

The Thermo Scientific Nicolet 380 FT-IR spectrometer is a reliable, easy-to-use system that helps you *identify, quantify and verify* your samples. The instrument, software and accessories are seamlessly integrated to provide you with answers and solutions.

## Thermo Scientific Nicolet 380 FT-IR Spectrometer

Proven and reliable FT-IR spectroscopy



The Nicolet™ 380 spectrometer provides high-quality results and greater productivity through the use of:

- Smart components
- Automatic system and accessory recognition
- Fully compatible with standard and Smart accessories
- Full-size sample compartment for any type of transmission experiment
- Diagnostics and optimization
- Snap-in experiments
- Multi-media tutorials

At the spectrometer's core is proven Thermo Scientific Enhanced Synchronization Protocol (E.S.P.) technology, which brings integration and intelligence to every part of the Nicolet 380 spectrometer system that affects the success of your measurements – from setup to report generation.

The spectrometer fits into a footprint the size of a typical desktop computer. Despite its compact size, the instrument offers a full-sized sample compartment that will hold all the accessories you need. Sampling efficiency with the Nicolet 380 spectrometer is fully realized when combined with Smart Accessories, which snap in place to customize and optimize the spectrometer for specific analyses.

### Truly Intelligent Sampling

Smart Accessories provide an unprecedented level of communication with the Nicolet 380 spectrometer, with features including:

- Permanently aligned optics to guarantee optimal performance and ensure precision from one measurement to the next
- Rugged, enclosed design to protect optics
- Snap-in installation and automatic recognition of accessories to load your experiments and optimize the spectrometer for the sampling technique

# Product Specifications

- Diagnostic checks to ensure optimal performance and check for "human errors"
- Multimedia tutorials to help users get the most out of the accessory
- Automatic purge within the accessory to provide quick equilibration times when an accessory is changed, and exceptional measurement stability over the long term
- Spectral quality checks monitor data collection to ensure consistent results

In addition to Smart Accessories, the full-size sample compartment accommodates most commercially available accessories, helping you protect your investment by using your existing accessories.

## Precise, Reliable Analysis

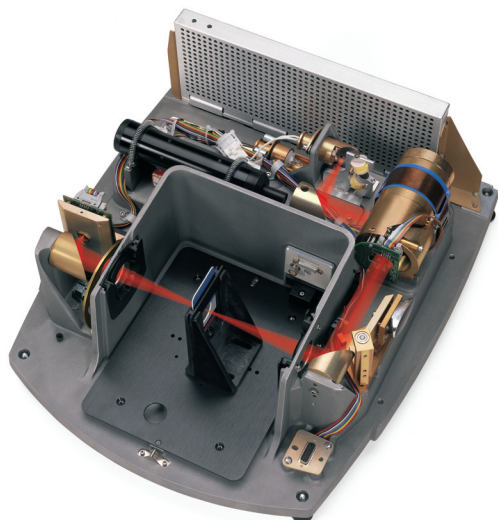
Thermo Fisher Scientific ISO 9001 engineering and manufacturing procedures and quality control process ensure reliable results. All components are pinned-in-place which means they are alignment-free and user-replaceable. The Nicolet 380 design allows you to achieve a wavelength precision better than 0.01 cm<sup>-1</sup> without using risky mathematical "fudge factors" that alter data and are difficult to explain in an SOP.

E.S.P. technology monitors the performance of all key components to ensure data quality. If the system detects something unusual, either the problem is fixed automatically or precise, easily understood recommendations are provided.

The laser beam goes straight into the interferometer, which contains the only moving part of the spectrometer – the moving mirror – which is dynamically aligned to compensate for any mirror tilt, shear, or sag.

## System Verification

A comprehensive spectrometer qualification package is available to verify system performance in compliance with the widely-accepted ASTM E1421 protocols used for compliance with ISO 9001. The ASTM method may be run on a routine basis to verify the system is operating within acceptable performance levels, based on NIST-traceable calibrated spectral standards.



## Optics

**Baseplate:** single-piece, precision-cast and machined baseplate incorporating pinned-in-place components for extra stability and reliability; standard purge ports and low purge volume design

**Mirror Optics:** proprietary diamond-turned, pinned-in-place mirrors

**Layout:** efficient design with short pathlength; a single mirror from the beamsplitter to the sample compartment; a single mirror from the sample compartment to the detector

**Source:** long-lifetime, dual-mode, high-energy Ever-Glo source; pre-aligned, pinned source position for easy replacement

**Interferometer:** rugged, frictionless electro-magnetic drive; digital dynamic alignment and digital signal processing (DSP) control for long-term stability; AutoTune, our patented technology, for optimization of system throughput (U.S. Patent 5,883,712)

**Beamsplitter:** proprietary Germanium on KBr (7800 – 350 cm<sup>-1</sup>) beamsplitter optimized for high energy throughput in the infrared spectrum's "fingerprint" region

**Reference Laser:** reference Helium Neon laser; pre-aligned, pinned-in-place, and user-replaceable

**Desiccant:** reusable desiccant in easy-to-change replaceable bag; visible desiccant moisture indicator without opening the system cover

**Detector:** high-performance DTGS detector mounted on pre-aligned, pinned-in-place baseplate for optimal sensitivity

## System Software

**OMNIC Lite Software:** menu and toolbar operation; fully customizable interface with password protection; integrated control of setup, collection, data manipulation, and reporting; comprehensive system diagnostics for the entire system and Smart Accessories; real-time display of spectral data and interactive parameter setting; context-sensitive help; multimedia tutorials for FT-IR theory, sampling, accessories, data collection, diagnostics, and other support

## Software Options

OMNIC Lite software provides seamless interaction with optional add-on packages for advanced analysis, including:

**Macros Basic** to automate standardized tasks and SOPs to a simple push-button procedure

**TQ Analyst** software for quantitative and advanced qualitative analysis of spectral data sets, including algorithms such as Discriminant Analysis and PLS

**OMNIC Spectra** for unsurpassed identification of unknown compounds, including multi-component search and contaminant analysis

## Thermo Scientific Nicolet 380 Spectrometer

|                         |                                                                                                                                                                          |                                                                      |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| Accessories             | Smart Accessories support                                                                                                                                                | Standard                                                             |
|                         | Traditional accessory support                                                                                                                                            | Standard                                                             |
| Performance             | Spectral range                                                                                                                                                           | 7800 – 350 cm <sup>-1</sup> using proprietary KBr beamsplitter       |
|                         | Optical resolution (apodized)                                                                                                                                            | < 0.9 cm <sup>-1</sup> resolution (standard)                         |
|                         | Peak-to-peak noise (1 minute scan)                                                                                                                                       | < 2.2 x 10 <sup>-5</sup> Abs. (> 22,000:1)                           |
|                         | RMS noise (1 minute scan)                                                                                                                                                | < 5.5 x 10 <sup>-8</sup> Abs.                                        |
|                         | Wavenumber precision                                                                                                                                                     | Better than 0.01 cm <sup>-1</sup> precision at 2000 cm <sup>-1</sup> |
|                         | Ordinate linearity (ASTM E1421)                                                                                                                                          | < 0.1%T deviation from 0.0%T at 4 cm <sup>-1</sup> resolution        |
| Electronics             | A/D converter                                                                                                                                                            | 24-bit                                                               |
|                         | On-bench controller                                                                                                                                                      | DSP-based                                                            |
| Computer Interface      | Operating system                                                                                                                                                         | Win 2000, Win XP, Vista                                              |
|                         | Interface                                                                                                                                                                | USB 2.0                                                              |
| Warranty                | 1 year on complete system                                                                                                                                                |                                                                      |
| Spectrometer Dimensions | 50 cm (w) x 58 cm (d) x 23 cm (h) with Smart Accessories;                                                                                                                |                                                                      |
|                         | 29 cm (h) with full sample compartment                                                                                                                                   |                                                                      |
| Spectrometer Weight     | 24 kg                                                                                                                                                                    |                                                                      |
| Sample Compartment      | Standard, full-sized; 21 cm (w) x 26 cm (d) x 20 cm (h)                                                                                                                  |                                                                      |
| Regulatory Approvals    |   |                                                                      |

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