



## solarix XR

- The Power to See What You've Never Been Able to See Before

# solarix XR

Now see what you've never been able to see



Bruker's **eXtreme Resolution** FTMS technology enables scientists to see vital "hidden" information that is missing in data from other types of mass spectrometers. This advanced technology addresses the needs of specialists in a variety of focus areas (e.g. small molecules, petroleum, lipids, metabolomics, etc.) that all desire efficient and precise solutions for their analytical problems. The unique value of this technology is isotopic fine structure, resulting in unmatched confidence for compound identification that required guesswork before solarix XR.

Chemical information can now be easily obtained in an efficient and cost-effective way, using cutting edge technology featuring the enhanced, redesigned Para-Cell as the key technology enabling **eXtreme Resolution**.



## eXtreme Resolution

**eXtreme Resolution** is the ability of the solarix to provide "razor thin" peaks in the mass spectrum resulting in significantly greater information content and peak capacity. **eXtreme Resolution** enables interrogation of complex mixtures or compounds very close in mass without the need for spatial separation providing simpler and more efficient analytical workflows. This is achieved with a combination of technological breakthroughs introduced in the solarix XR.

# Key Benefits and Key Applications

## Analytical Power

Unmatched in commercial mass spectrometry, solariX XR provides the capability to create new workflows and test hypotheses without limitations.

## Flexibility

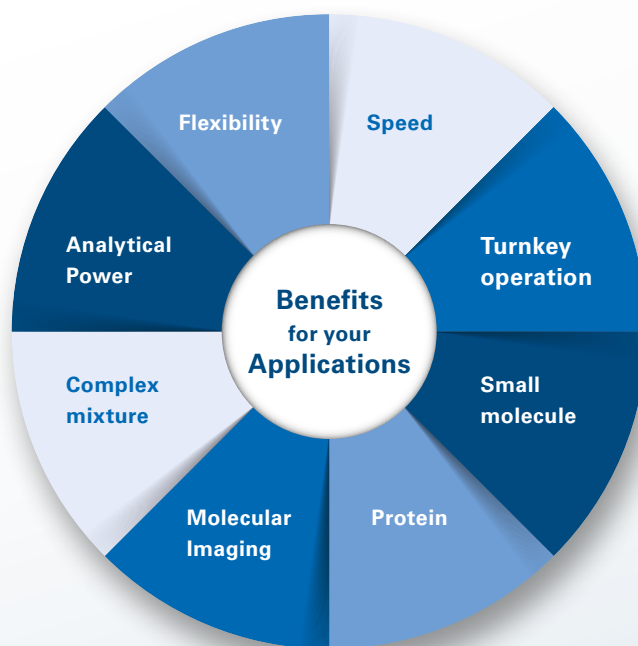
Experimental flexibility is provided with one of the widest array of sources available and an armada of both traditional and unique dissociation methods that supercharges every application and accelerates your workflows.

## Speed

High performance and flexibility translates to faster, streamlined workflows reengineering traditional approaches with tuned methods that save time and money and produce richer datasets in a given time than previously possible.

## Turnkey operation

Advanced software for acquisition, processing and automation combined with a robust source design and fully automated transfer optics provide compelling results with limited user effort.



## Small molecule analysis

Elemental compositions are exact and reliable as the solariX XR is the first commercial system to routinely provide answers derived from isotopic fine structure that is invisible to most other mass analyzers.

## Advanced protein analysis

solariX XR can measure large intact biomolecules with isotopic resolution followed by detailed structural analysis with proven applications in proteomics, biopharmaceutical analysis, and protein science.

## Molecular imaging

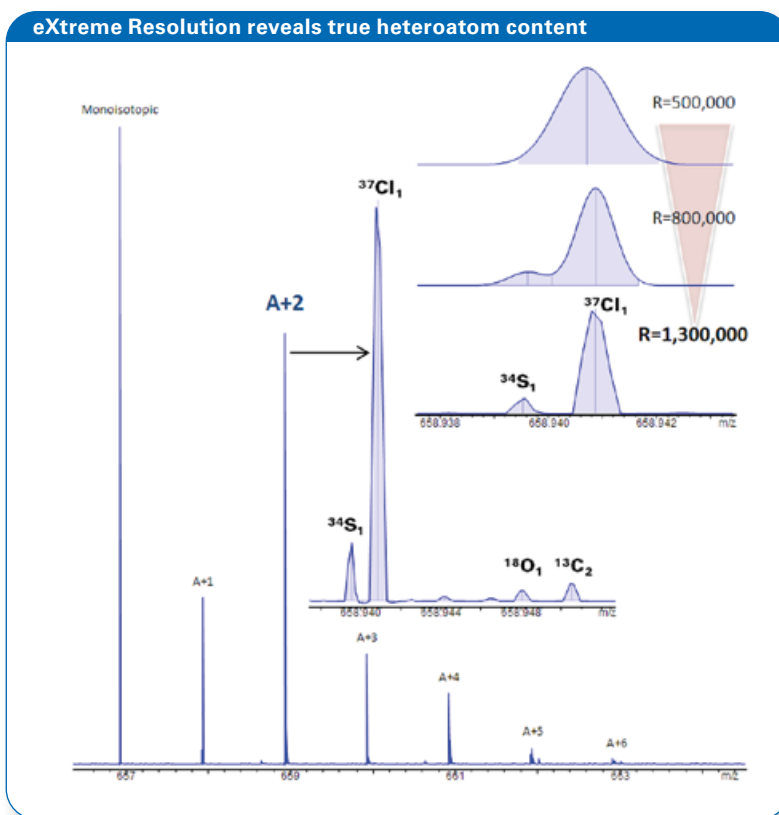
Leveraging Bruker's unmatched imaging expertise with the power of **eXtreme Resolution** provides complete competence for spatial localization of small molecules from a variety of samples.

## Complex mixtures

Utilize **eXtreme Resolution** to provide selectivity for samples such as petroleum, foods and beverages, environmental, and biological small molecules containing thousands of peaks that cannot be effectively or efficiently separated by conventional chromatographic methods.

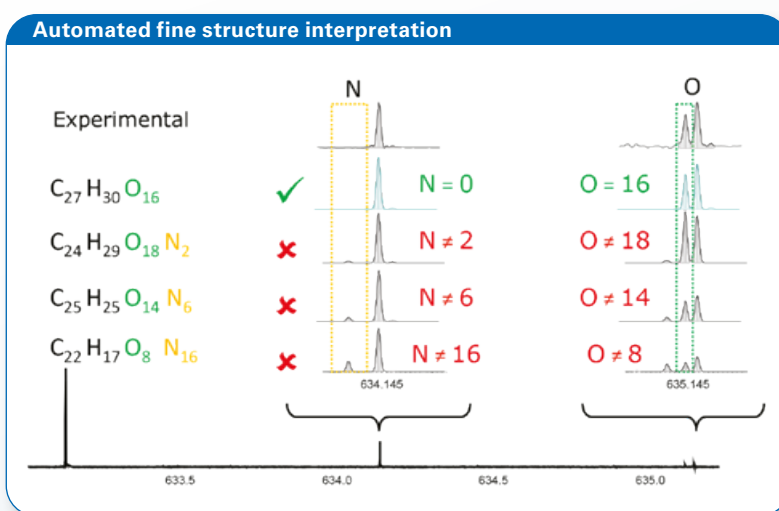
# eXtreme Resolution for measuring what is really there ...

Conventional mass spectrometry only sees nominal mass peaks for the isotopic clusters within detected compounds, although they are actually comprised of many different heteroatom isotopologues. **eXtreme Resolution** allows the user to routinely view isotopic fine structure, gaining powerful insight and unlocking secrets of this previously hidden realm.



## Automated interpretation of Isotopic Fine Structure (IFS)

SmartFormula software has evolved to handle the increased information provided by **eXtreme Resolution** and allows reading the chemical formula directly from the mass spectrum.



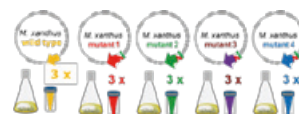
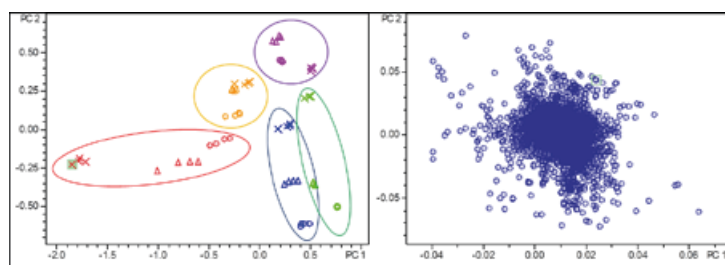
## ... and Making Quick Work of Complex Mixtures!

Meeting the challenge of analysis for large numbers of samples can quickly outstrip the capability of LC-MS platforms which consume precious time.

solariX XR is optimized for complex samples and can be tasked to handle large sample volumes in a fraction of the time required by traditionally applied methods, conserving time and saving money.

Screening methods can be easily assembled for automated MALDI or ESI that gather complex datasets in less than 1 minute followed by powerful multidimensional statistical analysis to find even the best hidden needle in a haystack.

### Ultrafast statistical profiling of complex mixtures

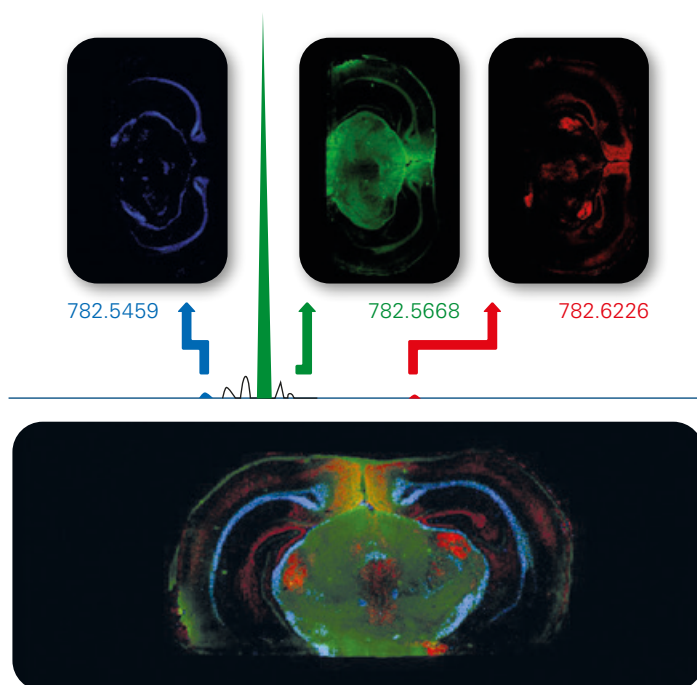


## Detect, Identify, Locate

The **eXtreme Resolution** advantage of solariX XR is enhanced by Bruker's industry leading imaging solution to create the ideal environment for high throughput small molecule imaging.

Complex mixtures produced by MALDI imaging are quickly separated in mass space and identified with unmatched specificity allowing seamless workflows that significantly increase chemical information content through spatial localization.

### eXtreme Resolution spatial MALDI imaging





# One technique for many application scopes

The solariX eXtreme Resolution series instruments are designed to enable versatile workflows. The access to Isotopic Fine Structure (IFS) information you have never been able to see before delivers results with ultimate confidence.

## **eXtreme Resolution ParaCell Detector**

Patented dynamically harmonized ParaCell ICR detector enabling routine access to IFS information

## **Multipole Transfer Optics**

Factory-optimized RF ion guides transmit ions 100 – 10,000  $m/z$  based on preloaded methods without the need for specialized tuning.

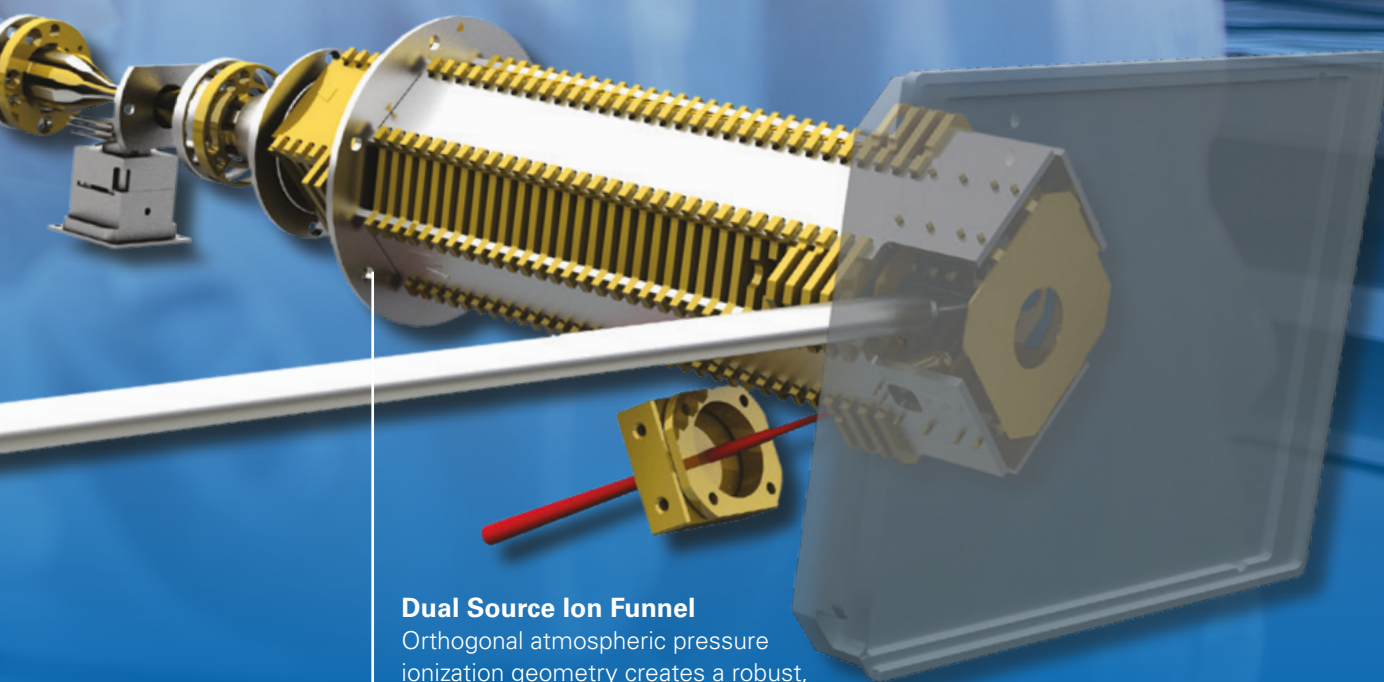
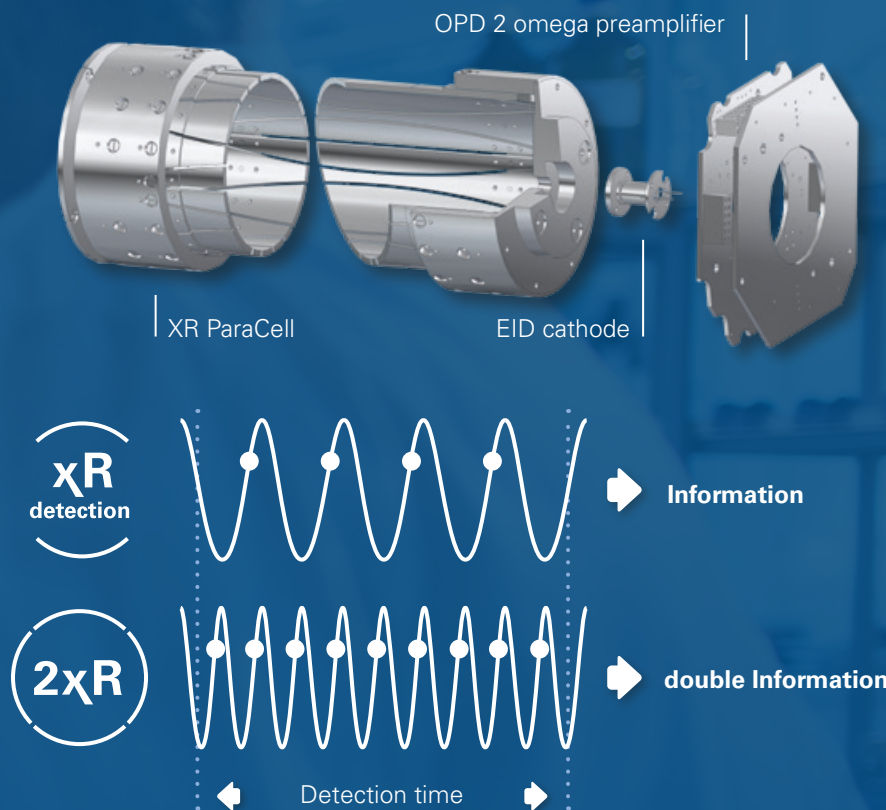
## **Powerful qQq Geometry**

Enables fast, automated MS/MS and advanced dynamic range MS experiments.





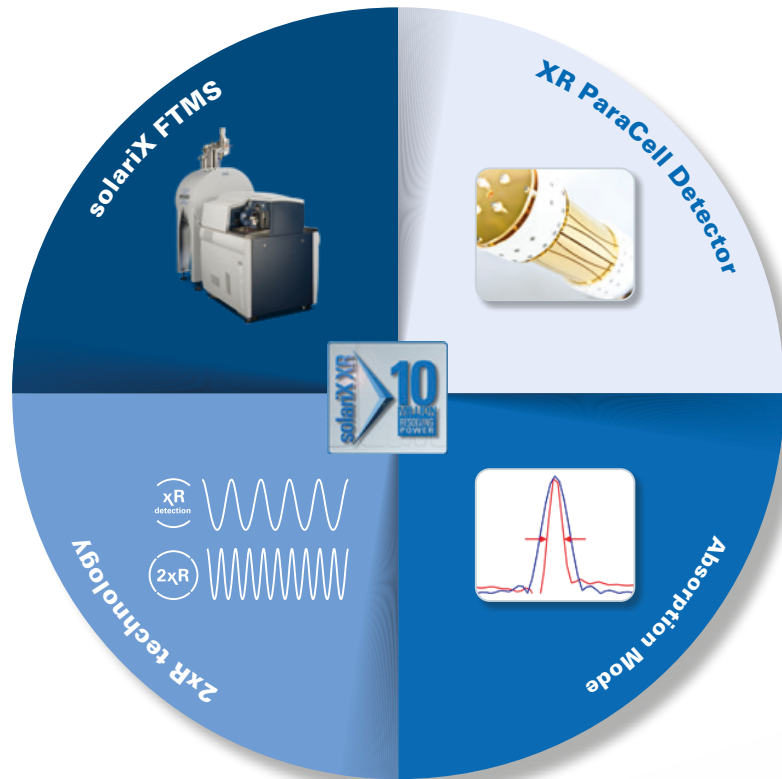
## 2xR technology enabling routine Isotopic Fine Structure analysis (IFS) with speed



### Dual Source Ion Funnel

Orthogonal atmospheric pressure ionization geometry creates a robust, simple yet powerful source with <5 seconds switchover to MALDI.

# Forging Productivity from Innovation



## 7T solarIX XR

**The flexible instrument for all routine IFS investigations**

- Hybrid Qh-FTMS mass spectrometer
- Patented dynamically harmonized ParaCell ICR detector
- Absorption Mode Processing (AMP)
- Ultrahigh performance low noise preamplifier
- Ultrastable low cost, low maintenance 7T magnet

## 7T solarIX 2xR

**The latest 2xR technology for fast and confident results**

- Hybrid Qh-FTMS mass spectrometer
- Patented dynamically harmonized ParaCell ICR detector with patented magnetron control technology
- Absorption Mode Processing (AMP)
- 2xR technology enabling routine Isotopic Fines Structure with speed
- Ultrahigh performance low noise 2xR preamplifier for improved sensitivity
- Ultrastable low cost, low maintenance 7T magnet

## Hi field solarIX XR

**Hi end technology for complex investigations**

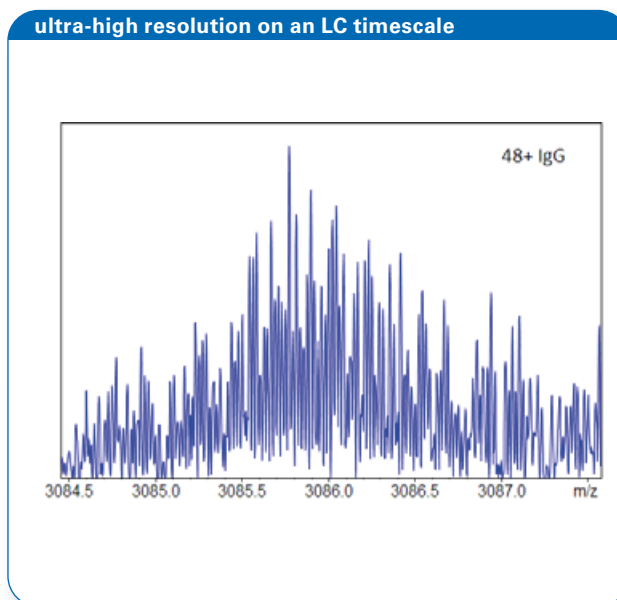
- Hybrid Qh-FTMS mass spectrometer
- Patented dynamically harmonized ParaCell ICR detector
- Absorption Mode Processing (AMP)
- Ultrahigh performance low noise preamplifier for improved sensitivity
- Ultrastable low maintenance, high field, high end magnet for ultimate dynamic range



# Speed and Resolving Power

## Unmatched resolving power

Routine acquisition of ultra-high resolution data on an LC timescale is now possible with the solariX 2XR. Acquiring isotopically resolved monoclonal antibody data was previously only possible using infusion. With the solariX 2XR, these measurements can now be performed on an LC timescale.

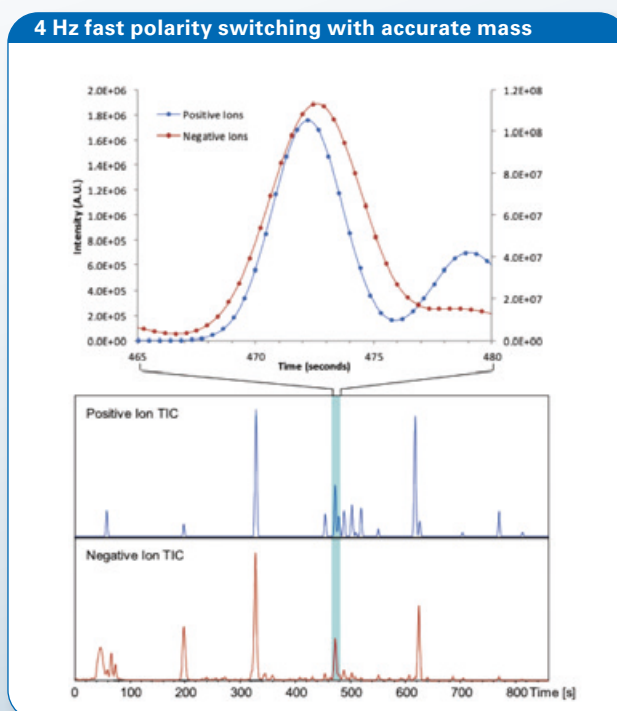


# Fast Polarity Switching

## Fastest in the industry for high mass accuracy

### “Zero Delay Alternating Polarity”

adds to the overall efficiency by providing a 4 Hz polarity switching capability at mass accuracies typical of ultra high performance mass spectrometers, providing the only solution to ultra high resolution and high mass accuracy polarity switching.

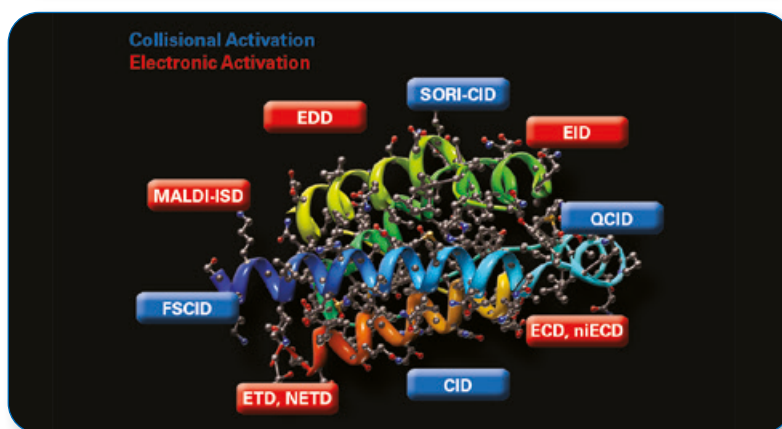
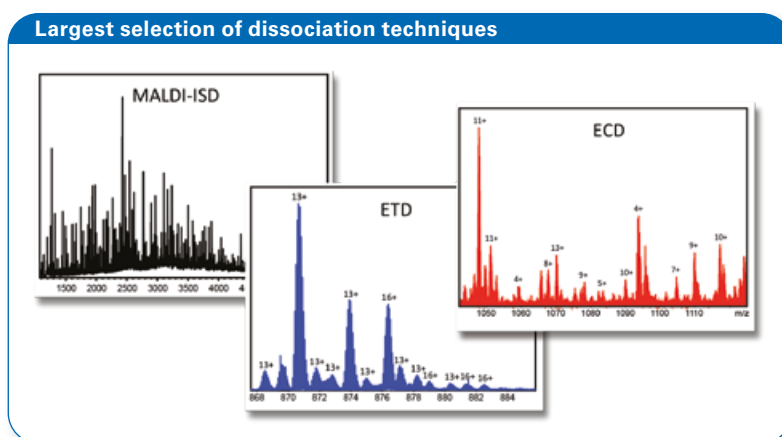


# Flexible Biomolecule Analysis

The new solariX XR is the most **flexible** mass spectrometry platform for the characterization of biomolecules.

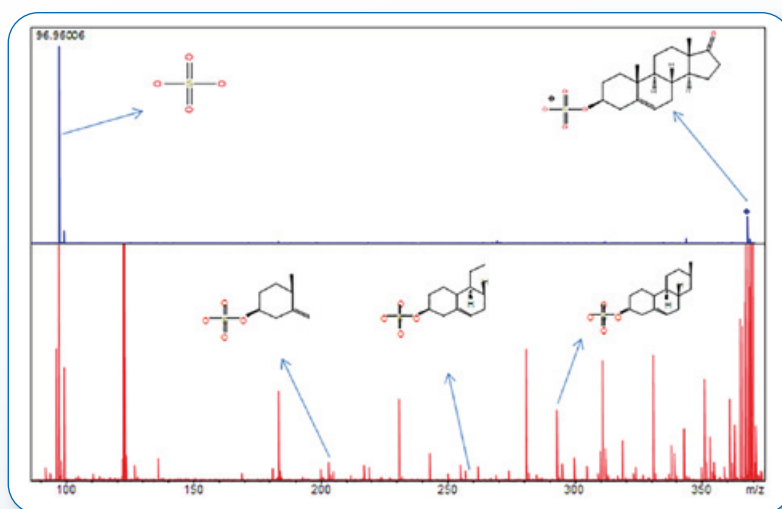
The solariX XR platform offers:

- The **largest variety** of collisional- and electron-dissociation techniques available on any mass spectrometry platform.
- **Highest mass accuracy** and **resolving power** of all mass spectrometers.
- **Wide  $m/z$  range**, from  $m/z$  100 – 10,000.
- Wide variety of **ion sources**, including MALDI, ESI, nanoESI, APPI, and APCI.



## Electron Induced Dissociation

Electron Induced Dissociation (EID) provides structural ring fragmentation of Androsterone Sulfate (AS), a notoriously difficult molecule to fragment (bottom spectrum). The dominant product ion in CAD (top spectrum), corresponds to loss of the sulfate head group. The y-axis, in the EID spectrum, has been scaled to show the large number of low abundant product ions which are not observed from CAD of AS.



# Dynamic Source Configuration

Unique to all of mass spectrometry, the Apollo II dual ESI/MALDI source supports the wide variety of Bruker AP ion sources and those of many third-party vendors, all switchable within seconds.

## CaptiveSpray™ nanoBooster

CaptiveSpray nanoBooster is the proteomics ion source that brings your MS to the next performance level – The operation is as easy as electrospray can be. The nanoBooster enables Glycoanalysis, supercharging and pushes up ID rates.

## ionBooster

The ionBooster offers a 5–100x gain in sensitivity for many compounds of interest in the fields of environmental analysis, food testing and therapeutic drug monitoring.

## APCI

**A**tmospheric **P**ressure **C**hemical **I**onization is used in metabolomics as well as for drug or pesticide screening for less polar molecules where ESI fails to deliver reasonable quantities of ions.

## APPI

**A**tmospheric **P**ressure **P**hoto **I**onization is used for less polar or non-polar molecules that can not be ionized in either ESI or APCI.

## DIP

The **D**irect**P**robe add-on for the Bruker APCI II and APPI II ion sources allows direct analysis of liquid and solid samples without tedious sample preparation.

## GC/APCI Source

The GC-APCI II Interface connects all Bruker mass spectrometers furnished with APOLLO II frontend via a unique flexible and heated transfer line to various GC-systems.

## MALDI

The highly sensitive MALDI source utilizes Bruker's innovative smartbeam-II™ laser technology. Widely accepted as the most viable MALDI imaging laser technology, and in conjunction with microtiter plate targets, provides unprecedented analytical and matrix flexibility.

Bruker's acquisition software enables push button control for fast switchover between MALDI and ESI workflows, even allowing simultaneous ESI/MALDI operation.





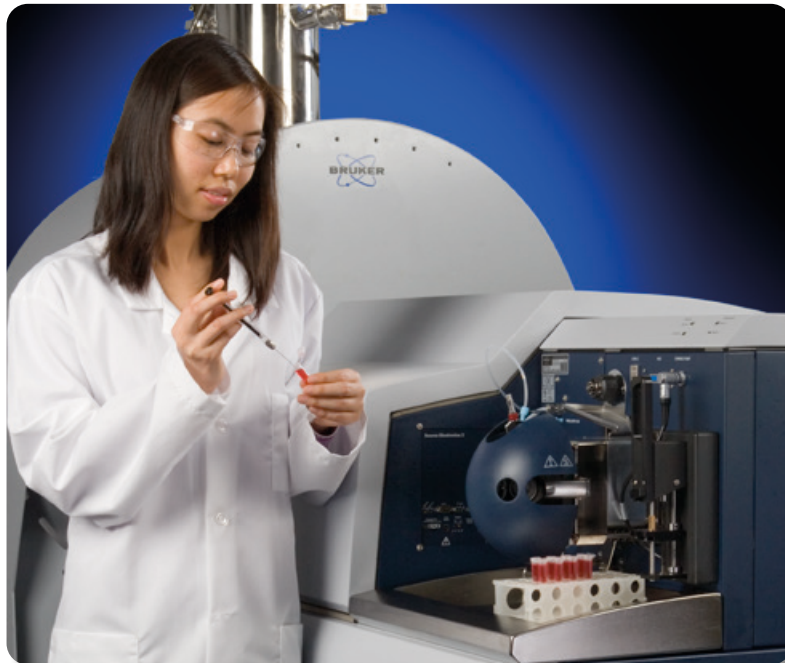
# solarix XR

*See what you've never seen before*



**Professor Eugene Nikolaev, ParaCell Inventor,  
Russian Academy of Sciences, Moscow**

*Continuing the tradition of Bruker innovation, the ParaCell is a new enabling technology for solarix XR. This radical concept is a departure from traditional ICR cell strategies and provides uncommon broadband ion stability resulting in resolution orders of magnitude above other detection schemes. This power enables the user to effortlessly obtain the extreme resolving power needed to probe isotopic fine structure or highly complex mixtures.*



**Resolution**

**Versatility**

**Confidence**

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

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