Nicolet 380 FT-IR Spectrometer

Accessories	Smart Accessories support	Standard
	Traditional accessory support	Standard
Performance	Spectral range	7800 – 350 cm^{-1} using proprietary KBr beamsplitter 6400 – 200 cm^{-1} using CsI beamsplitter 11000 – 375 cm^{-1} using XT-KBr beamsplitter
	Optical resolution (apodized)	< 0.5 cm^{-1} resolution (standard)
	Peak-to-peak noise	< 2.2 x 10^{-5} Abs. (< 20,000:1)
	RMS noise (1 minute scan)	< 5.5 x 10^{-6} Abs.
	Wavenumber precision	Better than 0.01 cm^{-1} precision at 2000 cm^{-1}
	Ordinate linearity (ASTM E1421)	< 0.1%T deviation from 0.0%T at 4 cm^{-1} resolution
	Rapid scan	Up to 40 spectra/second at 16 cm^{-1}
Electronics	A/D converter	24-bit
	On-bench controller	DSP-based
Computer Interface	Operating system	Win 2000, Win XP
	Interface	USB 2.0

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

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

- Smart components
- Automatic system and accessoryrecognition
- Diagnostics and optimization
- Snap-in experiments
- Multi-media tutorials

At the spectrometer's core is the revolutionary Enhanced Synchronization Protocol (E.S.P.) technology from Thermo, 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, leaving you more benchtop room. Despite its compact size, the instrument offers a full-sized sample compartment that will hold not only the accessories you use today, but those you may need tomorrow. 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
• 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. FT-IR microscopes from Thermo may also be attached.

Precise, Reliable Analysis

Thermo’s 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.

Thermo’s design allows you to achieve a wavelength precision better than 0.01 cm-1 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.

Qualification Packages

A comprehensive spectrometer qualification package is available to verify system performance in compliance with ISO and GLP/cGMP criteria. The package, with software and its complete documentation
set, provides evidence of DQ, IQ, OQ, and ongoing performance verification for the spectrometer. The package can automatically generate pass/fail reports, trend analysis, and a non-editable validation history to meet all documentation requirements. For those who must comply with 21 CFR Part 11, OMNIC™ DS (Data Security) software is available. It offers a complete set of ER/ES (electronic record/electronic signature) and audit trail tools.

Optics

Baseplate: single-piece, precision-cast and machined baseplate incorporating pinnedin-placed 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; visible source also available
Interferometer: rugged, frictionless electromagnetic drive; digital dynamic alignment and digital signal processing (DSP) control for long-term stability; AutoTune™, Thermo's patented technology, for optimization of system throughput (U.S. Patent 5,883,712)
Beamsplitter: choice of KBr (7800 – 350 cm-1), CsI (6400 – 200 cm-1), or XT-KBr (11000 – 375 cm-1) to enable mid-, far-, or near-IR spectroscopy
Reference Laser: reference Helium Neon laser; pre-aligned, pinned-in-place, and user-replaceable
Desiccant: reusable desiccant in easy-tochange replaceable bag; visible desiccant moisture indicator without opening the system cover
Detectors: pre-aligned, pinned-in-place detectors for easy exchange; high-performance DTGS detector, optional highperformance TE cooled DTGS detector; optional liquid nitrogen-cooled MCT detector with patented Thermo dewar design (non-icing)

System Software

OMNIC 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

Choice of Software Interface

Powerful, Full-featured OMNIC Professional Software: complete flexibility and control; a single, integrated program for all aspects of setup, collection, data analysis, and reporting
Intuitive EZ-OMNIC™ Software: point-and click operation for routine analysis and macro operation; simplified menus and toolbar buttons for easy learning and use