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Bruker Daltonics



# amaZon SL

- Setting New Standards in Performance, Simplicity and Value

think forward

Ion Trap MS

# Best-In-Class Ion Trap Mass Spectrometer for Routine Analysis

The amaZon SL entry-level system is based on Bruker's advanced amaZon ion trap series and delivers best-in-class analytical performance, enhanced productivity and efficiency – all tailored to your needs. Together with high sensitivity – thanks to proprietary Dual Ion Funnel technology – and fast data acquisition at high scan speeds and mass resolution, this ion trap delivers uncompromised LC/$MS^n$ data quality and flexibility at an affordable price.

## Bringing innovative trap technology within the reach of every analytical lab

The amaZon SL sets a new standard in ion trap excellence, making high-quality and high-confidence chemical analysis affordable for any analytical lab.

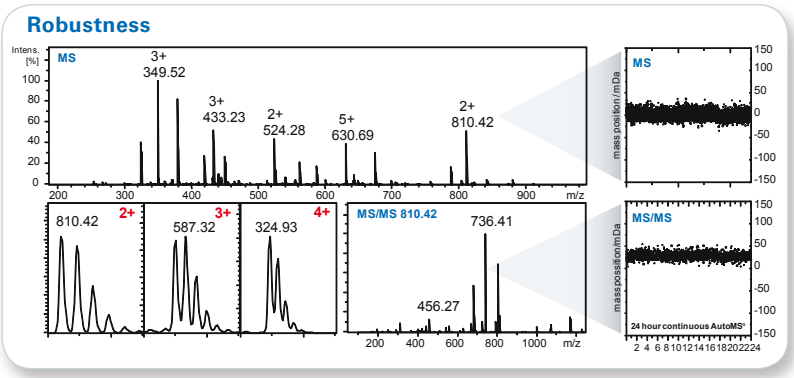
By enabling rapid and sensitive identification, characterization and structural confirmation of compounds, the amaZon SL is the robust, all-purpose solution to a wide variety of chemical, environmental, metabolic or forensic challenges:

- General LC/MS/MS chemical analysis
- Chemical structure confirmation by $MS^n$
- Screening applications with fast polarity switching and MS/MS library searching
- Quality control, synthesis control and process development
- Metabolite ID & profiling
- Copolymer analysis by GPC-MS/MS



# Ease of Use

MS and MS/MS spectra of a mixture of peptides. The enhanced resolution scan provides fully resolved peaks up to a charge state of 4+. The observed mass accuracy for the precursor ion at m/z 810 and the fragment ion at m/z 736 is absolutely unrivalled for ion trap instruments. A continuous AutoMS$^n$ experiment over a period of 24 h demonstrate the excellent robustness of the instrument with regard to an extremely stable mass position of the detected ions.

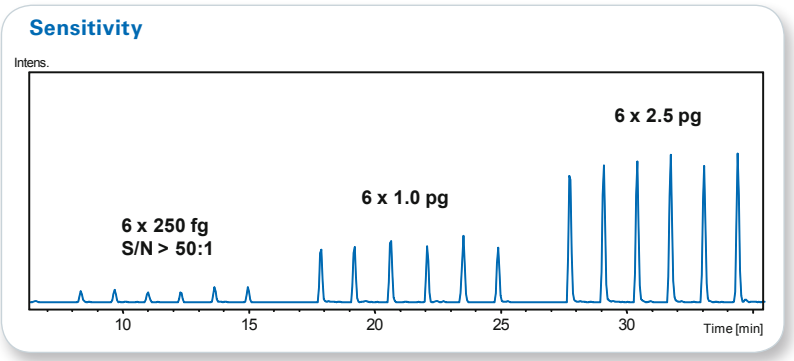



## Performance and reliability

The amaZon SL stands for excellent performance and reliable, robust operation. MS and MS$^n$ data sets deliver high sensitivity, resolution of multiply charged ions and class-leading, confident mass assignment.

## Simple and flexible quality & synthesis control

The flexible APCI source also offers the possibility to work with the direct injection probe (DIP) for the analysis of solid samples. This enables a fast and direct identification of compounds from organic syntheses, process development, etc.

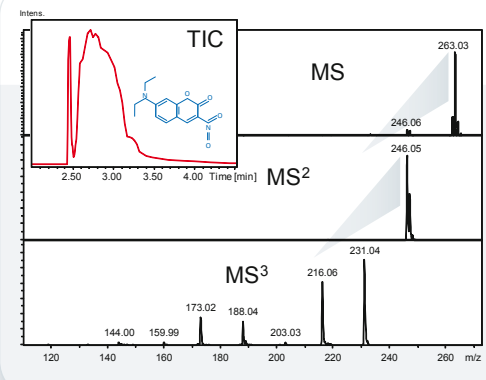



MS/MS sensitivity for multiple injections of reserpine. S/N ratios > 50:1 are reproducibly obtained using 250 fg column loads.



### Solid Samples

The direct probe ion source allows the straightforward analysis of liquid and solid samples without tedious sample preparation. The example shows the unambiguous identification of a synthetic compound using MS$^3$. The information provided by MS$^2$ alone is not sufficient due to non-specific water loss. Samples were kindly provided by SiChem GmbH, Bremen, Germany.

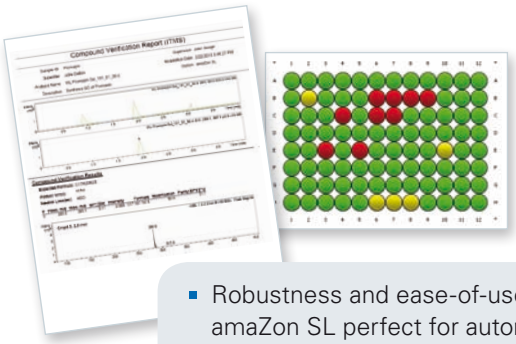





# Compound Screening & ID

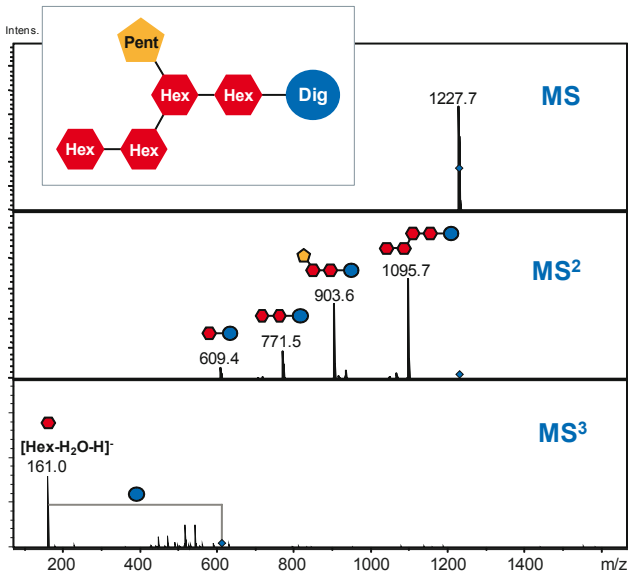
## MS$^n$ for structural elucidation and compound screening

Single fragmentation pathways in MS$^n$ steps allow observation of side-chain losses and enable verification or even de-novo elucidation of molecular structures. Compounds can easily be screened and identified by comparing results with reference spectra stored in MS$^n$ libraries.



- Robustness and ease-of-use make amaZon SL perfect for automated QC
- Compass™ OpenAccess enables non MS-experts to run samples or batches using predefined methods

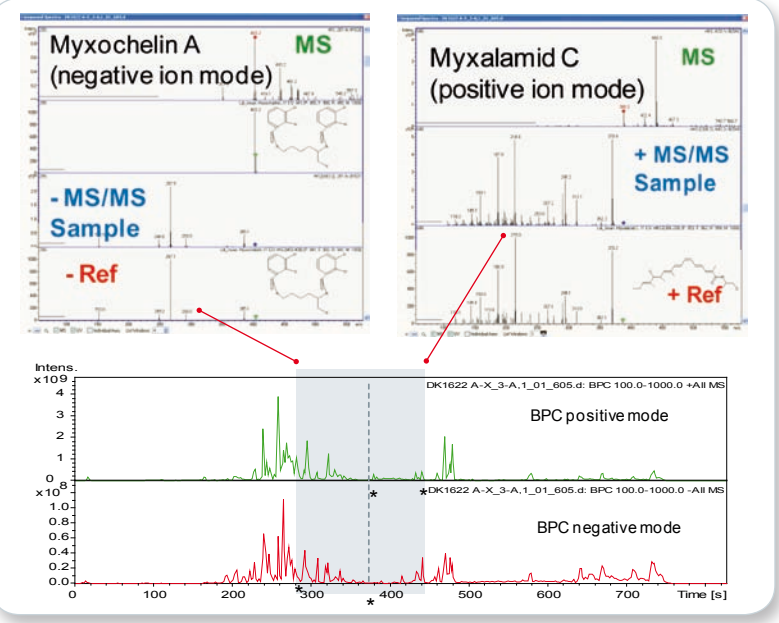
**Elucidation of glycan structures**




MS$^n$ enables characterization of digitonin, a steroid glycoside. The complete glycan structure, down to the initial sugar unit, can be elucidated in consecutive MS$^n$ steps.

## Chemical synthesis, quality control

The amaZon SL can be used in an Open-Access environment without special training. The LC-MS walk-up solution allows a true multiuser environment – perfectly adapted to the robustness and ease-of-use of the amaZon SL. The example above shows the verification of a chemical's presence in a synthesis quality control workflow. The user receives the result as a PDF report. The color-coded 96-well plate image provides a quick overview for every sample in a full batch.




Quick and reliable identification of natural compounds from myxobacteria by library search. Sensitive and highly reproducible MS/MS data allow direct comparison of experimental data with library reference spectra. Fast polarity switching delivers detection of compounds in both ionization modes and ensures that compounds are not missed.

# Superb Performance United with Simplicity and Reliability

## Exceptional analytical value

- Patented Dual Ion Funnel technology delivers superior sensitivity in the low femtogram range.
- Fast data acquisition with scan speeds up to 32,000 u/s at full isotopic resolution provides high duty cycles ideal for UHPLC coupling.
- SmartFrag™ algorithm ensures optimal, reproducible fragmentation for MS/MS library searches.
- On-the-fly polarity switching (delay <80 ms) for highly efficient compound MS/MS screening.
- Fragmentation up to the $MS^{11}$ stage, enables detailed structural investigation of compounds.

## Flexibility in your daily work

- The amaZon SL is fully integrated into the Bruker Compass™ software suite, allowing flexible use and full control of a wide variety of HPLC, UPLC and nanoLC systems.
- The instrument is fully compatible with any Bruker API source, giving access to multiple ionization methods, such as ESI, APCI, APPI, and nanoESI.

## Reliability and robustness

The amaZon SL is the latest product of over two decades of Bruker ion trap technology development.

- Robust, proven ion trap technology combined with the latest hardware controllers makes the amaZon SL a reliable long-term partner for daily laboratory work.
- Low maintenance requirements and reliable hardware make the amaZon SL ideally suited for open access environments, such as in synthesis control or general QC.



## Simple, intuitive operation modes

The SmartLine software suite provides extremely easy and quick access to analytical answers.

- Smart and intuitive automation routines for calibration, tuning and data post-processing.
- Simplified GUI.
- Compass™ OpenAccess enables use of the amaZon SL by multiple, non-expert, walk-up users.

## Turning ideas into successful analyses

The outstanding performance of amaZon ion trap mass spectrometers is based on and secured by a series of exclusive, patented technologies.

| Patent | Benefit | Current amaZon-related patents world-wide |
|---|---|---|
| Dual Ion Funnel Source | Mass-independent ion transfer and sensitivity boost | DE 195 23 859 C2; GB 2 302 985 B; US 5,572,035 A; GB 2 402 261 B; US 7,064,321 B2 |
| High Transmission Glass Capillary | Fast alternating polarity | DE 195 15 271 C2; GB 2 300 295 B; US 5,736,740 A |
| Non-linear Excitation for Ion Ejection | Ultrafast scan rates with unmatched mass resolution | CA 2 010 234 C; DE 689 13 290 T2; EP 0 383 961 B1; US 4,975,577 A; DE 41 42 870 C2; GB 2 263 192 B; US 5,386,113 A; DE 41 42 869 C1; GB 2 263 191 B; US 5,298,746 A |
| Smart Charge Control | Optimization of the charge density inside the ion trap without the need for a time-consuming pre-scan | DE 43 26 549 C1; GB 2 280 781 B; US 5,559,325 A; DE 197 09 086 B4; GB 2 322 961 B; US 5,936,241 A; DE 100 27 545 C1; GB 2 364 821 B; US 6,600,154 B1 |

# Technical Specifications

## Superior high-capacity trap using the latest Dual Ion Funnel technology

- Quadrupole ion trap based on innovative technical design for the highest ion storage capacities
- Patented SmartICC™ for optimum ion accumulation control without prescan
- Mass-independent ion transmission using Dual Ion Funnel technology
- Standard-setting combination of mass resolution, scan speed and m/z range in MS and $MS^n$
- Fast polarity switching for acquisition of positive- and negative-ion spectra under LC conditions
- Reproducible spectra for high-confidence MS/MS library searches using SmartFrag™

Scan speed and resolution (MS and $MS^n$)

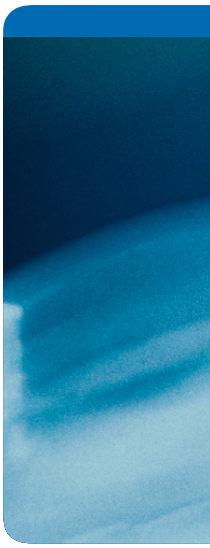
| Scan Mode | Res | m/z | u/sec |
|---|---|---|---|
| UltraScan™ | $2^+$ ions | 2,200 | 32,000 |
| Enhanced Resolution | $4^+$ ions | 2,200 | 8,100 |
| Extended Mass Range | | 4,000 | 27,000 |

## Scan modes

- Full scan MS, MS/MS and $MS^n$ for the most sensitive and reliable analysis of unknown compounds
- Neutral loss scan
- Multiple reaction monitoring (MRM) using MS/MS and $MS^3$
- Manual $MS^n$ up to n = 11 in all scan modes
- AutoMS$^n$ tree experiments with up to 5 fragment ions per stage

## Data-dependent experiments

All forms of common data-dependent experiments – including preferred mass lists for automated feedback experiments from MetaboliteTools – are supported.



## Source options

- Choice of API sources
- Advion Triversa NanoMate
- Online/Offline NanoElectrospray
- Smart CE-MS coupling with grounded needle

## Software options

- MetaboliteTools™ software for metabolite identification
- ACD Labs MS Manager for structural interpretation and classification
- Compass OA/QC: Web-based, guided operation of LC/MS systems for walk-up users
- Compass Security Pack™ for regulated environments

Support of HPLC and sample inlet systems from the following vendors:
Bruker EASY-nLC (I &II), Dionex, Advion TriVersa NanoMate, Agilent, VWR/Hitachi, Waters (incl. UPLC), Autosamplers from CTC

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www.bdal.com

**Bruker Daltonik GmbH**

Bremen · Germany
Phone +49 (0)421-2205-0
Fax +49 (0)421-2205-103
sales@bdal.de

**Bruker Daltonics Inc.**

Billerica, MA · USA
Phone +1 (978) 663-3660
Fax +1 (978) 667-5993
ms-sales@bdal.com



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