



\*Coupling available for Agilent GCs 6890/7890B/8890 and Shimadzu GC-2010 Plus/Nexis GC-2030

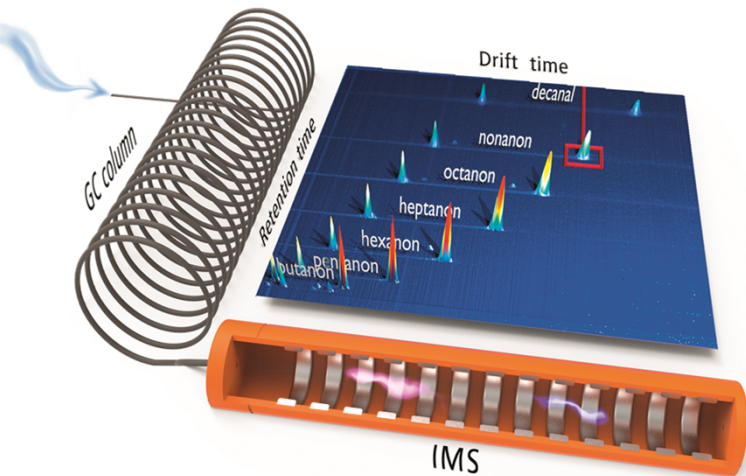
The IonMobilitySpectrometer25 by G.A.S. mbH enables the use of IMS technology in very demanding gas phase applications where high separation capabilities and/or sensitivity are needed. Compared to other detectors the IMS offers a second dimension of separation and by that full orthogonality so that co-eluting compounds can still be separated before they are detected at low-/sub ppb level. According to the laws of IMS which operates at atmospheric pressure ions are separated by their mass and structure. Therefore isomeric compounds can be separated by IMS.

The applied tritium source with a low intensity lies below the exemption limit of the DIRECTIVE 2013/59 EURATOM acc.to IAEA standard. The operation in the positive mode allows to e.g. test for heteroatomic compounds while outstanding sensitivity is also achieved e.g. for halogenated or sulphurous substances in the negative polarity.

The device comes with all necessary accessories ready-to-couple plus a software for parameter setting for the detector same as Electronic Pressure Controller to realize different drift gas flows to make use of the unique advantages of the FOCUS-IMS® set-up. The customized GC-transfer line is temperature-controlled to avoid 'cold spots'. With the oven exit on the right the

## ADVANTAGES

- **Time-Of-Flight FOCUS-IMS®**
- **Sensitive:** Detection limits in the low **ppb<sub>v</sub>** (**µg/m<sup>3</sup>**) range for VOCs<sup>[1]</sup> with heteroatoms like ketones, aldehyds, alcohols, amines or halogenated and sulphurous compounds
- **Selective** due to specific analyte ion drift times (2-dimensional separation, full orthogonality)
- **Flexible:** Positive and negative ion generation
- High GC sampling frequency
- **No licence for <sup>3</sup>H source required** according to DIRECTIVE 2013/59 EURATOM
- Highest **reproducibility**<sup>[1]</sup>
- Operation with **nitrogen or synthetic air**
- **Atmospheric Pressure Ionisation (API)**
- Stand alone **data aquisition software** and software suite for **3D GC-IMS data analysis**
- **No need for a radiation protection officer**



2-dimensional separation of GC (ordinate) and IMS (abscissa)

## APPLICATIONS

- Analysis of HS compositions of raw material, foodstuff or beverages w.r.t. flavour inducing compounds, e.g. [2]
- Support of sensory panels via impartial flavour documentation in quality control resp. off-smell detection
- Quantification of low sulphurous compounds (H<sub>2</sub>S, COS, DMS, mercaptanes) or halogenated hydrocarbons (methylene chloride, chloroform, e.g.) at low ppb-level
- Test for aldehydes, ketones, alcohols, siloxanes, carboxylic acids, aromatic compounds, esters, ether, terpenes, isocyanates, etc. [1-4]

1. Schanzmann, H. et al. Comparison of the quantification performance of thermal desorption GC-IMS and GC-MS in VOC analysis. *Anal Biochem Chem* (2025). [Link](#)
2. Gerhardt, N. et al. Resolution-optimized headspace gas chromatography-ion mobility spectrometry (HS-GC-IMS) for non-targeted olive oil profiling. *Anal Biochem Chem* 409, 3933–3942 (2017). [Link](#)
3. Gerhardt, N. et al. Volatile Compound Fingerprinting by Headspace Gas Chromatography- Ion Mobility Spectrometry (HS-GC-IMS) for the Authenticity Assessment of Honey as Benchtop Alternative to 1H-NMR Profiling. *Anal Chem*, Article ASAP, available online, (2018). [Link](#)
4. Schanzmann, H. et al. A novel coupling technique based on thermal desorption gas chromatography with mass spectrometry and ion mobility spectrometry for breath analysis. *J. Breath Res.* 18 (2024) 016009, [Link](#)

## ION MOBILITY SPECTROMETER

Set-up: FOCUS-IMS® (patent pending)

Source: Tritium (<sup>3</sup>H) < 100 MBq → below the exemption limit of 1 GBq acc. to DIRECTIVE 2013/59 EURATOM

Temperature: 40 – 120°C (140°C for 'Cleaning')

Detection limit: Typically low ppb-range

Dynamic range: typically 3-4 orders of magnitude

## MECHANICAL

Dimensions:

Agilent version: 331x143x475 mm (HxWxD)

Shimadzu version: 384x171x483 mm (HxWxD)

GC-transfer line: temperature-controlled ≤ 350°C

IMS-inlet line: ≤ 120°C (operation), 140°C 'Cleaning'

Drift gas inlet and outlet: 3 mm or 1/8" Swagelok

Sample inlet: PEEKsil® tubing, 0.5 mm ID

Drift gas: N<sub>2</sub>/Synthetic air (5.0 quality) flow controlled

## ELECTRICAL

Communication: USB 2.0 / type B

- Signal output
- Control interface

Power consumption: max. 120 W

Weight: 8 kg

Supply:

Input: 100-240V AC, 50-60 Hz

Output: 24 V DC

Interface: Remote connector for synchronization

## PC-SOFTWARE

- IMS25-Control: Stand alone parameter setting software
- VOCal: Software suite for 3-D data analysis (GCxIMS)
- Software Plug-ins for data analysis and export to further data treatment tools (e.g. ML)

Requirements: WINDOWS 10 or later, USB 2.0