

GC5

Ultra-sensitive compound specific isotope analysis



High sensitivity



High data quality



Extreme durability



Low cost of ownership

GC5

Generating a deeper understanding with GC-IRMS

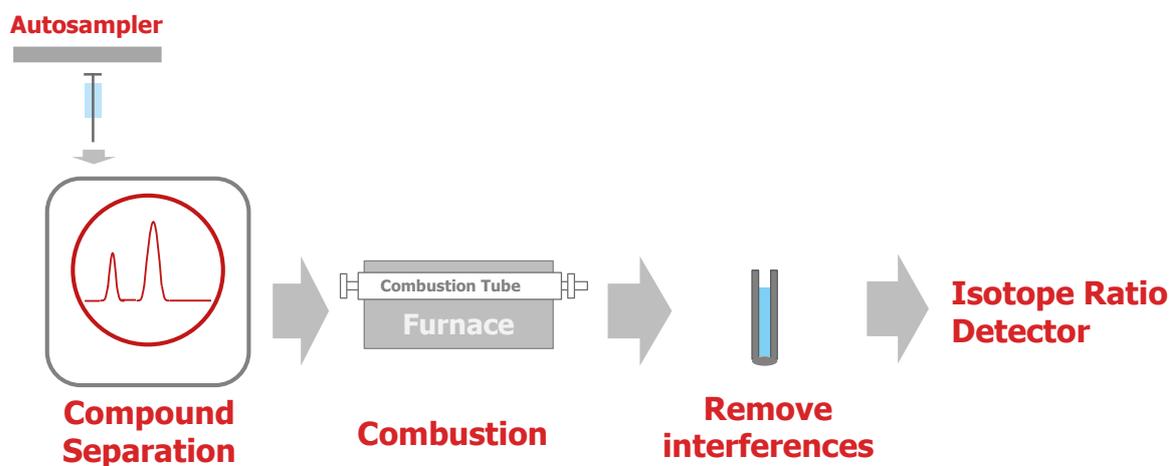


KEY FEATURES

- Market-leading sensitivity with picomolar detection levels as standard
- Powerful **IONOS** Peak Mapping reduces data processing time of complex chromatograms to minutes rather than hours, generating a large increase in lab productivity
- Outstanding robustness – low maintenance, with long-life reactor design
- 1500 °C furnace design
- Complete solvent peak removal with 100% of analyte to combustion furnace

The GC5 is the answer for all those who wish to enhance their research by investigating compound specific stable isotope data. The measurement of individual components in complex mixtures allows for a wide variety of applications to be pursued. Whether correlating seizures of narcotics, authentication of natural flavor components or understand-

ing the origin of complex petroleum samples – the GC5 can give you the answer you are looking for. The need for compound specific isotope analysis is widely acknowledged to be able to answer complex questions where a bulk analysis does not provide the answer. The many features of the GC5 allow you to be at the forefront in answering these questions.



Outstanding sample flexibility

The modular Agilent 7890B GC system lets you choose from the industry's widest selection of inlets, detectors, columns, and automated sample introduction techniques, making the measurement of a diverse range of sample concentrations down to ppb level possible. Let it be SPME, headspace, pyrolysis, capillary flow technology, multi-dimensional GC, the system is designed to handle these requirements easily.

Get more data from your analysis

Add the power of quantitative and qualitative GC-MS analysis to your system, providing single injection isotope ratio data and structural confirmation at the same time. Together with our partner, Agilent Technologies, this allows the user to have supreme confidence in the quality of the data, even under the most severe scrutiny.

One instrument for multiple isotopes

With the demand in multi-isotope data ever increasing, such as C & H in petroleum, N of amino acids, C, H & O in flavor and fragrance substances, fast and incredibly simple switching of modes is a real benefit. With dedicated set-ups for your isotope of interest, the GC5 interface has the answer to all possible problems during the conversion process. Application specific solutions for elements such as hydrogen or carbon make it easier than before to achieve impressive results. With solutions for $\delta^{13}\text{C}$, $\delta^{15}\text{N}$, $\delta^{18}\text{O}$ and δD measurements, the GC5 is truly a versatile instrument.

High performance as standard

Thanks to the placing of the open split to the IRMS inside the furnace tube, the GC5 achieves class leading peak shapes and sensitivity in compound specific isotope ratio analysis. In-line removal of interfering components combined with the highest possible transfer from the combustion interface to the IRMS, make it the system of choice for those who want extreme accuracy, the highest possible sensitivity and perfect linearity in the most challenging of samples.

MICROBORE REACTOR TECHNOLOGY

Microbore reactor technology enables the reactor to maintain peak shape and chromatographic integrity during the combustion stage, allowing the measurement of two neighbouring peaks without influencing each others isotope ratio. The careful design of the catalyst-column interface, avoiding small diameter fragile ceramic reactors, makes for robust, long-life microbore reactors. The element specific design of the reactors enables the measurement of even the most challenging samples with temperatures up to 1500 °C.



AGILENT TECHNOLOGIES 7890B

As a global VAR partner of Agilent Technologies, we offer Agilent's flagship Gas Chromatograph 7890B with our IRMS systems. The class-leading GC 7890B offers the use of all the possibilities of the Agilent catalogue. Equipped with a standard split/splitless injector and Flame Ionisation Detector, it is fully prepared for IRMS measurements. The 7890B offers Agilent's 5th-generation electronic pneumatics control (EPC) and digital electronics with fast oven cool-down which help you get more done in less time, at the lowest possible cost per sample. Using the Agilent Inert Flow Path technology ensures the inertness of every surface that touches your sample, so you can achieve isotope analysis with the lowest possible memory.

GC-IRMS analysis has never been easier!

| N-ALKANE | δD (‰ VSMOW) | St. Dev (‰, 1 σ) |
|----------|-------------------------|-----------------------------|
| C-17 | -141.25 | ± 1.1 |
| C-18 | -53.48 | ± 1.6 |
| C-19 | -120.68 | ± 0.8 |
| C-20 | -48.21 | ± 1.0 |

| VANILLIN | $\delta^{18}O$ (‰ VSMOW) | St. Dev (‰, 1 σ) |
|----------|-----------------------------|-----------------------------|
| A | -1.36 | ± 0.49 |
| B | 10.64 | ± 0.31 |
| C | 14.00 | ± 0.35 |
| D | 10.64 | ± 0.21 |

| N-ALKANE | $\delta^{13}C$ (‰ VPDB) | St. Dev (‰, 1 σ) |
|----------|----------------------------|-----------------------------|
| C-17 | -31.00 | ± 0.1 |
| C-18 | -31.01 | ± 0.1 |
| C-19 | -33.00 | ± 0.15 |
| C-20 | -32.19 | ± 0.11 |

| AMINO ACID | $\delta^{15}N$ (‰ VPDB) | St. Dev (‰, 1 σ) |
|---------------|----------------------------|-----------------------------|
| Leucine | 8.74 | ± 0.18 |
| Aspartic Acid | -1.53 | ± 0.14 |
| Glutamic acid | -2.96 | ± 0.13 |
| Phenylalanine | -2.13 | ± 0.13 |

EASE OF USE

The GC5 is optimized to significantly simplify the daily routine operation. Clearly arranged, easily accessible system components minimize maintenance efforts. The standard connectors and large O.D. reactor tubes ensure a reliably leak-tight instrument at any time. Thus customers can enjoy smooth analyses and confidence in their results.

IONOS

IONOS is the most advanced software ever created for the stable isotope community. With the increasing demand on the modern-day laboratory for ever more efficiency, the overhead of processing and evaluating large data sets is an unwelcome requirement. IONOS removes these demands saving the analyst time and money while generating data more consistently.

IDEAL SOLUTION FOR

- Anti-doping laboratories
- Academic research groups
- Quality control laboratories
- Contract laboratories

SAMPLE TYPES ANALYZED

- Doping samples
- Plant, soil & sediment extracts
- Flavor and fragrance substances
- Petroleum products
- Lipids and Biomarkers



High sensitivity

Class leading sensitivity through world class interface design.



High data quality

Outstanding precision and accuracy through high performance combustion and pyrolysis with matrix-independent results through novel calibration strategy.



Extreme durability

Remarkable robustness and longevity thanks to state-of-the-art technology.



Low cost of ownership

Low consumables consumption and maintenance effort thanks to straightforward design.

Elementar – your partner for elemental analysis

Elementar is the world leader in high performance analysis of organic elements. Continuous innovation, creative solutions and comprehensive support form the foundation of the Elementar brand, ensuring our products continue to advance science across agriculture, chemical, environmental, energy, materials and forensics markets in more than 80 countries.

Elementar Analysensysteme GmbH

Elementar-Straße 1 • 63505 Langenselbold (Germany)
Phone: +49 (0) 6184 9393-0 | info@elementar.de | www.elementar.de

