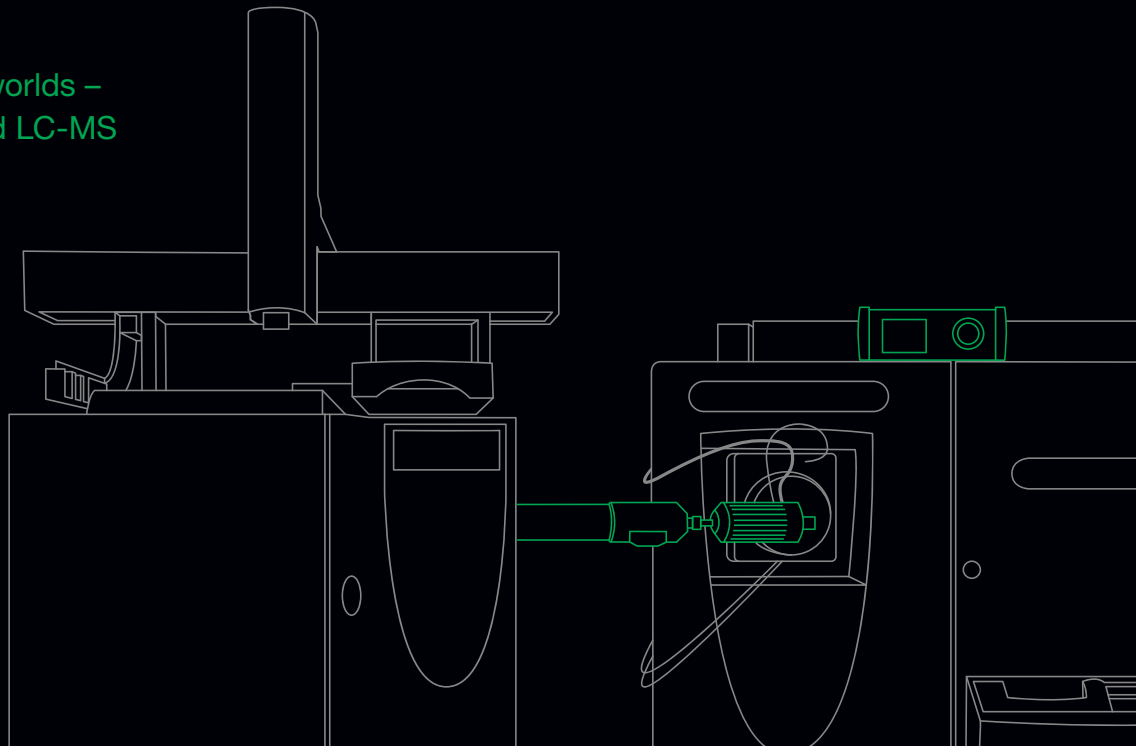
Soft Ionization GC Coupling to LC-MS Systems

Sicrit technology

Combine the best of both worlds –
all advantages from GC and LC-MS
in an integrated solution



A Powerful Combination Instead of Separate Solutions

GC-MS is the method of choice for many challenges in routine analysis. However, most samples require GC-MS as well as LC-MS analyses to cover the broad range of suspected target substances.

For both analyses dedicated instrumentation is required, which causes higher costs for acquisition, maintenance, and consumables.

Here, the SICRIT® solution offers a cost-effective alternative, enabling GC analyses on any LC-MS instrument.

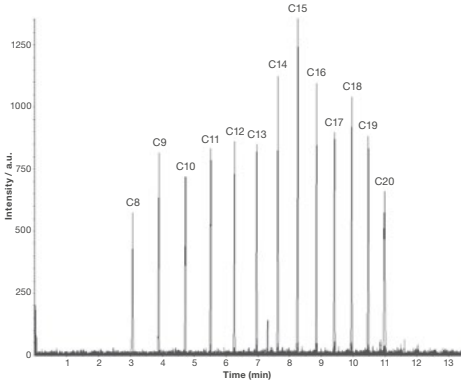
With its high sensitivity and soft ionization the SICRIT® Ion Source expands your mass spectrometric view and combines all advantages from GC and LC-MS in one integrated solution.

GC-SICRIT® coupling to an LC-MS triple quad for routine quantification based on MRM workflows in e.g. pesticide analyses.

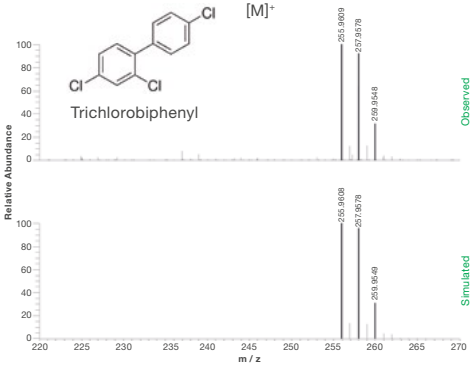
GC-SICRIT® coupling to a high resolution LC-MS (e.g. TOF or Orbitrap platforms) for non-target screening with unmatched selectivity and accuracy.

Enabling a Unique Range of Applications

Separation and soft ionization of n-alkanes for determination of molecular weights.



Soft ionization of PCBs forms $[M]^+$ ions to identify and validate components based on their isotopic pattern.



Sensitive quantification of nitrosamines by GC-SICRIT®-MS based on individual LC-MS MRM transitions.

Compound	Abbreviation	LOD [ng/mL]
N-Nitrosodimethylamine	NDMA	1.2
Diethylnitrosoamine	NDEA	0.1
N-Nitroso-N-methylethylamine	NMEA	0.1
N-Nitrosodipropylamine	NDPA	0.4
N-Nitrosopyrrolidine	NDBA	0.1
1-Nitrosopyrrolidine	NPYR	0.4
1-Nitrosopiperidine	NPIP	0.5

#Alkanes

#PCBs

#Nitrosamines

More information on our website

Want to see more details and additional applications? Visit **www.plasmion.de/downloads**

A Solution Based on Superior Technology (SICRIT®)

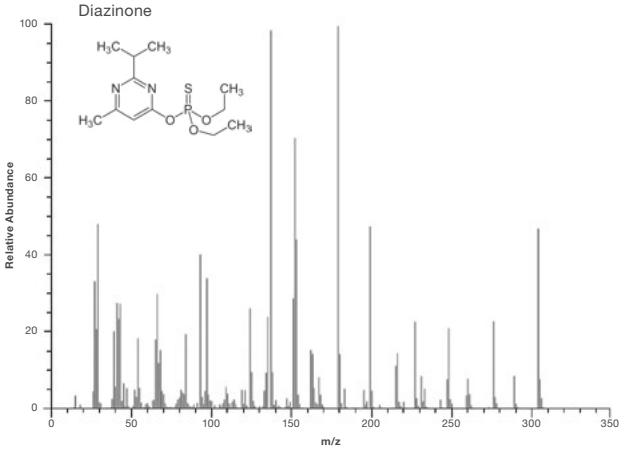
Increased Sensitivity

The locally confined ionization in a small capillary in extension of the MS-inlet, avoids the loss of ions by coulombic repulsion and increases sensitivity.

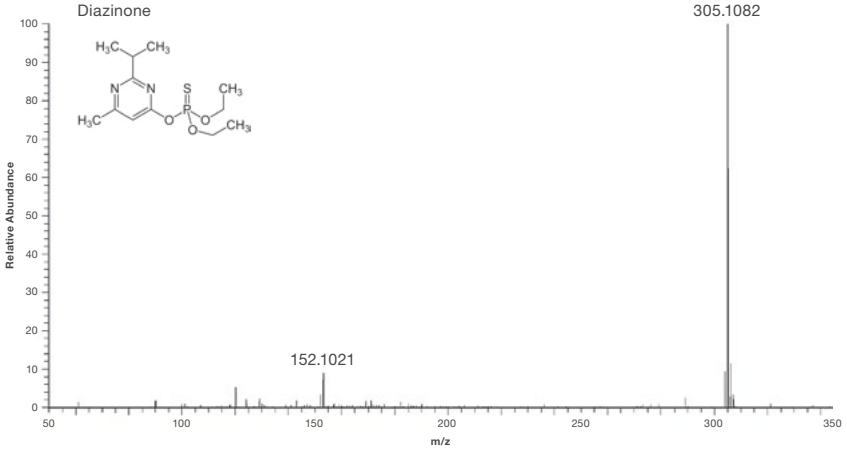
No Fragmentation

The unique shape of the cold plasma enables a soft ionization of analytes and avoids fragmentation.

*Fragmented Spectrum of EI Ionization**



Spectrum of SICRIT® – Almost No Fragmentation



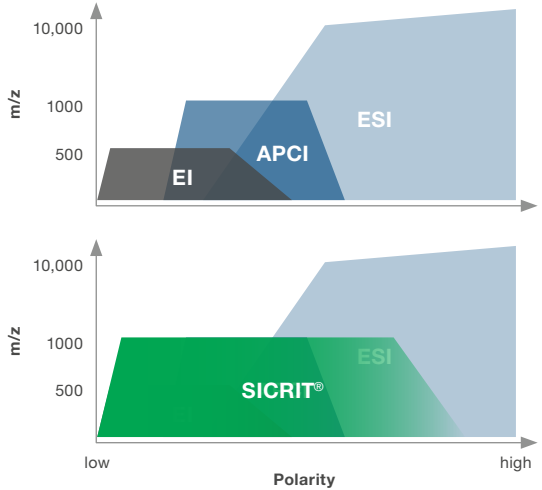
*NIST Chemistry Webbook: https/webbook.nist.gov/chemistry

Enhanced Range of Analytes

Three simultaneous ionization mechanisms expand the range of detectable analytes, covering polar and non-polar components.

Flexible Coupling

The gas-tight flow-through design enables a seamless coupling of any GC and GCxGC system with all LC-MS systems available on the market.



- SICRIT® covers the complete ionization range of APCI while causing less fragmentation.
- SICRIT® is capable to cover almost the whole ionization range of EI without drawbacks in terms of sensitivity. The exception are residual gases like N_2 or O_2.
- SICRIT® covers a major part of the ionization range of ESI. The exception are large biomolecules like proteins, etc.

Delivering Significant Economical Advantages

Plasmion‘s GC-SICRIT®-MS coupling leads to a significant reduction in sample processing efforts

Samples do not have to be splitted and processed on separated instrument platforms and acquired data does not have to be integrated from different software tools.

Plasmion‘s GC-SICRIT®-MS coupling reduces capital expenditure and required laboratory space

Analyses can be performed with one single MS system instead of two separate ones – this saves investment costs and avoids the need for additional laboratory space.

Plasmion‘s GC-SICRIT®-MS coupling meets highest demands in terms of performance

The flexibility in coupling with any LC-MS instrumentation gives unlimited access to the detector performance needed for the analytical task – may it be high sensitivity for targeted analysis of a distinct range of analytes or selectivity for non-target analysis of unknowns in complex matrices.

Provided by a Single Trusted Partner

Plasmion provides an integrated solution based on its plug & play SICRIT® ionization technology. All required instrumentation, also 3rd party instruments (e.g. GC and PAL systems), can be directly ordered via Plasmion.

You have: Mass spectrometer (MS) with atmospheric pressure inlet to be used as detection technology

We have: required and optional* equipment for GC coupling to LC-MS systems (orderable via Plasmion)

Gas Chromatograph (GC) to be used as separation technology

***CTC PAL Autosampler** to enable automated sample introduction

SICRIT® Ion Source to ionize polar and non-polar compounds

SICRIT® SC-30 Control Unit to control the ionization source and the connection modules

SICRIT® MS Interface to establish electronical and mechanical connetion to the MS

SICRIT® GC/SPME-Module to interface the Ion Source with the GC

SICRIT® Heated Transfer Line to connect the GC to the GC/SPME-Module

Plasmion 3rd Party Products

Gas Chromatographs e.g. Agilent GC 8860

The 8860 Gas Chromatograph (GC) is dedicated for routine GC analysis convincing with reliability and robustness. The system features a touchscreen display, a microchannel based EPC, and an Instrument Intelligence Functionality (IFF) for diagnostics and maintenance.

Together with Plasmion's GC coupling solution, the GC 8860 enables new workflows in combination with LC-MS instruments.

PAL RTC Autosampler

The PAL RTC is developed to maximize productivity in the laboratory. Its Robotic Tool Change (RTC) allows to switch between different syringes and SP(M)E tools and thus brings sample preparation to a higher level.

In combination with Plasmion's product portfolio, highly automated sampling and sample analysis can be realized. Furthermore, workflows with and without GC can be implemented by one instrumental setup.

Plasmion Products

Ion Source

The SICRIT® Ion Source can be operated with any carrier gas (even room air) and thus enables direct MS screening. Moreover, it enables a gas-tight measurement of sensitive processes or fully quantitative connection to classical GC/LC methods.

The cold plasma ionization based on a dielectric barrier discharge enables fragment-free measurement of multiple analytes.

SC-30 Control Unit

The SICRIT® SC-30 Control Unit enables to control the cold plasma in the SICRIT® Ion Source as well as the required parameters of all connection modules (GC-SPME/LC/IR desorption). All parameters can also be controlled via a respective software. An integration with software of other vendors is not required to operate the system.

Plasmion Products

MS Interfaces

The SICRIT® MS Interfaces are dedicated for specific MS instruments to establish an electronic and mechanical connection. There are interfaces available for almost all common MS instruments of Thermo Fisher, Agilent, SCIEX, Bruker, Waters, Shimadzu, and Jeol. Interfaces to other instruments are available upon request.

GC/SPME Module

The SICRIT® GC/SPME Module combines ionization technology with state-of-the-art sample separation and/or enrichment techniques.

- It enables a direct SICRIT®-MS connection from a GC or microbalance via a heated transfer line.
- It enables direct SPME-SICRIT®-MS measurements with automated injections featuring a PAL automation system.
- It enables fully quantitative direct measurements (manual or automated) of liquids and headspace samples.

Heated Transfer Line

The flexible SICRIT® Heated Transfer Line enables the connection between the GC and the GC/SPME Module. It is powered and controlled via an external controller or directly by most GCs as integrated solution.
The flexible and fully heated design enables loss-free sample transport and avoids cold spots.

Plasmion

simple smart sensitive

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