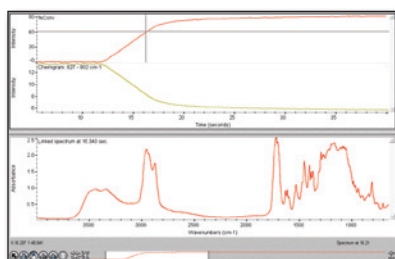


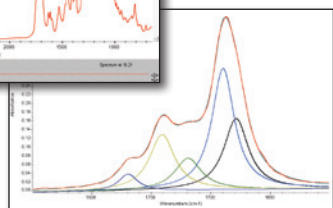
Thermo Scientific Nicolet iS50R FT-IR Spectrometer

Our tools, your science.

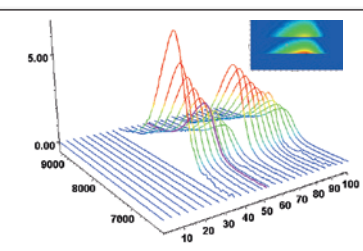
Clear the path to discovery with the Thermo Scientific Nicolet iS50R spectrometer and research tools.



Monitor time dependent data and extract kinetic information.



Find underlying structure in complex, overlapped spectral features.



Step-scan time-resolve spectroscopy of reversible processes to nanosecond timescales.



The Thermo Scientific Nicolet iS50R spectrometer carries forward all the flexibility and performance of the Nicolet™ iS™50 spectrometer system, with the added capabilities for the research spectroscopist. The Nicolet iS50R includes dual sources and triple detector optics, multiple on-board digitizers and easy access to spectrometer data and control signals.

An expanded Thermo Scientific Omnic software suite bundles several advanced tools including Peak Resolve™, OMNIC™ Series, and SpectraCorr™.

A key upgrade found in the Nicolet iS50R is the Vectra-Plus™ Step-scan interferometer with associated SST control software. Step-scan data collection lets you take on experiments with complex time dependent signals that make standard scanning methods impractical.

Examples include emission signal from pulsed sources, experiments using choppers, microsecond and nanosecond time-resolved absorbance, photoacoustic and photocurrent responses.

For research FT-IR, think Thermo Scientific.



Thermo
SCIENTIFIC

Thermo Scientific Nicolet iS50R FT-IR Spectrometer

Our tools, your science.

iS50 ABX Automated Beamsplitter Exchanger

Get full spectral range while maintaining continuous purge using automated beamsplitter exchange.

Filter Wheel and Source Aperture

Control spectral bandwidth, spectral resolution and source energy with automated filters and aperture.

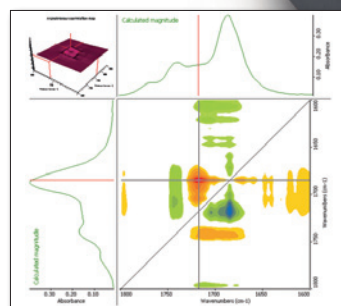
Multiple Beam Ports

Interface to external sources and experiment modules with multiple input and output ports.



Triple Detector Compartment

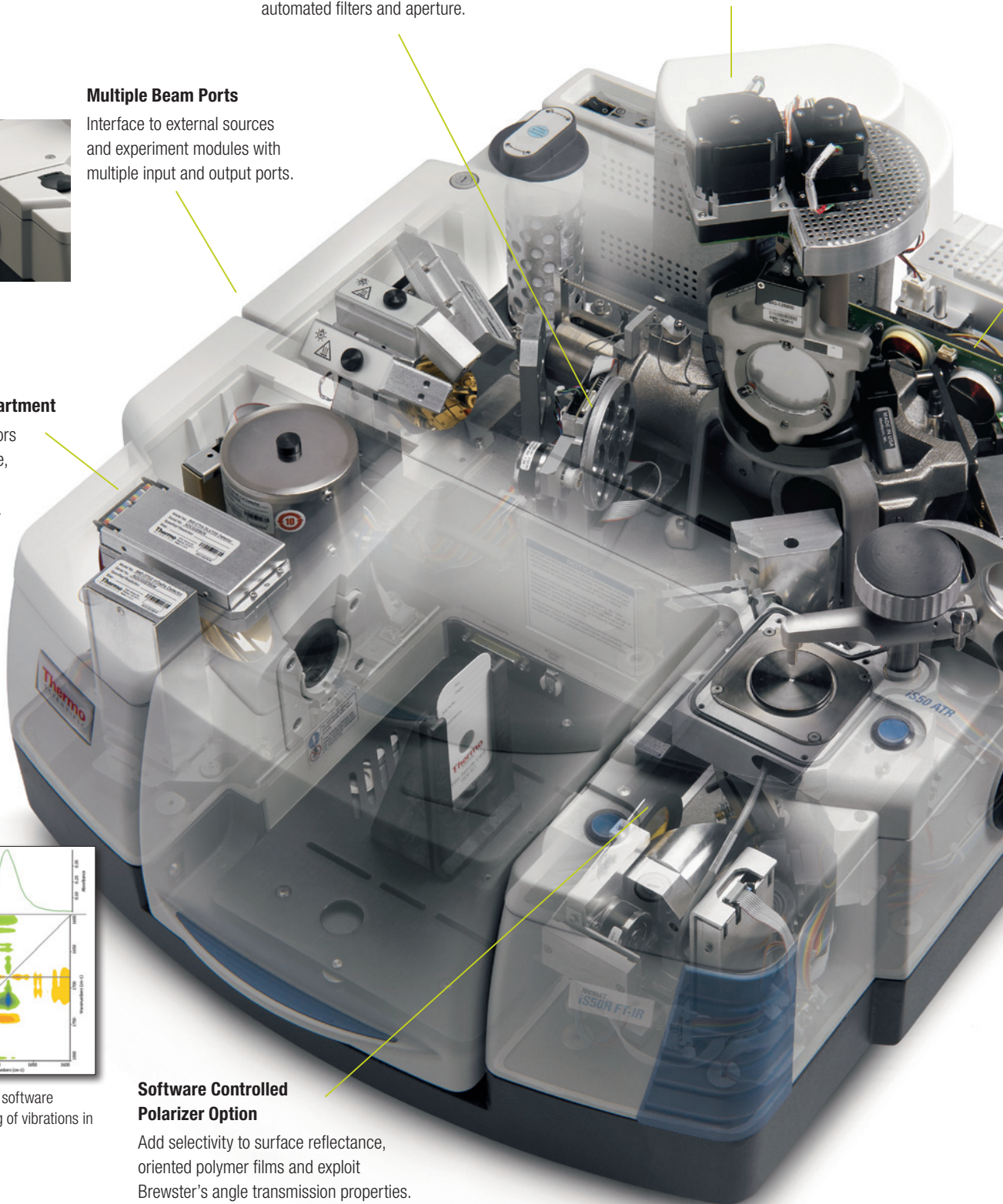
User-replaceable detectors match the spectral range, frequency response and sensitivity to your needs.



SpectraCorr 2D correlation software identifies chemical coupling of vibrations in dynamic experiments.

Software Controlled Polarizer Option

Add selectivity to surface reflectance, oriented polymer films and exploit Brewster's angle transmission properties.



Advanced Applications



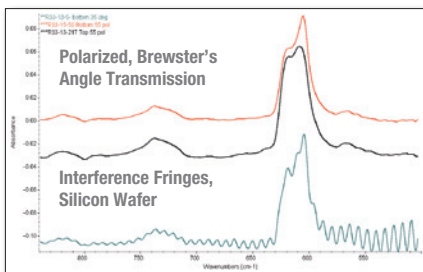
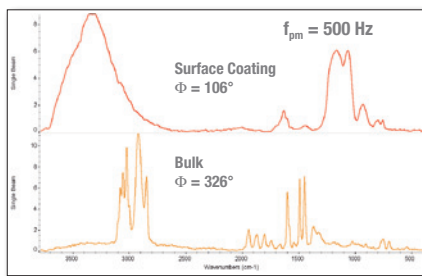
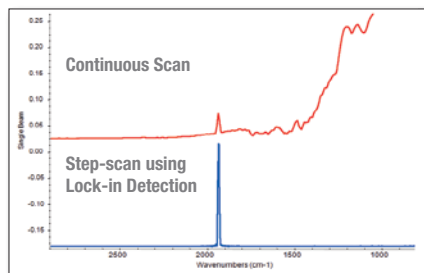
Vectra-Plus Interferometer

Expanded linear scan speeds and multiple step-scan modes under continuous, smart, dynamic alignment.

The iS50R Hub gives you access to detector and control signals for convenient interface to external signal processing tools, such as lock-in amplifiers, filters or external digitizers.

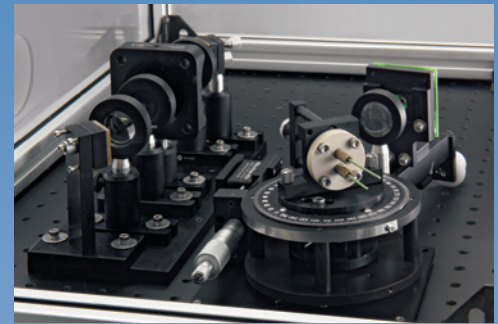


Detect weak periodic signals and eliminate background using step-scan data collection and lock-in detection.



Improve sensitivity and surfaces and suppress interference with polarized measurements.

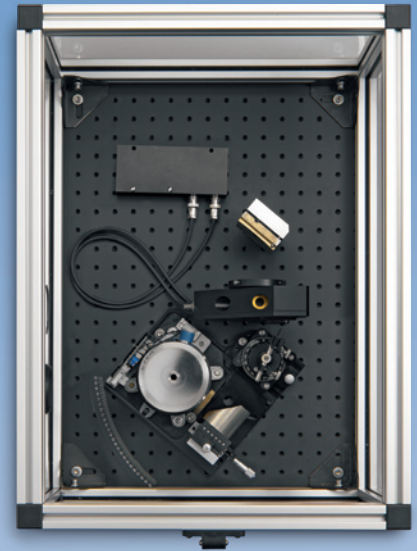
Separate phase-resolved signals with step-scan phase modulation collection mode.



iS50 Research Module

Set up large or complex experiments in the optional iS50 Research Module.

Pre-configured optics kits provide rapid set-up of popular experiments like PM-IRRAS.



External Detector Port

Extend performance with specialty detectors like a silicon bolometer for far-IR spectroscopy. Add purge shutters and the ABX option to complete a research far-IR package.

Microspectroscopy

Isolate and identify chemically distinct domains like contamination particles on products or specific layers in complex polymer films.



Improve your understanding of structures and phase relationships in all sampling modes, including ATR imaging. Combined with the Nicolet iS50R spectrometer, the Thermo Scientific Nicolet Continuum microscope has wide spectral range.

Nicolet iS50R Specifications

Spectrometer

| | |
|---|--------------------------|
| Polaris High Stability, Long Lifetime Mid-IR Source | Standard |
| Tungsten-Halogen Near-IR/Visible Source | Standard |
| Four Position Source Mirror | Standard |
| Continuously Variable Iris Aperture | Standard |
| Gold Optical Coatings | Standard |
| Aluminum Optical Coatings | Option |
| DLaTGS Detector | Standard |
| Three Position Detector Mirror | Standard |
| Attenuation Wheel | Standard |
| Validation Wheel | Standard |
| Automated Polarizer | Option |
| Automated Filter Wheel | Option |
| Automated Beamsplitter Exchanger | Option |
| Automated Sample Compartment Purge Shutters | Option |
| A/D Converter | 24 bit |
| Interface | USB 2.0 |
| iS50 Hub – External Signal Access | Standard |
| Dual Channel Digitizers | Standard |
| Extended Undersampling | Standard |
| Mirror Position Accuracy | ±0.2 nm |
| Amplitude Modulation (AM) Mode | Standard |
| Time-Resolved Spectroscopy | |
| On-board Digitizers | 1 MHz (1 μs), 18 bit |
| External Digitizer Option | 200 MHz (5 ns), 14 bit |
| Reference Monitor Channel | Included |
| Phase Modulation Option | |
| Modulation Frequency | 5–1000 Hz |
| Modulation Amplitude | 0.5–4.5 λ ₆₃₃ |
| Multiple Modulation Option | |
| Dual Channel Inputs | Included |
| Reference Modulation Output | Up to 70 Hz |

Software

| | |
|---|------------|
| Operating System | Windows® 7 |
| OMNIC Software | Standard |
| Time-series, Kinetics, Curvefitting and 2D Correlation Software | Included |
| ValPro System Validation Software | Option |
| 21 CFR Part 11 Compliance Tools | Option |

External Beam Capabilities

| | |
|-----------------------------|--------|
| Dual Side External Beams | Option |
| Collimated Emission Port | Option |
| Focused Emission Port | Option |
| Side External Detector Port | Option |


Performance Specifications

| | |
|--|---|
| Spectral Range, Standard System | 7800–350 cm ⁻¹ |
| Spectral Range, Multi-Range Optics | 27,000–20 cm ⁻¹ |
| Optical Resolution, Mid-IR, Linear Scan | Less than 0.09 cm ⁻¹ |
| Signal-to-Noise, 1 minute scan, Peak-to-Peak, 4 cm ⁻¹ | 55,000:1 |
| Signal-to-Noise, 5 second scan, Peak-to-Peak, 4 cm ⁻¹ | 13,000:1 |
| Ordinate Linearity | 0.07%T |
| Wavenumber Precision | Better than 0.01 cm ⁻¹ |
| Scan Velocity (24 values) | 0.0063–8.86 cm/sec |
| Rapid Scan, Spectra Per Second | 90 (at 16 cm ⁻¹), 130 (at 32 cm ⁻¹) |
| MCT Dewar LN ₂ Hold Time | 18 Hours |

Physical Characteristics

| | |
|---|--|
| Spectrometer Weight | 60 kg (132 lbs) |
| Spectrometer Dimensions (W × D × H) | 62.6 × 69.8 × 27.6 cm 25 × 27 × 11 in |
| Sample Compartment Dimensions (W × D × H) | 21 × 26 × 15 cm 8.3 × 10.2 × 5.9 in |

Other

| | |
|---|---|
| Mid-infrared Source and Interferometer Warranty | 5 Years |
| Spectrometer Warranty | 1 Year |
| Regulatory Approvals |  |

Advanced Applications

The Nicolet iS50R is compatible with both standard and Smart Accessories. In addition, we offer a full line of optional sampling modules and accessories including:

- PEM-Based Polarization Modulation, PM-IRRAS, VCD, VLD
- iS50 Research Module – Optics Breadboard
- iS50 ATR built-in module
- iS50 Raman sample compartment module
- iS50 NIR module
- iS50 GC-IR module
- Infrared microscopes
- TGA-IR sampling accessory

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