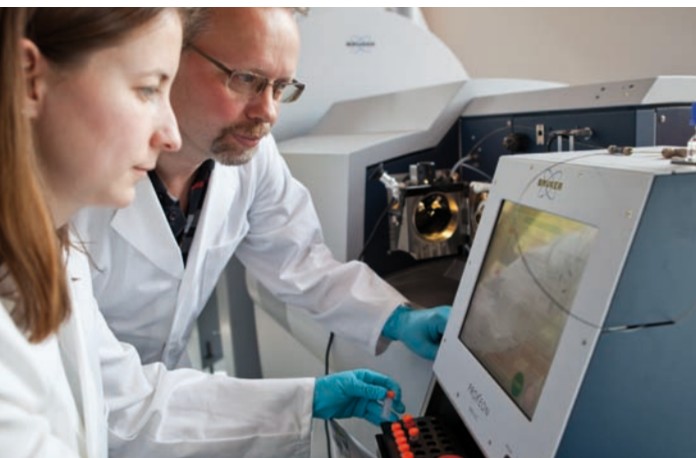




# solarix

- Optimized FTMS Solutions for the Most Challenging Applications

# Dedicated to the Most Challenging Applications



solariX, the next-generation line of hybrid Qq-FTMS systems, is the culmination of key technology enhancements that provide unique capabilities in mass spectral performance and versatility.

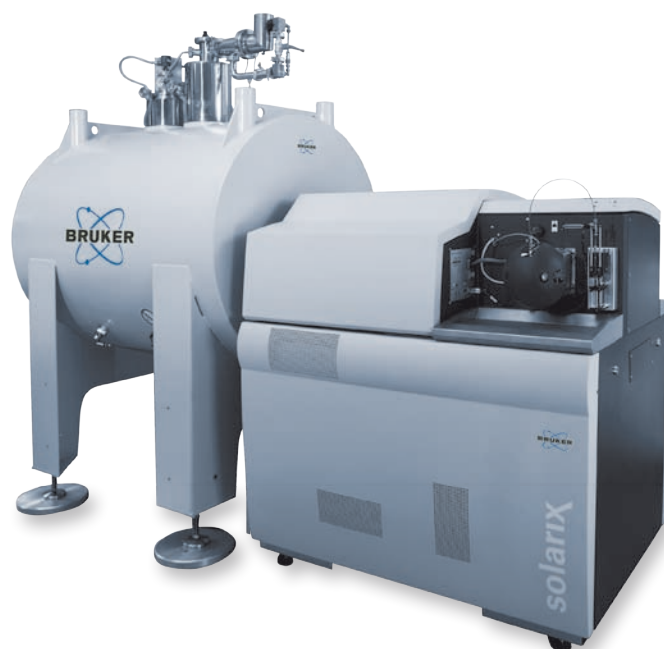
## The technological advances encompassed by solariX provide:

- Superior Sensitivity
- Unmatched Mass Accuracy and Broadband Resolution
- Widest range of structural tools, including Electron Transfer Dissociation (ETD)
- Expansive Mass Range
- Selective Ion Enrichment and Enhanced Dynamic Range
- Application Directed and Optimized Solution Packages

## Common applications for solariX

The analytical power and performance of FTMS is well suited to address some of today's most challenging and complex samples. Drawing on years of applications experience, we have combined our unique FTMS instrumentation and comprehensive software tools to provide turn-key solutions for the following areas:

- High End Proteomics Studies (Top-down and Bottom-up workflows)
- Molecular Imaging of Tissue - Distribution of Drugs, Metabolites, and Biomarkers
- Petroleum Product Analysis
- Complex Environmental sample analysis
- Metabolomics Research



## ● Performance Beyond Compare

At the core of the solariX is dramatically improved sensitivity and dynamic range. This allows researchers to identify and analyze a much wider range of molecules than ever before, and to delve deeper into complex mixtures and analyze lower abundance species.

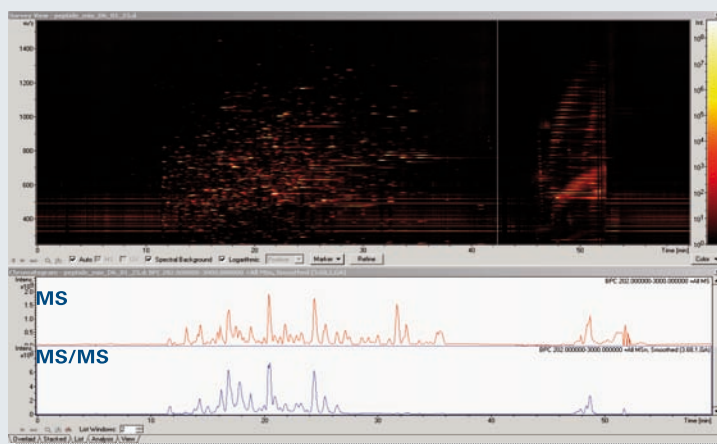
### More power for greater complexity

The broadband, ultra high resolving power (increased 8-fold) and superb mass accuracy of solariX is more powerful than previously possible with any other mass spectrometer. This extraordinary increase in the number of available m/z channels is essential for addressing complex problems such as petroleomics and environmental samples which require resolving powers of greater than 400,000 for effective analysis.

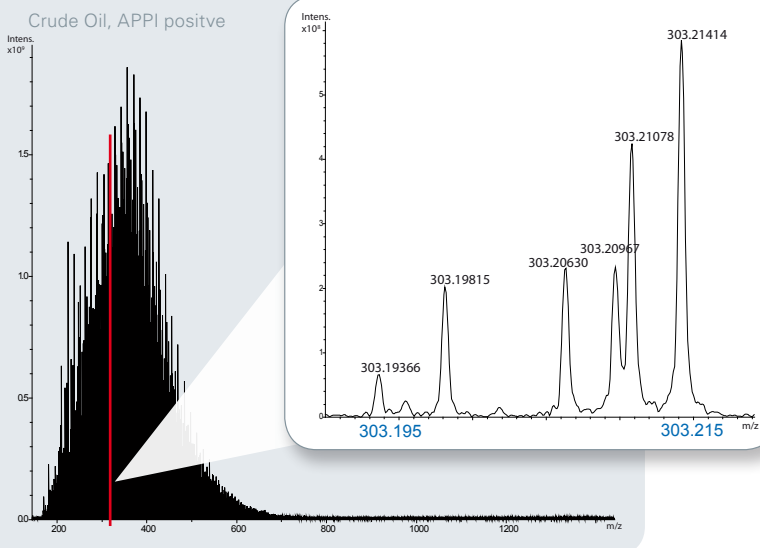
### Faster and more advanced LC-MS and LC-MS/MS operation

The new data acquisition functionality enables smarter modes of data dependent operation. Here, spectral acquisition parameters such as data set size or starting mass may be adjusted on-the-fly in a mass dependent mode of operation. Smaller data sets can be selected for MS/MS acquisitions making the overall data acquisition rate faster, while maintaining the high fidelity measurements for the MS precursor acquisitions. Moreover, super stable mass accuracy is maintained throughout the LC-MS analysis using Bruker's proprietary Ion Charge Control (ICC™) mode.

### Base Peak Chromatogram for LC-MS and LC-MS/MS of protein mixture



### Effective analysis of complex problems



Broad band spectrum of a crude oil measured by APPI in positive ion mode. Insets illustrate the extreme high resolving power (> 550,000) of the solariX-CM.

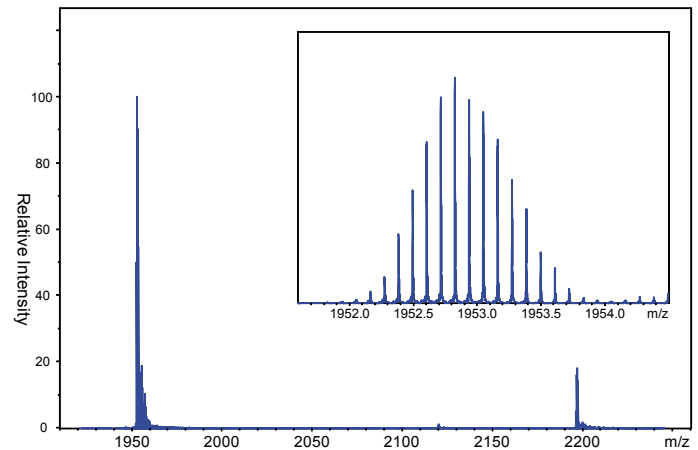
# New Horizons for Biomolecule Analysis

## Expanded capabilities for biomolecule analysis

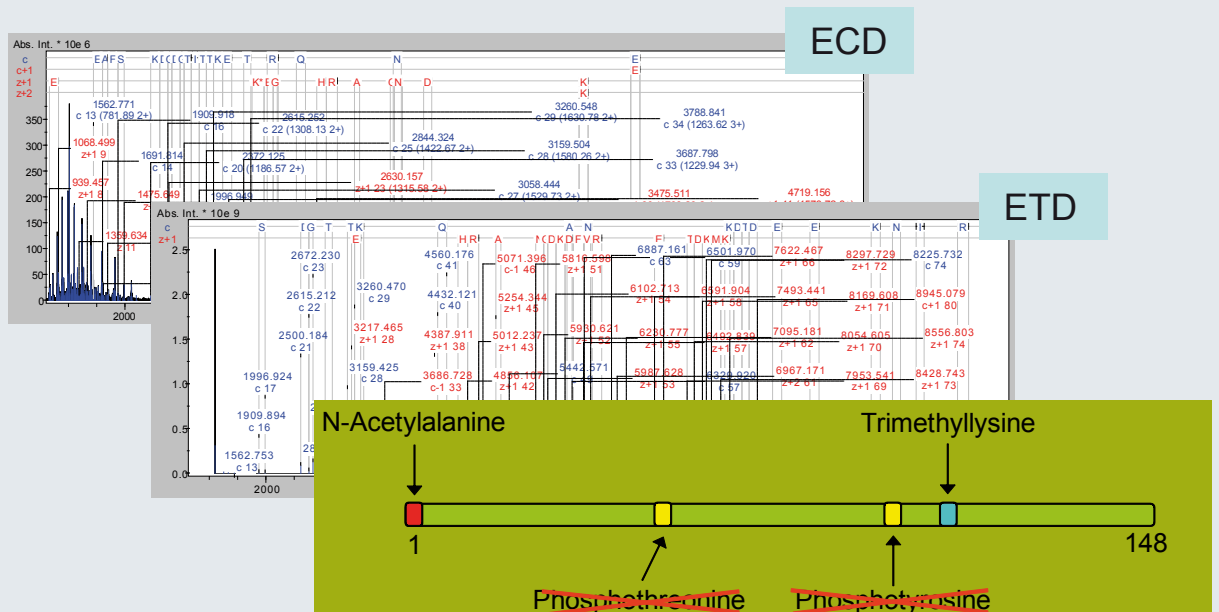
Adding to the existing arsenal of structural fragmentation tools, solarix is fully enabled with Electron Transfer Dissociation (ETD). This exciting new technique is superb for in depth, comprehensive analysis of proteins and peptides and their subtle, posttranslational modifications. For instance, the gentle molecular dissociation chemistry associated with ETD enables researchers to elucidate subtle post-translational modifications such as glycosylation and phosphorylation at levels of accuracy and resolution previously unavailable for such de-novo approaches. Furthermore, ETD can be automated, and combined with LC-MS/MS schemes in combination with quadrupole fragmentation (Q-CID).

### Myoglobin, non-denaturing MS conditions

Resolving Power = 450,000 @ m/z 1953



### ETD + ECD of Calmodulin



The combination of ECD and ETD performed on Calmodulin. As illustrated above, the expected phosphorylations are not present and the lysine at position 116 is trimethylated.

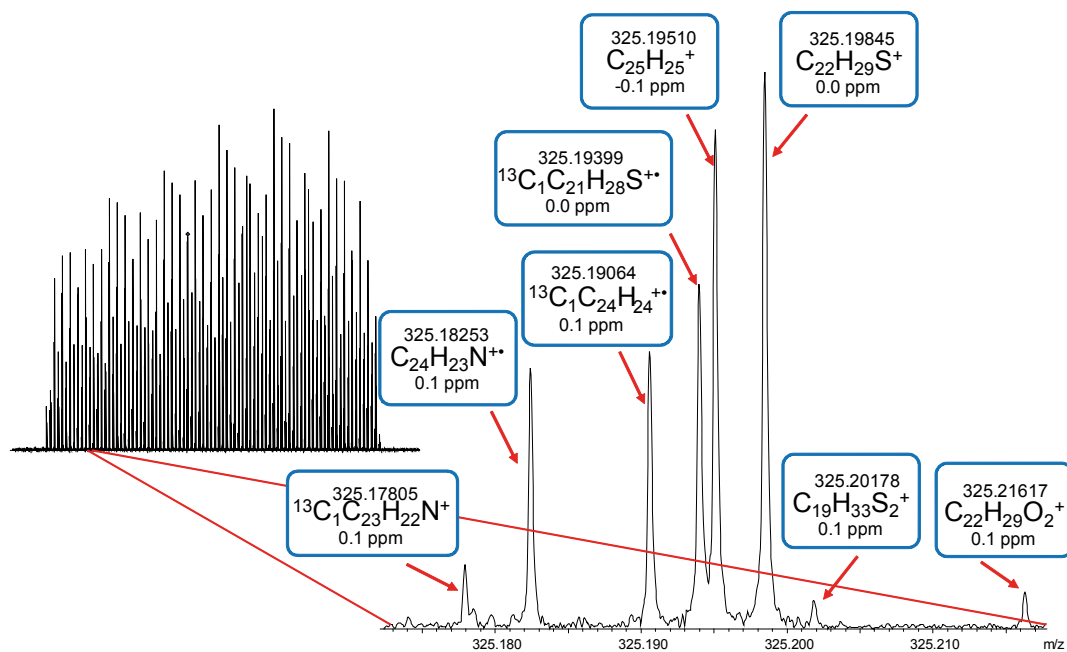
### Definitive molecular identification

With the solariX, high sensitivity, superior quality, exact mass measurements are only a mouse click away. Leveraging sub-ppm levels of mass accuracy for both intact precursor (MS) and product ions (MS/MS) combined with accurate isotope patterns, SmartFormula3D™ provides definitive elemental composition and molecular formula information. This level of confidence is readily achieved without internal standards or recalibration and the high resolution data inherently mitigates the complications resulting from other chemical interferences.



### Molecular formulae determination of components in crude oil

High resolution spectrum of crude oil by APPI demonstrating broadband resolving power of 950,000 with average mass measurement error below 100 ppb.

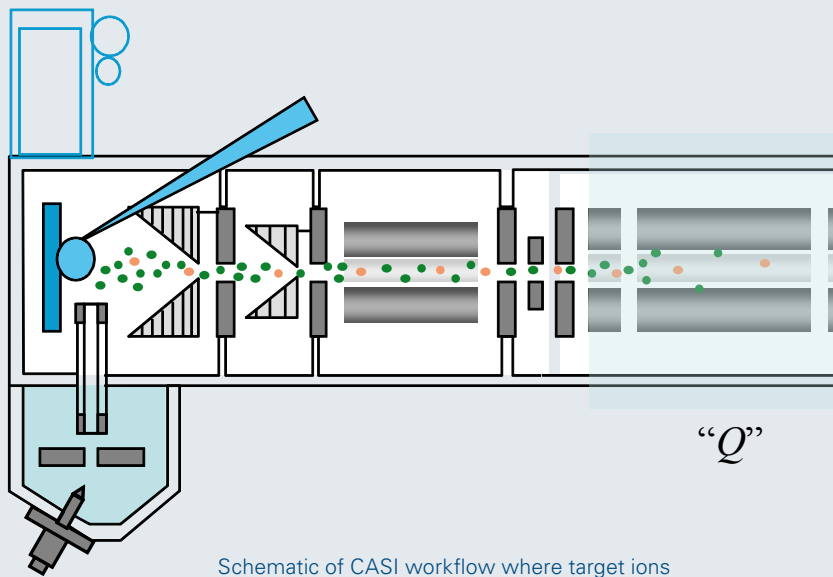


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### CASI™: For rapid, enhanced selectivity and dynamic range

The unique Qq-FTMS geometry of the solariX can enrich lower abundant or trace species for detection and structural interrogation via MS and MS/MS, respectively. This mode, known as Continuous Accumulation of Selected Ions (CASI), is essential for tissue imaging, analyzing low-copy PTMs, and to extend the general dynamic range of almost any measurement. This can improve signal intensities by as much as an order of magnitude.

CASI Figure



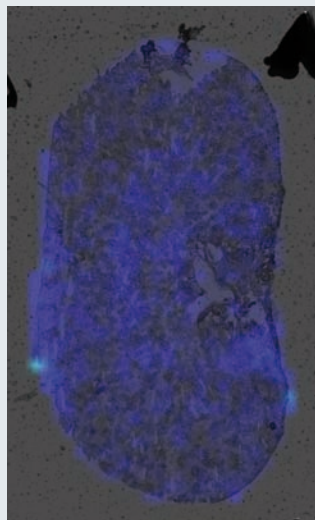
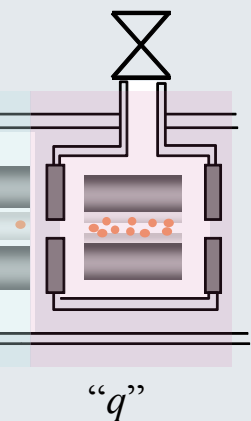
Schematic of CASI workflow where target ions are selected and enriched in the collision cell.



### Solution packages optimized for a variety of applications

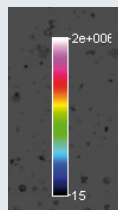
The solariX product line features a series of tailored solutions around specific applications. Each solution comprises the appropriate hardware, ion source options, and application level software for a turn-key analytical platform. Whether your primary application is complex mixtures (e.g. petroleomics) or high resolution tissue imaging, a solariX package is designed to meet your needs. For laboratories having unique or multiple analysis needs, Bruker will work with you to prepare an appropriate, customized configuration.

## ● High-End Performance for any Analytical Laboratory

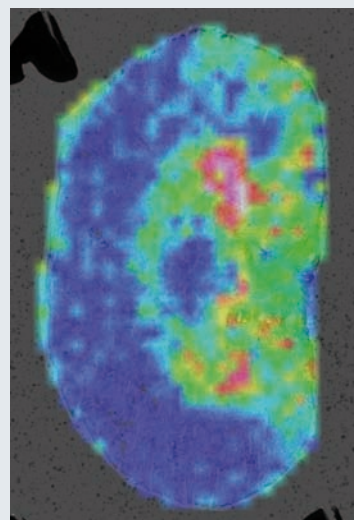


Full mass range MS

$m/z = 313.1485$



CASI boosts sensitivity, enabling the detection of drug and metabolites at lower concentrations



CASI - 20 m/z window

Molecular imaging of olanzapine in kidney Dosage – 5 mg/kg, 6h post dosage analysis.

The solariX FTMS is as intuitive and easy to use as a benchtop instrument. Bruker's Compass™ software enables the researcher to harness the analytical power and versatility with ease so that the focus is on the application and not on the instrumentation.

### Weekly cryogen "fills" become annual...

Bruker's patented refrigerated magnet technology means nitrogen-free compact superconducting magnets with very low helium losses to minimize instrument maintenance and service. Patented active shielding technology minimizes the stray magnetic field levels for compact installations and maximum laboratory safety. These magnets are available for the full range of magnetic field strengths (7T, 9.4T, 12T, and 15T).



## ● Unique Features of solariX

### Ultimate versatility in structural analysis

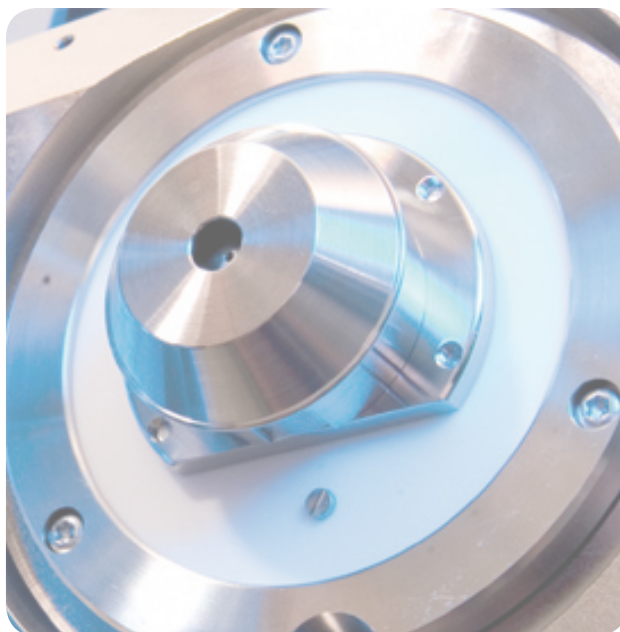
The solariX leverages the complementary nature of traditional quadrupole based Collisional Induced Dissociation (CID), and now Electron Transfer Dissociation (ETD). Additionally, precursors of complex mixtures may be isolated and fragmented using high front-end resolution, in-cell isolation followed by Electron Capture Dissociation (ECD) or Sustained Off-Resonance Irradiation (SORI)-CID. Whether your application is natural product, peptide/protein, carbohydrate, or petroleum product analysis, solariX has an array of fragmentation tools to address practically any compound class.



### Ion source flexibility

While FTMS is ideally suited to liquid introduction, Bruker Daltonics offers the unique dual ESI/MALDI source. This is based on patented Ion Funnel technology for maximum sensitivity which allows effortless switching between ESI and MALDI – all at the touch of a button! The intermediate pressure MALDI source offers exquisite sensitivity, and preserves molecular ion fidelity throughout the complete FTMS detection process. The efficiency of the dual ESI/MALDI source combined with the new ion optics of the solariX provides a marriage of ultra-high resolution with high-end “MALDI-TOF sensitivity”.

Along with our array of atmospheric pressure ionization sources (ESI, nano-ESI, APCI, and APPI), Bruker now offers GC-APCI capability.

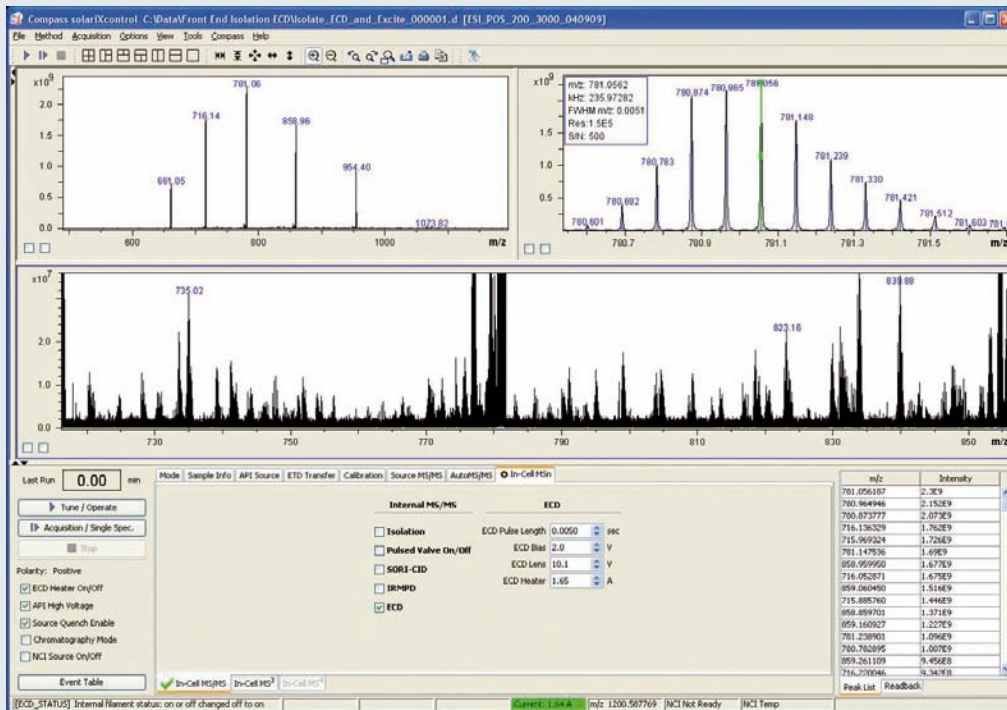




● Flexible Front-end Solutions

# Compass

The powerful Compass software enables the operation of a range of industry standard HPLC and u-HPLC platforms with the solariX. This includes comprehensive system control and seamless integration of mass spectral and UV data.



solariXcontrol™ - the instrument control software for solariX

# Technical Specifications



<b>Magnet 7.0T/US/R refrigerated magnet</b>	
Field strength	7.0T
<b>Analytical Performance</b>	
Mass Range	100 – 10,000 m/z (transmission with RF only) 100 – 6,000 m/z (mass selective)
<b>MS/MS Operation</b>	
Isolation efficiency (Qh-Interface) (LHRH, [M+2H]2+)	> 60%
MS/MS Efficiency (Qh-Interface) (LHRH, [M+2H]2+)	> 50% conversion from isolated precursor
Multistage MS (MS3 guaranteed) (LHRH)	LHRH MS/MS (collision cell) -> MS/MS/MS (Infinity Cell™)
Mass Dependent MS/MS	Automated isolation and MS/MS of the most intense ions in an LC-MS/MS run (scan ratio set to five)
Sensitivity ECD (Substance P)	S/N > 10:1 for 5 fmol (consumed). c5 fragment @ m/z 624
<b>ESI</b>	
Mass accuracy (Calibration on any 8 Q-CAD fragments for Angiotensin 1. checked on 4 different masses)	<1.0 ppm, m/z range 100 - 1500 (internal) <1.5 ppm, m/z range 100 – 1500 (external) *Spec is based on average of errors
Resolving Power @ m/z 400 (lincomycin)	> 1,000,000 (FWHH)
Sensitivity (Ubiquitin)	S/N > 10:1 for <100 amol (consumed)
High mass (BSA 0,1mg/ml)	S/N > 10:1
Negative ions	Functionality shown on Fibrinopeptide B
<b>ESI Source Options</b>	
Electrospray (standard)	(1 µl/min – 1 ml/min)
On-Line Nanospray (standard)	(100 nl/min – 500 nl/min)
EZ Nanospray (standard)	Zero – Adjust Off line Nanospray
APCI (optional)	Optional accessory
APPI (optional)	Optional accessory
Off-Line Nanospray (optional)	Optional accessory



[www.bdal.com](http://www.bdal.com)

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