

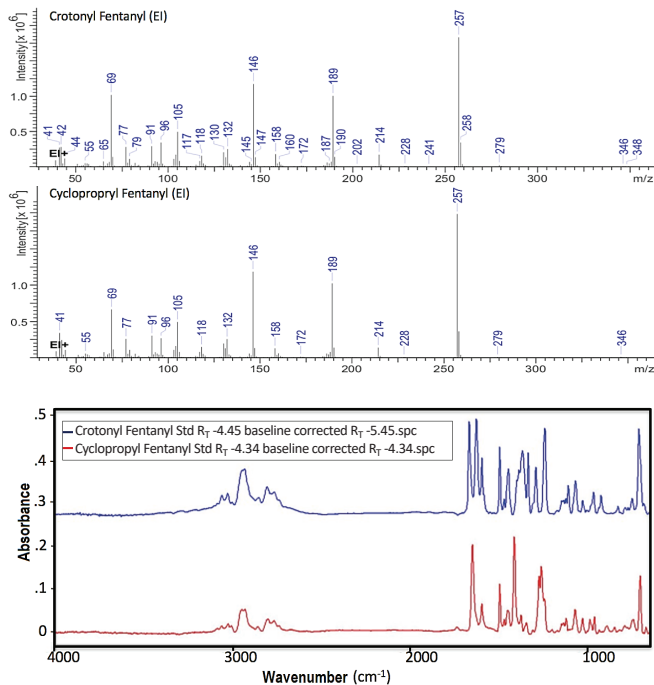
# DISCOVER-GC<sup>®</sup>

## THE SOLUTION TO ISOMER IDENTIFICATION AND COMPLEX MIXTURE ANALYSIS



Drug exhibits have become more challenging over the years due to an increase in complex synthetic substances with many positional isomer and diastereomer possibilities. With the DiscoverIR-GC<sup>®</sup> from Spectra Analysis Instruments, forensic and law enforcement labs can now easily and rapidly identify designer drugs, by-products, and cutting agents with a higher level of specificity and discrimination which is unattainable through mass spectrometry alone.

Spectra Analysis Instruments' state-of-the-art technology enables the coupling of gas chromatography to infrared spectroscopy for the separation and identification of controlled substance samples, clandestine lab materials and multi-component material samples. Designed as a "walk-up" instrument, its proprietary direct deposition/solid phase FTIR technology enables routine detection of substances such as fentanyl derivatives, synthetic cannabinoids, and phenethylamine type compounds I.E. methamphetamine, NBOME compounds and cathinones.



### How Does It Work?

Upon exiting the GC column, the eluants are deposited as a collimated jet onto a cryogenically cooled sample collection disk. The infrared ZnSe disk rotates under the deposit tip to result in a spiral track of deposited samples. A beam of infrared light from an interferometer passes through the disk along the deposition track, and infrared spectral information is acquired by a MCT detector.

### Key Applications:

- Novel Psychoactive Substances*
- Controlled Substances*
- Chemical Weapons*
- Pheromones*
- Flavors and Fragrances*
- Food and beverages*
- Diastereomers*



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### Key Benefits

#### Solid Phase Transmission Spectra

High-quality, solid-phase FTIR spectra acquired at  $4\text{ cm}^{-1}$  resolution. DiscovIR solid-phase spectra are acquired at  $-40^{\circ}\text{C}$  and feature sharp infrared bands.

#### Library Compatibility

The DiscovIR comes with pre-loaded libraries with over 1,200 spectra, and you may build a library with spectra gathered by the DiscovIR. DiscovIR spectra are also compatible with ATR and Transmission libraries, as well as additional FTIR libraries you may acquire.

#### Solid Phase vs Gas Phase FTIR

DiscovIR differs from vapor phase or light pipe GC-IR systems in that the sample is a solid deposition. With gas phase systems, the molecules are free to rotate, leading to lower sensitivity, higher sample volume requirements, and broad spectral bands.

#### Infrared Provides Isomer Specific Spectra

With an infrared spectrum, DiscovIR provides unequivocal differentiation between isomers and other molecules with similar or identical mass spec patterns. Identification of these compounds can be difficult or impossible with mass spectrometry alone.

#### GC-IR Removes Complexity from Mixtures and Adulterants

A key benefit is the ability to obtain pure spectra of each component in a mixture. GC-IR is ideal for multi-component analysis or adulterated samples.

#### Polystyrene Calibration

Fast and convenient daily verification routine using a NIST traceable polystyrene standard.

#### SWGDRUG Category A Technique

DiscovIR-GC is a SWGDRUG Category A analysis. The GC analytical workflow (sample preparation, injector mode, vial format, column, etc) is fully transferable to the DiscovIR-GC system.

System Overview	
Operating Principle	Direct deposition of column eluant on cryogenically-cooled ZnSe sample disc
Detection Method	Built-in FTIR
IR Range	4000-700 wavenumbers
Resolution	$4\text{ cm}^{-1}$
Spectrum Type	Transmission through disc and solid-phase sample
Disc Temperature Control	$-70$ to $+50^{\circ}\text{C}$
LN2 Usage	1 liter per hour of operation
Unattended Operation	10 hours; autosampler-compatible
IR Detector	0.1 x 0.1 mm MCT
Dimensions	79 x 43 x 69 cm 31 x 17 x 27 in 55 kg / 121 lb
Data Station	
Platform	Standard desktop computer with Microsoft Windows
Spectroscopy Package	GRAMS/AI and Spectral IDTM
Standard Features	- Real-time and post-run data collection - Band chromatograms for chemical screening
DiscovIR-GC Configuration	
GC Flow Rates Accepted	0.1 to 5 mL/min
GC Temperatures	Programmed up to $420^{\circ}\text{C}$
Chromatograph	- Compatible with any GC system - Integrated system with Dani Master GC and ALS
Maintenance and Support	
One-Year Warranty with follow-on Service Contracts available	
Training Courses offered	
Remote Diagnostic Capabilities	

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