.

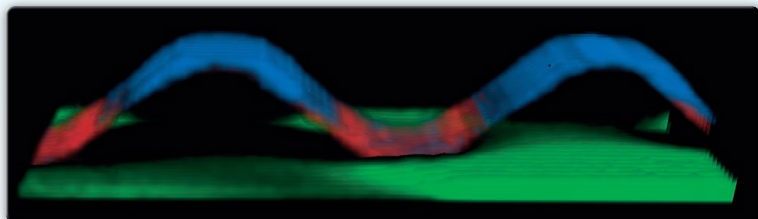


Problem solving and research capabilities for every field

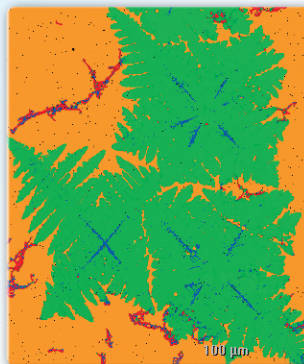
We designed the Thermo Scientific DXR2 Raman Family for users who are trying to solve an engineering problem, characterize a novel material, defend a patent, or tackle a backlog of evidence. If your analysis is a means to an end that simply requires answers quickly and confidently, the DXR2 microscopes are without question the right Raman for your laboratory.

Materials Science and Engineering

Raman microscopy provides rich chemical and physical information and a visual scanning interface provides rapid insights without extensive spectroscopic interpretation. Polarized Raman adds an extra dimension of structural understanding.



Controlled nano-scale semiconductor architectures is important for a variety of applications including flexible electronics. This is a three dimensional image of a 220 nm thick buckled silicon nanoribbon on a poly(dimethylsiloxane) support.



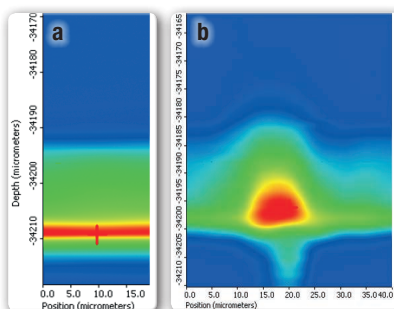
Raman imaging can be used to evaluate the quality of materials such as graphene films and provide essential feedback for development of production methods. This image shows the structural composition of a graphene film using Raman imaging and comprises over 170,000 spectra in a 188 x 227 micron area.

Rishabh Jain,
Research Scientist,
Bemis Company

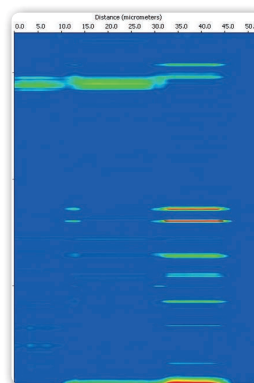
"As a graduate student, I used other Raman instruments before I started using the DXR and I found that the DXR was a lot easier to set up and use and also gave me better results."

Product Testing and Support

Reliability and global support make DXR2 microscopes the Raman of choice for busy laboratories relying on answers to maintain product quality.



Confocal Raman microscopy enables depth profiling of multi-layered polymers with minimal sample preparation, revealing differences between the desired distribution of polymers (a) and the same sample with an undesirable inclusion present (b).

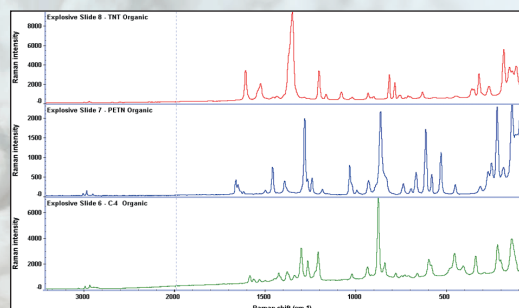


Cross-sectional analysis of a five-layer polymer shows discrete components with thicknesses ranging from 2 to 15 μm thick.

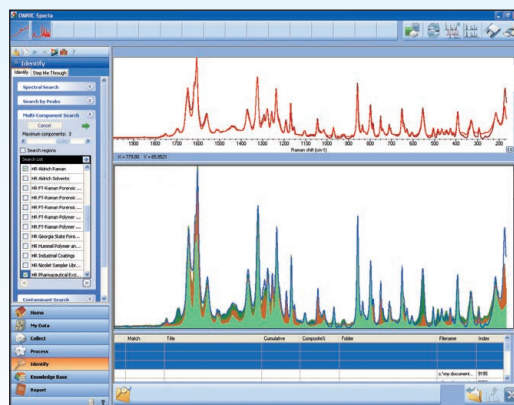


Investigative Analysis

High spatial resolution combined with powerful and field-specific spectral databases enable rapid identification of forensic materials such as explosives, powders, and inks.



Using our large spectral databases, it is possible to identify and discriminate between different types of explosives in almost any quantity, from large amounts of sample to residues.

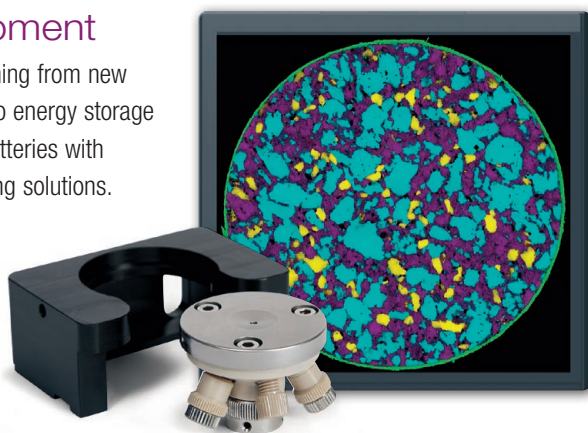


Composite spectra can be created using the software program Spectra to elucidate mixtures such as inks, pigments, or paints for art restoration or counterfeit identification.

Product Development

Support the discovery of anything from new pharmaceutical formulations to energy storage applications like lithium ion batteries with OMNICxi software and sampling solutions.

Temporal imaging analysis, coupled with in situ and ex situ sampling capabilities enable the investigation and improvement of energy storage applications.



The entire surface of a pharmaceutical tablet can be characterized in minutes and the distribution of active ingredients can be monitored. The software locates the various pharmaceutical components with no prior information.

Laura Slaymaker,
Graduate Student in the
Department of Chemistry,
University of Wisconsin –
Madison

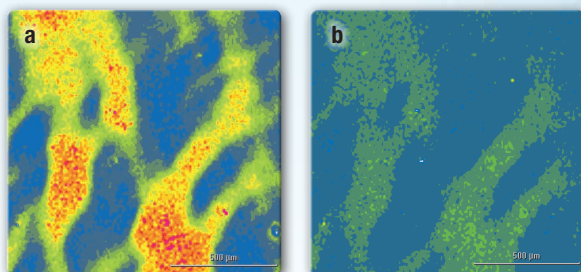
"The DXR opens up a lot of exciting possibilities because it does not take long to collect a Raman map of a small section of your sample...I'm excited to find new ways to apply it to the research I'm doing."

Michael S. Arnold,
Associate Professor,
Department of Materials
Science and Engineering,
University of Wisconsin –
Madison

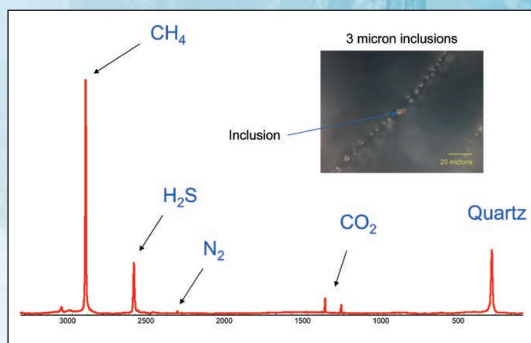
"On several occasions, we've included Raman spectral maps as preliminary data in our proposals. Whenever one can include data in a visual and compact way, it helps to make a more compelling case."

Academic and Interdisciplinary Research

DXR2 is the most approachable Raman microscope family available allowing more departments and more students to publish more compelling research.



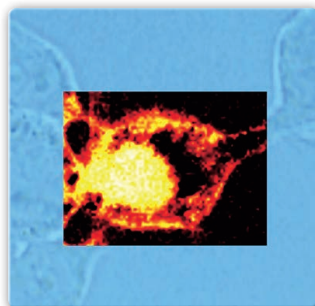
Raman image of isotactic polypropylene with polarized (a) and depolarized (b) Raman excitation. Both images show the peak height intensity ratio of the peak at 808 cm^{-1} to the peak at 841 cm^{-1} .



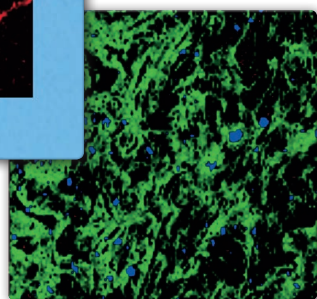
Using confocal Raman microscopy, inclusions in geological samples can be identified without the risk of contamination. Here, the inclusions in this quartz sample are shown to contain CH_4 , H_2S , N_2 , and CO_2 .

Life Science Research

DXR2 sampling modes and options, such as photobleaching, for biological samples enable high sensitivity characterization of biomolecules such as alkyne-tagged cells, localization and distribution of cellular components, or classification of diseased tissue.



The spatial distribution and characteristic spectra of biomolecules such as lipids, proteins, and DNA can be identified. This image shows the distribution of lipids within a HEK cell.



Raman imaging can be used to characterize and classify disease states of tissue. This dewaxed sample of normal breast tissue shows cell nuclei (blue) and the surrounding collagen matrix (green).



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 DXR2xi Raman imaging microscope, in its default configuration, is a Class 1 laser-safe product. Installation of a fiber optic probe launcher and fiber probe will convert it to Class 3b laser-safe. The DXR2 Raman microscope and DXR2xi Raman Imaging microscope may be manufactured under or covered by patents found at www.thermoscientific.com/pm_molspec.

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