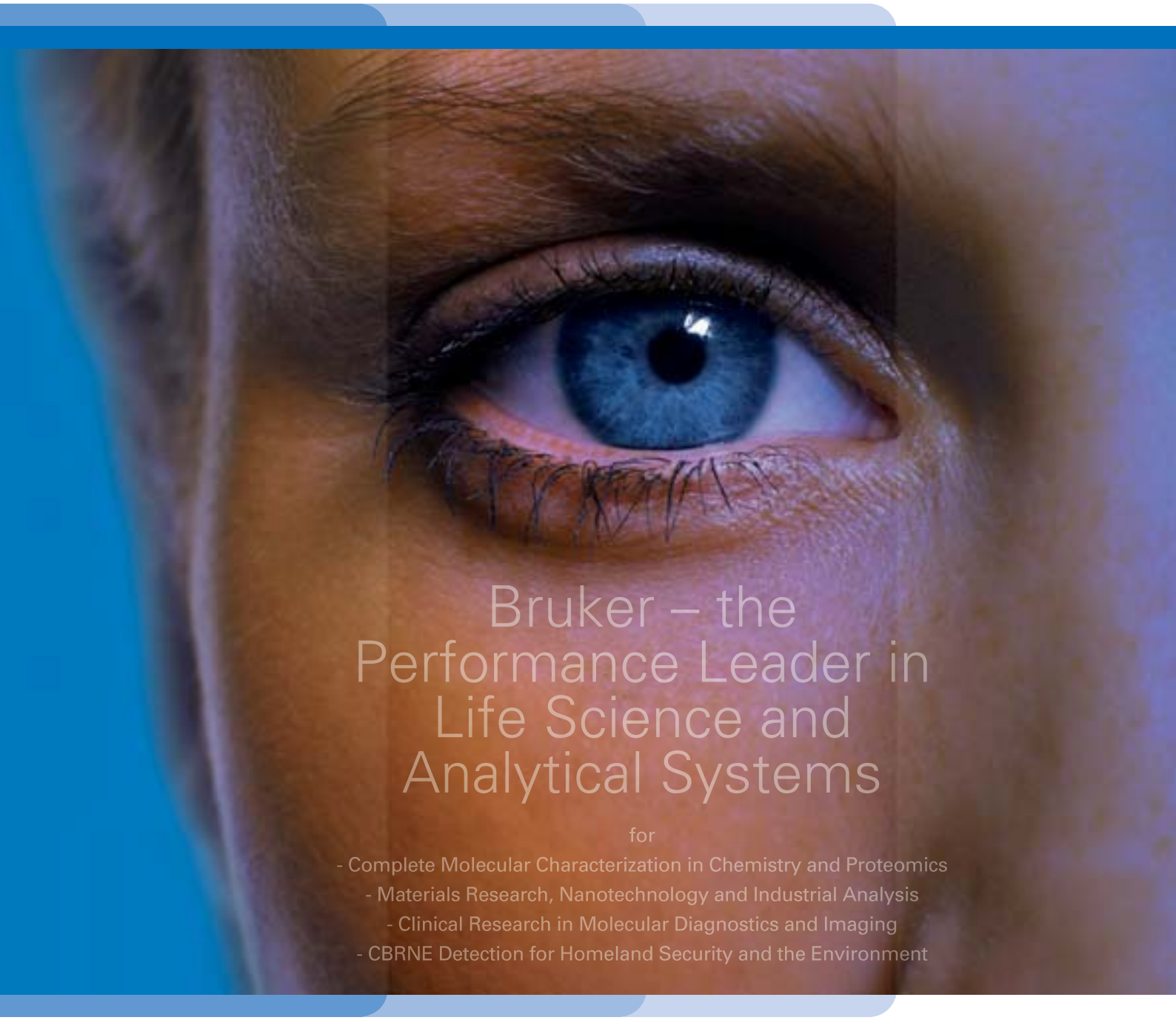


Bruker – the Performance Leader in Life Science and Analytical Systems

for

- Complete Molecular Characterization in Chemistry and Proteomics
- Materials Research, Nanotechnology and Industrial Analysis
- Clinical Research in Molecular Diagnostics and Imaging
- CBRNE Detection for Homeland Security and the Environment

think forward

Bruker is the performance leader in the following technology platforms and product lines:

Magnetic Resonance
- Nuclear Magnetic Resonance (NMR)
- Electron Paramagnetic Resonance (EPR)
- Magnetic Resonance Imaging (MRI)
- Superconducting Magnets

X-Ray and Elemental Analysis
- X-Ray Diffraction (XRD)
- X-Ray Spectrometry (XRF)
- X-Ray Crystallography (SCD)
- EDS and X-Ray Microanalysis
- Optical Emission Spectroscopy (OES)
- Combustion Analysis for Metals

Life Science Mass Spectrometry
- MALDI TOF/TOF Mass Spectrometry
- Ion Trap Mass Spectrometry
- Qq-TOF Mass Spectrometry
- ESI/MALDI-FTMS
- Clinical Research Systems for MALDI Molecular Imaging and Microorganism Identification

Molecular Spectroscopy
- FT-Infrared Spectroscopy (FT-IR)
- FT-Near Infrared Spectroscopy (FT-NIR)
- Dispersive and FT-Raman Spectroscopy
- FT-IR and FT-Raman Microscopy
- Bench-top TD-NMR Process and QA Systems

Chemical, Biological, Radiological, Nuclear and Explosives (CBRNE) Detection
- GC-Mass Spectrometry
- Ion Mobility Spectrometry (IMS)
- FT-IR Stand-off Detection and Powder Analysis
- Biological Classification and Identification Systems
- Explosives Detection Systems

Bruker – the performance leader in life science and analytical systems.

Right from the beginning, which is now nearly fifty years ago, Bruker has been driven by a single idea: to provide the best technological solution for each analytical task.

Today, worldwide more than 3,500 employees are working on this permanent challenge at over 70 locations on all continents. Bruker systems cover a broad spectrum of applications in all fields of research and development and are used in all industrial production processes for the purpose of ensuring quality and process reliability.

Bruker continues to build upon its extensive range of products and solutions, its broad base of installed systems and a strong reputation amongst its customers. Indeed, as our customers would expect, Bruker as one of the world's leading analytical instrumentation companies, continues to develop state-of-the-art technologies and innovative solutions for today's analytical questions.

Bruker. Think forward!

Bruker Corporation

The Bruker Group is a leading provider of high-performance scientific instruments and solutions for molecular and materials research, as well as for industrial and applied analysis. Bruker Corporation (NASDAQ: BRKR), headquartered in Billerica, Massachusetts, is the publicly traded parent company of Bruker AXS, Bruker BioSpin, Bruker Daltonics and Bruker Optics.

Bruker AXS

Bruker AXS is a leading global developer and manufacturer of analytical X-ray systems, optical emission spectrometers and combustion analyzers for elemental analysis, materials research and crystallographic investigations. Bruker AXS' innovative solutions enable a wide range of customers in research and industry – including chemistry, petrochemistry, pharmacy, metals and steel, semiconductor, cement, minerals and mining, automotive, forensics, environmental, art and conservation, nanotechnology and life sciences – to make technological advancements and to accelerate their progress.

Bruker BioSpin

Bruker BioSpin is the global market and technology leader in analytical magnetic resonance instruments including NMR, preclinical MRI and EPR. The company delivers the world's most comprehensive range of magnetic resonance research tools enabling life science, materials science, analytical chemistry, process control and clinical research. Bruker BioSpin is also the leading manufacturer of superconducting high and ultra high field magnets for NMR and MRI. Its superconducting wire business delivers the necessary high performance technology for NMR, MRI and FTMS magnets, as well as novel HTS conductors for emerging applications in renewable energy and power management solutions.

Bruker Daltonics

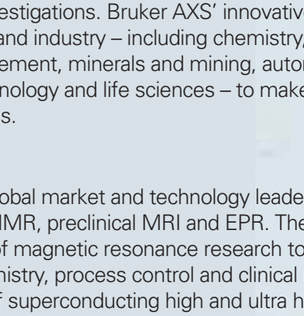
Bruker Daltonics is a leading manufacturer of mass spectrometry (MS) instruments and accessories for life science, pharmaceutical, biochemical and chemical research as well as for more routine analytical tasks in forensics and food safety. Technical solutions are based on a comprehensive range of MALDI-TOF/TOF, ESI/MALDI-Qq-TOF, ESI-ITMS, ESI/MALDI-FTMS mass spectrometry systems, as well as automated sample handling systems and productivity enhancing software designed to answer our customers' needs. Bruker Daltonics is also a global leader in nuclear, biological and chemical detection, with a CBRNE product line based on a broad array of technologies, including mass spectrometry and ion mobility spectrometry.

Bruker Optics

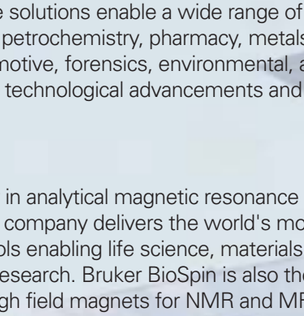
Bruker Optics offers the most advanced Fourier transform (FT-) Infrared and Near Infrared, Raman, time domain low resolution NMR and terahertz spectrometers for academic and industrial research, process and quality control.

Innovations for customers, delivered with integrity.

Bruker – the Group with analytical excellence, long time experience and global presence.



Bruker AXS facilities

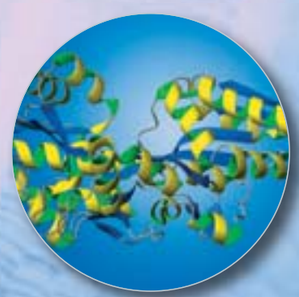


Bruker BioSpin facilities

Bruker Daltonics facilities

Bruker Optics facilities

Bruker facilities



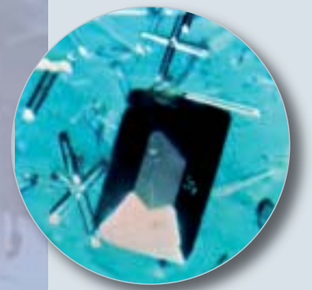
- Proteomics
- Structural Biology
- Metabolomics
- Nutrition
- Toxicology
- Clinical Research Solutions
- Functional Genomics
- Small Molecule Analysis
- Macromolecule Analysis

life science

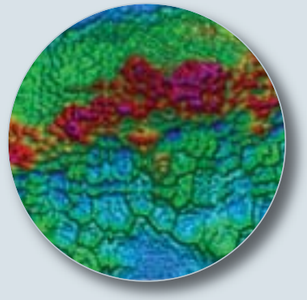
We are approaching a comprehensive understanding of biological organisms and processes.

PAC - Prespotted Anchor Chip
MALDI target technology

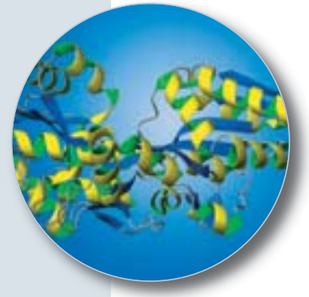
Structure determination
using X-ray crystallography.
Courtesy of: NASA



Protein distribution in kidney
tissue based on FT-IR imaging



Protein structure determination using NMR at 950 MHz
Courtesy of: Abbott labs



life science

Every biological organism has an individual set of genes, a typical set of proteins and a dynamic set of metabolites. Compared to the genome, the individual set of proteins and metabolites is dynamic and dependent on the respective constitution of the organism, its age or current burden.

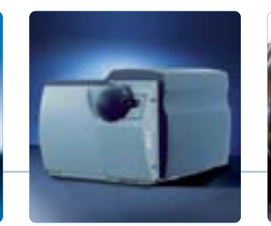
Proteomics studies the structures and general functions of proteins and endeavors to deduce generally applicable scientific data or phenotyping, for example of diseases.

The investigation of metabolites provides a snapshot of the current state of the organism; this is called metabolic profiling. This method is used in particular to examine substances for toxicity prior to clinical studies, to identify genetically modified organisms and in nutrition science.

Bruker supplies unique analytical methods and superior technological systems in the fast-growing scientific fields of genomics, proteomics and metabolomics.

950 MHz US² Ultra High Field NMR
system for basic analytical research

ultraflex III mass spectrometer
for high-confidence proteomics



The HCTultra PTM Discovery
System

X8 PROTEUM with ÅXIOM
for biological crystallography

X8 PROSPECTOR for
crystal screening

Ultra compact 800 MHz
UltraShield™ Plus NMR magnet

850 MHz US² wide bore
system for solid-state NMR
Courtesy of: ETH Zurich

Metabolic Profiler™ –
fully-integrated solution
for metabolic profiling

HYPERION series
FT-IR Microscopy

- Cement & Minerals
- Petrochemistry
- Semiconductors
- Electronics
- Metals
- Aluminum
- Glass & Ceramics
- Recycling & Refinement
- Coatings
- Aerospace Industry
- Clean Room Production

quality and process control

All types of industry, all types of production all over the world rely on state-of-the-art analysis.

Quality control in industrial food production

Process control in cleanroom production

Process control in cement production. Courtesy of: RHI Refractories

Trace analysis in seeds production

quality and process control

All industrial processes must be continuously monitored and the quality guaranteed one hundred percent at all times. This is the responsibility of this sector in a nutshell. The complexity and extent of the analytical requirements can be recognized fully when looking at the various industrial sectors and the analytics they involve. Practically every modern method of analysis is utilized in process and quality control. And Bruker always supplies the optimal technical solution.

Yet, despite the enormous diversity, those responsible for quality and processes always demand the same high performance from their analytical system in terms of reliability, reproducibility, operability and quality of the results. This is because they are responsible for the quality of thousands of hectoliters of wine, thousands of structured wafers, millions of tons of cement or millions of tablets, to mention just a few examples.

S8 TIGER for multi-element analysis

e-scan – table-top EPR analyzer for quality control

SampleJet™ – the versatile auto sampler

D8 FABLINE for semiconductor fabs

S2 RANGER for multi-element analysis

D4 ENDEAVOUR for phase identification

Q4 TASMAN for metals analysis

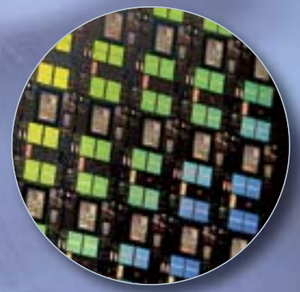
MATRIX Series Process FT-NIR Spectrometers

ALPHA for routine FT-IR analysis

micrOTOF-Q mass spectrometer for reliable formula determination

materials research

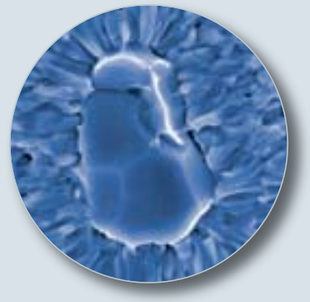
Today's world relies on intelligent materials and production methods.



- Coatings, Thin Films & Multilayers
- Biopolymers & Synthetic Polymers
- Nanotechnology & Nanomaterials
- Semiconductors
- Superconductors
- Metals & Alloys
- Wafer Structuring
- Forensic Analysis
- Analytical Chemistry
- Biomimetic Design
- Petrochemicals

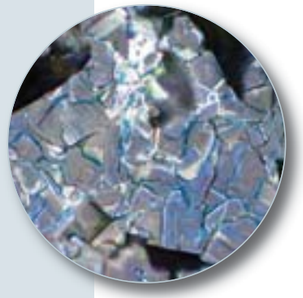
Micrograph of nanoparticles

Micrograph of a superconducting wire



Structured wafer

High-Tc superconductor



materials research

Materials science constitutes a real interdisciplinary challenge. Research into new and existing materials relies on a wide variety of disciplines, including physics, chemistry, biology, mineralogy and geology. An important, common goal of the scientists in this field is to discover how the structure and the characteristics of a material are related to one another.

All over the world researchers and developers place their trust in Bruker technology for their work and, with its help, develop materials and work pieces with really fascinating properties. We are all familiar with the famous terms ‘lotus blossom effect’, ‘superconductor’, ‘semiconductor’ or ‘Teflon®’. Yet very few people are aware of the many skills involved and the extent to which high tech materials make our daily life easier; nor do they realize how much nanotechnological manufacturing processes already simplify industrial production.

Few research or application fields have grown as fast over the past ten years or have had such a sustained impact on modern life. In the future this field will continue to deliver the challenges to be met by Bruker technologies and solutions.

D8 DISCOVER with GADDS for materials research

VERTEX series research FT-IR

autoflex III smartbeam for polymer characterization

SENTERRA – dispersive Raman microscope

D8 ADVANCE for phase determination

NANOSTAR for nanomaterials research

D8 DISCOVER for non-ambient investigations

X-Flash-Detectors for elemental analysis

TriGamma™ NMR probes – meeting new challenges in solid state NMR

EMXplus for premium performance in routine EPR research

- Wine & Beverages
- Fruits, Vegetables & Juices
- Feed & Forage
- Seed & Oilseed
- Water Analysis
- Pesticides & Hazardous Materials
- Environmental Monitoring
- Security & Protection
- Milk & Dairy
- Functional Food
- Origin Authentication
- Species Purity
- False Labeling

food and environment

The basis of modern life is the efficient and responsible utilization of natural resources.

On-site analysis for hazardous materials

Quality control in food industry

Process and quality control in wine and beverages industry

Trace analysis and environmental monitoring

food and environment

In terms of quality of life there is no other field at Bruker that plays such a major and direct role as nutrition and the environment. After all, the quality of food has a direct impact on our health and metabolism.

Worldwide, production processes and flows of goods characterize this sector of modern society. For the manufacturers in the food and beverages industry a range of challenges are faced from authentication of origin, representing the first step in the quality assurance process, to flavor profiling and above all, safety.

Bruker supplies numerous technologies and solutions to these fields making it possible to authenticate origin, optimize production processes and continuously monitor the safety of ingredients and final products. The constant efforts undertaken by food producers and regulatory authorities to ensure quality and safety are matched by the application of our state-of-the-art analytical systems to basic research and development, which is increasingly determining developments in this field.

The many harmful and hazardous chemical, biological, radiological and nuclear substances in the environment constitute an increasingly important issue faced by authorities and consumers alike. Bruker systems provide reliable support in identifying, verifying and eliminating these ever changing and increasing threats.

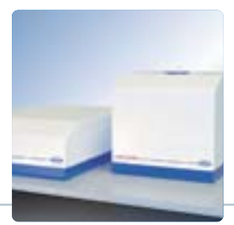
MPA – FT-NIR Multi Purpose Analyzer

Metabolic Profiler for fruit juice authentication

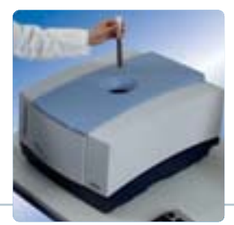
MATRIX™-I for QA/QC analysis

S1 TRACER for on-site element analysis

S2 PICOFOX for trace element analysis



e-scan – table-top EPR for irradiation control and beer analysis



minispec mq-one for industrial quality control

apex ultra for elemental composition ID

micrOTOF-Q mass spectrometer for identification of natural products

RAID-M 100 Chemical Agent Detector for Homeland Security

- Target and Lead Validation
- Structure Determination
- Structure/Activity Relationship
- Combinatorial Screening
- Drug Discovery
- Drug Development
- Functional Genomics
- Pharmacogenomics
- Biomining
- Bioavailability & Solubility
- Biomarker Discovery
- Metabolites
- Quality & Process Control
- Drug Imaging

pharmaceuticals

Maximum effectiveness and human tolerance, fast target validation and minimal time-to-market are the crucial factors.

Fat lean analysis

Material comparison in combinatorial screening

Process analytical technology

High-throughput screening

pharmaceuticals

The pharmaceutical industry deals with all aspects of discovering, manufacturing and developing new chemical substances for therapeutic applications. Regardless of whether the developers are endeavoring to improve known substances, to find new ones in nature, to optimize methods of synthesis, or to develop new drugs, all these aspects have one thing in common: Very large numbers of samples have to be characterized reliably and comprehensively by means of the screening method.

Therefore Bruker offers a broad range of high-throughput systems for all analytical methods and tasks, guaranteeing rapid success in the search for new active substances, drugs, targets and medical tests.

Genetic factors cause people to react differently to drugs. Both the effectiveness and the side effects can vary considerably from one patient to another. It is the declared objective of pharmacogenomics to identify relevant genetic factors by means of genetic tests and to take them into account in the development of tailor-made drugs. In routine use it is imperative that the relevant analytical method be as fast and simple to apply as possible, yet at the same time maintain maximum quality. The potential offered by the array of Bruker technologies available, forms the basis of a future with individualized therapy approaches to best suit the requirements of each patient.

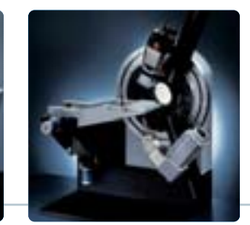
microflex LT for biomarker discovery and target screening

MPA FT-NIR analyzer for Pharmaceutical Process Analytical Technology (PAT)

AVANCE III NanoBay, a fully integrated NMR spectrometer

MicroCryoProbe for small volume NMR

MICROSTAR ULTRA high-power X-ray source

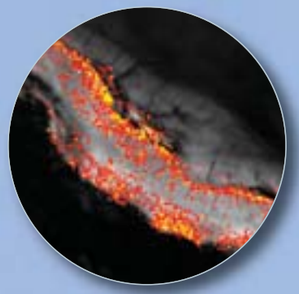


D8 DISCOVER HTS for high-throughput screening

D8 DISCOVER for non-ambient combinatorial screening

autoflex III smartbeam mass spectrometer for protein characterization

micrOTOF-Q mass spectrometer for elemental composition determination



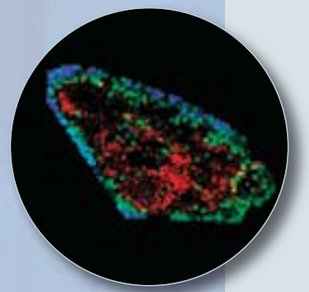
- Life Sciences
- Human Proteome
- Clinical Proteomics
- Molecular Imaging
- Molecular Biology
- Preclinical Research
- Small Animal Imaging
- Molecular Medicine
- Human Genome
- Biomarker Discovery

clinical research

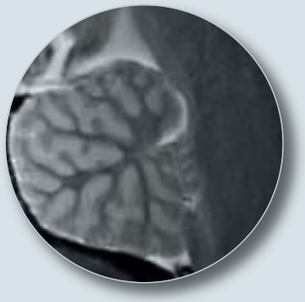
Insights in molecular dimensions will revolutionize medicine in the future.

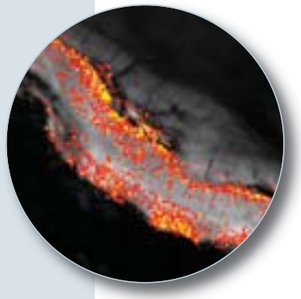
MALDI-TOF based microorganism ID

MALDI Imaging, screening for masses on tissue slices



In vivo MRI at microscopic scale





High resolution functional MR imaging showing brain activation. Courtesy of: N. Logothetis, MPI Tübingen

clinical research

Modern clinical research is particularly concerned with the development of new forms of diagnostics and therapy based on the molecular building blocks present in the body, such as proteins. Knowledge of protein structure and function is of immense importance to the understanding of the entire organism because proteins control almost all processes in humans. The magnitude of the challenge this poses to science becomes clear when the number of human genes – 22,000 – is compared to the number of proteins that exist in the human body – 500,000 to 1,000,000!

Bruker is developing state-of-the-art probes for clinical research and supplies various methods and systems for analyzing macromolecules. Thanks to the insights gained, researchers are today already in a position to characterize a series of different cell types, tissue types and metabolites by means of so-called biomarkers in the body. This method makes it possible to conclusively identify and localize tumor cells long before there are any symptoms to indicate a disease or before other classic diagnostic methods can promise any success.

The molecular imaging process takes research even further. The intention is to render biological processes visible at the cellular and molecular level in order to achieve a better understanding. Functional methods enable researchers to monitor "in real time" as sensory stimuli are being processed in the brain. This is the one of the basis for gaining fundamental knowledge of molecular processes and for diagnosing pathological deviations at an early stage.

Furthermore, a full, differentiated representation of fine tissue structures greatly enhances therapy in molecular medicine. Bruker is able to create opportunities for clinical researchers to form a connection between preclinical research and molecular medicine. This permits analysis of molecular details in the body in vivo and with the highest possible resolution.

Pre-clinical small animal MR imaging system

BioSpec MRI system for pre-clinical imaging

MRI CryoProbe for imaging at a microscopic scale

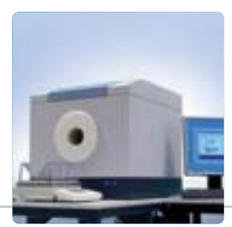
ImagePrep station for MALDI imaging sample preparation

microflex for microorganism fingerprinting

ultraflex III mass spectrometer for biomarker characterization

ClinScan for molecular MRI and translational research

BioSpec 11.7T Ultra high field MRI system



LF90 small animal body composition analyzer

		life science	quality & process control	materials research	food & environment	pharmaceuticals	clinical research
Bruker AXS							
S2 series	EDXRF		●	●	●	●	
S4 series	WDXRF		●	●	●	●	
S8 TIGER	WDXRF		●	●	●	●	
D4 ENDEAVOR	XRD		●		●	●	
D8 ADVANCE	XRD		●	●	●	●	
D8 DISCOVER	XRD	●	●	●	●	●	
D8 FABLINE	XRD		●	●			
NANOSTAR	SAXS			●		●	●
X8 Series	SCXRD	●		●	●	●	
APEX II Series	SCXRD			●	●	●	
SMART X2S	SCXRD			●	●	●	
Q4, Q6, Q8 series	OES		●	●			
QUANTAX	EDS	●	●	●		●	
Bruker BioSpin							
AVANCE III	NMR	●	●	●	●	●	
UltraShield UltraStabilized	NMR	●		●		●	
UltraShield Plus	NMR	●	●	●	●	●	
Metabolic Profiler	NMR/MS	●			●		●
AVANCE III NanoBay	NMR		●		●	●	
CryoProbes	NMR/MRI	●	●		●	●	●
TopSpin	NMR	●		●		●	
ELEXSYS	EPR	●		●			
EMX	EPR	●		●	●	●	
e-scan	EPR			●	●	●	
BioSpec	MRI	●				●	●
ClinScan	MRI	●				●	●
PharmaScan	MRI	●				●	
Bruker Daltonics							
FLEX series	MALDI TOF MS	●	●	●			●
HCT series	IT MS	●				●	●
micrOTOF(-Q)	ESI TOF MS	●	●		●	●	
apex ultra	FTMS	●	●		●	●	
PROTEINEER	MS	●					●
MALDI Molecular Imager	MALDI TOF MS	●				●	●
TargetAnalysis	MS		●		●	●	
EASY-nLC	Nano-HPLC	●				●	●
RAID-series	CBRN				●		
BioProfiler	CBRN				●		
RAPID	CBRN				●		
Bruker Optics							
ALPHA	FT-IR		●	●	●	●	
TENSOR	FT-IR	●	●	●	●	●	
VERTEX	FT-IR	●		●		●	
MPA	FT-NIR		●		●	●	
MATRIX	FT-NIR		●		●	●	
SENTERRA	RAMAN	●		●		●	
MultiRam	RAMAN	●	●	●	●	●	
minispec mq	TD-NMR		●	●	●	●	
minispec LF	TD-NMR	●					●

solutions at a glance

Every analytical method has its unique features and applications. Some methods deliver complementary and others substitutive results. Some are faster, some more simple, some most accurate…

But which is the “best” analytical solution?

Whatever your application is, two things are certain: Bruker is your partner in finding the most suitable solution for your application and all systems provided by Bruker will equip you excellently for demanding tasks and genuine challenges.

For a comprehensive overview of Bruker solutions please go to: www.bruker.com

		life science	quality & process control	materials research	food & environment	pharmaceuticals	clinical research
Bruker AXS							
S2 series	EDXRF		●	●	●	●	
S4 series	WDXRF		●	●	●	●	
S8 TIGER	WDXRF		●	●	●	●	
D4 ENDEAVOR	XRD		●		●	●	
D8 ADVANCE	XRD		●	●	●	●	
D8 DISCOVER	XRD	●	●	●	●	●	
D8 FABLINE	XRD		●	●			
NANOSTAR	SAXS			●		●	●
X8 Series	SCXRD	●		●	●	●	
APEX II Series	SCXRD			●	●	●	
SMART X2S	SCXRD			●	●	●	
Q4, Q6, Q8 series	OES		●	●			
QUANTAX	EDS	●	●	●		●	
Bruker BioSpin							
AVANCE III	NMR	●	●	●	●	●	
UltraShield UltraStabilized	NMR	●		●		●	
UltraShield Plus	NMR	●	●	●	●	●	
Metabolic Profiler	NMR/MS	●			●		●
AVANCE III NanoBay	NMR		●		●	●	
CryoProbes	NMR/MRI	●	●		●	●	●
TopSpin	NMR	●		●		●	
ELEXSYS	EPR	●		●			
EMX	EPR	●		●	●	●	
e-scan	EPR			●	●	●	
BioSpec	MRI	●				●	●
ClinScan	MRI	●				●	●
PharmaScan	MRI	●				●	
Bruker Daltonics							
FLEX series	MALDI TOF MS	●	●	●			●
HCT series	IT MS	●				●	●
micrOTOF(-Q)	ESI TOF MS	●	●		●	●	
apex ultra	FTMS	●	●		●	●	
PROTEINEER	MS	●					●
MALDI Molecular Imager	MALDI TOF MS	●				●	●
TargetAnalysis	MS		●		●	●	
EASY-nLC	Nano-HPLC	●				●	●
RAID-series	CBRN				●		
BioProfiler	CBRN				●		
RAPID	CBRN				●		
Bruker Optics							
ALPHA	FT-IR		●	●	●	●	
TENSOR	FT-IR	●	●	●	●	●	
VERTEX	FT-IR	●		●		●	
MPA	FT-NIR		●		●	●	
MATRIX	FT-NIR		●		●	●	
SENTERRA	RAMAN	●		●		●	
MultiRam	RAMAN	●	●	●	●	●	
minispec mq	TD-NMR		●	●	●	●	
minispec LF	TD-NMR	●					●

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