



# CANNABIS AND HEMP LABORATORY PRODUCTS

Instrumentation, application expertise,  
services and support

[techcomp-instruments.com](https://techcomp-instruments.com)





## INTRODUCTION

The global cannabis market is projected to grow rapidly over the next few years, with medicinal usage becoming more generally accepted, and recreational use likely to rise with emerging changes in legalization.

**To assure quality, meet regulatory requirements and certify products, careful management of samples and accurate testing and analysis is essential to succeed in this developing and competitive marketplace.**

Techcomp is your 'one stop' shop for Cannabis and Hemp Laboratory Products, providing everything you need to get started or expand your existing laboratory setup. Backed up with access to our expert team for full custom specification, application expertise, installation, training and maintenance.

From optimizing crop growth to accurate analysis of potency, terpenes and residuals, Techcomp can provide an unparalleled portfolio of solutions for manufacturers and testing laboratories operating in or getting started in the growing cannabis marketplace. Partnering with you to maximise crops and product quality, and to comply with emerging cannabis testing regulations.

**Our instrumentation and application expertise can support you with :**

- Crop growth optimization
- Crop transportation
- Growth monitoring
- Sample storage and preparation
- Sample analysis - including
  - Determination of moisture content in cannabis
  - Cannabis potency
  - Terpene profiling of cannabis
  - Purity and safety of cannabis
  - Optimal quantification of THC in blood
  - Vibrational spectroscopy



# MODIFIED ATMOSPHERE FOR OPTIMUM CROP GROWTH AND TRANSPORTATION

## Gas Monitoring

**Cannabis sales have become big business and its increasing legalisation for medical use is expected to promote sales, with the global legal cannabis market size predicted to reach USD 73.6 billion by 2027.**

This means that there is strong motivation towards improving cannabis crop yields and the efficiency of the growth process.

The use of modified atmospheres is one of the ways of improving crop yields that has become popular. Doing this involves growing the crops in an atmosphere that has been deliberately changed to control certain concentrations of gases. This is commonly used not just for food growth, but also to help improve crop quality and as a way of preserving products during transportation.

To help with crop growth, one of the most effective gas concentrations to alter is carbon dioxide (CO<sub>2</sub>). The Edinburgh Sensors products that are suitable for installation in a greenhouse for online active monitoring include the integrative Gascard NG, the benchtop Boxed Gascard and the Guardian NG.



### Company Profile

With operations in Scotland, Edinburgh Sensors supply end users and OEMs with a wide range of IR Gas Detection systems.

[edinburghsensors.com](http://edinburghsensors.com)

## Gascard NG & Guardian NG

For developing solutions for an automated greenhouse, Edinburgh Sensors offer full pre- and post-purchase technical sales advice on all products and guidance on interfacing their NDIR sensors with data logging or control systems. The Gascard NG and Guardian NG have onboard RS232 connectors or optional Ethernet support and the Boxed Gascard has a USB option as well. The Guardian NG can even be used to read faults or issues from other devices it is interfaced with.

A number of standard CO<sub>2</sub> measurement ranges are available including low concentrations up to 5000 ppm and high concentrations up to 100%. All devices offer excellent accuracy and very short warm-up and response times, so they can easily detect small or sudden fluctuations in gas concentrations. The extensive built-in temperature compensation means that they are robust devices and the gas detection will remain accurate over a wide range of environmental conditions.



Edinburgh Sensors Gascard NG



Edinburgh Sensors Guardian NG



Edinburgh Sensors Boxed Gascard



# GROWTH MONITORING

## FTIR Spectroscopy

**The Edinburgh Instruments IR5 is a benchtop FTIR Spectrometer with a wide range of sampling accessories.**

Specifically, using an attenuated total reflectance (ATR) accessory allows simple measurements of cannabis flowers directly, requiring extremely small sample quantities.

The technique can be used to quantify cannabinoids in the sample, which is useful for monitoring the potency of cannabis grows. Information such as the effect of lighting conditions and the optimum growth time can be gathered from the spectra.



Edinburgh Instruments  
IR5 FTIR Spectrometer



# SAMPLE STORAGE AND PREPARATION

## Cold Storage Units

**Medical cannabis is defined by its moisture content, which changes rapidly depending on the climate where it is kept. It should therefore be kept at a cool temperature and low humidity.**

If it is kept in an environment that is too warm and too humid, it may be susceptible to mould. However, if there is too little moisture, it may dry out which causes damage and loss of efficacy.

At Froilabo, cold storage units are available with different operating temperature ranges, cooling speeds, and storage capacities, depending on the application. We produce a range of refrigeration and low temperature freezers which are ideal for the storage of cannabis.



Froilabo Trust ULT Freezer Range



### Company Profile

Froilabo has facilities in France and Romania and specialises in temperature control equipment including ULT Freezers, Incubators and Lab Ovens.

[froilabo.com](http://froilabo.com)





## Sample Preparation – Weighing

**During the sample preparation stage, accurate weighing of the cannabis is essential.**

High-resolution analytical balances from Precisa are the perfect addition to your cannabis testing laboratory. Precisa is a leading manufacturer of measuring instruments in the precision and analysis field. Developing and producing first-class and high-quality Swiss made analytical instruments to support you in your daily work.

Precisa high-resolution balances are characterized by simple and intuitive operation, and are widely used in research and development, the pharmaceutical and chemical industries.

These Semi-Micro balances are reliable and proven in everyday practice, offering a readability of 0.00001 g and a weighing range of up to 220 g.



Precisa Series 390 Semi-Micro Balances



**Precisa**  
THE BALANCE OF QUALITY

### Company Profile

Designed and manufactured in Switzerland, Precisa offer a range of high precision metrology and weighing solutions.

[precisa.com](https://www.precisa.com)



# SAMPLE ANALYSIS

## Determination of Moisture Content in Cannabis

**The precise moisture content of cannabis must be measured because the poor drying of the plant during the extraction processes could lead to mould or fungal infestations, which in turn may pose a risk to the health of users, particularly those with immunodeficiencies.**

Properly dried cannabis should contain no more than 10-12% moisture. Anything above this and the plant will be more susceptible to disease and contamination. Therefore, a highly accurate moisture analyzer must be used in order to precisely determine the moisture content percentage for optimum safety.

For the most accurate measurements of moisture content, Precisa produces a wide variety of moisture analyzers. Resulting from Swiss precision in production

and engineering, our fully automatic analyzers are compact and robust and provide error-free, high-quality and efficient moisture analysis.

There are three steps in the moisture analysis process. The parameters for the process are first set using the automated key pad and the sample is placed in the drying chamber. Heat will remove all of the moisture from the sample, which will alter its weight. The gravimetric loss can then be calculated through the comparison of the final weight of the sample to its initial weight, which will in turn inform us of its moisture content.

Precisa's moisture content analyzers feature readabilities from 1 mg / 0.01 % to 0.1 mg / 0.001% and can reach temperatures of up to 230 °C. Therefore, they are the perfect solution for the moisture content analysis of cannabis for medical usage.

## Profiling and Quantification of Cannabis

**Once the cannabis or cannabis product is produced a suite of further tests are needed to profile and characterize the product. This may be required by regulatory bodies and to demonstrate the quality of the product.**

With the growing market and increasing number of medicinal formulations, the testing requirements are becoming more stringent and producers need to demonstrate the quality, potency and safety of their product to meet regulatory requirements, achieve certification and differentiate it from those of inferior quality or containing impurities. In addition, testing and analysis plays a critical role in Forensic Toxicology laboratories worldwide.



Precisa Series 365 Moisture Analyzer



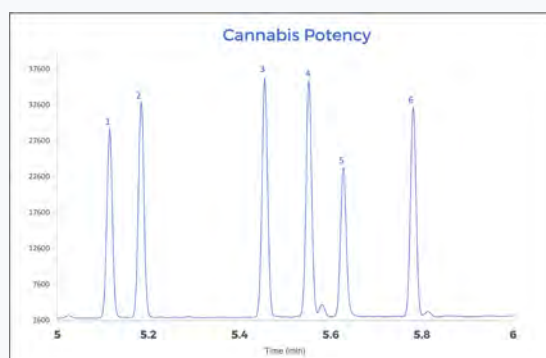


## Cannabis Potency

**Hemp and cannabis are becoming more popular because of legalization in multiple countries, particularly for medical cannabis.**

The increase of this market also increases the offer of alternative products (edibles and e-liquids) that contain very different levels of cannabinoids than the content described on the label. There are strict regulations regarding the cannabinoid content in such products so it is vital that these levels are routinely monitored. Solutions include:

- Cannabis Potency by GC-FID (data available with nitrogen, hydrogen or helium as carrier gas) (using 8300 GC/8500 GC)
- Cannabis Potency by GC-MS (using 8300 GC/8500 GC and 8700 SQ or 8900 TQ)
- Cannabis Potency by LC-DAD



Profiling of six cannabinoids.

Chromatogram of a cannabis potency standard taken from SCION Application note AN130.

Elution order of potency analytes

Peak ID	Component
1	CBC
2	CBD
3	8-THC
4	9-THC
5	CBG
6	CBN

**For 'Cannabis Potency Testing' system configurations, please refer to the Sample Analysis Instrumentation section.**



For QR code links to Application Notes detailing each test, please refer to the Application Notes section at the back of this publication.



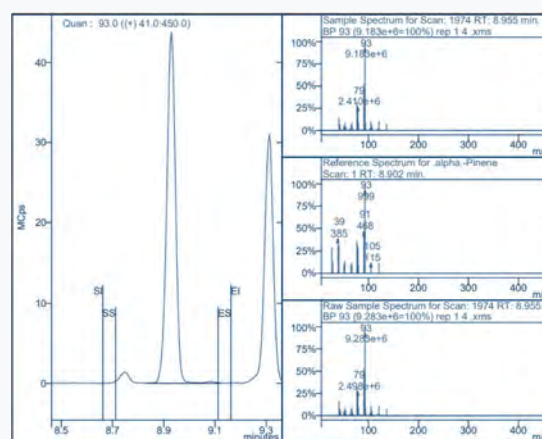
## Terpene Profiling of Cannabis

**Terpenes are organic compounds in cannabis that provide the distinguished aroma and flavour.**

Every species or strain of cannabis has its own distinguished profile and therefore performing terpene profiling is the preferred method for determining the quality of different strains. These terpenes do not only provide flavour or aroma but also interact with the active cannabinoids to enhance their effects on humans. Solutions include:

- Determination of Terpenes in Cannabis by GC-FID (using 8300 GC / 8500 GC)
- Determination of Terpenes in Cannabis by HS-GC-MS (using Headspace HT3, 8300 GC/8500 GC and 8700 SQ or 8900 TQ)

**For 'Terpene Profiling of Cannabis' system configurations, please refer to the Sample Analysis Instrumentation section.**



This figure shows Total Ion Chromatogram (TIC) showing peak attributable to  $\alpha$ -Pinene (Left hand side) with full scan mass spectrum of  $\alpha$ -Pinene in sample (upper right), confirmed by NIST library reference spectrum (middle right) also shown is raw sample spectrum (lower right)

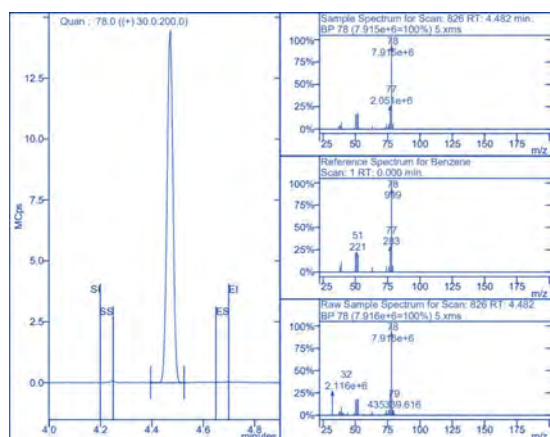
## Purity and Safety of Cannabis

Residual Solvents, Pesticides, and Aflatoxins are organic volatile products often found on cannabis leaves. Unfortunately these Residual Solvents, Pesticides, and Aflatoxins can cause health risks when after extraction these components are not removed efficiently. Therefore it is important to monitor these components to assess the quality and safety of the product for consumption. Solutions include:

- Determination of Aflatoxins in Cannabis by LC-FLD\*
- Residual Solvents in Cannabis by HS-GC-MS (using Headspace HT3, 8300 GC/8500 GC and 8700 SQ or 8900 TQ)
- Identification and Quantification of Pesticides in Cannabis by GC-TQ\* (Using Headspace HT3, 8300 GC/8500 GC and 8900 TQ MS)

\* Application data not yet available (Aflatoxin and Pesticide data for alternative sample matrix available), for advice contact your local sales representative

**For 'Purity and Safety of Cannabis' system configurations, please refer to the Sample Analysis Instrumentation section.**



This figure shows Total Ion Chromatogram (TIC) showing peak attributable to Benzene (Left hand side) with full scan mass spectrum of Benzene in sample (upper right), confirmed by NIST library reference spectrum (middle right) also shown is raw sample spectrum (lower right)



For QR code links to Application Notes detailing each test, please refer to the Application Notes section at the back of this publication.

## Monitoring/Testing

### Optimal Quantification of THC in Blood

Hemp and marijuana are becoming more popular because of legalization in multiple countries and the number of cannabis users worldwide is now estimated to be over 200 million people.

However, it is illegal to drive a vehicle whilst under the influence of cannabis. Common side effects includes the feeling of euphoria, hallucinations, relaxation and even sedation.

If law enforcement officers believe a person is under the influence, the driver can be subjected to a screening test of cannabinoids in saliva. A positive result must then be confirmed by the presence and levels of the drug in a blood sample, using Gas Chromatography.

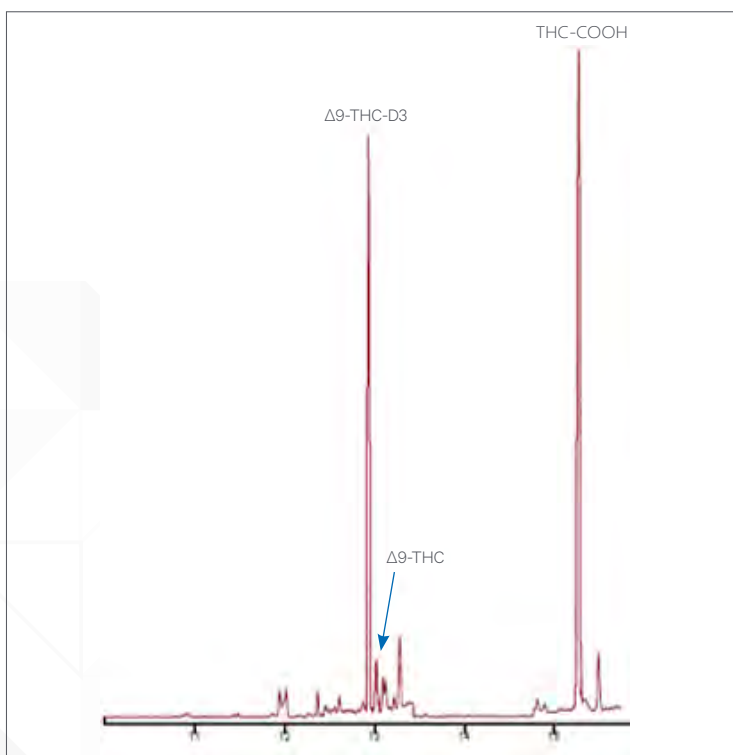
The active ingredient in cannabis is delta9-Tetrahydrocannabinol ( $\Delta$ 9-THC). Post ingestion,  $\Delta$ 9-THC is metabolised into the inactive ingredient Tetrahydrocannabinolic Acid (THCA/THCCOOH). Quantification of THCA can indicate long term use of the drug.

Drug detection limits are set by government laws and vary from country to country. The limits in the United Kingdom and Canada is 2ng/mL whereas in France the limit is 1ng/mL.

The analysis of cannabinoids from biological matrices is made easy with the SCION GC-MS. The highly sensitive and robust instrument has exceptional limit of detection for both  $\Delta$ 9-THC and THC-COOH. With an LOD of 0.2ng/mL and LOQ of 0.5ng/mL, for  $\Delta$ 9-THC, these limits exceed the requirements specified by the laws in UK, Canada and France. Additionally, the cannabinoid analyser is capable of detecting THCCOOH at concentrations as low as 2.5ng/mL, with excellent repeatability for both cannabinoids. Solutions include:

- Optimal Quantification of THC in Blood (using SCION 8300/8500 GC, Autosampler and SCION 8700 SQ MS)

**For 'Optimal Quantification of THC in Blood' system configurations, please refer to the Sample Analysis Instrumentation section.**



TIC of blood sample from cannabis user



## Vibrational Spectroscopy

**Vibrational spectroscopy refers to two techniques, Raman and FTIR, which identify and classify compounds based on their molecular vibrations.**

They are complimentary techniques, offering what is often termed a fingerprint of the sample due to the compound-specific nature of the spectrum. Vibrational spectroscopy is non-destructive, rapid, and requires little to no sample preparation. It can be used to differentiate between hemp and cannabis, determine THC and CBD concentrations, characterise THC, CBD, and CBN compounds, and identify different *Cannabis Sativa* varieties.

The RM5 Raman Microscope from Edinburgh Instruments is a confocal microscope built for Raman spectroscopy. This method retains the high spectral quality offered by vibrational spectroscopy whilst adding the ability to spatially resolve samples via Raman mapping. Cannabis flowers can be directly placed on the microscope and analysed with no additional preparation. Raman mapping offers spatial resolution of approximately 1  $\mu\text{m}$ , meaning cannabis samples can be investigated for contaminants such as microplastics, or trace pesticide residue. Raman microscopy is well suited for probing microplastics as it is highly sensitive to polymers, easily distinguishing between different types.



The Edinburgh Instruments RM5 Raman Microscope



### Company Profile

Global leaders in the research, development and manufacture of state-of-the-art spectroscopy instrumentation for over 50 years.

[edinst.com](http://edinst.com)



# SAMPLE ANALYSIS INSTRUMENTATION

## SCION Instruments

**SCION Instruments manufactures a range of chromatography and mass spectrometry instrumentation for a broad range of cannabis and cannabis derived product analyses covering potency, quality and safety aspects.**

The key instrumentation for many of these are the flexible SCION 8300 GC and 8500 GC's which can be configured with a range of sampling devices and detectors, including single and triple quadrupole mass spectrometers (8700 SQ MS and 8900 TQ MS). In combination with the SCION LC6000 HPLC, SCION Instruments offer a complete solution for all your cannabis testing requirements.



The SCION 8300 GC

The SCION 8500 GC

## SCION 8300 GC - Gas Chromatograph

The ideal gas chromatograph for many applications that saves space without compromise on performance, productivity and functionality. Capacity for 2 injection ports, 1 GC detector plus a mass spectrometer makes the SCION 8300 GC a perfect match for your analyses.

### Highlights:

- Compact footprint of only 32 cm (12.6") wide
- Fast ramping oven (170°C/minute)
- Two channel architecture, with up to 2 injection ports and 2 detectors (including MS)
- 10" High resolution full-colour touchscreen, 16 languages supported
- Electronic flow control (EFC), 3 channels 0.001psi resolution
- Full automation capabilities through CompassCDS software and autosampler

**See below for example system configurations.**

## SCION 8500 GC - Gas Chromatograph

The SCION 8500 GC is versatile and offers flexibility. Supporting three injector and four detector positions (including the mass spectrometer) with full independent access, no other gas chromatograph system provides this capability. SCION 8500 GC is the ideal platform for all your cannabis profiling and quantification applications. The perfect GC for any analytical challenge due to the wide array of options for configuration.

### Highlights:

- Ultimate flexibility/configurability.
- Fast ramping over (150°C/minute)
- Three channel architecture, with up to 3 injection ports and 4 detectors (including MS)
- 10" High resolution full-colour touchscreen, 16 languages supported
- Electronic Flow Control (EFC), up to 21 channels at 0.001psi resolution.
- Flexibility to add samplers, valves, valve oven, backflush and column switching capabilities, etc. Programmed and controlled through CompassCDS

**See below for example system configurations.**

**SCION**  
INSTRUMENTS

### Company Profile

Based in the Netherlands, SCION Instruments are a global leader in Gas and Liquid Chromatography equipment and solutions.

[scioninstruments.com](http://scioninstruments.com)



## Example SCION 8300 GC / 8500 GC System Configurations

### Potency (FID):

SCION 8300 GC or 8500 GC with Split/Splitless (S/SL) injector, Flame Ionization Detector (FID) and SCION 8400 Pro or 8410 Pro Autosampler

Column: SCION 35MS 30m x 0.25mm x 0.25 $\mu$ m

Software: Compass CDS

### Potency (MS):

SCION 8300 GC or 8500 GC with S/SL injector, SCION 8400 Pro or 8410 Pro Autosampler and SCION 8700 SQ MS (Single Quadrupole Mass Spectrometer)

Column: SCION 35MS 30m x 0.25mm x 0.25 $\mu$ m (same as potency FID)

Software: Compass CDS and MS Workstation

### Terpenes (FID):

SCION 8300 GC or 8500 GC with S/SL injector, FID and SCION 8400 Pro or 8410 Pro Autosampler

Column: SCION 624MS 30m x 0.25mm x 0.14 $\mu$ m

Software: Compass CDS

### Terpenes (MS):

SCION 8300 GC or 8500 GC with S/SL injector, SCION HT3 headspace and SCION 8700 SQ MS

Column: SCION 624MS 30m x 0.25mm x 0.14 $\mu$ m

Software: Compass CDS and MS Workstation

### Residual Solvents (MS):

SCION 8300 GC or 8500 GC with S/SL injector, SCION HT3 headspace and SCION 8700 SQ MS

Column: SCION 624MS 30m x 0.25mm x 0.14 $\mu$ m

Software: Compass CDS and MS Workstation

### Cannabinoids in Blood (MS):

SCION 8300 GC or 8500 GC with S/SL injector, SCION 8400 Pro or 8410 Pro Autosampler and SCION 8700 SQ MS

Column: SCION 5MS 15m x 0.25mm x 0.25 $\mu$ m

Software: Compass CDS and MS Workstation

## Auto Samplers

### 8400 Pro and 8410 Pro

Regardless of sample type or throughput, there are two autosampler options (8400 Pro and 8410 Pro) to meet your requirements for accuracy & precision. Each can be tailored to meet specific sampling needs and workloads. Third party samplers for Thermal Desorption and Purge & Trap are easily integrated.

#### Highlights:

#### 8400 Pro Autosampler

- Capacity: 100 x 2 ml vial sample capacity
- Wide variety of syringes

#### 8410 Pro Autosampler

- Capacity: 10 x 2ml + 6 x 5ml + 5x 10ml vials
- Flow-through cell for continuous sampling image

#### Both variants offer:

- Dual injection access
- Dual or duplicate injection capability
- Three solvent wash
- Sample tray heating or cooling
- Large solvent vial, Flowcell, SPME options



## Versa Automated Headspace Vial Sampler

Static headspace is one of the most popular techniques for gas chromatography due to its versatility for analysing volatile organic compounds (VOCs) in a complex variety of matrices. This is because it eliminates tedious sample preparation steps, as well as prevents contamination problems that are common to other sample introduction techniques. Versa is the perfect solution for applications which require all the advantages of headspace analysis, available to fit any budget.

### Highlights:

- Small on size but big on value. Only 12" wide (30.5cm)
- 20-position autosampler/single position platen oven
- 22mL vials
- Sample heating to 200°C throughout pathway
- Built-in pressure control to ensure consistent volume for all samples regardless of external conditions
- Inert sample pathway including transfer line, sample needle, and loop provide superior analytical results by eliminating adsorption and reducing carryover
- Automatic leak check and Benchmark test for quick troubleshooting
- Simple method development using Method Optimization Mode (M.O.M.)
- Versa TekLink™ 2G software for use as standard or full 21 CFR compliance

### Methods & Applications:

The Versa can quickly and accurately identify residual solvents in bulk or finished pharmaceuticals as prescribed in the United States Pharmacopeia (USP) and it meets all of the guidelines per USP Method <467>.

- USP <467>

This USP method is applicable to testing residual solvents within cannabis.

## HT3 Static and Dynamic Headspace System

SCION Instruments announce the next generation Headspace instrument, the HT3™ Static and Dynamic Headspace System.

Static Headspace analysis is a time-tested and robust technique for the analysis of volatile compounds in almost any matrix. The popularity of the technique is due to Headspace analysis providing a clean, reliable result.

Dramatic improvements in sensitivity are achieved with the new Dynamic Headspace option, while maintaining the ruggedness and reliability of a traditional Static Headspace instrument.

### Highlights

- Standard integrated 60-position autosampler with 10-position platen heater provides true walk away automation
- Increased sensitivity from 50 to 100 times with the Dynamic Headspace option (compound dependent)
- Removable sample path for trouble-free maintenance
- High temperature capability to 300°C expands range of applications
- Inert sample pathway including transfer line, sample needle and loop provide superior analytical results by eliminating adsorption and reducing carryover
- Automated Leak Check and Benchmark for quick troubleshooting
- Automated method development using Method Optimization Mode (M.O.M.)
- 21 CFR Compliance
- Built-in Mass Flow Controller ensures consistent flow and pressure for all samples regardless of external conditions

### Methods & Applications:

The HT3 can quickly and accurately identify residual solvents in bulk or finished pharmaceuticals as prescribed in the United States Pharmacopeia (USP) and it meets all of the guidelines per USP Method <467>.

- USP <467>

This USP method is applicable to testing residual solvents within cannabis.

See below for example system configurations

### Example SCION HT3 Headspace System Configurations

#### Terpenes (MS):

SCION 8300 or 8500 GC with S/SL injector, SCION HT3 headspace and SCION 8700 SQ MS

Column: SCION 624MS 30m x 0.25mm x 0.14µm

Software: Compass CDS and MS Workstation

#### Residual Solvents (MS):

SCION 8300 or 8500 GC with S/SL injector, SCION HT3 headspace and SCION 8700 SQ MS

Column: SCION 624MS 30m x 0.25mm x 0.14µm

Software: Compass CDS and MS Workstation



HT3 Static and Dynamic Headspace System



SCION Versa Automated Headspace Sampler



## SCION 8700 SQ MS

Used in combination with the SCION 8300 GC / 8500 GC, the SCION 8700 SQ Single Quadrupole Mass Spectrometer (MS) is designed for today's fast paced analytical laboratory. Innovative design features such as a Lens-Free ion path, heated ion optics and an Extended Dynamic Range (EDR) detector enable the SCION 8700 SQ to deliver accurate quantification and identification on a routine basis, even in complex matrices. As ions pass through a mass spectrometer a significant portion is lost every time they encounter a lens. Due to its unique design the SCION 8700 SQ doesn't have any lenses thus increasing the sensitivity of the instrument by reducing ion losses. Another major advantage of having no lenses the source is the only part to clean, so you can spend more time analysing samples and less time maintaining your instrument.

### Highlights:

- Innovative lens-free ion path delivers simplified tuning
- Off axis source and detector increase sensitivity
- Active focusing QO
- Dual filament source increases uptime
- Compound-based scanning software

## SCION 8900 TQ MS

Used in combination with the SCION 8300 GC / 8500 GC, the SCION 8900 TQ Triple Quadrupole Mass Spectrometer (TQ MS) has a small footprint but does not compromise on quality. Offering superior sensitivity and robustness based on innovative ion optics, and fast and easy method development. Coupled to our outstanding GC instruments, the SCION 8900 TQ MS system defines a new standard of usability for quantitative analysis. Available in two models, the SCION 8900 TQ MS offers a flexible solution for any laboratory.

### Highlights:

- Unmatched sensitivity - MRM mode capable of detecting 100 fg OFN for 272>222 with a S/N of >50,000:1.
- Fastest scan rates in the market at 30,000 Da/s
- Innovative lens-free ion path delivers simplified tuning for increased efficiency in your laboratory (Patent No.: US 6,576,897 B1, LENS-FREE ION COLLISION CELL). Fewer statistical ion losses and no charging effects lead more ions from the source to the detector.
- Improved MRM speed of 1000 MRM/s for advanced data capture. High speed electronics – more MRM transitions per run and better sensitivity with more datapoints for each chromatographic peak.



SCION 8700 SQ GC-MS

SCION 8900 TQ GC-MS

- Low dwell times of 0.5ms allow for capturing more data in your analysis.
- High-performance turbo pump included for rapid time to vacuum and worry-free operation.
- Six orders of magnitude dynamic range (EDR) for precise and accurate results across a wide range of concentrations. The Extended Dynamic Range detector with unique Integrated-Quad design requires just one injection, saving time and resources, and delivering accurate and rapid results.
- Extensive mass range from 1 to 1200 for comprehensive analysis.
- High mass resolution of 0.7-4Da with mass stability of 0.1Da over 48 hours for accurate and consistent results.
- Off-axis source and detector increase sensitivity for detecting even the smallest concentrations of compounds.
- Greater sensitivity - Active-Focusing QO uses helium molecules to increase ion transmission. Collision cooling lowers the diameter of the ion trajectory and also increases the number of ions which reach the detector.
- Fully integrated with TASQ software, Target analysis screening quantitation (TASQ) software provides a turnkey data analysis solution for the requirement to screen, confirm and quantify hundreds of compounds in a single analysis.
- MRM Method Builder - Designed by chromatographers, the GCMS 8900 TQ autofill function removes the need to know the MRM transition of an analyte. A simple drag-and-drop of the compound from the factory-installed compound library, which contains more than 3000 MRM transitions, automatically sets up the method and manages the TQ duty cycle.

## SCION LC 6000 – Liquid Chromatograph

The Scion 6000 Series HPLC aims for confidence in results through outstanding life-time performance. A robust design maximises uptime and productivity levels whilst minimises cost of operation. The SCION 6000 Series offers an array of automation options for workflow optimisation, making our lab experience the best and easiest possible

### Highlights:

- SCION 6100 Quaternary pump low pressure mode offering superior gradient performance and excellent flow rate precision
- SCION 6210/6220 Autosampler provides excellent injection volume precision and ultra low carry over
- SCION 6310 Column Oven helps deliver sharp peaks and excellent peak symmetry. The oven can accommodate up to 3 250 mm ID tagged columns
- Full range of HPLC columns now available
- Excellent Detector Performance with Ultra Violet and Diode Array Detector, Fluorescence and Refractive Index available

### Example SCION LC 6000 System Configurations

#### Potency (LC):

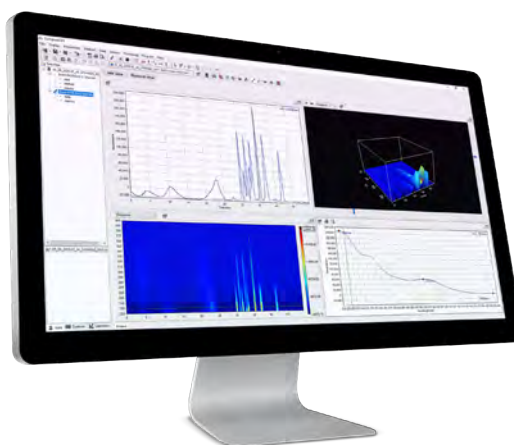
SCION LC 6000 equipped with a quaternary pump, column oven and UV detector.

Column: C18 150mm x 2.1mm x 3µm

Software: Compass CDS



SCION LC 6000



Compass CDS User Interface

## Compass CDS – Chromatography Data System

Compass CDS is an industry-proven, feature packed and user friendly networked chromatography data system. This software solution has been developed throughout the last 20 years in response to the requirements of our customer base. Providing an application and information-rich user interface, it is also uniquely customizable. Intuitive, easy-to-use, CompassCDS provides laboratory staff with a powerful tool for a variety of operations in different analytical fields

### Highlights:

- User friendly, intuitive and information-rich user interface
- Application-specific plug-ins and add-ons
- Extended custom calculations and reporting
- Multi-vendor GC and LC instrument control
- Scales from local workstation to enterprise-wide client/server installations
- Robust design for 24/7 operations
- Secure, centralized system administration and data management
- Secure, highly configurable and support redundancy
- Seamless integration with LIMS, ELN, LES, SAP/ERP, SCADA/PCS using the Sample Streamer
- Optimized for virtualized environments (VMWare, Hyper-V) and MetaFrame rollouts (Citrix, Window TS, RDP)
- Complies to national and international regulations and guidelines (21CFR11, ISO/IEC 17025)

## Edinburgh Instruments

### Edinburgh Instruments have been providing high performance instrumentation in the Molecular Spectroscopy market for over 50 years.

Our photoluminescence, Raman, FTIR, UV-Vis absorption, and transient absorption spectrometers are always designed with a focus on their applications, from routine analysis in industry to demanding research. Specifically for cannabis analysis, FTIR and Raman spectroscopy are both excellent techniques providing a wealth of sample information. The key instruments for such analysis are the IR5 FTIR Spectrometer and the RM5 Raman Microscope.

Both the IR5 and the RM5 are suitable for cannabis potency testing (THC and CBD content) – enabling on-site analysis without sample preparation and real-time monitoring of potency during growth.

### IR5 FTIR Spectrometer

The IR5 is a modern high-performance benchtop FTIR spectrometer offering simple operation as well as fast and accurate results. A robust interferometer is at the core of the IR5, which is built on an anti-vibration frame to minimise any influence from the environment.

The interferometer features a solid-state reference laser with a long operating life. The combination of a stable high-intensity IR source and broadband DLaTGS detector ensures repeatability and accuracy. The result is a reliable instrument giving data that you can trust.

#### Highlights:

- High sensitivity and spectral resolution down to 0.5 cm<sup>-1</sup>
- Maintenance-free thanks to moisture control technology
- User-friendly Miracle™ software
- Upgradeable to Fourier Transform Photoluminescence measurements
- Wide range of sampling accessories to suit every application
- Configurable with a second detector for spectral range optimisation



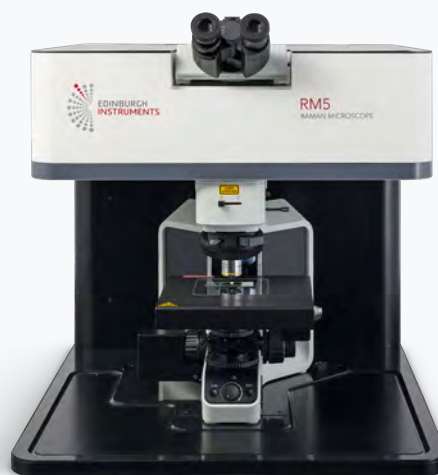
Edinburgh Instruments IR5 FTIR Spectrometer

## RM5 Raman Microscope

The RM5 is a compact and fully automated Raman microscope for analytical and research purposes. Its truly confocal design offers uncompromised spectral resolution, spatial resolution, and sensitivity. The RM5 builds on the expertise of robust and proven building blocks, combined with modern optical design considerations; and a focus on function, precision and speed. The result is a modern Raman microscope that stands alone in both specifications and ease of use.

#### Highlights:

- High level of automation using the Ramacle® software package
- Up to 3 fully integrated Raman lasers from 405 nm – 1064 nm
- Upgrade to 2 detectors for spectral range and sensitivity optimisation
- 5-position grating turret so no compromise is needed between spectral resolution and spectral range
- 2D, 3D, and surface mapping available for full sample exploration
- Multi-position software-controlled confocal pinhole



Edinburgh Instruments RM5 Raman Microscope



# SERVICES AND SUPPORT

## Application Specific System Solutions

**SCION Instruments is unique in our capability to deliver customised solutions to meet your specific analysis requirements.**

At the heart of our custom solutions are the versatile 8300 GC/ 8500 GC gas chromatography instruments, which we design and manufacture at our own production facility in Goes, Netherlands. These high performance building blocks are designed to enable extensive customisation. Choose from a wide variety of samplers, valves, valve oven, backflush and column switching capabilities. They can also be paired with our 8700 SQ MS / 8900 TQ MS mass spectrometry instruments, and with a range of autosampler solutions.

We have more than 50 standard, pre-configured systems available to meet a wide variety of applications, such as SIMDIST, DHA, RGA and others – built and tested – and ready to meet your analytical needs right out of the box.

And we can tailor a system solution specifically for your unique requirements, building and testing to meet your specific analytical challenges.

Our knowledgeable and highly qualified field staff can help you specify the exact system for your needs, and give you all the support and confidence you need to deploy this in your laboratory and start making immediate progress.

## Service and Support Plans

To provide you with security and peace of mind for the future, we also offer a wide range of service and support plans to make sure your operations keep performing for years to come. Our support and maintenance teams are located globally, and are ready to help.



# APPLICATION NOTES

To access the applications notes for each of the tests featured in this document, please scan the QR codes provided below.



Cannabis Potency by GC-MS (using 8300 GC / 8500 GC and 8700 SQ or TQ)



Cannabis Potency by GC-FID using 8300 GC / 8500 GC with Carrier Gas Comparison (Helium, Hydrogen, Nitrogen)



Cannabis Potency by LC-DAD



Determination of Terpenes in Cannabis by GC-FID (using 8300 GC / 8500 GC)



Determination of Terpenes in Cannabis by HS-GCMS (using Headspace HT3, 8300 GC / 8500 GC and 8700 SQ or TQ)



Residual Solvents in Cannabis by HS-GC-MS (using Headspace HT3, 8300 GC / 8500 GC and 8700 SQ or TQ)



Optimal Quantification of THC in Blood (using SCION 8300 / 8500 GC and SCION 8700 SQ MS)



NOTE: For advice and support with any specific Cannabis testing requirements, please contact your SCION representative.



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