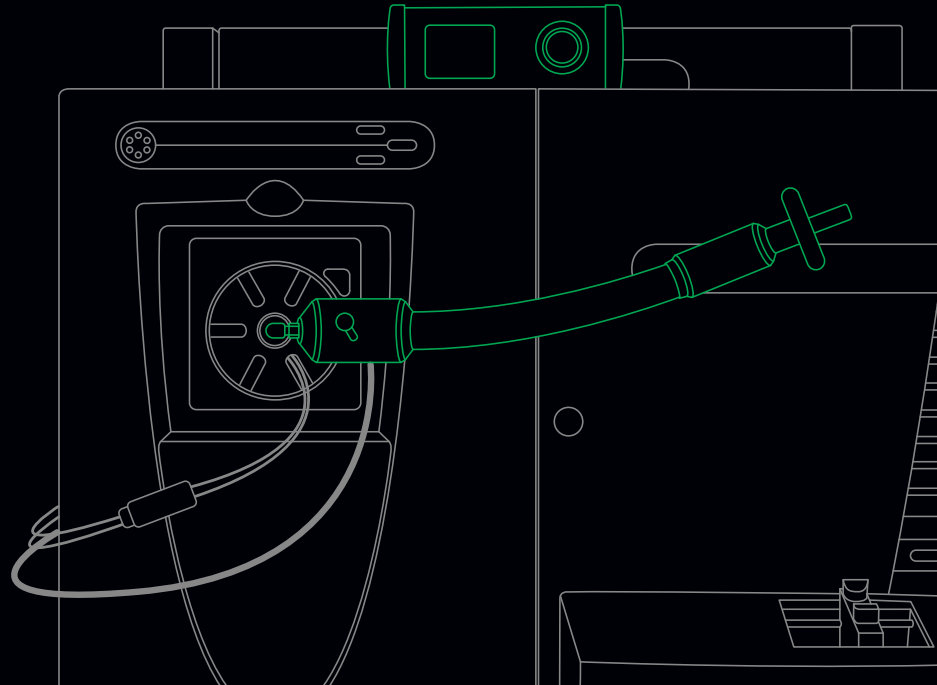


# The SICRIT<sup>®</sup> Solution for Breath Analysis



Sicrit  
technology

Biomarker discovery in exhaled breath  
enabling non invasive clinical diagnostics  
based on direct MS



# Cutting Edge Breath Analysis

The most promising approach in non invasive clinical diagnostics is the analysis of exhaled breath. It enables the identification of volatile organic biomarkers for different kind of diseases like lung cancer, tuberculosis or COPD. However, detection and assignment of exhaled VOCs requires highly selective detection technologies.

Plasmion's Breath Analysis Solution based on high resolution mass spectrometry presents a versatile tool for qualification and quantification of the breath volatolom. In combination with QTOF, Orbitrap or FT ICR systems, as known from state of the art proteomics or metabolomics, it enables superior resolution and accuracy.



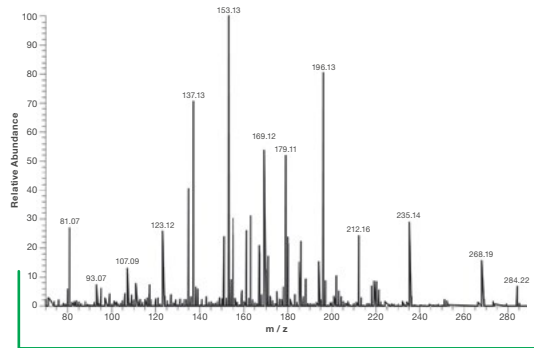
*Dedicated disposable mouth pieces enable a flexible sampling of exhaled breath and ensure highest hygiene standards.*



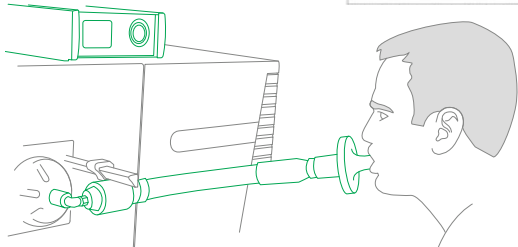
*Plasmion's patented soft ionization source in combination with its heated breath sampling system ensures highest chemical inertness and guarantees safe breath analysis on each conventional LC MS mass spectrometer.*

# Enabling Unique Applications

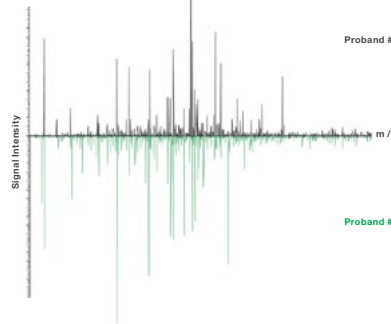
Non-invasive sampling of patient's breath for volatolom analysis in real time.



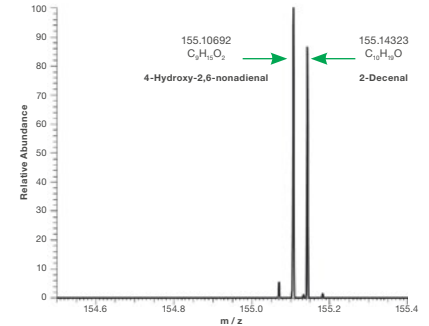
Exhalations



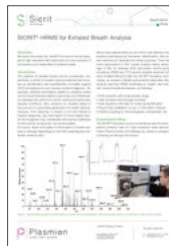
Patient profiling based on VOC patterns and dedicated data evaluation tools.



Target/Non-Target Biomarker identification based on exact molecular mass.



#Breath



More information on our website

Want to see more details and additional applications? Visit [www.plasmion.de/downloads](http://www.plasmion.de/downloads)

# A Solution Based on Superior Technology (SICRIT®)

## Unmatched Resolution

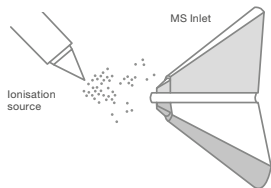


The efficient flow-through ionization is an upgrade to any high-end LC-MS system that enables direct measurement with unmatched resolution.

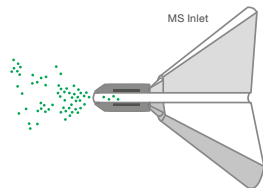


### SICRIT-MS Technology

#### CONVENTIONAL IONIZATION



#### SICRIT® IONIZATION



- The SICRIT® flow through ionization minimizes losses due to coulombic repulsion and ensures efficient transfer of ions into the MS inlet.
- SICRIT® is a soft ionization technique giving you clean spectra with almost no fragmentation and easy to interpret  $MH^+$  ion species.
- SICRIT® takes advantage of the best MS detectors in the field and enables the combination with sensitive triple quad system for ultra-trace analysis as well as with high- or ultra-high resolved detectors with maximum resolving power up to 1.000.000.

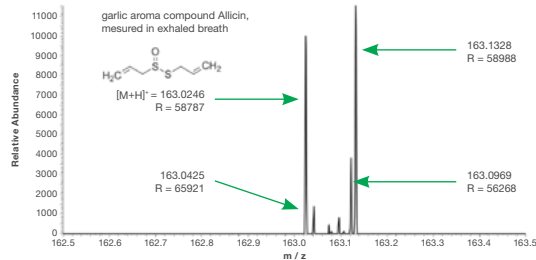
## No Fragmentation



The unique shape of the cold plasma enables a soft ionization of analytes and allows for identification based on exact mass.



### High-Resolution Breath Spectrum of SICRIT®



- SICRIT® allows for in depth-analysis of disease biomarkers, for kinetic studies of oral medicines or for monitoring of food aroma compounds in breath.
- The soft ionisation leads to one (molecular) ion species that enables SICRIT® to differentiate isobaric species, e. g. from garlic (163.0017) and onion (163.0033)

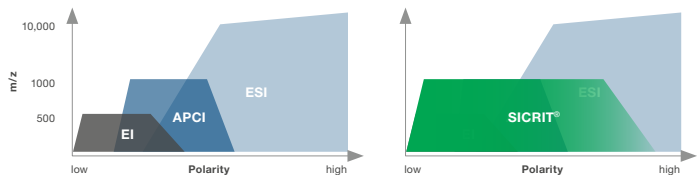


## Enhanced Range of Analytes

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



### SICRIT<sup>®</sup> Ionization Coverage



- SICRIT<sup>®</sup> is capable to cover the complete ionization range of APCI without having major drawbacks in terms of sensitivity.
- SICRIT<sup>®</sup> is capable to cover almost the whole ionization range of EI without drawbacks in terms of sensitivity. The exception are residual gases like N<sub>2</sub>, O<sub>2</sub>, etc. that cannot be detected.
- SICRIT<sup>®</sup> is capable to cover a major part of the ionization range of ESI. The exception are large biomolecules like proteins, etc.



# Delivering Significant Economical Advantages



## Plasmion's Breath Analysis Solution reinvents medical diagnostics

Based on online-mass spectrometry, breath can be directly measured in a non-invasive manner. Subsequently, Plasmion's breath analysis solution may enable on-site diagnosis in real-time.



## Plasmion's solution is based on state-of-the-art laboratory technology

Mass spectrometry is the state-of-the-art technology in the elucidation of disease pathways and biomarker discovery. Plasmion's breath analysis solution utilizes the same instrumental platform but extends its capabilities towards biomarker discovery in the volatolom.



## Plasmion's technology delivers highest analytical performance

The soft plasma ionization is dedicated for use with high-resolution MS instrumentation. The broad range of analytes addressable in combination with the high-end detector results in best data quality for biomarker discovery on the market.



# Provided by a Single Trusted Partner

Plasmion provides an integrated solution based on its plug & play SICRIT® ionization technology. All required instrumentation 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 breath analyses (orderable via Plasmion)



**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 electrical and mechanical connection to the MS



**SICRIT® Breath Interface**  
to enable loss free, safe and standardized introduction of breath into the MS



# 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.







## 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.

# Plasmion Products

## Breath Analysis Module

Our Breath Analysis Module combines safe handling of even infectious breath with stable and standardized sample introduction for highest quality of data. All parts are made of high purity medical grade material. Active charcoal filters minimize background interferences that may originate from different gas supplies.

Certified disposable mouthpieces with built in bacteria and virus filters ensure highest hygiene and safety standards.



## Other sampling strategies

Besides direct sampling via disposable mouthpiece SICRIT® also features different sampling strategies like thermal desorption tubes, gas sampling bags, or retronasal adapters.

Please get in touch for more information.





Plasmion

simple smart sensitive

Am Mittleren Moos 48

D-86167 Augsburg

[www.plasmion.de](http://www.plasmion.de)

T: +49 (0) 821 20 71 33 55

E: [info@plasmion.de](mailto:info@plasmion.de)