SUPER SESI

Ion Nose, ionization for

Airborne Molecules & Metabolites Analysis

FOSSILIONTECH

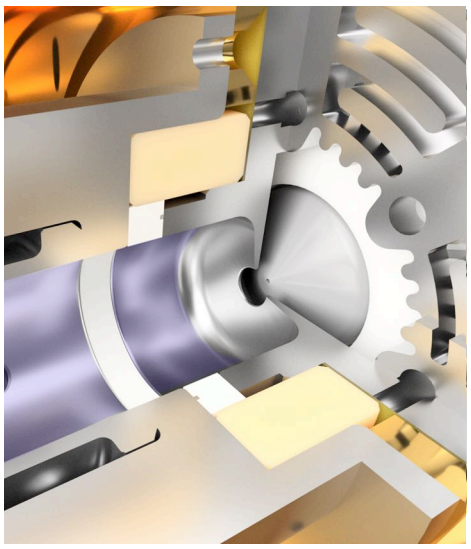
SUPER **SESI**

Optimized for Sciex Instruments

Thermal optimization

SUPER SESI for Sciex incorporates a redesigned curtain plate with a heat exchanger that floats at high voltage. This ensures a high uniform temperature, which enables:

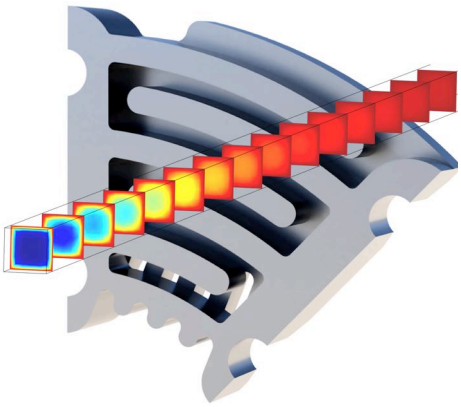
- **Improved electrospray stability**
- **Better control of ionization conditions**
- **Improved background levels**



Why is this important?

Sciex mass spectrometers incorporate a curtain plate that produces a counterflow gas, which prevents humidity from entering in the Q-jet region. If this counterflow is not properly handled, the ionization region would be subjected to strong temperature gradients, having some adverse effects:

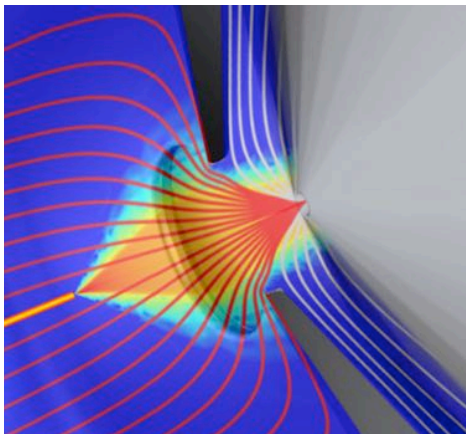
- The temperature of the electrospray meniscus is not controlled, as it changes with the flows and with the position of the electrospray tip. This, combined with the fact that the SESI is normally operated at temperatures near the boiling point of the liquid, leads to poor stability of the electrospray.
- The temperature of the ionization region is not uniform. This leads to more complicated ionization pathways and uneven ionization ratios, which are difficult to predict, model, and optimize.
- In the regions that are cooled by the counterflow gas. Condensation of low volatility species can have a dominating effect, thus increasing memory effects and background signals.



Superior limits of detection

Ionization efficiency

The internal geometry is optimized to maintain a stable low turbulence flow configuration. This minimizes dilution and maximizes the flow of ions passed to the MS. The result is high ionization efficiency with reduces exposed area.



Reduced background levels

The sample flow only gets in contact with high purity materials:

- Silica coated SS-316L
- Teflon (a Teflon ring separates the grounded side of the ionization chamber form the curtain plate side, which is floating at high voltage.

All parts are easily accessible for cleaning.

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Specifications

Power input:	220-240 V, 50-60 Hz, 250VA
Dimensions:	180x180x294 mm
Weight:	10Kg
Sample line temp.:	PID Controlled, 180ºC Max
Ionization chamber:	PID controlled, 130ºC Max
Counterflow temp.:	PID controlled, 130ºC Max
Protection level:	IP20
Inlet line	30 cm, 6mmOD, SS AISI 316 Silica coated *Other specifications upon request
Spray Voltage	Controlled by the MS
Spray back-pressure	Dual control: MS or independent port
Flow	Re-uses flows provided by MS. No extra gas supply required.
nano-Amperemeter	1 nA

^These specifications may be subjected to minor changes.

FIT's quality commitment

Fossil Ion Technology (FIT) is a Start-up created by scientists and engineers to serve scientists. We are proud to have developed the SESI technology. SUPER SESI combines the best performance and the best usability. SUPER SESI ionizes your sample so that you can focus on your science.

Our goal is to become your technology partner. We are committed to increase the impact of your research with a technology that can be seamlessly integrated in your workflow.

Selected references

Expanding metabolite coverage of real-time breath analysis by coupling a universal secondary electrospray ionization source and high resolution mass spectrometry – a pilot study on tobacco smokers; Journal of Breath Research, February 2016.

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Real-Time Chemical Analysis of E-Cigarette Aerosols By Means Of Secondary Electrospray Ionization Mass Spectrometry; Chemistry – A European Journal, January 2016.

Real-time high-resolution tandem mass spectrometry identifies furan derivatives in exhaled breath; Analytical Chemistry; June 2015.

Identification of 2-Alkenals, 4-Hydroxy-2-alkenals, and 4-Hydroxy-2,6-alkadienals in exhaled breath condensate by UHPLC-HRMS and in breath by real-time HRMS; Analytical Chemistry; February 2015.

Numerical modeling and experimental validation of a universal secondary electrospray ionization source for mass spectrometric gas analysis in real-time; Sensors and Actuators B: Chemical, September 2015.

Low Sample Flow Secondary Electro-Spray Ionization, improving vapor ionization efficiency; Analytical Chemistry; September 12, 2012.

Secondary Electrospray Ionization of Complex Vapor Mixtures. Theoretical and Experimental Approach; Journal of the American Society for Mass Spectrometry; February 2012.

Mechanistic study on the ionization of trace gases by an electrospray plume; International Journal of Mass Spectrometry, December 2011

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