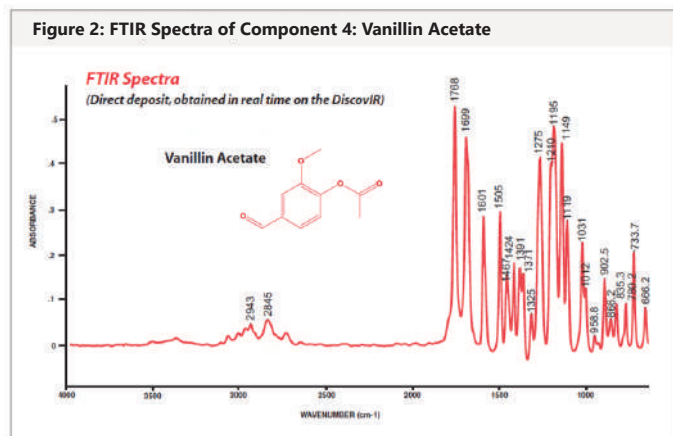
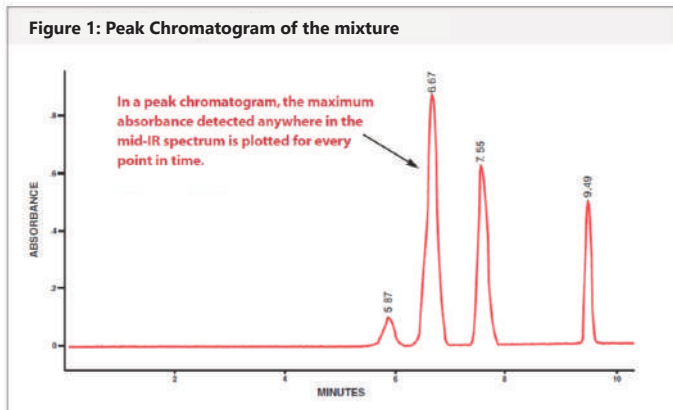


DISCOVIR-LC[®]

REVERSED PHASE LC-IR SPECTRA COLLECTED IN REAL TIME WITH PHYSICAL SOLVENT REMOVAL



Fifty microliters of a 0.5 mg/mL solution of a four component mixture were injected onto a C18 Nova-Pak 75 mm x 3.9 mm I.D. column. A 10 minute gradient from 98% H₂O/CH₃OH to 100% CH₃OH at a flow rate of 1 mL/minute was employed.

New DiscovIR-LC[™] system from Spectra Analysis is able to afford total solvent removal from a reversed-phase gradient run (2% to 100% organic) with no change in the operational setpoints of the system.

Solid phase Transmission FTIR Spectra are acquired continuously throughout the run.

Figures 1-2 show the chromatogram and FTIR spectra of the eluants.

How Does It Work?

Upon exiting the LC column, solvent is removed and the eluants are deposited onto a sample collection disk. The infrared ZnSe disk rotates under the deposition 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 are acquired by a MCT detector.

Key Applications:

Deformulation
Co-polymer Compositional Drift
Extractables & Leachables
Minor Component Identification
Chemical Troubleshooting
Degradation / Failure Analysis



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Key Benefits

A Breakthrough Detector Technology

DiscovIR-LC is a "breakthrough" (solvent removing) FTIR detector technology, providing solid-phase analysis of HPLC (High Performance Liquid Chromatography) and SEC (Size Exclusion Chromatography) separations.

DiscovIR-LC represents the first fully-automated high performance HPLC-FTIR detection system capable of achieving the kind of rigorous, repeatable qualitative analyses that pharmaceutical, polymer chemists and other industry customers require. By providing an on-line chemistry solution, DiscovIR-LC increases the productivity of a company's most valuable processes: product development, process control and troubleshooting, quality control (incoming and outgoing), patent protection and competitive analysis.

Micro-Deposition Improves Analysis

DiscovIR's unique temperature controlled and vacuum deposition method ensures that results are accurate and reproducible. Eluted peaks are first deposited in a film onto a rotating IR-transparent disc. Next, an infrared beam passes through each concentrated spot and the detector automatically collects spectra data.

Concentrates Analytes in Minimal Area

Cryogenic temperature control of the Sample Disc minimizes the area of the deposited analyte. This results in a thicker sample layer and therefore higher sensitivity of the absorbance spectrum.

Retains Entire Chromatographic Run

The entire chromatographic run is applied as a solid deposit on the Sample Disc, preserving the resolution of the separation. Therefore, the entire run is available to be scanned again in order to investigate subtle features and improve signal-to-noise. The speed of the rotating Sample Disc can be adjusted to match concentration of the deposited sample.

System Overview

Operating Principle	Direct deposition of column eluant on moving ZnSe sample disc
IR Spectrometer	Built-in FTIR
IR Detector	0.1x0.1 mm MCT
Wavenumber Range	4000-700 cm ⁻¹
Data Collection	Real-time, with post-run analysis available
Spectrum Type	Transmittance through disc and solid-phase sample
Disc Capacity	12-24 hours of chromatography
Disc Temperature	-30°C to +50°C

Data Station

Platform	Microsoft Windows
Spectroscopy Package	GRAMS/AI and Spectral ID [™]
Standard Features	Real-time and post-run data collect Chromatographic / spectral workup Band chromatograms for chemical classes Ratio Chromatograms for determining co-polymer distribution in SEC
Library Search	Library Search Software included Spectra compatible with all solid phase FTIR libraries

DiscovIR-LC Configuration

Sample Delivery	Multi-step Desolvation Interface
Flow Rates	0.25 to 2.0 mL
Compatible Solvents	Water, ACN, Methanol, THF, Chloroform
Compatible Additives	Volatile buffers (ammonium carbonates, acetates, formates), trifluoroacetic acid (TFA), triethylamine (TEA)
Sensitivity	Typically 1 µg per component
Chromatograph	Any Liquid Chromatograph System

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