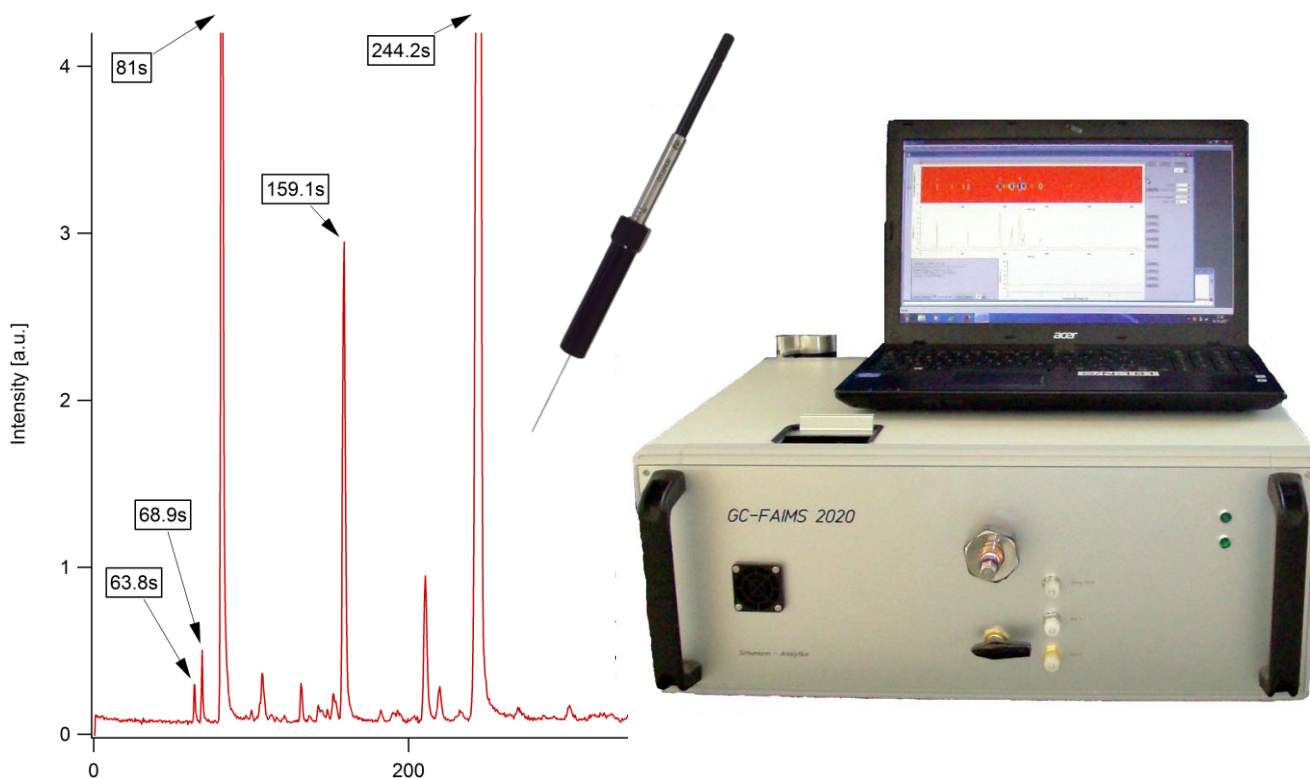


Gas Chromatography –

High Field Asymmetric Ion Mobility Spectrometry (GC-FAIMS)



Sensitive Detection and Identification of Volatile, Semivolatile and Nonvolatile Organic Compounds in complex Matrices

The GC-FAIMS combines the high selectivity of the chromatographic separation technique with the extraordinary sensitivity for the high field asymmetric ion mobility spectrometry. Therefore, the GC-FAIMS-combination is a very powerful analytical tool for a wide range of applications with excellent sensitivities. Field asymmetric ion mobility spectrometry (FAIMS), also known as differential mobility spectrometry (DMS), is a gas detection technology that separates and identifies chemical ions based on their mobility under a varying electric field at atmospheric pressure. FAIMS can be used to detect and to identify volatiles in aqueous, solid and gaseous matrices.

Sample preparation and injection

There are a wide variety of sample preparation, extraction and processing techniques each with their own advantages and disadvantages. Due to the integrated well established split/splitless injector technology, known from the conventionally gas chromatography, the sample introduction can be made by direct injection via a syringe or by solid phase micro-extraction (SPME).

The SPME, for example, is a simple and effective adsorption/desorption sample preparation technique that eliminates the need for solvents or complicated apparatus for concentrating volatiles, semivolatiles or nonvolatiles compounds in liquid samples or headspace and is fully compatible with the GC-FAIMS system. SPME also reduces the sample preparation time up to 70% and can be automated.

Examples of Applications

- Environmental analyses of water samples (e.g. hydrocarbons, PAHs, poly chlorinated biphenyls, phenols, organophosphate pesticides, trace odors)
- Headspace analysis of trace impurities in polymer and solid samples
- Toxicology analyses: blood alcohol or drugs
- Indoor air quality (e.g. aldehydes, terpenes, ketones)
- Flavor analyses of food products
- Detection of toxic industrial compounds (e.g. BTEX)
- Analysis of breath for medical diagnostic
- Product quality control by detection of target compounds
- Detection of wood preservatives like lindane, penta-chlorophenol



Advantages

- High reproducibility
- GC temperatures: isotherm or ramps up to 200°C
- Heating rates up to 30°C/min
- Split/splitless heated Injector up to 300°C
- Integrated mass flow controller for precise controlling of column flows
- Standard Inlet liner
- Powerful custom software for data visualization, real time control and offline analysis
- Detects positive and negative ions
- High flexibility: Can also be used as a standalone detector (without GC run)

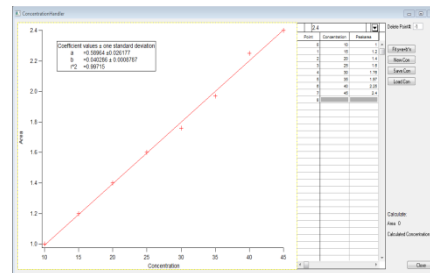
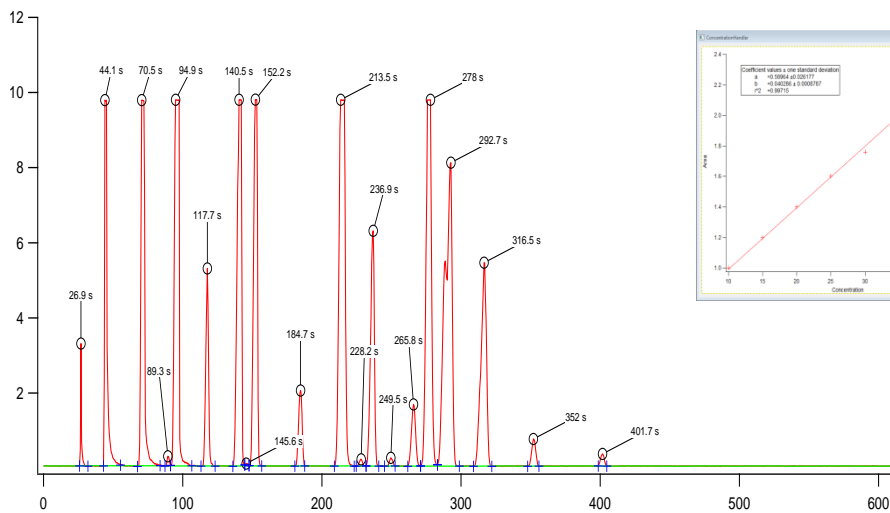
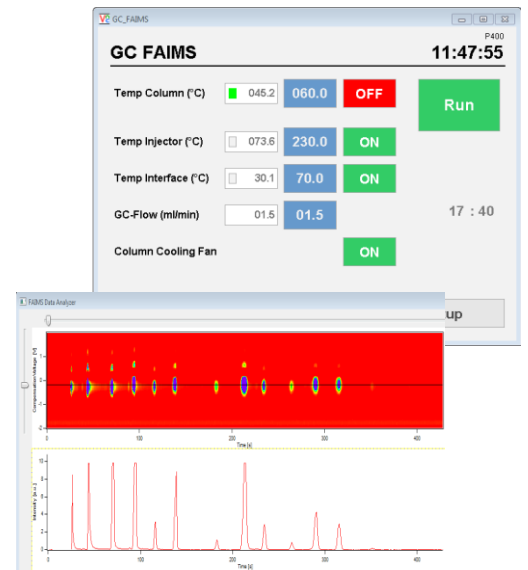


Software

The powerful custom software is assigned for the complete instrument control of the gas chromatograph and the ion mobility detector, for data acquisition and analysis of two- and three-dimensional spectra.

The additional offline software “FAIMS-Data Analyser” enables extensive data analysis and statistics like auto identifying peaks, calculating peak areas (manual or automated) and curve fitting for quantitative analysis.

A library of substances and reference spectra is easily created.



Technical Specification



Sampling:	Heated Injector, Direct injection, SPME, or six port valve
Working principle:	Pre-separation via gas chromatographic column, detection with a High Field Asymmetric Ion Mobility Detector
Ionization method:	Ni-63 radioactive β -radiation or UV-Ionization
Detection limits:	Typically in the low ppb range
Gas connectors:	1/8" Swagelok stainless steel
Heater element:	500 W
PC interfaces:	2x USB, RS485, GPIO
Power supply:	115 to 230 VAC
Dimensions:	53 x 24 x 50 cm (BxHxD)

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