rapifleX™

Designed for Molecules that Matter.

MALDI-TOF/TOF

Innovation with Integrity

rapifleX™

The first MALDI-TOF/TOF that adapts to your needs.

The rapifleX is the most advanced MALDI-TOF/TOF system on the market today and it is also the most adaptable.

Whether you are looking at top-down sequencing for Biotherapeutics and Biosimilars, glycan structure analysis and confirmation, and localization of disulfide/ trisulfide bond determination and scrambling analysis, the rapifleX is the best instrument for the job.

The system combines state-of-the-art technology with advanced informatics into a system that gives you speed, robustness, versatility and confidence.

Dr. Julian D. Langer, MPI of Biophysics and MPI for Brain Research, Frankfurt am Main, Germany,
In our lab, with its high MS^2 isolation efficiency, resolution and mass accuracy at high m/z values, the rapifleX TOF/TOF has been instrumental in identifying and characterizing new subunits of membrane protein complexes, including prokaryotic respiratory chain complexes and antibiotic drug targets."

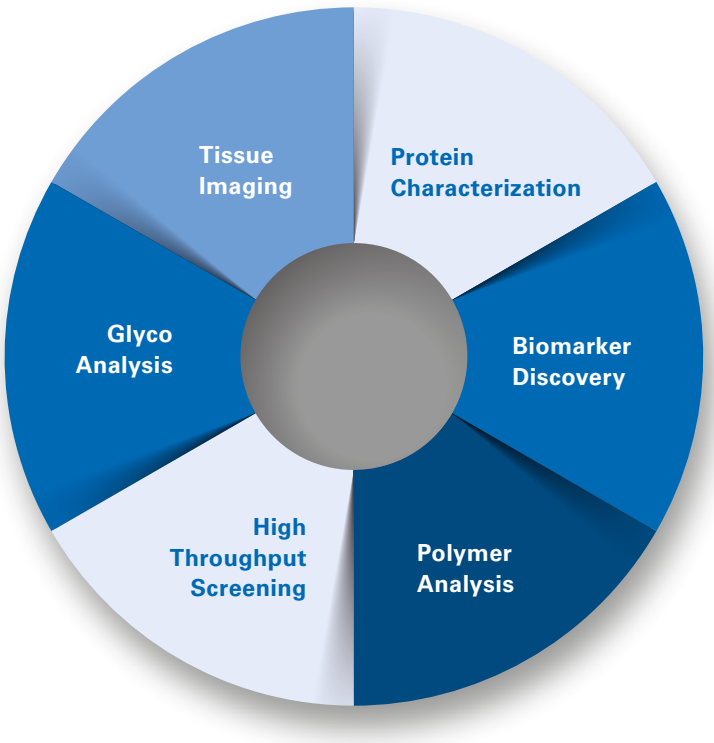
MALDI-TOF/TOF for today´s challenging applications

Bruker has a long history of helping life scientists meet their toughest laboratory challenges. We provide the innovative MALDI-TOF and MALDI-TOF/TOF mass spectrometry systems that you rely on to accelerate your research.

The rapifleX is the latest example of Bruker's dedication to developing and delivering innovative MALDI-TOF analysis technologies.

Unprecedented speed of analysis with 10 kHz laser reduces costs per sample. It enables time critical applications and faster decision making processes.

The Bruker rapifleX platform offers a complete characterization system with unprecedented speed of analysis and performance.



Increased Productivity

Superior MS/MS performance and speed for superior data quality enable structural assignments for analytes that used to be difficult to characterize.

Increased Dedication

rapifleX offers multiple characterization strategies to help answer challenging sample and research questions.

Increased Confidence

Application focused software significantly reduce the complexity and the time required to analyze some of the most challenging modifications.

Designed for your needs

The first MALDI-TOF/TOF that adapts to your needs

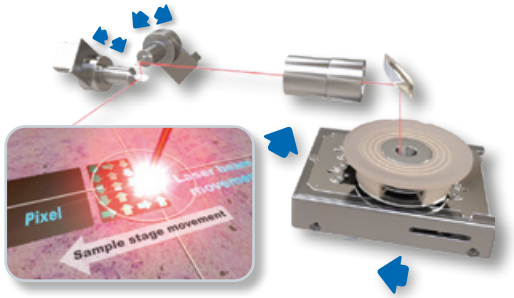
Our passion is mass spectrometry. With the rapifleX series our engineers and developers have created the first MALDI–TOF/TOF system that now adapts to the analytical question at hand - automatically.

With speed in mind, we redesigned the heart of the rapifleX MALDI Imaging solution to work up to 20 times faster than traditional MALDI-TOF systems to meet the increasing requirements of tissue imaging or high throughput primary screening.

The adaptable ion optics and class leading laser technology provide the best data quality, regardless of the acquisition mode or mass range.

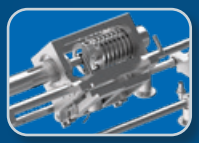
rapifleX more than 25 years of knowledge and experience consolidated.

10 kHz smartbeam 3D laser and systems electronics



A moving mirror is added along with synchronized coordination between the target stage and laser positioning. The laser beam now travels inside the ion optics, offering improved ionization efficiency and longer time between each lens cleaning.

Three stage gridless reflector - software controlled adaptation for optimized performance in MS and MS/MS, small and large analytes



Swing-out MS/MS ion optics for best sensitivity.

FlashDetector and 10 bit digitizer for high resolution and dynamic range

High precision optical bench - ultimate stability and sensitivity

Monolithic vacuum housing adds robustness

Speed - 10 kHz scanning smartbeam 3D laser for highest throughput – 5-20x increase in speed

Robustness - User removable ion source for easy cleaning, designed for maximum uptime in 24/7 operations

Confidence

- Ion optics **adapt to application**
- Three-stage reflector: **No compromise, maximum resolution** for full molecular weight range
- Removable MS/MS ion optics for **maximized sensitivity for MS analysis**
- MS/MS mass range for large peptides such as **glycopeptides, di/trisulfide peptides and difficult non-tryptic peptides**
- Precursor ion selector resolution increased to 1000 – for high selectivity in complex mixtures. Supreme precursor ion selection for confidence in MS/MS data quality
- **10 bit digitizer** for high dynamic range

The whole is more than the sum of its parts

The unprecedented 10 kHz speed and ion source robustness, the wide dynamic range, higher specificity and resolution, all contribute to the detailed characterization of biologically and clinically relevant lipids, peptides and proteins, raising customer MALDI-TOF/TOF expectations for applications such as:

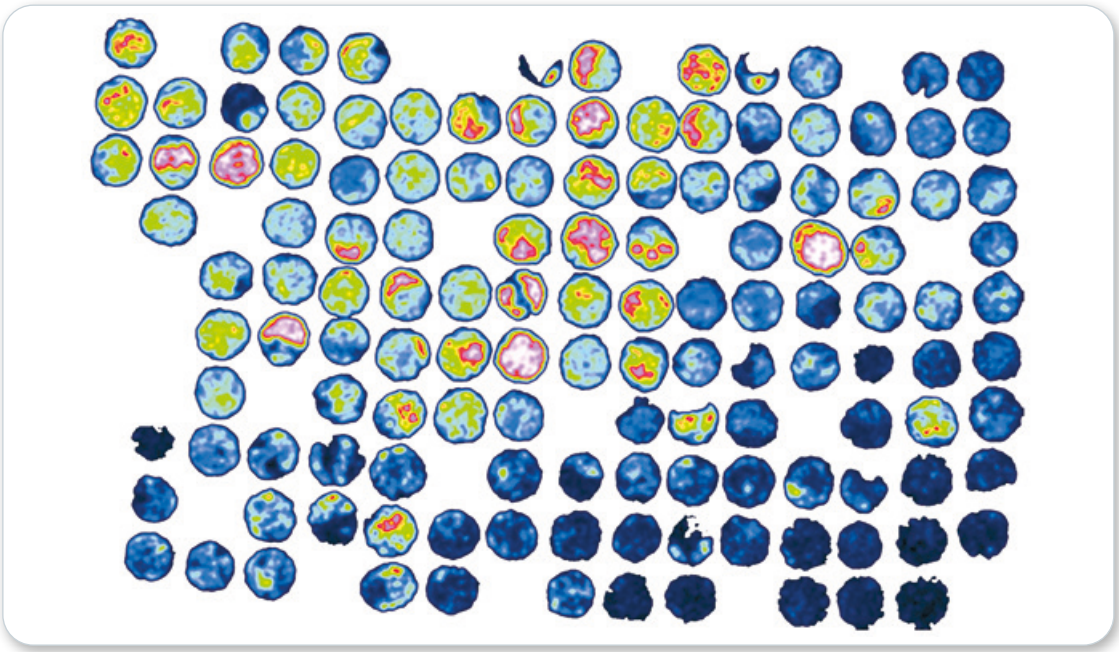
In-depth protein characterization for example disulfide and trisulfide determination or scrambling analysis and intact protein sequencing. Further time-critical applications include HTS primary screens and tissue imaging.

Most robust, yet easy to access ion source. All sensitive surfaces are at a safe distance from the source of possible contamination. When necessary, the capsular like ion source can be easily removed and just rinsed with solvent. The rapifleX stands uninterrupted primary screening with 2 million samples.

Tissue imaging with the rapifleX: A seamless solution

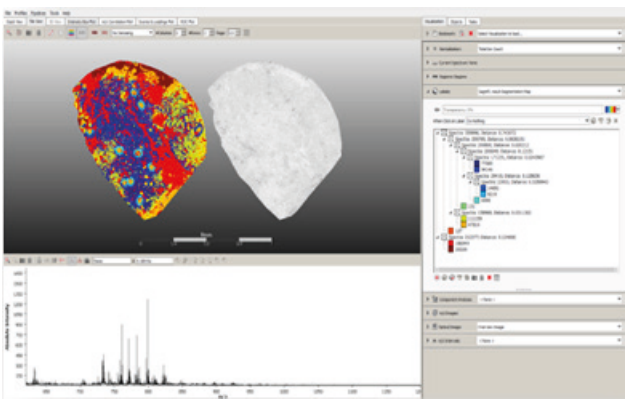
From fast data acquisition to comprehensive data mining using SCiLS software.

- Fastest acquisition with more than 40 pixel/second
- Superior image quality
- Integration of histology
- Comprehensive software for the interpretation of large tissue-based biomarker studies



Tissue micro arrays are measured in minutes. Direct comparison of several patients in one experiment possible, FFPE tissue can be used to generate useful information directly out of clinical relevant material.

Data mining at a new level: SCiLS software



- Identify molecular features co-localizing to regions or known markers
- Perform unsupervised segmentation
- Identify regional and molecular changes
- Upgrade SCiLS Lab Core for more analytical power and functionality such as PCA, Cluster, PLSA and other workflows
- Build classification models

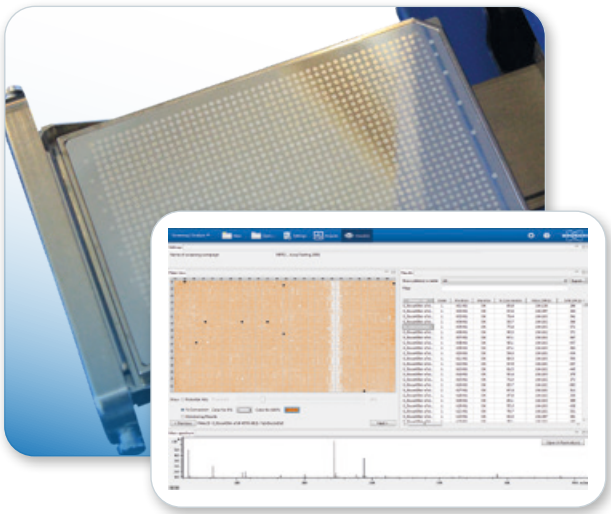
SCiLS

Statistical analysis of imaging data: SCiLS software allows for fast and efficient data mining for both: single experiments and cohorts of samples.

Accelerating drug discovery and screening

The new rapifleX MALDI PharmaPulse is the first mass spectrometer to offer the speed, specificity and robustness required for large primary screens in drug discovery:

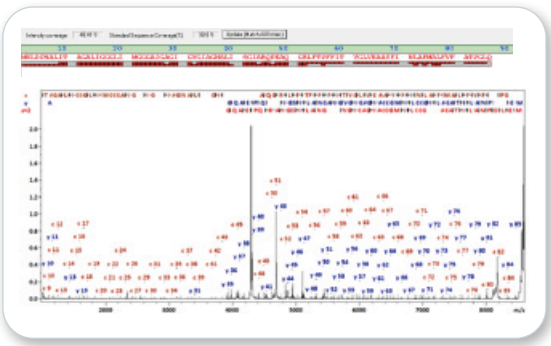
- Label-free ultra-high throughput screening (uHTS) for biochemical assays
- Label-free detection accelerates and simplifies assay development and avoids interferences from artifacts
- The integrated automation solution can process 1536 HTS MALDI plates in less than 8 minutes
- Up to 100 times less solvent than multi-plexed LC/SPE-MS systems
- No need for SPE cartridges or HPLC columns
- Extremely low sample volumes of typically 100 nL and below are required for detection



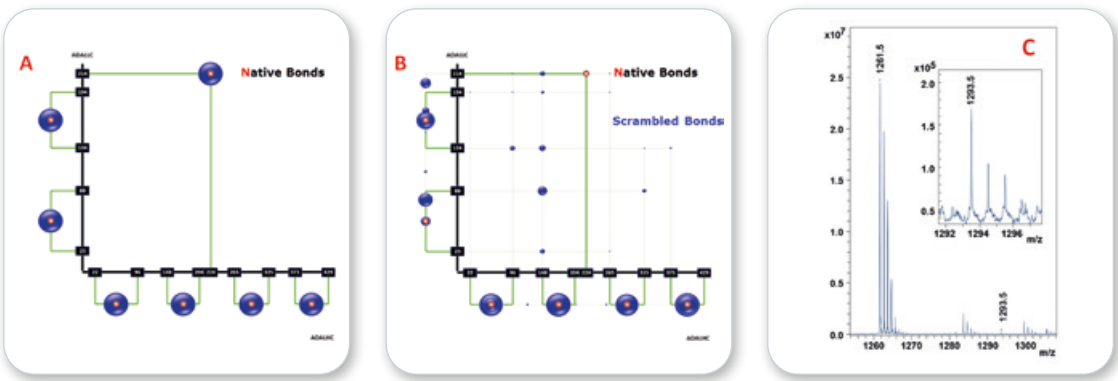
Full 1536 plate reading in less than 8 minutes

Verification by high sequence coverage

Top-down sequencing spectrum of the c-ring subunit of *M. phlei* ATP synthase containing a mutation which causes antibiotics resistance with an overall sequence coverage of 99%. Modification and mutation sites are detected unambiguously.



Confident characterization of biotherapeutics



Automated disulfide bond determination via LC-MALDI analysis and the DisulfideDetect software of the therapeutic antibody adalimumab before (A) or after heat treatment (30 min at 70 °C; B). Trisulfides were also identified from the same dataset. The 10 bit digitizer allows for trisulfide quantitation with high dynamic range down to the relevant 0.1-1% range.

rapifleX™

Productivity

Dedication

Confidence

Dr. Matthias Trost, Programme Leader & Head of Proteomics
MRC Protein Phosphorylation & Ubiquitylation Unit University of Dundee
The rapifleX's novel laser technology and an improved digitizer provide massive increases in speed and signal-to-noise compared to previous instruments. These features make it the instrument of choice for high-throughput MALDI-TOF mass spectrometry in drug discovery."

For research use only. Not for use in clinical diagnostic procedures.

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