

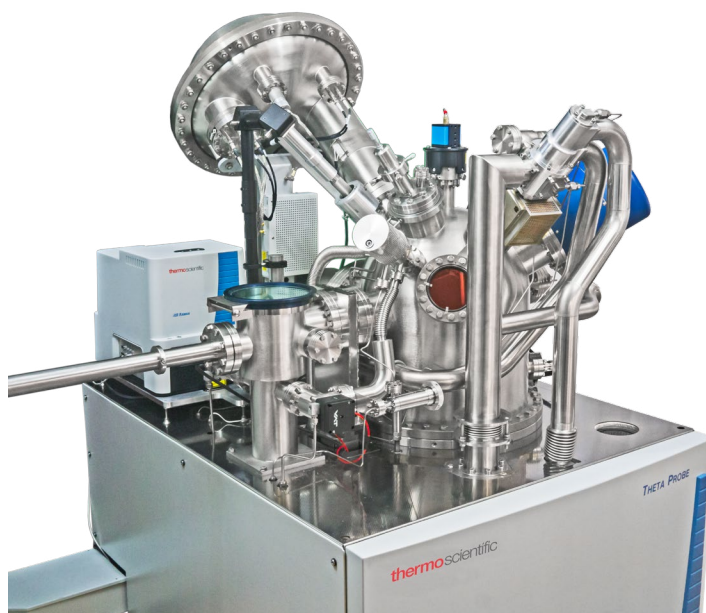
Thermo Scientific iXR Raman Spectrometer

Research-grade Raman performance in a compact and configurable package

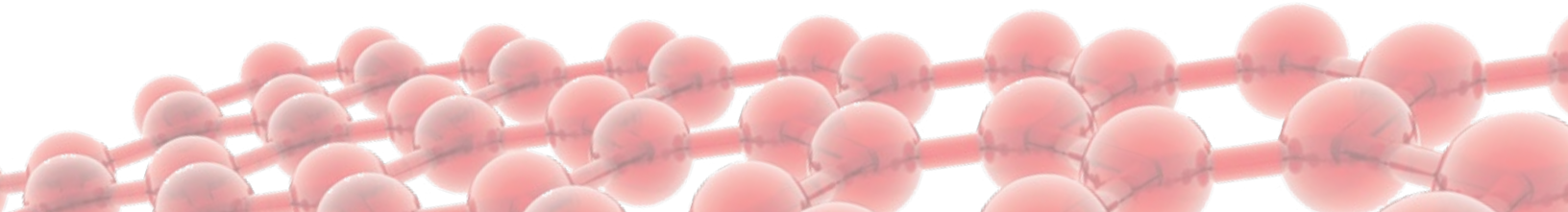
The Thermo Scientific™ iXR™ Raman spectrometer is specifically designed to bring research-grade measurements to your most challenging analytical applications. It is ideal for coupling to other analytical equipment, lending chemical composition and structural information to multi-modal analyses. Its compact footprint and flexible accessories afford operation in locations and scenarios unachievable by most laboratory instrumentation.



MARSxR, comprised of an iXR Spectrometer interfaced to a Thermo Scientific™ HAAKE™ MARS™ Rheometer



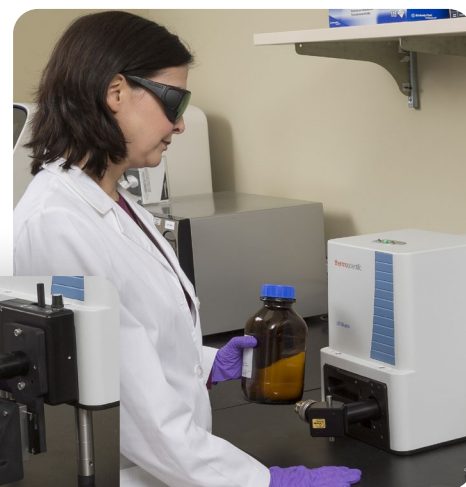
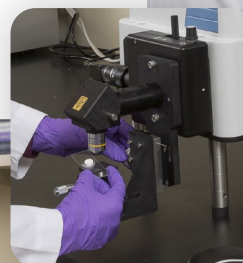
The iXR spectrometer is a highly-configurable system, with multiple dedicated sampling accessories available, capabilities for bench or rack mounting, and a compact footprint ready to be transported.



Powerful performance in a compact form factor – take the power of Raman to your application!

A complete Raman system for a range of applications

- Multi-Modal Analysis
- Art and Conservation
- Forensics
- Military
- Defect Analysis on large or small components
- Laboratory, table top, or rack-mount



Features that deliver research-grade results

- Achieves the quality and sensitivity of the DXR3 family of Raman instruments
- Multiple, changeable laser selections enhance measurement capability
- Robust, high-throughput, 1-box solution
- Breadth of processing & library capabilities with OMNIC software suite
- Take your DXR experience outside of the lab



iXR Raman Spectrometer

- Based on DXR Raman components
- Interface to other instruments by free space coupling
- Range of available sampling accessories enables adaptability to a wide range of measurement needs
- Interchangeable lasers, gratings and filters to optimize laser wavelength for the measurement

Physical dimensions

| | |
|--------|-------|
| Width | 29 cm |
| Depth | 44 cm |
| Height | 37 cm |
| Weight | 25 Kg |



Spectrograph

| | | |
|---------------------|------------------------------------|---|
| Design | Patented triplet spectrograph | No moving parts |
| Spectral dispersion | Full range grating | Average 2 cm ⁻¹ /CCD pixel element |
| | High resolution grating | Average 1 cm ⁻¹ /CCD pixel element |
| Aperture | Four software selectable apertures | 25 and 50 um confocal pinhole apertures; 25 and 50 um slit apertures |

DXR family shared component specifications

The iXR Raman Spectrometer is based on the same reliable research-grade design as our DXR benchtop and microscope systems, providing robust performance while allowing users to easily exchange pre-aligned laser, filter and grating components in the spectrometer.



General system features

| | | |
|------------------------|----------------------------|---|
| Lasers | Multiple excitation lasers | Supported wavelengths 455 nm, 532 nm, 633nm and 785 nm |
| | Laser safety | Class 3B |
| | Laser power regulator | Active feedback system to control absolute laser power delivered to the sample |
| General | System alignment | Automatically optimized upon component exchange or on-demand |
| | Fine laser power control | Power controlled and reported at samples in 0.1 mW increments |
| Replaceable components | Smart components | Pre-aligned user-exchangeable system components (lasers, filters, gratings) lock into place and are automatically optimized with an internal calibration tool |
| | | Software checks for laser, grating and filter compatibility |
| | | Software restores alignment and calibration settings when components are exchanged |
| Computer interface | | iXR communicates with single USB 2.0 connector (Camera Accessory communicates with a separate USB 2.0 connector) |



Lasers

| Lasers | 455 nm | 532 nm High Brightness | 532 nm High Power | 633 nm High Power | 785 nm High Brightness | 785 nm High Power |
|-----------------------------------|------------------------|---------------------------|-------------------------|-------------------------|---------------------------|--------------------------|
| Power | max. 6 mW at sample | max. 10 mW at sample | max. 40 mW at sample | max. 25 mW at sample | max. 24 mW at sample | max. 150 mW at sample |
| Center Wavelength | 455 +/- 0.2 nm | 532 +/- 1 nm | 532.3 +/- 0.3 nm | 632.3 +/- 0.25 nm | 785 +/- 0.2 nm | 785 +/- 0.5 nm |
| Transverse Mode | TEM ₀₀ | TEM ₀₀ | TEM ₀₀ | TEM ₀₀ | TEM ₀₀ | Multi-Mode |
| Beam Quality (M ²) | <1.5 | <1.3 | <1.05 | <1.5 | <1.5 | NA |



Gratings



Filters

System performance - special range and resolution

| Lasers | | 455 nm | 532 nm | 633 nm | 785 nm |
|-----------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Full Range | Resolution ¹ | 5.0 cm ⁻¹ FWHM | 5.0 cm ⁻¹ FWHM | 5.0 cm ⁻¹ FWHM | 5.0 cm ⁻¹ FWHM |
| | Upper Cutoff | 3500 cm ⁻¹ | 3500 cm ⁻¹ | 3500 cm ⁻¹ | 3300 cm ⁻¹ |
| | Lower Cutoff ² | 85 cm ⁻¹ | 50 cm ⁻¹ | 50 cm ⁻¹ | 50 cm ⁻¹ |
| High Resolution | Resolution | | 2.0 cm ⁻¹ FWHM | 2.0 cm ⁻¹ FWHM | 2.0 cm ⁻¹ FWHM |
| | Upper Cutoff | | 1800 cm ⁻¹ | 1800 cm ⁻¹ | 1800 cm ⁻¹ |
| | Lower Cutoff | | 50 cm ⁻¹ | 50 cm ⁻¹ | 50 cm ⁻¹ |
| Extended Range | Resolution | | 11.0 cm ⁻¹ | | |
| | Upper Cutoff | | 6000 cm ⁻¹ | | |
| | Lower Cutoff | | 50 cm ⁻¹ | | |

¹The system spectral resolution is measured using ASTM Method E-2529-06.

The difference between system spectral resolution and spectrograph resolution is primarily determined by the excitation bandwidth.

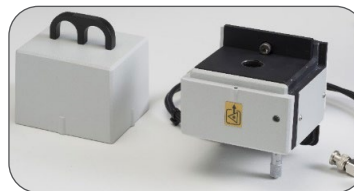
²50% maximum transmitted power.

iXR dedicated sampling accessories



Adjustable Side or Down Turning Sampling Accessory

Kit of adjustable beam-routing tools for measuring a wide range of samples too big for a typical microscope setup.



Macro Compartment Sampling Accessory

Platform for sampling bags, vials, and other bulk materials. Tight-fitting cover rejects ambient light.



Micro Stage Sampling Accessory

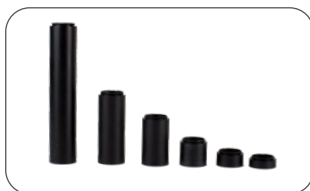
Micro-sampling capabilities for the iXR. Manual XYZ stage for straightforward sample positioning and manipulation. Use with any magnification of microscope objective.



Camera Accessory

Visible camera for sample inspection. Can be used in conjunction with other sampling accessories.

iXR opto-mechanical interface parts for customizable free space coupling



Lens tubes
6", 3", 2", 1", 0.5" and 0.3"
left to right



90° flat mirror, coated for
maximum reflectivity

Thermo Scientific software options for routine or advanced control and analysis

Thermo Scientific™ OMNIC™ Software

OMNIC Series Software

OMNIC Macros/Pro Software

Full featured molecular spectroscopy acquisition and analysis software

Supports time-evolved data collection

Interface to advanced Visual Basic programming

Instrument alignment, calibration and optimization

| | | |
|--|------------------------------|---|
| Alignment and calibration ³ | Entirely software controlled | Autoalignment technique aligns laser and Raman emission |
| | Wavelength | Software-controlled calibration using multiple neon emission lines |
| | Laser frequency | Software-controlled calibration using multiple polystyrene Raman peaks |
| | Intensity | Software-controlled calibration using standardized white light source |
| Laser power regulator | | Absolute excitation laser power at the sample controlled by OMNIC software laser power at sample reported in mW |
| Automatic fluorescence correction | | Compensates for fluorescence prior to data analysis |
| Smart Background | | Automatically accounts for background noise, improving spectral quality |

³Standards incorporated into patented alignment tool

Instrument serviceability

| | |
|--|--|
| Replacement lasers | User-installable |
| Instrument performance monitoring | Software provides real-time status of system readiness, including error condition checks and diagnostics |
| Additional laser, filter, grating sets | User installable |
| | |
| | |

Other specifications

| | |
|---------------|---|
| Environmental | Minimum temperature: 16°C |
| | Maximum temperature: 27°C |
| | Humidity range: 20-80% |
| Electrical | 100-240 V AC, 47-63 Hz |
| Regulatory | CE, UL/CSA/ETL, 21 CFR1040.10 |
| Warranty | 12-month warranty standard, extended warranties available |

The iXR Raman Spectrometer is a class 3B laser product. Can be operated as a class 1 laser product when properly installed in conjunction with other Thermo Scientific equipment.

Find out more at thermofisher.com/ixr