VIP-HESI dual source

- Next generation in
  Mass Spectrometry sensitivity

Innovation with Integrity

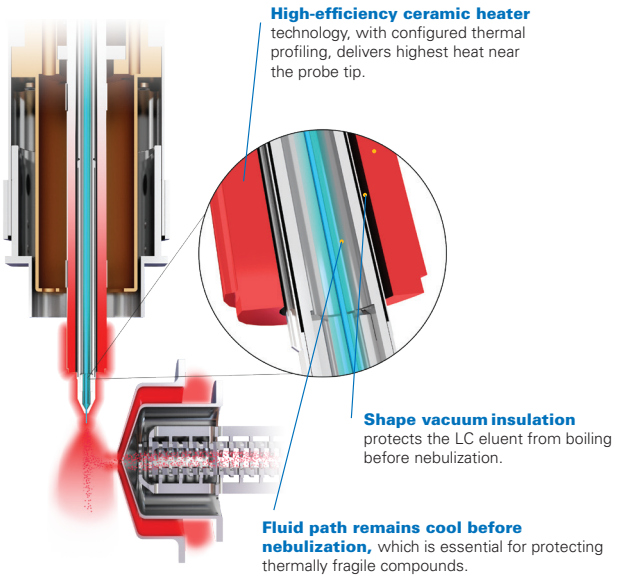
QTOF and timsTOF MS

VIP-HESI dual source

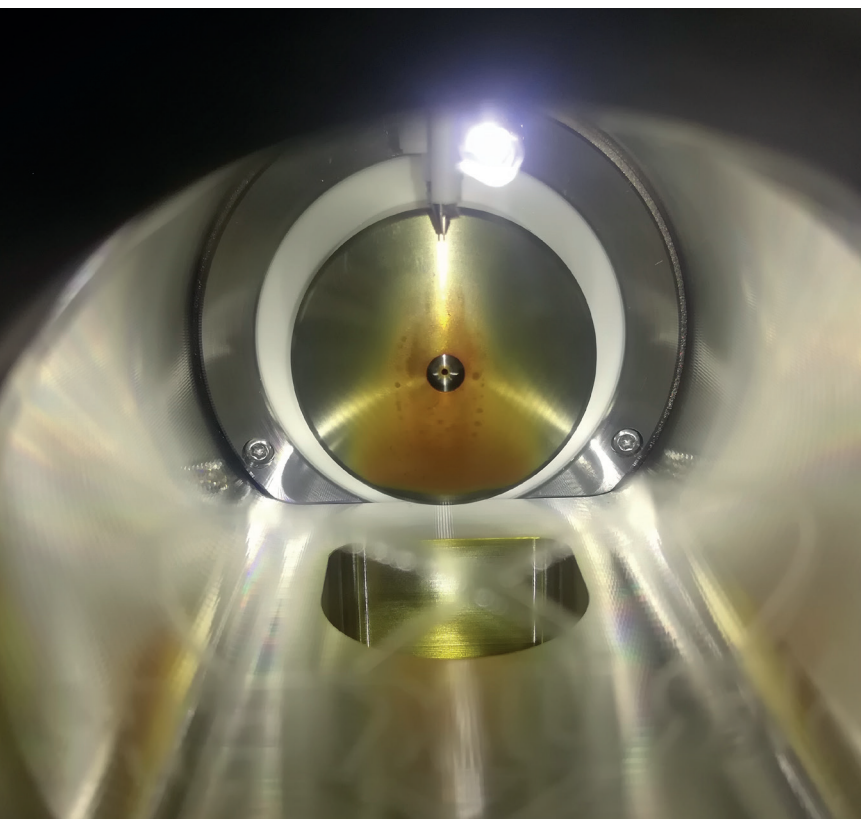
Next generation in Mass Spectrometry sensitivity

Vacuum Insulated Probe – Heated Electrospray Ionisation (VIP-HESI) has been migrated from the proven EVOQ Elite and coupled to Bruker QTOF and timsTOF systems. Together they deliver

- Highest performing accurate mass system
- Greatest sensitivity with no thermal breakdown of molecules
- Robustness to analyse a multitude of samples provided by the 'Active Exhaust'
- Sensitivity enhancements across all flow rate regimes – 5 to 15 fold
- Positive and negative ion acquisition modes
- Higher sensitivity with complex matrices
- Increased sensitivity across all mobile phase compositions
- Enhanced APCI performance



All these enhancements bring 'triple quad like' performance into the realms of accurate mass in mass spectrometry allowing the analyst to benefit from



- Increased confidence in compound identification due to many confirmatory ions
  - Reduced false positive and false negative reporting
  - Further enhanced by collisional cross section values with Trapped Ion Mobility Spectrometry systems (TIMS)
- Retrospective analysis as system collects "all the data all of the time"
  - Removes the requirement to store samples and re-inject, just reprocess the data
- Unlimited number of compounds analysed per run
  - Sensitivity remains constant even when screening for many hundreds of compounds
- Up to 5 orders of linear dynamic range
- Highly reproducible data with low RSD values

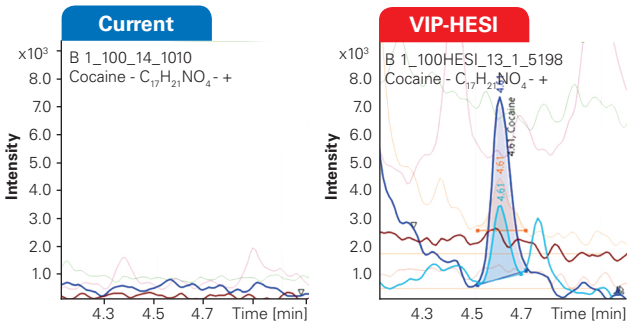
1 Drugs of Abuse in Hair

Cocaine in hair analysis. The analysis below was 0.3 pg/ml

What would this bring to your lab?

- Less hair sample needed, less disruption
- More accurate hair "time line" of drugs of abuse usage
- Comparable examples on LC-MS/MS indicate same sensitivity level
- Full screening and quantification for large libraries
- Identification possibilities for NPS drugs

Average improvement drugs of abuse in hair: 16.1 fold



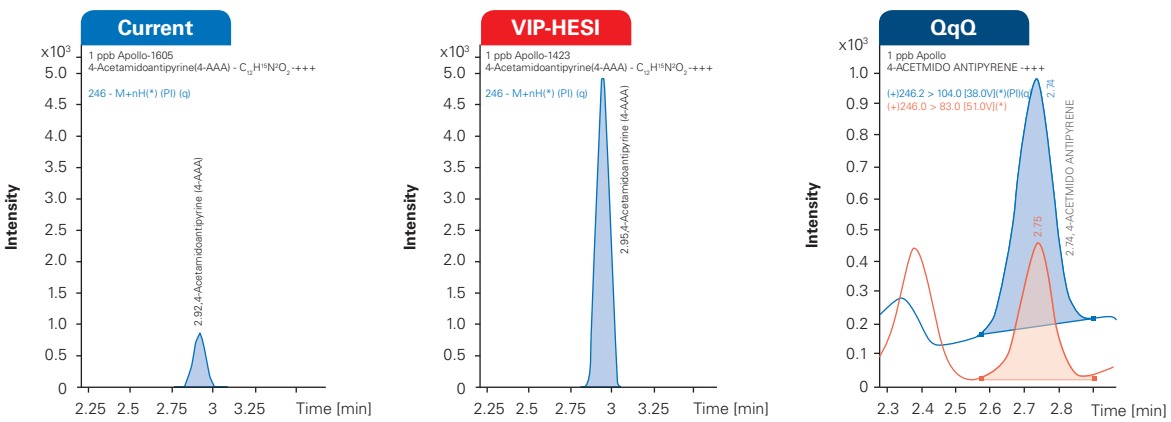
2 Drug Mixtures in Urine

Average intensity gain of 5.1 for drug mixtures in urine

What would this bring to your lab?

- Lower detection limits, comparable with LC-MS/MS on triple quadrupole instruments
- Signal to noise improvement by high resolution to achieve sensitivity in matrix
- Higher sensitivity often allows smaller injection volumes which can improve robustness
- Low quantification with full screening possibilities
- Easy addition of new targets into the screening method

Average improvement drugs in urine sample: 5.1 fold

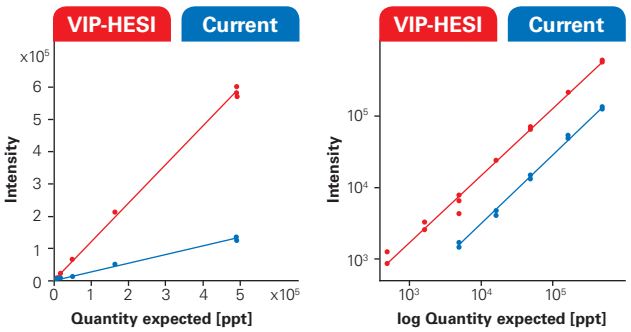


3 Lipids in plasma

Average gain of 4.9 for lipids in plasma

What would this bring to your lab?

- Improve the number of unique lipid annotations using a VIP-HESI source
- Increase the LOD of your lipid targets
- Get an extended dynamic range for lipid quantitation
- Reduce false positives by improving the quality of MS/MS spectra
- Further increase confidence in annotation using CCS-enabled 4D-Lipidomics



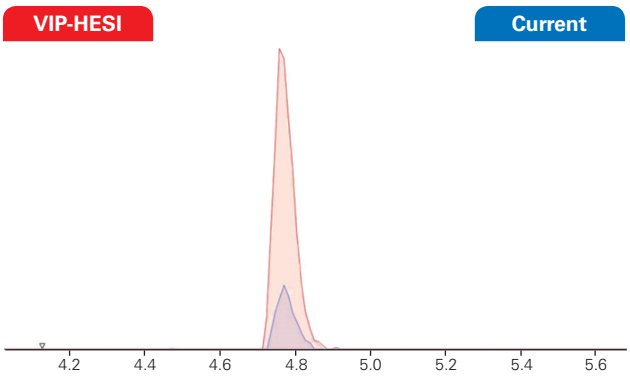
Average improvement lipids in plasma: 4.9 fold

4 Pesticides in Water

Pesticide analysis in water. Commercial lab test on certified QqQ levels with VIP-HESI

What would this bring to your lab?

- Increased screening possibilities without limitation in the number of analytes monitored
- No need to re-run screening on second LC-MS/MS system for quantitation
- Retrospective screening at triple quadrupole LC-MS/MS level, looking back to newfound compounds without re-injecting samples
- Full screening and quantification for large libraries
- Looking for suspects, identifying unknowns by using the same VIP-HESI (tims or Q)TOF solution
- Retrospective trend reporting for new environmental risk components



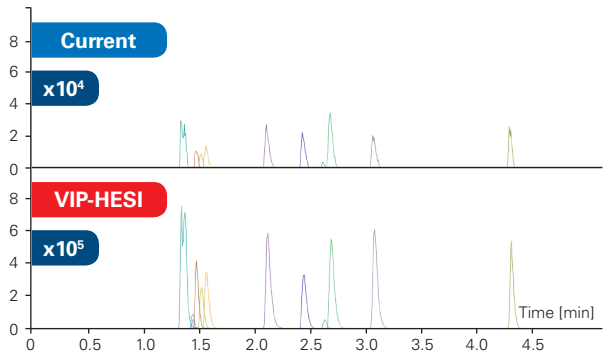
Overlay of VIP-HESI and current ion source

Average improvement pesticides in environmental water sample: 8.1 fold

5 Forensic Toxicology Mix Analysis with VIP-HESI APCI

What would this bring to your lab?

- Benefit from the specificity of LC-APCI by switching from VIP-HESI mode in minutes
- Benefit from the enhanced sensitivity typically experienced with neutral or more lipophilic compounds



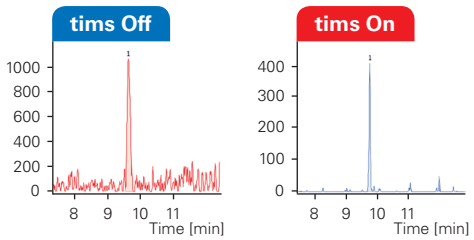
Average improvement of LC-APCI analyzed drugs: 18.1 fold

6 Analysis of PFAS using VIP-HESI and Ion Mobility

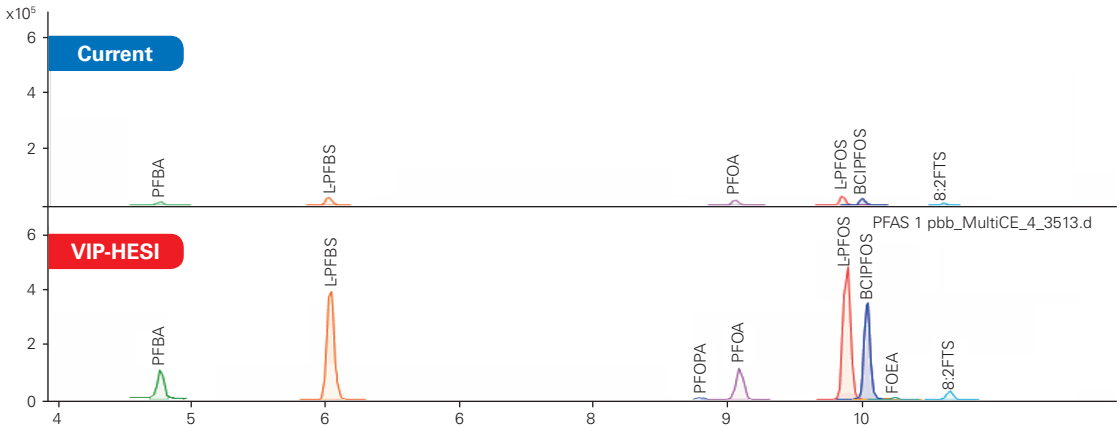
PFAS analysis moves to the next level with VIP-HESI, QTOF and optional Ion Mobility

What would this bring to your lab?

- Screen many of the PFAS components at enhanced sensitivity with isomeric separation via TIMS
- Ion mobility can increase S/N ratio especially in complex matrix
- Easily adapt to changing regulations on PFAS with VIP-HESI (tims or Q)TOF hardware in the future



Average improvement of PFAS standard in water: 9.8 fold



VIP-HESI dual source

What would a 5-fold increase in accurate mass in mass spectrometry sensitivity bring to your lab for almost any application?

- Reduced sample preparation saving time and money?
- Detecting lower levels of drugs and metabolites for deeper understanding?
- Finding new emerging contaminants sooner?
- Simpler method development, again saving time?
- Seamless transition between targeted and untargeted workflows on the same instrument?

What would a real ESI/APCI dual source bring to your lab?

- Increase the sensitivity of components drastically without additional cost of a second source
- More flexibility in ionisation techniques without changing ion sources

Utilize ion mobility separation to run faster chromatographic gradients and reduce noise even further resulting in improved S/N values.

High Resolution Mass Spectrometry opening new possibilities with **Ion Mobility and VIP-HESI dual source**

VIP-HESI dual source, TASQ and Metaboscape® - easy to use, robust, most sensitive high resolution LC-MS solution

For Research Use Only. Not for use in clinical diagnostic procedures.

Bruker Daltonics GmbH & Co. KG

Bremen · Germany
Phone +49 (0)421-2205-0

Bruker Scientific LLC

Billerica, MA · USA
Phone +1 (978) 663-3660

ms.sales.bdal@bruker.com - www.bruker.com