Thermo Scientific Nicolet iS50 FT-IR Spectrometer

The Materials Analysis Workstation

The Thermo Scientific™ Nicolet™ iS™50 FT-IR spectrometer uniquely combines multi-tasking capabilities and high performance in an affordable, optimized footprint system. Extensive upgrade options include a built-in ATR, an automated beamsplitter exchanger and Raman, NIR, TGA-IR and GC-IR modules.

The main goal of the busy analytical laboratory, whether working with polymers, rubbers, pharmaceuticals, forensics or any other materials, is answering specific questions. The Nicolet iS50 FT-IR spectrometer provides smarter tools – both in the instrument and in the software – to lead you to definitive answers.

The Nicolet iS50 system couples multiple sources, sampling stations and detection options through Touch Point one-touch setup and operation, especially when driven by the iS50 ABX automated beamsplitter exchanger. Built-in tools leave open options, such as simultaneous installation of a sample compartment iS50 Raman module and the iS50 ATR multi-range, diamond sampling station.

All offerings you have come to know, like Thermo Scientific Smart Accessories™ and System Performance Verification, are supported on the Nicolet iS50.

In the most demanding laboratory situations, full validation is available along with hyphenated tools like the iS50 GC-IR module and the TGA-IR accessory. The Thermo Scientific OMNIC™ software contains new tools such as the Mercury TGA and Mercury GC analysis routines, auto-reporting and the archiving of analysis results when you save your data.

Experience FT-IR beyond the ordinary with the Nicolet iS50 FT-IR spectrometer.

Thermo SCIENTIFIC

Go beyond your expectations

with the Nicolet iS50 FT-IR Spectrometer

The real meaning of "workstation" is getting the tools you need into the footprint you have available at a cost you can manage. The Nicolet iS50 FT-IR spectrometer solves all this by giving you…

- Dual sources: proprietary Thermo Scientific Polaris™ long-lifetime mid-IR source and ultra-stable Near-IR/Visible Tungsten-Halogen source
- Up to five detectors installed
- The proven, respected Thermo Scientific Vectra™ interferometer featuring dynamic alignment
- Motorized iS50 ABX automated beamsplitter exchanger mounting up to 3 beamsplitters
- Built-in all reflective, mid- and far-IR diamond iS50 ATR
- Sample compartment iS50 Raman module with x-y-z stage
- Touch Point operation for optics and data collection
- TGA-IR accessory for materials deformulation
- Two external output beams
- Two external source inputs, focused or collimated
- Easy to remove sample compartment cover with ports for tubing or wires
- Sample compartment KBr windows for mid-IR, near-IR and Raman
- Automated purge shutters
- Optical filters, polarizer, energy screens and traceable standards
- Full sized sample compartment for standard and Smart Accessories

…all in a 63 cm by 70 cm footprint.

Nicolet iS50…beyond ordinary FT-IR!

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Four Position Source Mirror

- Polaris Long-lifetime mid-IR source
- Tungsten-Halogen NIR/Vis source
- Raman InGaAs detector
- Focused emission port

Source	High (cm⁻¹)	Low (cm⁻¹)
Polaris IR	9600	20
NIR/Vis	27,000	2000
External	Custom	Custom

Three Position Detector Mirror

- User replaceable, LN_2 cooled
- DLaTGS (standard)
- User replaceable, room temperature

Detector	High (cm⁻¹)	Low (cm⁻¹)
DLaTGS-KBr	12,500	350
MCT-High D*	11,700	800
MCT-A	11,700	600
MCT-B	11,700	400
Time-resolved MCT	11,700	650
Silicon	27,000	8600
PbSe	11,000	2000
InGaAs	12,000	3800
InSb	11,500	1850
DLaTGS-CsI	6400	200
DLaTGS-Polyethylene	700	50
Si bolometer	600	15
Photoacoustic	10,000	400

Full Sized Sample Compartment

- KBr or CsI windows
- Motorized purge shutters
- Compatible with standard and Smart Accessories

Small Footprint

System	Weight	Dimensions (W × D × H)
Base	60 kg 132 lbs	62.6 × 69.8 × 27.6 cm 25 × 27 × 11 in
With ABX	64 kg 141 lbs	62.6 × 69.8 × 50.8 cm 25 × 27 × 20 in

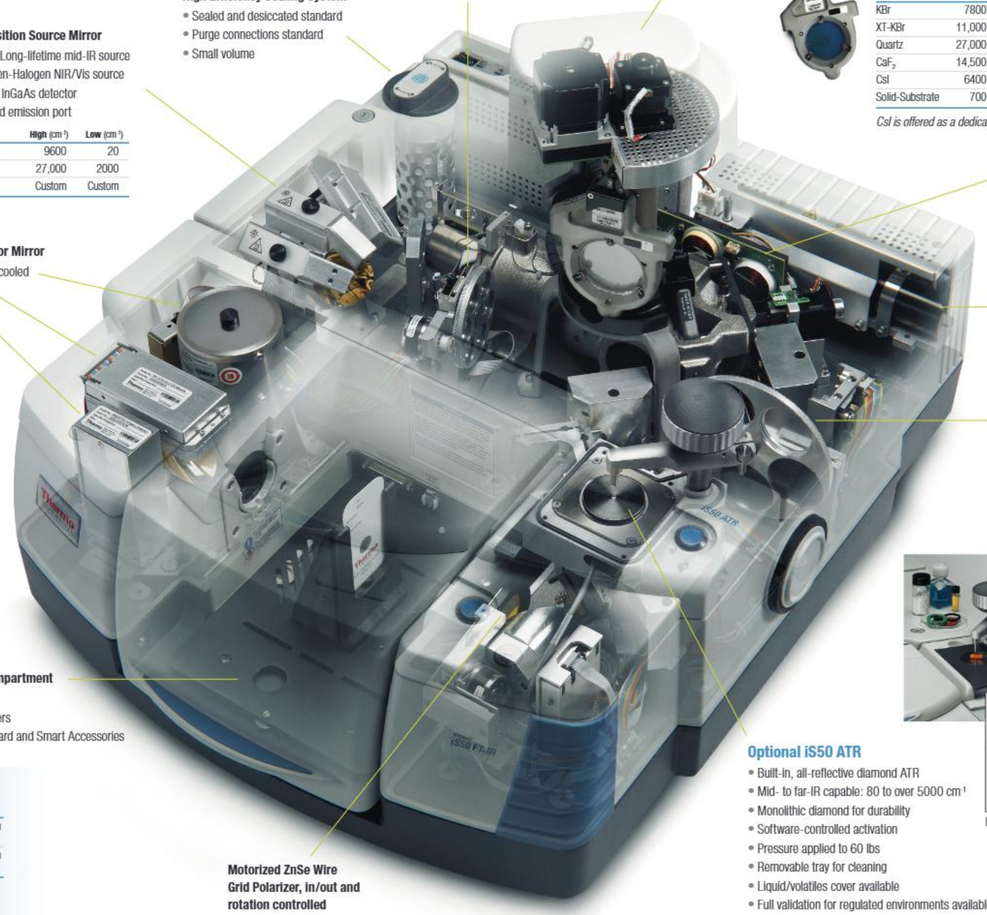
• No added footprint for Raman and dedicated ATR
• Only 27.9 cm (11 in) more with iS50 NIR module

Beam Size and Optical Filters

- Continuously variable J-stop
- High-resolution standard, 0.09 cm⁻¹
- Filter wheel accepts up to five industry standard one inch filters for visible, far-IR etc.

High Efficiency Sealing System

- Sealed and desiccated standard
- Purge connections standard
- Small volume



Motorized ZnSe Wire Grid Polarizer, in/out and rotation controlled

Optional iS50 ABX Automated Beamsplitter Exchanger

- Up to three beamsplitters
- Cover far-mid-near, far-mid-vis or other combinations
- Less than 25 seconds per exchange
- 52 mm beamsplitter diameter

Multiple Beamsplitter Options

Beamsplitter	High (cm⁻¹)	Low (cm⁻¹)
KBr	7800	350
XT-KBr	11,000	375
Quartz	27,000	2800
CaF_2	14,500	1200
CsI	6400	200
Solid-Substrate	700	20

CsI is offered as a dedicated system

Dynamically Aligned Interferometer

- Thousands of field-proven installs
- Durability and speed
- Tilt and shear full mirror control

Easy Laser Replacement

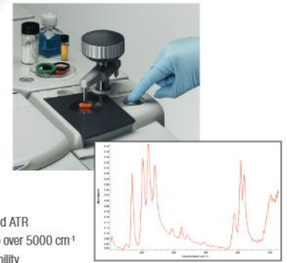
- Modular design
- Externally mounted

Validation / Attenuation Wheel Standard

- NIST traceable 1.5 mil polystyrene
- NIST traceable NG-11 glass
- Two selectable energy screens

Optional iS50 ATR

- Built-in, all-reflective diamond ATR
- Mid- to far-IR capable: 80 to over 5000 cm⁻¹
- Monolithic diamond for durability
- Software-controlled activation
- Pressure applied to 60 lbs
- Removable tray for cleaning
- Liquid/volatiles cover available
- Full validation for regulated environments available



Far-infrared spectrum of acetylferrocene

Sample Compartment iS50 Raman Module

Fluorescence-Free FT-Raman

- 1064 nm diode laser
- Weight: 7.6 kg (16.8 lbs)
- Full validation for regulated environments available
- Built in x-y-z stage
- Point and collect, area map, well plates
- Driven by Thermo Scientific µView™, AtIus™ and Array™ Automation
- Screening and cluster analysis

Built-in USB Video Camera

- 5 mm field of view
- View and collect
- Archive images

Quick Lock Connections

- Cable free installation

Raman map and video image of fiber

External iS50 NIR Module

Integrating Sphere and NIR Fiber Port

- Supports sample cup spinner, viscous sample accessory, and more
- Fiber optic SMA in/out ports
- Optional Thermo Scientific SabIR™ probe
- Full validation for regulated environments
- Available in integrating sphere only configuration

External iS50 GC-IR Module

Heated Flow Cell and Transfer Line

- 300 °C continuous operation
- 15 cm × 1 mm diameter gold-coated light pipe
- Splitter (10:1) for FID/IR or MS/IR detection
- Driven by OMNIC Series software

Infrared data management and autosampler control when equipped with Thermo Scientific TRACE™ 1310 GC and Thermo Scientific Dionex™ Chromeleon™ chromatography data system software.

Nicolet iS50 Specifications

Spectrometer	
Polaris High Stability, Long Lifetime Mid-IR Source	Standard
Tungsten-Halogen Near-IR/Visible Source	Option
Four Position Source Mirror	Option
Continuously Variable Iris Aperture	Standard
Gold Optical Coatings	Standard
Aluminum Optical Coatings	Option
DLaTGS Detector	Standard
Three Position Detector Mirror	Option
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

Software	
Operating System	Windows® 7
OMNIC Software	Standard
Thermo Scientific 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, CsI Optics	6400–200 cm^{-1}
Spectral Range, Multi-Range Optics	27,000–20 cm^{-1}
Optical Resolution, Mid-IR	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 (15 values)	0.158–6.28 cm/sec
Rapid Scan, Spectra Per Second	65 (at 16 cm^{-1}), 95 (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	CE ETL C US

Optional Application Modules

In addition to the application modules listed below, a full line of accessories are available, including: infrared microscopes, TGA-IR, and Linear-scan Dual-channel Collection. The Nicolet iS50 FT-IR spectrometer is compatible with both standard and Smart Accessories.

iS50 ATR Module	
Crystal	Diamond
Spectral Range	5000–80 cm^{-1}
Down Force of Pressure Device	60 lbs
Detector	Proprietary DLaTGS

iS50 Raman Module	
Laser	1064 nm diode
Laser Power	>450 mW at sample
Laser Spot Size	<60 microns
Sampling Plates	48 well, 9 well, vials, microscope slides
Stage Resolution	5 micron steps
Weight	7.6 kg (16.8 lbs)
Compliance	Class 1 laser product

iS50 NIR Module	
Integrating Sphere Window	Sapphire
Interior of Integrating Sphere	Gold coated
Integrating Sphere Detector	InGaAs
Fiber Optic Connections	Standard SMA
Fiber Optic Detector	InGaAs
Validation Wheel	Standard

iS50 GC Module	
Gas Cell	15 cm × 1 mm gold-coated light pipe
Temperature	300 °C max transfer line and cell heaters, USB controlled
Detector	LN_2-cooled MCT-A
Exhaust Line	Passes through activated charcoal filter to rear panel fitting

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