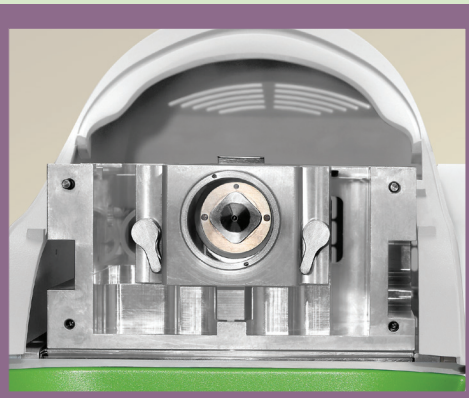
TECHNICAL NOTE

Liquid Chromatography/
Mass Spectrometry

# QSight StayClean HSID Technology



## Unique IonTransportation from Atmosphere to Vacuum

In LC/MS analysis, ions that are formed in an ion source are normally sampled into a mass spectrometer through a small aperture or capillary, followed by devices such as an ion funnel or ion guide. Often times, axial electric fields are applied in order to transfer ions through multiple pumping stages before reaching the mass analyzer at high vacuum. During this transfer to high vacuum, ions, neutrals, solvated charged species may deposit on inner surfaces, contaminating the path of the ions' migration to high vacuum, causing signal fluctuation, instability and drift. In addition, transporting ions under influence of the axial electric field in a collision- rich environment causes ion scattering and discrimination between high and low mass ions so that the mass spectrometer requires tuning to set different lens parameters for high and low masses. With the QSight™ StayClean™ hot-surface induced desolvation (HSID™) technology, ions and solvated charged species are entrained in a hot laminar flow of sampling gas to be transported to a vacuum region (Figure 1). The laminar flow gas shields ions and solvated species from striking the HSID walls, acting as a constant cleaning agent. Additionally, solvated species gain energy from the hot gas and become desolvated. This enables enhanced uniform response across the entire mass range with no lens optimization.

## StayClean HSID Interface with Minimum Chemical Background and Long Term Robustness

Most mass spectrometers today have an orthogonal sampling introduction to reduce contamination of a mass spectrometer. Because of the proximity to the ion source, the interface can still expose to contamination as described above. In the QSight triple quad mass spectrometer, the HSID interface provides a heated inner surface that prevents contaminants from depositing on the surfaces, while the hot laminar flow facilitates the desolvation of charged species, leading to reduced contamination and enhanced ion transmission efficiency. Through the combination of the coaxial flow ionization source and laminar flow ion guide technologies, long term signal stability and reproducibility is achieved, and frequent cleaning is no longer required.

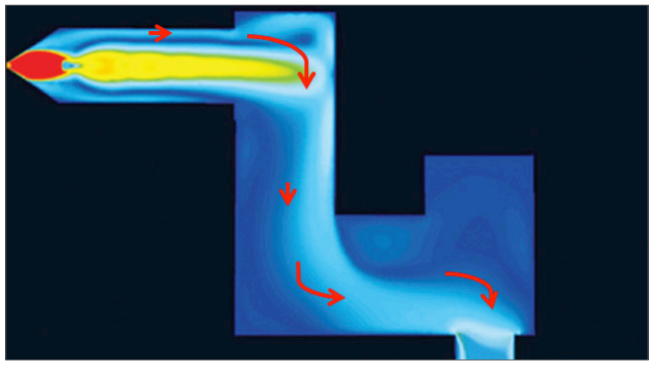


*Figure 1.* HSID schematic illustrates the path that ions are transferred by laminar flow (arrow). The entire HSID block is heated to help prevent contaminants from depositing on the inner surface. Laminar gas flow carries all the charged species from entrance to exit.

**PerkinElmer, Inc.**
940 Winter Street
Waltham, MA 02451 USA
P: (800) 762-4000 or
(+1) 203-925-4602
**www.perkinelmer.com**

PerkinElmer®
*For the Better*

**For a complete listing of our global offices, visit www.perkinelmer.com/ContactUs**

Copyright ©2016, PerkinElmer, Inc. All rights reserved. PerkinElmer® is a registered trademark of PerkinElmer, Inc. All other trademarks are the property of their respective owners.

013093_01 PKI