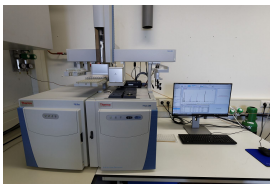
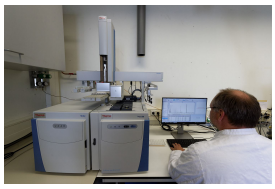
GC-Triple Quadrupole Mass Spectrometer (GC-MS/MS)

https://search.researchequipment.wur.nl/SearchDetail.aspx?deviceid=a1aa014c-8008-4e08-9b9e-ec1ecc8a0756





Brand

Interscience

Type

Contact

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Organisation

Plant Sciences Group

Department

Bioscience

Description

This platform is dedicated to the highly sensitive, quantitative, and targeted analysis of small molecules The standard set-up is used to analyse non-volatile compounds (mostly primary metabolites). The system is equipped with a sample preparation robot that is capable of automated online TMS derivatisation procedure especially suited for non-volatile compounds including amino acids, organic acids, mono- and disaccharides.
The analyses is done by a technique called multi reaction monitoring (MRM), where only specific target mass ions are selected by the first quadrupole and subsequently fragmented by the second quadrupole, to obtain a set of “daughter” mass ions. These “daughter” mass ions are highly specific for a particular analyte of interest. The third quadrupole is then used as a scanning device or mass filter. This allows a very sensitive detection of analytes even in complex sample matrices with a high dynamic range.
Next to the MRM analysis of target compounds the system can be run in full scan mode, simultaneously enabling the untargeted analysis of target and non-target compounds, including spectral matching of unknowns with mass spectral libraries (e.g., NIST 14).

Technical Details

The system comprises a Thermo Scientific GC-MS/MS consisting of a Trace 1300 GC with a PTV injection unit. The GC is equipped with a Deans heart cutting module to selectively remove unwanted analytes from the chromatogram. The GC is connected to a TSQ8000 Duo triple quadrupole mass spectrometer from Thermo Scientific Instruments. At the forefront a Thermo TriPlus RSH autosampling robot is installed.

Further Specifications
Trace GC 1300
• PTV injector programmable with max. 15 °C/sec up to 450 °C

• Deans heartcut module

• Ready for one extra injection or detection system

TSQ800 DUO
• ExtractaBrite electron impact ion source cassette

• Mass range: 1.2-1100amu

• Scanning speed: up to 20,000amu/s

• Dynamic range: up to 7 orders of magnitude

• Simultaneous multimode acquisition (SIM, SCAN, SRM)

• Timed SRM function for efficient multi-compound analysis

TriPlus RSH injection robot
• Heated agitator for 6 samples

• Custom made sample tray for up to 220 samples

• Automatic syringe exchange system

• Automated online MeOX/TMS derivatisation procedure

Applications

• Targeted analysis of primary plant metabolites with relation to stress, resistance, crop quality, adaptation, etc.

• Untargeted metabolomics analysis with relation to e.g., plant-environment interactions, disease biomarkers, biosynthetic and signalling route elucidation, etc.

Complementary Techniques

We also offer platforms for GC-MS volatile and LC-MS non-volatile analyses which are fully complementary to this TSQ approach.