IS-X Academy
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Advanced hands-on training, Sift-MS Tracer

For some time, our expert team has been overwhelmed with questions about a new technology that seems to conquer every lab.

SIFT-MS is a direct MS technique – there is no chromatography. Compound detection and separation in SIFT-MS is achieved using ions that ionize the sample in different ways coupled with MS detection. It is comprised of three sequential parts: formation of ionizing species, analyte ionization, and then ion detection. Ionization in SIFT-MS is achieved using eight molecular and atomic ions in a very soft chemical ionization process.

The sample gas stream is analyzed in the flow tube within a few milliseconds. In SIFT-MS, ionization is very clean and stable, giving two key benefits:

1. Very consistent ionization, which is the foundation of library-based quantitation,
2. Long-term measurement and calibration stability.

In the last phase of the analysis, mass spectrometry is used to analyze the product ions and the remaining reagent ions. Ion detection in SIFT-MS is achieved using a quadrupole mass filter and particle multiplier system. By measuring the product and reagent ion signals, and knowing the rate of reaction (k) from the library, together with the dilution of sample into the carrier gas stream, concentrations are calculated in real time.

The high selectivity comes from the different gas-phase ion-molecule reaction mechanisms provided by the reagent ions. These differences in chemistry mean that often structural isomers will undergo different reactions that yield different product ion masses that the quadrupole mass filter can easily separate.

The linearity of response extends over 5 orders of magnitude with no change in sampling procedure or any dilution. The chemical ionization used in SIFT-MS confers wide linear and dynamic ranges: typically six orders of magnitude. High reagent ion signals provide part-per-trillion detection limits direct from air with no pretreatment or pre-concentration required – and high immunity to humidity!

Our team has developed several applications and a lot of fundamental knowledge over the past year. We would like to share this knowledge with you on the basis of a specific hands-on training on Sift-MS analysis.

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The complete training package exists out 2 days by 3 knowledge modules @ 5.700,00.

Module 1: What is SIFT-MS? ½ day
1. Introduction to SIFT-MS chemistry
2. SIFT hardware and the Voice200
3. Tracer Kiosk Operation and Validation
4. Advanced Kiosk operation
5. Using WinSCP for file handling
6. Using PuTTy to run the CF-Hub microcomputer

Module 2: Basics Scan Design
1. Mass Scan Interpretation
2. Quantification by SIFT-MS
3. Basic SIM Scans
4. Adding Compounds to the Library
5. Scan Phases
6. Inlet handling

Module 3: Practical hands-on
1. Sample treatments, do and don'ts.
2. Analytical control unit for calibration
3. Automation by Robotic set-up.
4. Data handling and method setup.
5. Practical exercises.