TORONTECH

OCTOBER, 2026

# NEWSLETTER



## EVERY MATERIAL HAS A FINGERPRINT
## MATCH THE INSTRUMENT TO IT

*One FTIR family for material ID, polymers, emissions, and composition.*

October 2026 – A lab confirms an incoming resin against its reference spectrum in the morning; an inspector needs the same answer at a loading dock that afternoon; and an emissions team needs fifty answers at once at a plant stack the next day. **Infrared spectroscopy handles all three — but no single instrument is right for all three settings.**

The trap is rarely the technique; it is the form factor. A benchtop bought for work that lives in the field sits idle. A single-technique handheld cannot read a sealed vial the way a Raman channel can. And a spectrometer built for solids and liquids will not survive hot, corrosive flue gas. **Matching the instrument to the sample and the setting is the whole decision.**

Torontech's ToronFTIR™ and ToronNIR™ range spans benchtop, transportable, handheld, gas-analysis, and near-infrared models — so you match the instrument to your samples and your setting rather than compromising on one.

## THE FTIR METHOD: INFRARED FINGERPRINT IDENTIFICATION

① **Prepare & Load**
Press a KBr pellet, fill a cell, or clamp the sample onto the ATR crystal.

② **Background Scan**
Record an empty reference to ratio out atmospheric $CO_2$ and water vapor.

③ **Acquire & Transform**
The interferometer records an interferogram; a Fourier transform builds the spectrum.

④ **Read & Match**
Scan the four mid-IR regions and match the fingerprint to the reference library.

**Note:**
Gas analysis (G12000) replaces Step 4 with multi-gas Beer-Lambert quantification; FT-NIR (ToronNIR™ 12000) with a chemometric calibration model.


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## PRODUCT LINE

**Benchtop Systems** — **Lab-based FTIR for high-resolution identification and quality control.**

### ToronFTIR™ 7800

*Wide-range benchtop FTIR for high-resolution material identification and quantitative QC.*

**Features/Advantages:**



- **Wide Spectral Coverage:** 7,800–350 $cm^{-1}$ spans the near- and mid-infrared, with an optional 7,800–650 $cm^{-1}$ build.
- **High Signal-to-Noise:** Better than 20,000:1 as standard, with an optional configuration better than 45,000:1 for trace work.
- **200,000-Spectra Library:** Bundled quantitative modules and standard-curve models speed identification and quantitation.

### ToronFTIR™ R4000 — Rubber / Polymer

*Compact benchtop FTIR tuned for rubber and polymer identification.*

**Features/Advantages:**



- **High Resolution:** Better than 1 $cm^{-1}$ separates closely spaced polymer bands; a 30,000:1 SNR keeps weak spectra clean.
- **Audit-Trail Function:** Records operator actions and measurement history to support data integrity in regulated labs.
- **Compact Bench:** a 25 kg unit measuring 450 × 350 × 210 mm installs without a dedicated room.


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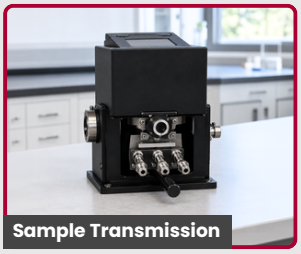

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## Benchtop Systems Available Attachments



**Sample Transmission**

*Suitable for thin-film and tubular samples.*



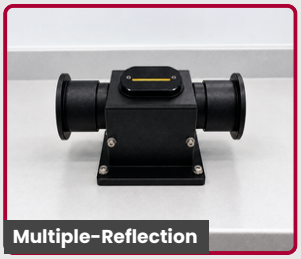
**In-Situ Attachment**

*Suitable for infrared in-situ reaction analysis.*



**Flat Reflection**

*Suitable for thin films, glass, coatings, and flat samples.*



**Multiple-Reflection**

*Suitable for non-corrosive liquids and pastes.*



**ATR Attachment**

*Suitable for ZnSe or diamond crystal, for plastics, asphalt, resins, rubber, and liquids.*



**Diffuse Reflectance**

*Suitable for testing powders, granules, jewelry, and ores.*



**Detachable Liquid Cell**

*Suitable for organic solvents and polymer solutions.*



**Multi-Component Gas Cell**

*Suitable for gas-phase analysis (KBr, ZnSe, NaCl, or $CaF_2$ windows).*




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## Portable & Handheld — Lab-grade and field-ready infrared identification that travels to the sample.

### ToronFTIR™ H7800M — FTIR + Raman

*Dual FTIR-Raman handheld for customs, hazmat, and screening through sealed containers.*



**Features/Advantages:**

- **Dual FTIR + Raman:** Two complementary techniques in one 1.5 kg unit widen the range of identifiable materials.
- **Reads Through Packaging:** Raman (4,000–170 $cm^{-1}$) measures through sealed glass and clear plastic and handles water-rich samples.
- **Multiple Laser Options:** 532, 785, and 1,064 nm excitation is available to manage fluorescence across materials.

### ToronFTIR™ H7800A — Single-Technique

*Single-technique handheld FTIR for fast, non-destructive material ID on site.*



**Features/Advantages:**

- **Pocketable, Field-Ready:** A 1.5 kg unit measuring 185 × 110 × 55 mm travels to the sample for on-site work.
- **Non-Destructive:** Reads samples directly without damage, so product and evidence stay intact.
- **Onboard Library + Compliance:** 20,000–250,000 spectra with audit trail and IQ / OQ / PQ qualification support.

### ToronFTIR™ P7800 — Transportable

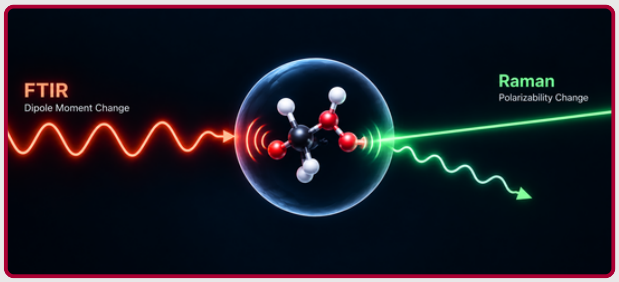
*The 7800 optical platform in a transportable build for teams that move between benches and sites.*



**Features/Advantages:**

- **Lab-Grade Specs, Portable:** 7,800–350 $cm^{-1}$ coverage and better than 20,000:1 SNR (optional 45,000:1) travel between sites.
- **Environmental Monitoring:** Real-time temperature and humidity alerts protect the instrument as conditions change.
- **Turnkey Setup:** Supplied ready to run with a 200,000-spectra library and quantitative modules.

## ToronFact Corner




Infrared and Raman techniques are complementary, not redundant, as they respond to different aspects of molecular bonds. Infrared detects changes in dipole moments, while Raman focuses on polarizability changes, allowing a dual FTIR-Raman unit to identify more materials. Additionally, Raman can analyze through clear glass and plastic, unlike infrared, supporting the utility of the H7800M's second channel.

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## Specialized Analyzers — Purpose-built platforms for gas emissions and bulk composition.

### ToronFTIR™ G12000 — Gas Analyzer

*Portable extractive FTIR for stack emissions and multi-gas VOC monitoring at fixed sources.*



**Features/Advantages:**

- **50+ Gases at Once:** Quantifies combustion gases and VOCs in a single scan at five scans per second.
- **Handles Hot, Corrosive Flue Gas:** 180 °C heated sampling and anti-corrosion optics keep reactive species in the vapor phase.
- **4.5 m Optical Path:** A folded long-path cell lowers detection limits for trace pollutants.

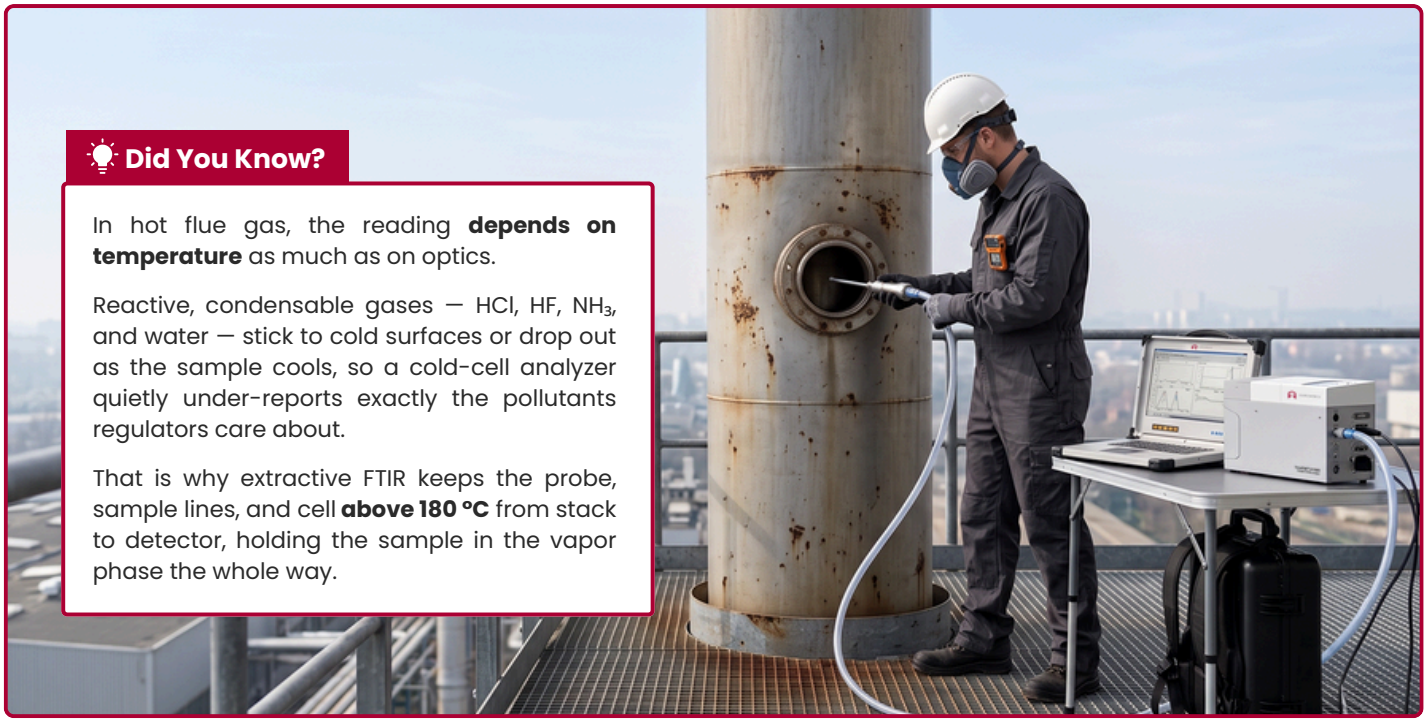
### ToronNIR™ 12000 — FT-NIR

*FT-NIR analyzer for rapid, reagent-free composition testing of grain, feed, and food.*



**Features/Advantages:**

- **Reagent-Free Composition:** Reports moisture, protein, fat, starch, and ash from one scan in under a minute.
- **Near-Infrared Range:** 12,000–3,800 $cm^{-1}$ (800–2,600 nm) covers bulk composition of grain, feed, and food.
- **Onboard Library + Compliance:** 20,000–250,000 spectra with audit trail and IQ / OQ / PQ qualification support.



### Did You Know?

In hot flue gas, the reading **depends on temperature** as much as on optics.

Reactive, condensable gases — HCl, HF, $NH_3$, and water — stick to cold surfaces or drop out as the sample cools, so a cold-cell analyzer quietly under-reports exactly the pollutants regulators care about.

That is why extractive FTIR keeps the probe, sample lines, and cell **above 180 °C** from stack to detector, holding the sample in the vapor phase the whole way.


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## Which ToronFTIR™ System Matches Your Work?

| BEST FOR | RECOMMENDED MODEL | WHY THIS IS THE BEST FIT |
|---|---|---|
| High-resolution lab material ID with broad coverage. | **ToronFTIR™ 7800** | 7,800–350 $cm^{-1}$ range, a 200,000-spectra library, and optional 45,000:1 SNR handle routine ID through trace work. |
| Rubber, tire, and polymer identification. | **ToronFTIR™ R4000** | Tuned for elastomers with better-than-1 $cm^{-1}$ resolution and an audit trail in a compact 25 kg bench. |
| Lab-grade analysis you move between sites. | **ToronFTIR™ P7800** | The 7800 optical platform in a transportable build; sealed, drift-resistant optics keep results stable in transit. |
| Fast on-site ID by a single operator. | **ToronFTIR™ H7800A** | A 1.5 kg single-technique handheld — the simplest, lowest-cost route to field infrared identification. |
| Customs, hazmat, and through-container screening. | **ToronFTIR™ H7800M** | Dual FTIR + Raman reads through sealed glass and clear plastic and widens material coverage. |
| Stack emissions and multi-gas VOC monitoring. | **ToronFTIR™ G12000** | Measures 50+ gases in one scan with a 4.5 m path and 180 °C heated sampling for wet, corrosive flue gas. |
| Grain, feed, and food composition. | **ToronNIR™ 12000** | FT-NIR reports moisture, protein, fat, and starch in under a minute, with no reagents or wet chemistry. |




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## Why Choose Torontech for Your FTIR Spectrometer

**One Family, Every Form Factor:**
Benchtop, transportable, handheld, gas-analysis, and near-infrared models come from a single supplier, so you can standardize as your testing needs grow.

**Standards-Aligned for Regulated Work:**
Quantitative modules correlate to ASTM E2412 and EN 14078, and audit-trail plus IQ / OQ / PQ support keep data traceable.

**Built for Real Conditions:**
Sealed, moisture-protected optics, heated corrosion-resistant sampling, and gold corner-cube mirrors hold performance from the bench to the field.

**Service and Support Worldwide:**
Installation, calibration, and responsive technical support across North America and beyond back every instrument.

## Ready to Match The right FTIR to Your Samples?

Tell us your sample type, the materials or gases you analyze, and whether you work in the lab or the field, and we will recommend the right configuration — from a benchtop 7800 to a handheld H7800M or a G12000 gas analyzer. Explore the full lineup: torontech.com/product/ftir-spectrometers

For help configuring the right instrument for your needs: sales@torontech.com

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