The Thermo Scientific™ Nicolet™ iS™50 FTIR 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 FTIR 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 FTIR beyond the ordinary with the Nicolet iS50 FTIR Spectrometer.
**Thermo Scientific**

**Nicolet iS50 FTIR Spectrometer**

The materials analysis workstation

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**Full Sized Sample Compartment**
- KBr or CsI windows
- Motorized purge shutters
- Compatible with standard and Smart Accessories

**Four Position Source Mirror**
- Polaris Long-lifetime mid-IR source
- Tungsten-Halogen NIR/Vis source
- Raman InGaAs detector
- Focused emission port

**Three Position Detector Mirror**
- User replaceable, LN$_2$ cooled
- DLaTGS (standard)
- User replaceable, room temperature

**Source**
<table>
<thead>
<tr>
<th></th>
<th>High (cm$^{-1}$)</th>
<th>Low (cm$^{-1}$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polaris IR</td>
<td>9600</td>
<td>10</td>
</tr>
<tr>
<td>NIR/Vis</td>
<td>27,000</td>
<td>2000</td>
</tr>
<tr>
<td>External</td>
<td>Custom</td>
<td>Custom</td>
</tr>
</tbody>
</table>

**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

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**Detectors**

<table>
<thead>
<tr>
<th>Detector</th>
<th>High (cm$^{-1}$)</th>
<th>Low (cm$^{-1}$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DLaTGS-KBr</td>
<td>12,500</td>
<td>350</td>
</tr>
<tr>
<td>MCT-High D*</td>
<td>11,700</td>
<td>800</td>
</tr>
<tr>
<td>MCT-A</td>
<td>11,700</td>
<td>600</td>
</tr>
<tr>
<td>MCT-B</td>
<td>11,700</td>
<td>400</td>
</tr>
<tr>
<td>Time-resolved MCT</td>
<td>11,700</td>
<td>650</td>
</tr>
<tr>
<td>Silicon</td>
<td>27,000</td>
<td>8600</td>
</tr>
<tr>
<td>PbSe</td>
<td>11,000</td>
<td>2000</td>
</tr>
<tr>
<td>InGaAs</td>
<td>12,000</td>
<td>3800</td>
</tr>
<tr>
<td>InSb</td>
<td>11,500</td>
<td>1850</td>
</tr>
<tr>
<td>DLaTGS-CsI</td>
<td>6400</td>
<td>200</td>
</tr>
<tr>
<td>DLaTGS-Polyethylene</td>
<td>700</td>
<td>50</td>
</tr>
<tr>
<td>Si bolometer</td>
<td>600</td>
<td>10</td>
</tr>
<tr>
<td>Photoacoustic</td>
<td>10,000</td>
<td>400</td>
</tr>
</tbody>
</table>

**Small Footprint**

<table>
<thead>
<tr>
<th>System</th>
<th>Weight</th>
<th>Dimensions (W × D × H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td>60 kg</td>
<td>62.6 x 69.8 x 27.6 cm</td>
</tr>
<tr>
<td></td>
<td>132 lbs</td>
<td>25 x 27 x 11 in</td>
</tr>
<tr>
<td>With ABX</td>
<td>64 kg</td>
<td>62.6 x 69.8 x 50.8 cm</td>
</tr>
<tr>
<td></td>
<td>141 lbs</td>
<td>25 x 27 x 20 in</td>
</tr>
</tbody>
</table>

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

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Motorized ZnSe Wire Grid Polarizer, in/out and rotation controlled
Easy Laser Replacement
- Modular design
- Externally mounted
- Accurate, precise, stable He-Ne laser

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

Multiple Beamsplitter Options

<table>
<thead>
<tr>
<th>Beamsplitter</th>
<th>High (cm⁻¹)</th>
<th>Low (cm⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KBr</td>
<td>7800</td>
<td>350</td>
</tr>
<tr>
<td>XT-KBr</td>
<td>11,000</td>
<td>375</td>
</tr>
<tr>
<td>Quartz</td>
<td>27,000</td>
<td>2,800</td>
</tr>
<tr>
<td>CaF₂</td>
<td>14,500</td>
<td>1,200</td>
</tr>
<tr>
<td>CsI</td>
<td>6,400</td>
<td>200</td>
</tr>
<tr>
<td>Solid-Substrate</td>
<td>&gt;1000</td>
<td>10</td>
</tr>
</tbody>
</table>

CsI is offered as a dedicated system.

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

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™, Arius™ and Array™ Automation
- Screening and cluster analysis

Far-infrared spectrum of acetylferrocene

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

Sample Compartment

Multiple Beamsplitter Options
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

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 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.
Go beyond your expectations with the Nicolet iS50 FTIR 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 FTIR 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 reformulation
- 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
- Upgrades to Step-Scan and dual-channel detection

...all in a 63 cm by 70 cm footprint.

Nicolet iS50...beyond ordinary FTIR!
## 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

### Performance specifications
- **Spectral Range, Standard System**: 7800–350 cm⁻¹
- **Spectral Range, CsI Optics**: 6400–200 cm⁻¹
- **Spectral Range, Multi-Range Optics**: 27,000–10 cm⁻¹
- **Optical Resolution, Mid-IR**: Less than 0.09 cm⁻¹
- **Signal-to-Noise, 1 minute scan, Peak-to-Peak, 4 cm⁻¹**: 65,000:1; typical, 55,000:1 guaranteed
- **Signal-to-Noise, 5 second scan, Peak-to-Peak, 4 cm⁻¹**: >13,000:1
- **Ordinate Linearity**: 0.07%T
- **Wavenumber Precision**: Better than 0.0008 cm⁻¹
- **Wavenumber Accuracy**: Better than 0.005 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 LN₂ Hold Time**: 18 hours

### Upgradeable to Step-Scan and Dual-Channel

### Other
- **Warranty**
  - Source: 10 years
  - Interferometer: 10 years
  - Laser: 5 years
  - Spectrometer Warranty: 1 year
- **Regulatory Approvals**

### 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 FTIR 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**: Diamond 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 x 1 mm gold-coated light pipe
- **Temperature**: 300 °C max transfer line and cell heaters, USB controlled
- **Detector**: LN₂-cooled MCT-A
- **Exhaust Line**: Passes through activated charcoal filter to rear panel fitting

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Find out more at [thermofisher.com/is50](https://thermofisher.com/is50)