Advion
19 Brown Road • Ithaca, N.Y. 14850
www.advion.com

- TriVersa NanoMate is the latest in chip-based technology from Advion that combines the strengths of liquid chromatography, mass spectrometry, fraction collection, and chip-based infusion in one integrated system. It allows researchers to obtain more information from their complex samples than with LC/MS alone.

Customer Profile

"I can't imagine running these analyses without the TriVersa NanoMate"

Max Planck Institute of Molecular Plant Physiology
Golm, Germany

Dr. Patrick Giavalisco
Research Group Leader

Research focus:
Metabolomics/Proteomics

Mass spectrometers:
Thermo LTQ Orbitrap
Waters SYNAPT Qtof G1

Customer since: 2006

No. of TVNM: 3

Q: What is the focus of your lab's research?

Our lab focuses on two major topics. One is the identification of genes, proteins and metabolites (small molecules) which have important roles in the regulation of growth and development of biological systems (especially in plants). The second topic is the integration of this information in novel models and hypothesis explaining how these compounds interplay and communicate.

Q: How does the TriVersa NanoMate® (TVNM) align with your research goals?

Many researchers look at metabolites in a targeted way which means that they may miss some important features. We do analyze metabolites, using high resolution MS in an more general, untargeted manor. For this purpose the TVNM is an excellent tool for coupling our fast chromatography (UPLC) to the somewhat slower high resolution MS (FT-ICR MS or Orbitrap).

Next to analyzing online one fraction of the chromatographic run, we collect simultaneously fractions for every sample, allowing us to re-analyze the differential peaks by direct infusion high resolution MS and MS^n, enabling us in some cases to further characterize or even identify the peaks of interest.

In addition, we originally purchased the TVNM for direct infusion MS. We often have large numbers of samples which can be easily screened in high throughput by using a fingerprinting direct infusion MS method. With the TVNM, the method provides a selection tool to decide which samples to study in greater detail.

Q: What benefits have you experienced with the TriVersa NanoMate?

We have a fast UPLC system and a slow MS, so the TriVersa NanoMate connects the two for maximum performance from both. The high flow UPLC can be split before the nanoelectrospray nozzle which means less sample is being introduced to the MS, reducing ion suppression, decreasing contaminations of the machine and increasing sensitivity by improving the signal to noise ratio.

Relevant Publications

13C isotope-labeled metabolomes allowing for improved compound annotation and relative quantification in liquid chromatography-mass spectrometry-based metabolomic research.
Giavalisco P, Köhl K, Hummel J, Seiwert B, Willmitzer L., Anal Chem. 2009 Aug 1;81(15):6546-51.

High-resolution direct infusion-based mass spectrometry in combination with whole 13C metabolome isotope labeling allows unambiguous assignment of chemical sum formulas.
Giavalisco P, Hummel J, Lisec J, Inostroza AC, Catchpole G, Willmitzer L., Anal Chem. 2008 Dec 15;80(24):9417-25.

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Metabolomics

Rapid screening and metabolite fingerprinting using chip-based nanoelectrospray infusion

- Rapidly screen samples to identify those of interest for MS^n analysis
- Reduced ion suppression, MS contamination, and increased sensitivity
- Maximize efficiency of UPLC and HRMS

Fraction collection for on-/off-line MS and MS^n