

# Teaching spectroscopy techniques for tomorrow's scientists

FTIR | NMR | UV-Vis

## Bring your chemistry curriculum to life

Prepare the next generation of scientists with hands-on access to real-world instrumentation. Spectroscopic techniques like FTIR, NMR, and UV-Vis, are an important part of the chemistry curriculum, with a wide range of applications—from industrial to life science.

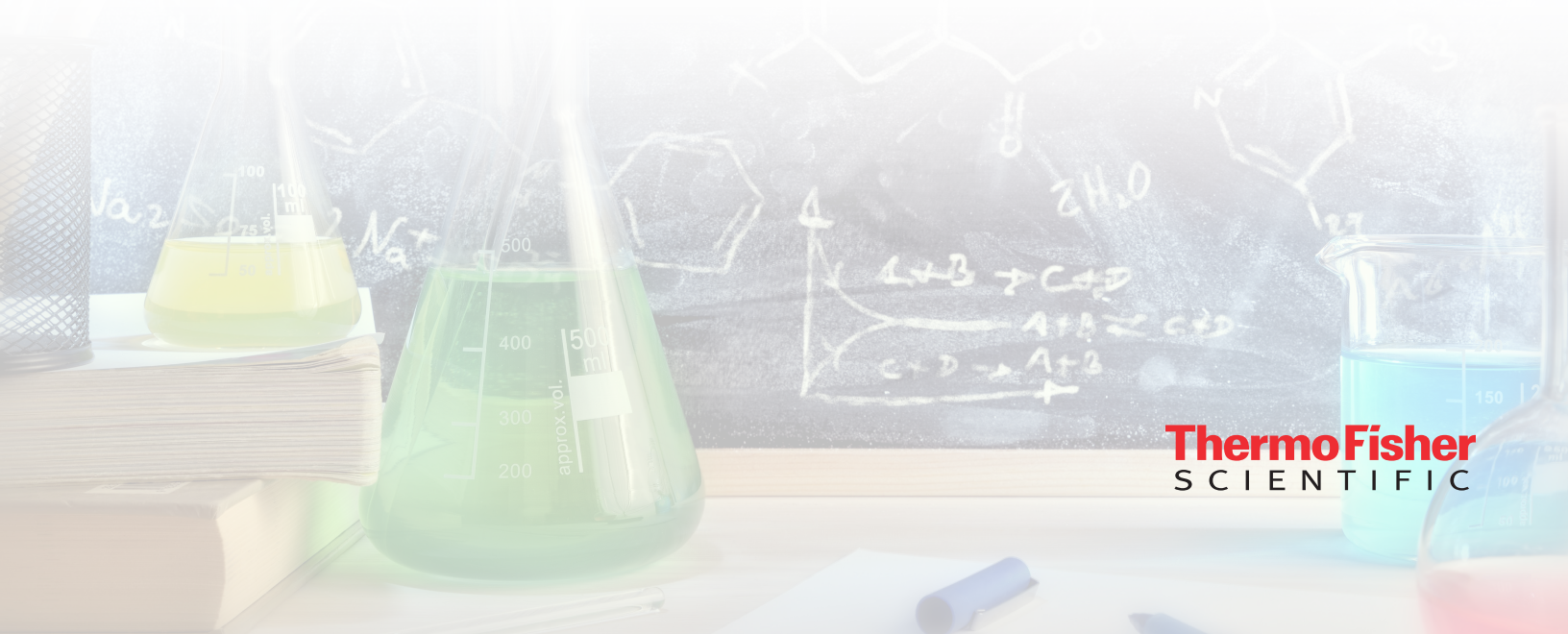
Whether you are teaching introductory chemistry, organic chemistry, or advanced instrumentation courses, our spectrometers offer ease-of-use, reliable operation, and connected solutions for the modern classroom.

## Save on classroom prep time with teaching resources

We offer ready-to-go lesson plans, so you can quickly put your instruments to use, and reduce prep time. Engage your students with labs that demonstrate scientific theory with interesting experiments such as learning how bleach makes your “whites” white (UV-Vis), determining the chemical structure of ethanol from commercial gasoline



(NMR), and identifying different plastic recyclable classes using infrared spectra (FTIR). In addition, comprehensive on-line resources - videos, webinars, application notes, and more – are available to further support your teaching goals.





## Beginning/Intermediate Chemistry Courses

From single wavelength measurements to Beer's Law and quantitative analysis, we offer student-friendly instruments that bring scientific concepts to life.

### Vis/UV-Vis Spectroscopy

#### Thermo Scientific™ SPECTRONIC™ 200 Visible Spectrophotometer

Quick, convenient measurements for beginners

- Removable sample compartment for easy clean up
- Supports test tubes and standard square cuvettes (included)
- Spectrum indicator in live display associates wavelength to color
- Includes Quant mode with up to 4 standards



#### Thermo Scientific™ GENESYS™ 30 Visible Spectrophotometer

Outstanding durability, traditional simplicity

- Large sample compartment with removable, washable liner for easy clean up
- High-definition color screen with expanded measurement capability
- Supports use of standard cuvettes, test tubes, and long pathlength cells (with optional holder)
- Ideal for performing OD<sub>600</sub> measurements and colorimetric protein assays



#### Thermo Scientific™ NanoDrop™ One/One<sup>c</sup> Microvolume UV-Vis Spectrophotometers

Quantify DNA, RNA, and protein samples

- Data in seconds from only 1–2 μL of sample
- Walk-up convenience with high-definition touchscreen
- Easy data transfer to PC or network via Wi-Fi, USB, or Ethernet



#### Thermo Scientific™ GENESYS™ 50 UV-Vis Spectrophotometer\*

Smarter by design with advanced usability and modern functionality

- High-resolution, touchscreen user interface
- On-board-controlled software with sophisticated methods including kinetics, advanced Quant and Peak Pick
- Print via USB, Ethernet or Wi-Fi USB adaptor available



\* Also available as a visible-only instrument (Thermo Scientific™ GENESYS™ 40 Visible Spectrophotometer).

# Instrumentation for every step of the education journey



## Organic/Advanced Chemistry Courses

From chemical reactions to sample and spectrum analysis, these products have everything you need for organic and advanced chemistry topics.

### FTIR Spectroscopy

#### Thermo Scientific™ Nicolet™ Summit FTIR Spectrometer

Simplify chemical identification on or off campus

- Minimize crowded lab space with OMNIC Anywhere Cloud-based software that enables data analysis anywhere, anytime on any device
- Simplify analysis with intuitive Thermo Scientific™ OMNIC™ Paradigm Software



### NMR Spectroscopy

#### Thermo Scientific™ picoSpin™ 45 NMR Spectrometer

NMR for everyone

- Simplified workflows make it easy to use
- No sample-to-sample shimming between samples – ideal for large laboratory sections
- Unmatched 5 year factory warranty comes standard
- Compact and portable – saves on bench space



#### Thermo Scientific™ Nicolet™ iS20 FTIR Spectrometer

Advanced characterization for high-level chemistry

- Expand course curriculum with accessories for FTIR microscopes, MCT detector options, TGA-IR, and commercially available accessories
- Powerful Thermo Scientific™ LightDrive™ Optical Engine provides reliability with an unmatched 10-year warranty on the interferometer, laser, and IR source
- Integrated touch panel simplifies workflow execution and scan bar provides instrument status at a glance (idle, collecting, alert)



#### Thermo Scientific™ picoSpin™ 80 NMR Spectrometer

The power of NMR, when and where you need it.

All the benefits of the picoSpin 45 NMR Spectrometer plus:

- Highest field strength of any benchtop NMR gives you the performance for teaching and research
- Two times narrower line widths and unrivaled shim stability
- Four times the sensitivity for all your sample needs





## Spectroscopy techniques—from high school to graduate school

Spectroscopic technique	Electromagnetic wavelength region	What principles can you teach students?	Course titles	Lesson plans (examples)
UV-Visible	Visible	Analyte concentration	<ul style="list-style-type: none"> <li>Intro to Chemistry</li> </ul>	<ul style="list-style-type: none"> <li>Chemical Analysis of Brass</li> <li>Food Dyes and Beer's Law</li> </ul>
	UV	Analyte purity and concentration	<ul style="list-style-type: none"> <li>General Chemistry</li> <li>Advanced Biochemistry</li> </ul>	<ul style="list-style-type: none"> <li>Kinetics of Blue Dye with Hypochlorite Bleach</li> <li>Spectrophotometric Determination of Trace Iron in Solution</li> </ul>
FTIR	Infrared	Analyte functional groups and bond types	<ul style="list-style-type: none"> <li>General Chemistry</li> <li>Organic 1 &amp; 2</li> </ul>	<ul style="list-style-type: none"> <li>Isolation and Identification of Essential Oils from Citrus Peels</li> <li>Recycling Plastics</li> <li>Rotational-Vibrational Spectrum of HCl Gas</li> </ul>
NMR	Radio	Molecular structure, diastereomers, reaction kinetics, concentration, purity, and more.	<ul style="list-style-type: none"> <li>General Chemistry</li> <li>Organic 1 &amp; 2</li> <li>Senior Instrumentation</li> </ul>	<ul style="list-style-type: none"> <li>Extraction of Eugenol from Cloves</li> <li>From Corn Cobs to Gas Tanks</li> <li>Simple Distillation of Toluene-Cyclohexane Mixture</li> </ul>

Get complete resources and learn more at  
Chemistry in the Classroom – [thermofisher.com/cic](https://thermofisher.com/cic)

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