Training Courses for Mass Spectrometry and Surface Plasmon Resonance

Instrumentation, Software Packages and Solution for Life Science and Applied Markets

Table of Contents

Power up Your Skills and Share Your Knowledge

Trainings on Bruker instrumentation, software packages and solutions are provided by very experienced application experts.

Various courses are available covering the range from absolute beginners to experienced users.

- **Training**
- **Improvement**
- **Practice**
- **Focus**
- **Intelligence**
- **Lesson**
- **Motivation**
- **Success**

General Remarks and Information for Training Courses

Registration
For registration, please access the online registration at www.bruker.com or contact training-hb@bruker.com.

Registration
After submission of your registration, you will get a summary of the submitted information automatically. This is not a confirmation. The registrations will be taken into consideration on a first come, first served basis.

Confirmation
After receiving your registration, we will confirm your participation. If the selected training course is already fully booked, we will inform you immediately.

Training costs
Training costs include the course fees as well as lunch and beverages during the training.

Travel and accommodation are excluded. Please contact your local Bruker Training Center to get a list of recommended hotels located nearby.

Course language
All courses will be held in English unless otherwise agreed with the customer.

Cancellation
Bruker Daltonics GmbH & Co. KG reserves the right to cancel the training if the minimum number of participants is not achieved one month prior to the training date.

Customers may cancel in writing not later than one month prior to the training date at a full refund of the training price. If customer cancels later than two weeks before the training, the full training fee will be charged. Customers may substitute a participant without extra charge or payment in this case. Bruker needs to be informed to register the new participant beforehand.

Training material
Training material will be provided by the trainer. Any recordings of training or parts of training are prohibited.

Bruker general terms and conditions of supply and service apply.

Overview

Training Courses at a Training Center

Essential Operator Training Courses
- Introductory courses at a Bruker training center.

- Includes instrument control, data acquisition and processing.

- Includes sample preparation and application-specific training

- If HPLC is required, it includes application relevant HPLC aspects but does not substitute an explicit HPLC training.

- The number of participants is usually limited to 6 persons per course.

- Price is per person and excludes all travel and lodging expenses.

Advanced Operator Training Courses
- Prerequisite for attending an advanced operator training course is the successful participation in an essential operator training course.

- Basic theory will be touched on, but will not be in the focus of advanced trainings.

- Comprehensive software courses to give an overview of software functionalities for a fast productivity ramp-up.

- Price is per person and excludes all travel and lodging expenses.

Onsite Training Courses

Onsite Operator Training Courses
- Contents are defined prior to the training between the customer and Bruker training center.

- Time needs should be calculated analogously to the factory training courses. Parameter optimization in your lab and of your instrument requires approximately an additional half day.

- The number of participants in the training is not limited but should not exceed a reasonable number to ensure a good interaction between trainees and trainer (usually up to 6 persons). A training room should be provided by the customer to ensure a productive training.

- Bruker reserves the right to convert an ordered onsite training into an in-house training in case of war, civil war, political instability, the risk of terrorist activity, pandemics or natural disasters which pose a significant threat for Bruker employees. In this case, Bruker will carry the costs for traveling in economy class to the Bruker training center providing the training as well as lodging costs for a maximum of two training participants. Travel costs of accompanying persons not participating in the training cannot be covered.

Online Training Courses

Online Operator Training Courses
- Software training courses are offered online.

- Courses can be spread on multiple sessions to allow for smaller amount of information per session.

- To offer trainings during times when travelling is difficult or not allowed a variety of online trainings is available.

Did you know?

Bruker LabScape maintenance service agreements are not only a key component for maximizing the duty cycle and reliability of your instrument. It is also your access to a global network of application and support specialists as well as orginal parts and supplies. Depending on your contract you enjoy a basic or premium discount on Bruker MALDI consumables, dedicated training and targeted application support.

Get in touch with your local Bruker office and discover your possibilities.

LabScape®
Service & Lifecycle Support

Maintenance Service Agreements for Life Science

	LabScape Connect	LabScape Essential	LabScape Access	LabScape Complete	LabScape Complete 48
Remote Services					
Remote Monitoring*	✓	✓	✓	✓	✓
Unlimited Priority Remote Support	✓	✓	✓	✓	✓
Software services					
Compass & Data Analysis SW Upgrades	✓	✓	✓	✓	✓
Postprocessing SW Licenses & Upgrades**		discount	discount	premium discount	premium discount
Upgrade of Postprocessing Software**				1 Voucher p.a	1 Voucher p.a
Regular Maintenance					
Regular Maintenance Work and Parts		✓	✓	✓	✓
Onsite Repair Services and Parts					
Unlimited Repair Visits incl. Spare Parts			✓	✓	✓
Wear and Tear Part Replacement	discount	discount	discount	✓	✓
Loaner Equipment*					✓
Compliance Services					
Operational Qualification / Perform. Validation					included
Onsite Response Service Level					
Onsite Response			3-5 business days	3-5 business days	2nd business day
Additional benefits					
Consumable Parts	discount	discount	discount	premium discount	premium discount
Operation Training or Applications Training	discount	discount	discount	premium discount	premium discount

* if applicable to the respective product
** SCiLS™ Lab, MetaboScape®, BioPharma Compass®

Training Center Contact Information

Europe

Bruker Daltonics GmbH & Co. KG
Fahrenheitstrasse 4
28359 Bremen, Germany
Phone: +49 (421) 2205-1591
Email: Training-HB@Bruker.com

Bruker Daltonique S.A.
Parc de la Haute Maison - Bât A5 – RDC
77420 Champs sur Marne, France
Phone: +33 (388) 0660-40
Email: Application.masse@bruker.com

Bruker Española S.A
Parque Empresarial Rivas Futura
C/Marie Curie, 5 Edificio Alfa, Planta Baja
28521-Rivas Vaciamadrid
Madrid, Spain
Phone: +34 (91) 4994080
Email: bruker@bruker.es

America

Bruker Scientific LLC
40 Manning Road, Manning Park
Billerica, MA 01821, USA
Phone: +1 (978) 663-3660
Email: MS-Training-Americas@bruker.com

Bruker Scientific LLC
101 Daggett Drive
San Jose, CA 95134, USA
Phone: +1 (978) 663 3660
Email: MS-Training-Americas@bruker.com

Bruker do Brasil Ltda.
Condomínio BBP – Barão de Mauá
Rod.D.Pedro I, km 87.5 (pista norte) 12954-
260 Atibaia, SP, Brazil
Phone: +55 (11) 2119-1770
Fax: +55 (11) 2119-1772
Email: luiz.santos@bruker.com

Asia

Bruker Japan K.K. Daltonics Division
1-8-29, Nishimiyahara
Yodogawa-ku
Osaka-city
Osaka 532-0004, Japan
Phone: +81 (45) 4400478
Fax: +81 (45) 4532458
Email: Training.BDAL.JP@bruker.com
Training course available in Japanese
language

Bruker (Beijing) Scientific Technology Co., Ltd
8F, Tower C, Building B-6, No.66 Xi Xiao Kou
Road, Haidian District
Beijing 100192, China
Phone: +86 (10) 5833 3000
Fax: +86 (10) 5833 3030
Email: MS_Training_China@bruker.com
Training course is available in Chinese language

Bruker (Shanghai) Scientific Technology Co., Ltd
Shanghai Office
9F, Building NO.1, Lane 2570, Hechuan Rd,
Minhang District Shanghai 200233, China
Phone: +86 21 51720800
Fax: +86 (021) 5172 0880
Email: MS_Training_China@bruker.com
Training course is available in Chinese language

Language: Check language availability at your training center. In factory trainings are not available in some regions, please check with your training center.

Training Course Index

All trainings offered with an instrument purchase can also be ordered as standalone trainings (please just look for the corresponding training order number).

Register Number	Training Name	Duration	Page
ESI-timsTOF Operator			
Essential Operator Training Courses, In-House			
C8EL23	Low Molecular Weight Applications	3 Days	24
C8EL33	Low Molecular Weight Applications including MetaboScape®	3 Days	25
C8EB13	BioPharma Compass® Workflows	3 Days	26
C8EP23	Proteomics	3 Days	27
C8ET13	TargetScreener 4D Solution	3 Days	28
ESI-timsTOF flex Operator			
C8EI13	MALDI Imaging	3 Days	30
TQ Operator			
Essential Operator Training Courses, In-House			
C6EA23	LC-MS TQ	3 Days	32
C6EA13	GC-MS TQ	3 Days	33
C7EA11	GC-APCI	1 Day	34
MRMS Operator			
Essential Operator Training Courses, Onsite			
C4EG13	MRMS Operator	3 Days	36
C4EI12	MALDI Imaging	2 Days	37
C4EL12	Metabolomics	2 Days	38
C4EP12	Petroleomics	2 Days	38
C4EB12	Biomolecules	2 Days	40

Register Number	Training Name	Duration	Page
ESI Ion Trap Operator			
Essential Operator Training Courses, In-House			
C2EL13	Low Molecular Weight Applications	2.5 Days	42
C2EX13	Toxtyper® Routine Workflows	2.5 Days	43
UHPLC Operator			
Essential Operator Training Courses, In-House / Online			
C5EL12	Elute+ UHPLC	2 Days	45
SPR Operator			
Essential Operator Training Courses, In-House / Online			
D1EX01	SPR Pro Instruments	2 Days	47
D3AX01	SPR Individual Operator Onsite Training Course	up to 3 Days	48
Software courses			
Advanced Operator Training Courses, Online			
C9AA11	Statistical analysis of MALDI Imaging data using SCiLS™ Lab software	2 x 0.5 Days	50
C1AS11	Polymer analysis using PolyTools	0.5 Days	51
C9AA21	MetaboScape®	2 x 0.5 Days	52
C9AA61	TASQ®	2 x 0.5 Days	53
C9AA32	BioPharma Compass®	2 x 0.5 Days	54
D2AX01	SPR Pro Instruments, Analyzer & Control Software	0.5 Days	55
Advanced Operator Training Courses, Onsite			
	General	2, 3, 4 or 5 Days	56

All essential or advanced operator trainings can also be ordered onsite. Online courses and 1 day training courses are exempted from this unless sold together with other onsite trainings.

MALDI-TOF(/TOF) Operator

Training courses cover the range from
instrument control to application driven solution

MALDI-TOF(/TOF) Essential Operator Training Course

Proteomics

Intention

This training course focuses on the basics of practical MALDI-TOF or MALDI-TOF/TOF operation in the context of proteomics and protein analysis experiments. The course covers the essentials of sample preparation, data acquisition/processing and instrument maintenance, and, thus, will enable novice users getting started with MALDI-TOF(/TOF) analyses of peptides and proteins.

Prerequisite

No deeper pre-experience is required. However, before attending the training course, participants are encouraged to take part in the user familiarization that is done at a customer site upon installation of the MALDI-TOF(/TOF) instrument, and to gain some first practical experience over a few weeks.

Course Topics

Instrument overview

General introduction to the principles of MALDI-Compass® TOF(/TOF) (MALDI ionization, TOF(/TOF) analyzer).

Sample preparation

Sample requirements (concentration, purity), sample pre-treatment (desalting), matrices of choice and matrix preparation protocols for various types of samples (peptides, proteins, incl. samples modified by e.g. phosphorylation, glycosylation).

Data acquisition

Introduction to Bruker´s flexControl software, optimization of most important acquisition method parameters (e.g. laser fluence, shot count per spectrum), automated data acquisition using autoXecute.

Data processing

Introduction to Bruker´s flexAnalysis software, peak annotation, smoothing, baseline subtraction, recalibration (internal / external), automated processing using flexAnalysis methods.

Data interpretation

Introduction to Bruker´s Biotools or BioPharma Compass® software, protein identification by database search (MASCOT), batchwise database searching using batch search methods.

Instrument maintenance

Participants will be familiarized with all the maintenance operations that are to be done routinely by instrument users.

C1EI13

MALDI-TOF(/TOF) Essential Operator Training Course

MALDI Imaging

Duration
3 Days

Intention
This course is intended for beginners in the field of MALDI Imaging and will provide a comprehensive introduction to the entire workflow. The course is focused on the mass spectrometric analysis of tissue sections using Bruker MALDI-TOF(/TOF) hardware and software.

Prerequisite
No detailed knowledge in mass spectrometry and / or histology is required to attend the course. Basic familiarity with Bruker MALDI-TOF(/TOF) instruments and a general understanding of the MALDI Imaging concept would be helpful. A substantial part of the course will be conducted in a level 2 biosafety lab.

Course Topics

Instrument overview
General introduction to the principles of MALDI-TOF(/TOF) (MALDI ionization, TOF(/TOF) analyzer).

Introduction to the concept of MALDI Imaging.

Sample preparation
Requirements to sample materials, preparation of tissue sections on conductive slides, deposition of MALDI matrix.

MALDI-TOF(/TOF) instrument operation (basics) (Introduction to flexControl software, method setup for MALDI imaging analyses).

Data acquisition
Acquisition of MALDI Imaging data using flexImaging software.

Consolidation training
Deposition of MALDI matrix, acquisition of MALDI Imaging data using flexImaging software, batch acquisition of multiple MALDI Imaging datasets.

Visualization of MALDI Imaging data in flexImaging software.

Data reprocessing workflow.

C1ES13

MALDI-TOF(/TOF) Essential Operator Training Course

Polymers and Synthetic Chemistry

Duration
3 Days

Links

Intention
This training course focuses on the basics of practical MALDI-TOF or MALDI-TOF/TOF operation in the context of polymer and synthetic chemicals analysis. The course covers the essentials of sample preparation, data acquisition/processing and instrument maintenance, and, thus, will enable novice users getting started with MALDI-TOF(/TOF) analyses of synthetic polymers and further classes of organic and inorganic compounds.

Prerequisite
No deeper MALDI-TOF(/TOF) pre-experience is required. However, before attending the training course, participants are encouraged to take part in the user familiarization that is done at a customer site upon installation of theMALDI-TOF(/TOF)instrument, and to gain some first practical experience over a few weeks.

Course Topics

Instrument overview
General introduction to the principles of MALDI-TOF(/TOF) (MALDI ionization, TOF(/TOF) analyzer).

Sample preparation
Sample requirements (concentration, purity), matrices of choice and matrix preparation protocols for various types of samples (in particular: synthetic polymers, further compound classes will be treated on demand).

Data acquisition
Introduction to Bruker´s flexControl software, optimization of most important acquisition method parameters (i.e. laser fluence, shot count per spectrum).

Data processing
Introduction to Bruker´s flexAnalysis software, peak annotation, smoothing, baseline subtraction, recalibration (internal/external), automated processing using flexAnalysis methods.

Data interpretation
Introduction to Bruker´s PolyTools software, determination of end groups, number-average molar mass M_n, mass-average molar mass M_w and dispersity of synthetic polymer samples

Instrument maintenance
Participants will be familiarized with all the maintenance operations that are to be done routinely by instrument users.

ESI-QTOF Operator

Training courses cover the range from instrument control to application driven solution

C3EL23

ESI-QTOF Essential Operator Training Course

Low Molecular Weight Applications

Intention

This course is intended for novice Bruker QTOF users without significant prior experience in data acquisition, data processing and instrument maintenance. The course covers all important aspects of QTOF operation, including application-relevant HPLC aspects, but it does not substitute a dedicated HPLC training. The post processing of the data is done with the DataAnalysis software. To include MetaboScape® or TASQ® choose courses C3EL33 or C3EL43, respectively.

Prerequisite

Due to the familiarization during the system installation, participants should have a basic knowledge of the QTOF mass spectrometer (compact, impact, maXis) and some initial experience with the hardware and the software.

Please note: This training does not replace a dedicated HPLC training!

Course Topics

Introduction to Bruker QTOF systems

Overview over hardware and software. System components and function. High-resolution MS and MS/MS acquisition modes.

Atmospheric pressure ionization (API)

Fundamentals of electrospray ionization (ESI). Requirements regarding solvent and buffers, default settings for the ESI source. Basics of APCI, APPI and VIP-HESI, if applicable.

Calibration and tuning of the instrument

Introduction to otofControl software. Mass calibration and tuning of the instrument. Explanation of source and tune parameters. Methods for small molecule analysis.

MS/MS modes and parameters

Applications for different MS/MS modes: Data dependent MS/MS, MRM and bbCID. Parameters for intelligent precursor selection in autoMS/MS mode. In-source CID and pseudo MS^3.

HPLC-MS analysis

Introduction to the HyStar software. Set-up of HPLC methods and preparation of sample tables. Acquisition of LC-MS/MS data.

Data analysis

Overview over the DataAnalysis software. General data processing: Recalibration of data, generation of extracted ion chromatograms (EICs), extraction of MS and MS/MS spectra, calculation of elemental compositions (SmartFormula). Advanced features: Different algorithms for feature extraction, CompoundCrawler, FragmentationExplorer, LibraryEditor.

Maintenance

Guidelines and recommendations for the maintenance of the QTOF instrument. Ion source cleaning.

Applications

Application-specific questions are discussed upon request.

C3EL33

ESI-QTOF Essential Operator Training Course

Low Molecular Weight Applications including MetaboScape®

Intention
The course is intended for novice Bruker QTOF users without significant prior experience in data acquisition and / or instrument maintenance. The course covers all important aspects of QTOF operation as well as application-relevant HPLC aspects but does not substitute an explicit HPLC training. The 3-day in-person training is supplemented by a 1-day online training of MetaboScape® software for data processing, annotation of unknown compounds, and statistical analysis (see page 52).

Prerequisite
Due to the familiarization during system installation, attendees should have a basic knowledge of the QTOF mass spectrometer (compact, impact, maXis) with several weeks of experience with the instrument and the software. Basic knowledge about statistics is of advantage.

Please note: This training does not replace a dedicated HPLC training!

Course Topics

Instrument overview
Instrument geometry, theory of the orthogonal time of flight system, accurate mass measurement, MS/MS capabilities of the instrument.

Atmospheric pressure ionization (API)
Fundamentals of electrospray ionization (ESI). Requirements regarding solvent and buffers, default settings for the ESI source. Basics of APCI, APPI and VIP-HESI, if applicable.

Tuning and optimization of the instrument
Calibration and tuning of the instrument, ion transfer, tuning for high sensitivity and high mass accuracy, resolution, mass range and mass accuracy.

Data acquisition
Data acquisition speed depending on sample complexity, HPLC control using HyStar software. Introduction to Metabolomics studies.

MS/MS capabilities
Isolation, fragmentation, auto MS/MS, MRM, intelligent precursor selection, In-source fragmentation, pseudo MS^3, broadband CID.

Data Analysis
General data processing and evaluation using DataAnalysis, SmartFormula, basic introduction to the LibraryEditor and ReportDesigner. Introduction to statistical data mining: PCA, t-Test, ANOVA and others. Data handling in MetaboScape®, feature extraction, optimizing processing parameters. Discussion about statistical models in MetaboScape® for different analytical questions.

Metabolite Identification
Identification of compounds with SmartFormula (exact mass, isotopic pattern), retention times and MS/MS spectra by using AQ scoring. Search strategies using additional annotation tools in MetaboScape®, such as Target Lists,and MS/MS spectra libraries (e.g. HMDB, MetaboBase® and personal libraries). Structure elucidation with database searches (e.g. ChemSpider) and in-silico fragmentation.

Maintenance
General maintenance of the QTOF, source maintenance, including dismantling and methods of cleaning.

C3EL43

ESI-QTOF Essential Operator Training Course

Duration
3 Days

Low Molecular Weight Applications including TASQ®

Intention
The course is intended for novice Bruker QTOF users without significant prior experience in data acquisition, data processing and instrument maintenance. The course covers all important aspects of QTOF operation including application relevant HPLC aspects, but it does not substitute a dedicated HPLC training. It includes a 0.5-day basic training of the TASQ® software for targeted screening and quantification.

Prerequisite
Due to the familiarization during the system installation, participants should have a basic knowledge of the QTOF mass spectrometer (compact, impact, maXis) and some initial experience with the hardware and the software.

Please note: This training does not replace a dedicated HPLC training!

Course Topics

Introduction to Bruker QTOF systems
Overview over hardware and software. System components and function. High-resolution MS and MS/MS acquisition modes.

Atmospheric pressure ionization (API)
Fundamentals of electrospray ionization (ESI). Requirements regarding solvent and buffers, default settings for the ESI source. Basics of APCI, APPI and VIP-HESI, if applicable.

Calibration and tuning of the instrument
Introduction to otofControl software. Mass calibration and tuning of the instrument. Explanation of source and tune parameters. Methods for small molecule analysis.

MS/MS modes and parameters
Applications for different MS/MS modes: Data dependent MS/MS, MRM and bbCID. Parameters for intelligent precursor selection in autoMS/MS mode. In-source CID and pseudo MS^3.

HPLC-MS analysis
Introduction to the HyStar software. Set-up of HPLC methods and preparation of sample tables. Acquisition of LC-MS/MS data.

Data analysis
Overview over the DataAnalysis software. General data processing: recalibration of data, generation of extracted ion chromatograms (EICs), extraction of MS and MS/MS spectra, calculation of elemental compositions (SmartFormula).

Screening and quantitation in TASQ®
Execution of screening and quantitation workflows in TASQ®: batch import, TASQ® method parameters, data review, screening and quantitation workflow.

Maintenance
Guidelines and recommendations for the maintenance of the QTOF instrument. Ion source cleaning.

C3EP23

ESI-QTOF Essential Operator Training Course

Proteomics

Intention
The course is intended for novice Bruker QTOF users without significant prior experience in data acquisition, data processing and instrument maintenance. The course covers all important aspects of QTOF operation including application relevant HPLC aspects, but it does not substitute a dedicated HPLC training.

Prerequisite
Due to the familiarization during system installation, attendees should have a basic knowledge of the ESI-QTOF mass spectrometer (compact, impact, maXis) with several weeks of experience with the instrument and the software.

Please note: This training does not replace a dedicated HPLC training!

Course Topics

Instrument overview
Instrument geometry, theory of the Bruker QTOF systems, accurate mass, MS^2-capabilities.

Data acquisition
Resolution, calibration. HPLC control using HyStar software.

Tuning and optimization of the instrument
Calibration and tuning of the QTOF system, ionization mode, ion transfer, tuning for high sensitivity/high resolution or wide mass range.

MS/MS-experiments
Isolation, fragmentation, Auto-MS^2, MRM experiments, intelligent precursor ion selection.

Atmospheric pressure ionization (API)
ESI operation, ionization efficiency, direct infusion, coupling to high and low flow separation instruments (UHPLC and nanoLC).

Data analysis
General data processing, accurate mass, recalibration, deconvolution (including MaxEnt), peaklist generation and export.

Database searching
File export options, basics of BioTools and BioPharma Compass® software, database search.

General maintenance
Source maintenance, including dismantling and methods of cleaning.

Applications
Specific requirements of the customer with respect to the focus of this course will be discussed.

ESI-QTOF Essential Operator Training Course

BioPharma Compass® Workflows

Intention
This course is intended for novice users of the Bruker QTOF equipment combined with the software suite BioPharma Compass® without significant prior experience in data acquisition and processing. This course covers all important aspects of QTOF operation and (automated) workflow-based processing with BioPharma Compass® as well as application relevant HPLC aspects but does not substitute an explicit HPLC training.

Prerequisite
Course participants should have attended the system and software familiarization during instrument and BioPharma Compass® server installation and a few weeks of instrument and software use to develop some basic experience with the necessary hardware and software setup.

Course Topics

Instrument overview
Instrument geometry, theory of the orthogonal time of flight system, accurate mass measurement, MS/MS capabilities of the instrument.

Atmospheric pressure ionization (API)
ESI ionization efficiency, direct infusion, electrolyte and buffer requirements for MS coupling of separation instruments like HPLC or UHPLC.

Tuning and maintenance of the QTOF
Calibration and tuning of the QTOF, general maintenance of the QTOF, source maintenance, including dismantling and methods of cleaning.

Data acquisition
Setup and method optimization options for measurements of intact protein and peptide mapping samples.

Data analysis
General data processing and evaluation using DataAnalysis software.

BioPharma Compass® introduction
Introduction to BioPharma Compass® functionalities and introduction to the supported workflows.

Administrative tasks
Basic administrative tasks are shown for BioPharma Compass® software suite including user-, station-, workflow- and method management.

Automation
BioPharma Compass® is a turnkey solution, meaning that the whole process of acquiring data, analysis of data, report generation and result storage can be executed without the need of user intervention. The workflow and method concept is discussed, samples will be submitted, measured and analyzed. Available tools for inspecting results are shown.

Reprocessing and validation
The functionality for reprocessing of acquired data sets and validation of obtained results are discussed.

Workflows in detail
Details of the workflows protein screening, top-down ESI, peptide mapping, peptide mapping/PTM comparison, peptide screening, peptide screening/batch comparison are presented and discussed.

C3ET13

ESI-QTOF Essential Operator Training Course

TargetScreener HR Solution Workflows

Intention

This course is intended for novice users of the Bruker TargetScreener solution without significant prior experience in data acquisition, data processing and instrument maintenance. The course covers all important aspects of the Bruker TargetScreener solution including application relevant HPLC aspects, but it does not substitute a dedicated HPLC training.

Prerequisite

Due to the familiarization during the system installation, participants should have basic knowledge of the TargetScreener solution.

Please note: This training does not replace a dedicated HPLC training!

Course Topics

Introduction to Bruker QTOF systems

Overview over hardware and software. System components and function. High-resolution MS and MS/MS acquisition modes.

Atmospheric pressure ionization (API)

Fundamentals of electrospray ionization (ESI). TargetScreener eluent composition for positive and negative ionization mode.

Calibration and tuning of the instrument

Introduction to otofControl software. Mass calibration and tuning of the instrument. Explanation of source and tune parameters of the TargetScreener default methods.

MS/MS modes and parameters

Use of broadband CID (bbCID) acquisition mode for screening and quantification and data dependent MS/MS for the extension of the TargetScreener database.

HPLC-MS analysis

Introduction to the HyStar software. TargetScreener HPLC methods and preparation of sample tables. Acquisition of LC-MS/MS data.

Data analysis

General data processing in DataAnalysis: Recalibration of data, generation of extracted ion chromatograms (EICs), extraction of MS and MS/MS spectra, calculation of elemental compositions (SmartFormula).

Screening and quantitation in TASQ®

Execution of screening and quantitation workflows in TASQ®: batch import and management, TargetScreener method parameters, customization of TASQ® methods, data review, screening and quantitation workflow.

Maintenance

Guidelines and recommendations for the maintenance of the QTOF instrument. Ion source cleaning.

ESI-timsTOF Operator

Training courses cover the range from
instrument control to application driven solution

C8EL23

ESI-timsTOF Essential Operator Training Course

Low Molecular Weight Applications

Intention
The course is intended for novice Bruker timsTOF users without significant prior experience in data acquisition and / or instrument maintenance. The course covers all important aspects of timsTOF operation as well as application relevant HPLC aspects but does not substitute an explicit HPLC training. To include MetaboScape® or TASQ® choose courses C8EL33 or C8EL43, respectively.

Prerequisite
Due to the familiarization during system installation, attendees should have a basic knowledge of the timsTOF mass spectrometer with several weeks of experience with the instrument and the software.

Course Topics

Instrument overview
Instrument geometry, theory of the tims-orthogonal time of flight system, accurate mass measurement, MS/MS capabilities of the instrument, introduction to ion mobility separation with tims technology.

Atmospheric pressure ionization (API)
ESI, APCI, APPI, ionization efficiency, positive and negative ion mode ionization, direct infusion, electrolyte and buffer requirements for MS coupling of HPLC and UHPLC.

Tuning and optimization of the instrument
Calibration and tuning of the instrument, ion transfer, tuning for high sensitivity and high mass accuracy, cycle and trigger times, resolution, mass range and mass accuracy, tuning of ion mobility for different resolution modes.

Data acquisition
Data acquisition speed depending on sample complexity, HPLC control using HyStar software, strategies for acquiring data with and without ion mobility.

MS/MS capabilities
Isolation, fragmentation, data dependent MS/MS, MRM, intelligent precursor selection, In-source fragmentation, pseudo MS^3, broad band CID.

Data analysis
General data processing and evaluation with DataAnalysis, SmartFormula and quantitation using QuantAnalysis software, basic introduction to the LibraryEditor and ReportDesigner. Heatmap of ion mobility data, extraction of relevant data out of ion mobility datasets, calculation of ion mobility resolution and CCS values.

Maintenance
General maintenance of the timsTOF, source maintenance, including dismantling and methods of cleaning.

C8EL33

ESI-timsTOF Essential Operator Training Course

Duration
3 Days + 1 Day

Low Molecular Weight Applications including MetaboScape®

Links
Registration Form
Table of Contents
Training Course Index

Intention
The course is intended for novice Bruker timsTOF users without significant prior experience in data acquisition and / or instrument maintenance. The course covers all important aspects of timsTOF operation as well as application relevant HPLC aspects but does not substitute an explicit HPLC training. The 3-day in-person training is supplemented by a 1-day online training of MetaboScape® software for data processing, annotation of unknown compounds, and statistical analysis (see page 52).

Prerequisite
Due to the familiarization during system installation, attendees should have a basic knowledge of the QTOF mass spectrometer (compact, impact, maXis) with several weeks of experience with the instrument and the software. Basic knowledge about statistics is of advantage.

Please note: This training does not replace a dedicated HPLC training!

Course Topics

Instrument overview
Instrument geometry, theory of the orthogonal time of flight system, accurate mass measurement, MS/MS capabilities of the instrument.

Atmospheric pressure ionization (API)
ESI, APCI, APPI, ionization efficiency, positive and negative ion mode ionization, direct infusion, electrolyte and buffer requirements for MS coupling of HPLC and UHPLC.

Tuning and optimization of the instrument
Calibration and tuning of the instrument, ion transfer, tuning for high sensitivity and high mass accuracy, resolution, mass range and mass accuracy.

Data acquisition
Data acquisition speed depending on sample complexity, HPLC control using HyStar software. Introduction to Metabolomics studies.

MS/MS capabilities
Isolation, fragmentation, Auto MS/MS, MRM, intelligent precursor selection, In-source fragmentation, pseudo MS^3, broad band CID.

Data analysis
General data processing and evaluation using DataAnalysis, SmartFormula, quantitation using QuantAnalysis software, basic introduction to the LibraryEditor and ReportDesigner. Introduction to statistical data mining: PCA, t-Test, ANOVA and others. Data handling in MetaboScape®, feature extraction, optimizing processing parameters. Discussion about statistical models in MetaboScape® for different analytical questions.

Metabolite identification
Identification of compounds with SmartFormula (exact mass, isotopic pattern), retention times and MS/MS spectra by using AQ scoring. Search strategies using additional annotation tools in MetaboScape®, such as Target Lists, and MS/MS spectra libraries (e.g. HMDB, MetaboBase® and personal libraries). Structure elucidation with database searches (e.g. ChemSpider) and insilico fragmentation.

Maintenance
General maintenance of the timsTOF, source maintenance, including dismantling and methods of cleaning.

C8EB13

ESI-timsTOF Essential Operator Training Course

BioPharma Compass® Workflows

Duration
3 Days

Links
Registration Form
Table of Contents
Training Course
Index

Intention
This course is intended for novice users of the Bruker timsTOF instruments combined with the software suite BioPharma Compass® without significant prior experience in data acquisition and processing. This course covers all important aspects of instrument operation and (automated) workflow-based processing with BioPharma Compass® as well as application relevant HPLC aspects but does not substitute an explicit HPLC training.

Prerequisite
Course participants should have attended the system and software familiarization during instrument and had a few weeks of instrument and software use to develop some basic experience with the necessary hardware and software setup.

Please note: This training does not replace a dedicated HPLC training!

Course Topics

Instrument overview
Instrument geometry, theory of the orthogonal time of flight system, accurate mass measurement, MS/MS capabilities of the instrument.

Atmospheric pressure ionization (API)
ESI ionization efficiency, direct infusion, electrolyte and buffer requirements for MS coupling of separation instruments like HPLC or UHPLC.

Tuning and optimization of the instrument
Calibration and tuning of the instrument, ion transfer, tuning for high sensitivity and high mass accuracy, resolution, mass range and mass accuracy.

Data acquisition
Setup and method optimization options for measurements of intact protein and peptide mapping samples.

Data analysis
General data processing and evaluation using DataAnalysis software.

BioPharma Compass®
Introduction to BioPharma Compass® functionalities and introduction to the supported workflows.

Administrative tasks
Basic administrative tasks are shown for BioPharma Compass® software suite including the management of users, stations, workflows and methods.

Automation
BioPharma Compass® is a turnkey solution, meaning that the whole process of acquiring data, analysis of data, report generation and result storage can be executed without the need of user intervention. The workflow and method concept is discussed, samples will be submitted, measured and analyzed. Available tools for inspecting results are shown.

Reprocessing and validation
The functionality for reprocessing of acquired data sets and validation of obtained results are discussed.

Workflows in detail
Details of the workflows protein screening, top-down ESI, peptide mapping, peptide mapping/PTM comparison, peptide screening, peptide screening/batch comparison are presented and discussed.

C8EP23

ESI-timsTOF Essential Operator Training Course

Proteomics

Intention
The course is intended for novice Bruker timsTOF users without significant prior experience in data acquisition and / or instrument maintenance. The course covers all important operation and application relevant topics for intruments of the timsTOF family coupled to nano HPLC intruments.

Prerequisite
Due to the familiarization during system installation, attendees should have a basic knowledge of the timsTOF mass spectrometer and LC set-up.

Course Topics

Instrument overview
Instrument geometry including the principle of ion mobility separation with tims and the time-of-flight (TOF) system. Introduction to different PASEF scan modes.

Captive spray
Practical aspects of using the captive spray ion sources for nanoflow applications.

Tuning and optimization of the instrument
TIMS and TOF calibration. PASEF method parameter optimization using timsControl.

Data acquisition
HPLC control using HyStar software. Optimization of methods for shotgun proteomics using timsControl software:

- General overview over MS and MS/MS parameters including different MS/MS capabilities, e.g. data dependent PASEF, data independent PASEF and parallel reaction monitoring PASEF

- Adjustment of MS and MS/MS relevant parameters according to sample complexity and aim of the analysis

Data analysis
Manual inspection of acquired data in DataAnalysis, including heatmap of ion mobility data. Processing of proteomics datasets, preparation for database searches, and label free quantitation workflows.

Maintenance
General maintenance of the timsTOF, source maintenance and exchange, including dismantling and cleaning.

General nanoElute® maintenance and troubleshooting.

General discussion about sample handling according to the application (e.g. low sample amount on SCP/Ultra).

ESI-timsTOF Essential Operator Training Course

TargetScreener 4D Solution Workflows

Intention

This course is intended for novice users of the Bruker TargetScreener 4D solution without significant prior experience in data acquisition, data processing and instrument maintenance. The course covers all important aspects of the Bruker TargetScreener 4D solution including application relevant HPLC aspects, but it does not substitute a dedicated HPLC training.

Prerequisite

Due to the familiarization during the system installation, participants should have basic knowledge of the TargetScreener 4D solution.

Please note: This training does not replace a dedicated HPLC training!

Course Topics

Introduction to TIMS-HRMS

Instrument geometry, theory of trapped ion mobility spectrometry (TIMS)- high-resolution mass spectrometry (HRMS), accurate mass measurement, MS/MS capabilities of the instrument, introduction to ion mobility separation with TIMS technology.

Atmospheric pressure ionization (API)

Fundamentals of electrospray ionization (ESI). TargetScreener eluent composition for positive and negative ionization mode.

Calibration and tuning of the instrument

Introduction to the timsControl software. Overview of MS and TIMS parameters. Mass and ion mobility calibration. Explanation of source and tune parameters of the TargetScreener default methods.

MS/MS modes and parameters

Use of broadband CID (bbCID) acquisition mode for screening and quantification and data dependent MS/MS for the extension of the TargetScreener database.

HPLC-MS analysis

Introduction to the HyStar software. TargetScreener HPLC methods, preparation of sample tables, data acquisition.

Data analysis

General data processing in DataAnalysis: Recalibration of mass and mobility dimensions, generation of extracted ion chromatograms (EICs) and extracted ion mobilograms (EIMs), extraction of MS and MS/MS spectra, calculation of elemental compositions (SmartFormula). Heatmap of ion mobility data, calculation of ion mobility resolution and CCS values.

Screening and quantitation in TASQ®

Processing of bbCID data in TASQ®: batch import and management, TargetScreener method parameters, customization of TASQ® methods, data review, performing screening and quantitation workflow.
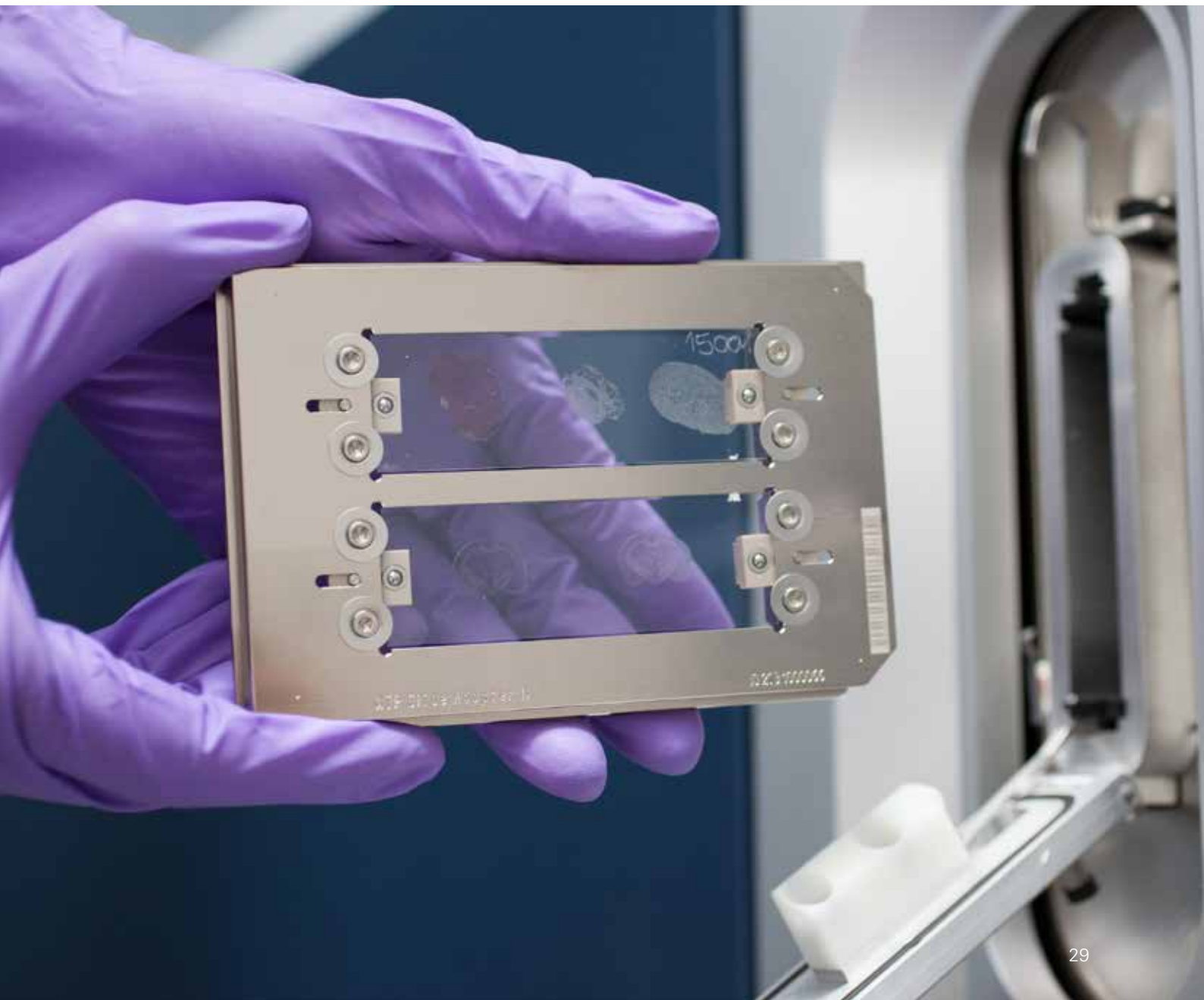
Maintenance

Guidelines and recommendations for the maintenance of the timsTOF instrument including ion source cleaning.

ESI-timsTOF fleX Operator

Training courses cover the range from instrument control to application driven solution

ESI-timsTOF fleX Essential Operator Training Course

MALDI Imaging

Intention

This course is intended for beginners in the field of MALDI Imaging and will provide a comprehensive introduction to the entire workflow. The course is focused on the mass spectrometric analysis of tissue sections using the Bruker timsTOF fleX hardware and software.

Prerequisite

Any detailed knowledge in mass spectrometry and / or histology is required to attend the course. Basic familiarity with Bruker's MALDI instruments and a general understanding of the MALDI Imaging concept would be helpful. A substantial part of the course will be conducted in a level 2 biosafety lab (factory course).

Course Topics

Introduction

Introduction to MALDI mass spectrometry. Concepts of MALDI Imaging and the MALDI Imaging workflow.

Sample preparation

Sample preparation considerations regarding requirements to transportation and storage of good quality tissue samples. Cryosectioning: Introduction and hands-on training.

Matrix deposition

Matrix selection guidelines, basics of HTX M3+ sprayer instrument operation.

Instrumentation

MALDI timsTOF flex instrument operation (TIMS off). Basics of timsControl software, method optimization for MALDI Imaging, calibration. Hands-on training for HTX M3+ sprayer, including troubleshooting and method development guidelines. MALDI timsTOF flex instrument operation (TIMS on): Adjustment of timsControl software methods with TIMS on, method optimization for MALDI Imaging, calibration.

Image acquisition

Introduction to flexImaging software and automatic image data acquisition. flexImaging software training: guided tour of all program features, including hands-on training.

Automation

Batch acquisition of multiple MALDI images.

TQ Operator

Training courses cover the range from instrument control to application driven solution

LC-MS TQ Essential Operator Training Course

Intention
This course is intended for novice Bruker EVOQ® LC-MS Triple Quadrupole series (EVOQ® Qube, EVOQ® Elite, EVOQ® Elite ER) users without significant prior experience in data acquisition and / or instrument maintenance. This course covers all important aspects of EVOQ® TQ operation as well as application relevant LC aspects but does not substitute an explicit LC training.

Prerequisite
Due to the familiarization during system installation, attendees should have a basic knowledge of the triple quad mass spectrometer with several weeks of experience with the instrument and the software.

Please note: This training does not replace a dedicated HPLC training!

Course Topics

Instrument overview
Familiarization with the LC-MS TQ system, theory of the quadrupol systems, different scan modes.

Atmospheric pressure ionization (API)
Electrospray Ionization (ESI) and Atmospheric Pressure Chemical Ionization (APCI) operation, ionization efficiency, heated ESI characteristics.

Calibration and Tuning
Instrument tuning: mass and detector calibration

Direct instrument control and data acquisition
Direct instrument control using tqControl and HyStar. Usage of the MRM-builder. Creation of acquisiton methods for different scan modes. Offline and online batch management.

Data processing and analysis in tqControl
Method processing parameters, data revision, quantitation workflow and quantitation options, reporting.

Maintenance
Good working conditions (solvents, containers, nitrogen etc.), cleaning of the ion source, changing probes and capillaries.

Applications
Individual questions and specific requirements with respect to the focus of this course will be discussed.

C6EA13

GC-MS TQ Essential Operator Training Course

Duration
3 Days

Links

Intention
This course is intended for novice Bruker EVOQ® GC-MS Triple Quadrupole series users without significant prior experience in data acquisition and / or instrument maintenance. This course covers all important aspects of EVOQ® TQ operation as well as application relevant GC aspects but does not substitute an explicit GC training.

Prerequisite
Due to the familiarization during system installation, attendees should have a basic knowledge of the triple quad mass spectrometer with some experience with the instrument and the software.

Please note: This training does not replace a dedicated GC training!

Course Topics

Instrument overview
Instrument overview, GC-injectors, injection methods, theory of the quadrupol systems, different scan modes.

Electron impact ionization (EI)
Principle of ion formation, ionization efficiency, in source fragmentation.

Advanced inlet techniques (on request)
Headspace Injection, ChromatoProbe.

Calibration and Tuning
Instrument tuning: mass and detector calibration

Direct instrument control and data acquisition
Direct instrument control using tqControl and HyStar. Usage of the MRM-builder. Creation of acquisiton methods for different scan modes. Offline and online batch management.

Data processing and analysis in tqControl
Method processing parameters, data revision, quantitation workflow and quantitation options, reporting.

Maintenance
General maintenance of the GC and the mass spectrometer, source maintenance, including dismantling and methods of cleaning.

Applications
Specific requirements of the customer with respect to the focus of this course will be discussed.

C7EA11

GC-APCI Essential Operator Training Course

Intention
This course is intended for users of Bruker QTOF series, which like to expand their scope into GC APCI coupling. This course covers all important aspects of GC APCI ion source operation as well as application relevant GC aspects but does not substitute an explicit GC training.

Prerequisite
Due to the familiarization during system installation, attendees should have a basic knowledge of the QTOF HR mass spectrometer with some experience with the instrument and the software.

Please note: This training does not replace a dedicated GC training!

Course Topics

Instrument overview
Instrument overview, GC-injectors, injection methods, GC APCI process, dry and wet measurement conditions.

Atmospheric Pressure Chemical Ionization (APCI)
Principle of ion formation, ionization efficiency, in source fragmentation.

Calibration and tuning
Instrument tuning: mass and detector calibration

Direct instrument control and data acquisition
Direct instrument control using otofControl and HyStar.

Data processing and analysis in Data-Analysis
Method processing parameters, data revision, or quantitation are NOT a part of this training.

Maintenance
General maintenance of the GC and the mass spectrometer, source maintenance, including dismantling and methods of cleaning.

Applications
Specific requirements of the customer with respect to the focus of this course will be discussed.

MRMS Operator

Training courses cover the range from instrument control to application driven solution

C4EG13

MRMS Operator Onsite Training Course

Intention

This course is the basic training course for operation of the MRMS instrument. In addition to basic instrument handling, please book a suitable application course (C4EI12, C4EL12, C4EP12, C4EB12) for a full five-day training. The course will be held at the customer's site using the installed instrumentation. This ensures that all applications trained during the course will for sure be applicable on the local installation.

Prerequisite

Prerequisites depend on the actual training course content and should be discussed with the responsible application specialist from Bruker in advance of the training.

Course Topics

Introduction

Theory of MRMS and basic operation of the MRMS instrument with its control software

ESI and MALDI

ESI (Electrospray ionization) as well as MALDI measurements of standard compounds

Calibration and tuning

ParaCellTM shimming, mass calibration, as well as tuning of ion source and ion transfer parameters for low, medium and high m/z ranges in positive and negative ion mode.

MS operation

Mass resolution, speed, scan range, Continuous Accumulation of Selected Ions (CASI), quadrupole isolation and fragmentation options

Method handling and data acquisition

Familiarization and method handling in ftmsControl, flexImaging and Hystar Software (optional for LCMS)

Data analysis

General data processing in DataAnalysis

C4EI12

MRMS Application Course

MALDI Imaging

Intention
This training course is intended for novice Bruker solariX or scimaX® series users without significant prior experience in MALDI Imaging experiments. Slide preparation, data acquisition, data analysis and instrument handling are included. The course covers all important aspects of data acquisition and data analysis for MALDI Imaging applications.

Prerequisite
A MRMS Essential Operator Training Course should be passed before attending a MALDI Imaging training course.

Location
This course is offered onsite using the customer's MRMS system.

Course Topics

Introduction
Theory of MALDI Imaging on the solariX or scimaX® instrument series.

Sample preparation
Standard tissue cutting on cryotome, application of matrix using the HTX M3+ sprayer, application of standards.

Calibration and tuning
Mass calibration, tuning of ion transfer and ICR cell with special focus on analytes of interest (lipids/metabolites/peptides).

MS operation
flexImaging and mrmsControl familiarization, mass resolution, speed, scan range, quadrupole isolation, Continuous Accumulation of Selected Ions (CASI).

Method handling and data acquisition
Method handling with the control software and DataAnalysis. Set-up and accomplishment for MALDI Imaging analyses.

Data analysis including database searching
General data analysis in SCiLS™ Lab, file export options, basics of MetaboScape®, data transfer between SCiLS™ Lab and MetaboScape®.

Applications
Workflow for lipid or metabolite (if preferred peptide) and MALDI Imaging experiments on tissue.

C4EL12

MRMS Application Course

Metabolomics

Intention
This training course is intended for novice Bruker solariX or scimaX® series users without significant prior experience in metabolomics experiments. The course covers all specific aspects of data acquisition and data processing for metabolomics applications as well as application relevant HPLC aspects for metabolomics and small molecule applications such as lipids but does not substitute an explicit HPLC training.

Prerequisite
A MRMS Essential Operator Training Course should be passed before attending a metabolomics training course.

Location
This course is offered onsite using the customer's MRMS system.

Please note: This training does not replace a dedicated HPLC training!

Course Topics

Introduction
Data acquisition of metabolomic samples including data processing using the MRMS instrument.

ESI and MALDI
ESI (Electrospray ionization) as well as MALDI measurements of different samples using positive and negative ion modes.

Calibration and tuning
Mass calibration, tuning of ion source and ion transfer parameters for these kind of samples in positive and negative ion mode.

MS operation
Mass resolution, speed, scan range, method handling, Continuous Accumulation of Selected Ions (CASI), quadrupole isolation and fragmentation options.

Method handling and data acquisition
Method handling with the control software, HyStar and DataAnalysis. Direct infusion measurements of standard metabolomic samples (polar compounds and lipids). Flow injection analysis (FIA) and LC-MS when required.

Data analysis
General data processing in DataAnalysis, processing of single spectra generated by MALDI, ESI or FIA experiments, SmartFormula calculation, MetaboScape® workflow of FIA and LC-MS data.

Applications
Analysis of metabolomic samples such as tea and coffee extracts in MetaboScape®. Specific requirements of the customer with respect to the focus of this course will be discussed.

MRMS Application Course

Petroleomics

Intention
This training course is intended for novice Bruker solariX or scimaX® series users without significant prior experience in petroleomics experiments. The course covers all important aspects of data acquisition and data processing for petroleomics applications using different ionization techniques such as APPI, APCI and LDI.

Prerequisite
A MRMS Essential Operator Training Course should be passed before attending a petroleomics training course.

Location
This course is offered onsite using the customer's MRMS system.

Course Topics

Introduction
Data acquisition of petroleomics samples including data processing using the MRMS instrument.

Atmospheric pressure ionization (API) and LDI
API techniques (ESI/APCI/APPI) as well as laser desorption ionization (LDI), ionization efficiency, direct infusion (DI) and flow injection analysis (FIA) (optional).

Calibration and tuning
Mass calibration, tuning of ion source and ion transfer parameters for these kind of samples in positive and negative ion modes.

MS operation
Mass resolution, detection range, method handling,Continuous Accumulation of Selected Ions (CASI), quadrupole isolation and CID fragmentation.

Method handling and data acquisition
Method handling with the control software and mrmsControl, HyStar (optional for FIA) and DataAnalysis. Acquisition of petroleomics data via APPI and LDI.

Data analysis
General data processing in DataAnalysis, processing of petroleomics spectra with 3rd party software such as Composer* or PetroOrg** software. Generation of specific plots such as DBE vs. C, Van Krevelen plots etc. Export of processing results as Excel sheets.

Applications
Analysis of petroleomics samples using LDI as well as APCI and APPI via direct infusion experiments. Specific requirements of the customer with respect to the focus of this course will be discussed.

---

* Composer is a product of Sierra Analytics, Modesto, CA 95356 USA
** PetroOrg is a product of National High Magnetic Field Laboratory, Tallahassee, Florida

C4EB12

MRMS Application Course

Duration
2 Days

Biomolecules

Intention
This training course is intended for novice Bruker solariX or scimaX® series users without significant prior experience in biomolecule experiments. The course covers all important aspects of data acquisition and data processing for biomolecule applications using MALDI and ESI, as well as different fragmentation techniques such as CID, ETD and ECD.

Prerequisite
A MRMS Essential Operator Training Course should be passed before attending a metabolomics training course.

Location
This course is offered onsite using the customer's MRMS system.

Course Topics

Introduction
Data acquisition of biomolecule samples including data processing using the MRMS instrument.

ESI and MALDI
ESI (Electrospray ionization) and MALDI (Matrix-assisted laser/desorption ionization) measurements of different biomolecule samples. Fragmentation techniques: Collision Induced Dissociation (CID), Electron Transfer Dissociation (ETD) and Electron Capture Dissociation (ECD) of peptides and proteins.

Calibration and tuning
Mass calibration, tuning of ion source and ion transfer parameters for these kind of samples in positive and negative ion mode.

MS operation
Mass resolution, detection range, method handling, Continuous Accumulation of Selected Ions (CASI), quadrupole isolation, CID, ETD and ECD fragmentation.

Method handling and data acquisition
Method handling with the control software and mrmsControl, HyStar (optional for LCMS) and DataAnalysis. Acquire protein digest spectra and generate MS/MS fragmentation data.

Data analysis
General data processing in DataAnalysis, processing of peptide mass fingerprint (PMF) and fragmentation data (CID, ETD and ECD) in BioTools. Database search via MASCOT.

Applications
Analysis of biomolecule samples using MALDI and ESI. Specific requirements with respect to the focus of the course will be discussed.

ESI Ion Trap Operator

Training courses cover the range from
instrument control to application driven solution

Ion Trap Essential Operator Training Course

Low Molecular Weight Applications

Intention
This training course is intended for novice Bruker ion trap users without significant prior experience in data acquisition, data analysis and instrument maintenance. The course covers all important aspects of ion trap operation and data processing as well as application relevant HPLC aspects but does not substitute an explicit HPLC training.

Prerequisite
Due to the familiarization during system installation, attendees should have a basic knowledge of the ion trap mass spectrometer with several weeks of practical experience with the instrument and software.

Please note: This training does not replace a dedicated HPLC training!

Course Topics

Introduction
Theory of the ion trap mass spectrometry and atmospheric pressure ionization (API) techniques.

Atmospheric pressure ionization (API), Electrospray Ionization (ESI) and alternative API techniques (IonBooster/APCI/APPI), ionization efficiency, direct infusion and HPLC-ESI-MS coupling.

Calibration and tuning
Calibration (e.g. detector, scan modes), tuning of the ion transfer with special focus on small molecules, positive/negative switching.

Ion trap and MS(n) operation
Scan modes, resolution and speed, scan range, Ion Charge Control (ICC), MS(n) capabilities of the ion trap, isolation and fragmentation options, Manual MS(n), MRM and data dependent MS(n) with intelligent precursor ion selection.

Method handling and data acquisition
Method handling in trapControl, HyStar and DataAnalysis. Set-up and accomplishment of HPLC MS^n analyses.

Data analysis
General data processing in DataAnalysis, chromatogram trace definitions and MS(n) spectra extraction, FindCompounds algorithm, basic introduction to library search applications, QuantAnalysis™ software.

Maintenance
Good working conditions (solvents, containers, nitrogen etc.), cleaning of the ion source.

Applications
Small molecule analysis using LC-MS(n). Specific requirements of the customer with respect to the focus of this course will be discussed.

C2EX13

Toxtyper® Essential Operator Training Course

Toxtyper® Routine Workflows

Duration
2,5 Days

Links

Intention
This training course is intended for novice users of the Bruker Toxtyper®. It enables participants to perform the standard Toxtyper® screening workflow. The course covers all important aspects of Toxtyper® sample analyses, routine maintenance, instrument performance verification and Toxtyper® QC measurements.

Another component of the training is the expansion of Toxtyper® libraries with new drug compounds.

Prerequisite
Attendees should have a basic knowledge of LCMS coupling and the analysis of toxicological or forensic samples.

Course Topics

Introduction
Introduction to HPLC and ion trap hardware as well as general features of the Toxtyper® software.

Toxtyper® workflow
Execution of the Toxtyper® workflow according to the Toxtyper® user tutorial. This includes LC-MS system setup, quality control samples, result interpretation based on real life samples and standby conditions.

Routine Toxtyper® ion trap performance tests
Weekly recommended maintenance tests of the system are trained: ESI source maintenance, detector check, and Toxtyper® routine performance tests.

Toxtyper® ion trap calibrations
After a brief introduction to the trapControl software calibrations of detector, scan calibration and isolation/fragmentation are performed.

Troubleshooting
Information on error handling is provided.

Additional topics on request
As add-ons more information on ESI and ion trap mass spectrometry can be given. Besides that, administrator options are discussed.

UHPLC Operator

Training courses cover the range from
instrument control to MS coupling

C5EL12

Elute+ UHPLC Essential Operator Training Course

Duration
2 Days

Intention
This course is intended for novice users of the Bruker Elute+ UHPLC System without significant prior experience in liquid chromatography. The course covers all important aspects of the Elute+ UHPLC System including application relevant aspects.

Prerequisite
Since this course is intended as dedicated HPLC-training prior knowledge about liquid chromatography is of advantage, but not a prerequisite.

Course Topics

Basics in Chromatography
Introduction to basic principles of chromatographic techniques.

Elute+ UHPLC System
Structure and working principles of the Elute+ UHPLC Pump. Working principle of the Elute+ Autosampler including different injections modes and wash routines. Overview over Elute+ UHPLC Column Oven.

HyStar Software
Introduction to the HyStar Software: Basic overview, creating separation methods and sample tables, data acquisition, quick data review and error handling.

Good Working Conditions
Good Working Conditions for daily operation and system idle mode. Recommendations for flow path cleaning.

Application Workflow Example
Introductions for preparing pump, autosampler and column oven for daily operation. Instructions for setting up new sample tables, column equilibration and starting the acquisition. Recommendations for column storage and shutdown settings.

Method Development
Fundamentals of method development including isocratic and gradient elution, solvents and pH of mobile phases and influence of parameters such as gradient conditions and flow rates.

SPR Operator

Training courses cover the range from instrument control to application driven solution

D1EX01

SPR Essential Operator Training Course

SPR Pro Instruments

Intention
This training course focuses on the basics of practical Surface Plasmon Resonance (SPR) operation with focus on the determination of kinetic constants. The course covers the essentials of sample preparation, data acquisition/processing and instrument maintenance. Thus, the course will enable novice users getting started with SPR analyses.

The course will be held onsite of the customer using the installed instrumentation. This ensures that all applications trained during the course will for sure be applicable on the local installation.

The number of customers trained during this training is defined by the customer's requirements. However, for practical and didactical reasons, groups should not get larger than 5 trainees.

Prerequisite
Basic general knowledge in SPR is highly recommended and lab experience required. Attendees of the training course are encouraged to take part in the user familiarization that is done at a customer site upon installation of the SPR instrument.

Required infrastructure onsite
Access to the system, max. 5 people per training.

Customer provides general lab equipment and access to ddH$_2$O.

Course Topics

The training content in its fullest extend would be as following:

Basics in SPR
Basic training on the theory of SPR and the different applications with SPR. Individual questions and specific requirements with respect to the focus of this course will be discussed.

Instrument overview
Familiarization with the SPR systems and its features for the different applications as well as the handling of the instrument.

General maintenance of the SPR instrument, including methods of cleaning and cleaning routines.

Data acquisition software training
Introduction into the handling of the data acquisition software (SPR Control Software) and joint generation of selected basic methods.

Practical training
Practical training on system with two kinetic test assays (incl. method programming and sample handling).

The experiments include coverage of method creations incl. racks, sensor docking and precondition, pH-scouting, protein immobilization and kinetic experiment.

Data analysis
General data processing and evaluation using Sierra SPR Analyzer Software, introduction to SPR analysis software and practical training on data analysis from the obtained assay data. Discussion of application specific software questions.

D3AX01

SPR Individual Operator Onsite Training Course

Intention
This trainings course focuses on your individual needs and will cover the topics that you request upfront.

From a simple operator refresh training to a deep dive into Analyzer and Control Software over a focus on assay optimization to method development for your specific application, the course will be individually fitted.

Prerequisite
Attendees need to have completed the basic SPR Essential Training Course and participated in the user familiarization done at a customer site upon installation of the SPR instrument.

Not more than 5 attendees for practical work!

Required infrastructure
Sample material for the application of interest has to be provided by the customer.

Course Topics

The training content will be fitted to your individual needs and can feature:

Assay discussion (virtual)
We discuss your application 4-6 weeks before the actual training in a virtual meeting. This meeting serves the purposes to define the scope of the training and identify necessary reagents for the assay. These should then be organized by the customer until the onsite training takes place.

Theoretical introduction to application
The theoretical background for the specific training application is discussed in-depth in a lecture (1-2 hours) in a virtual meeting. A recording is then provided to the customer.

Assay development and optimization support
Our specialists support you with initial assay development or assay optimization and show you methods to make assay development for SPR Pro instruments easier and more comfortable.

Specific application training
The training focuses on a specific application discussed upfront. This training is done with customer samples and should enable the user to eventually perform as well as improve the assay of interest independently. An extensive assay optimization may be included, but is not necessary.

Specific application trainings are offered for these applications:
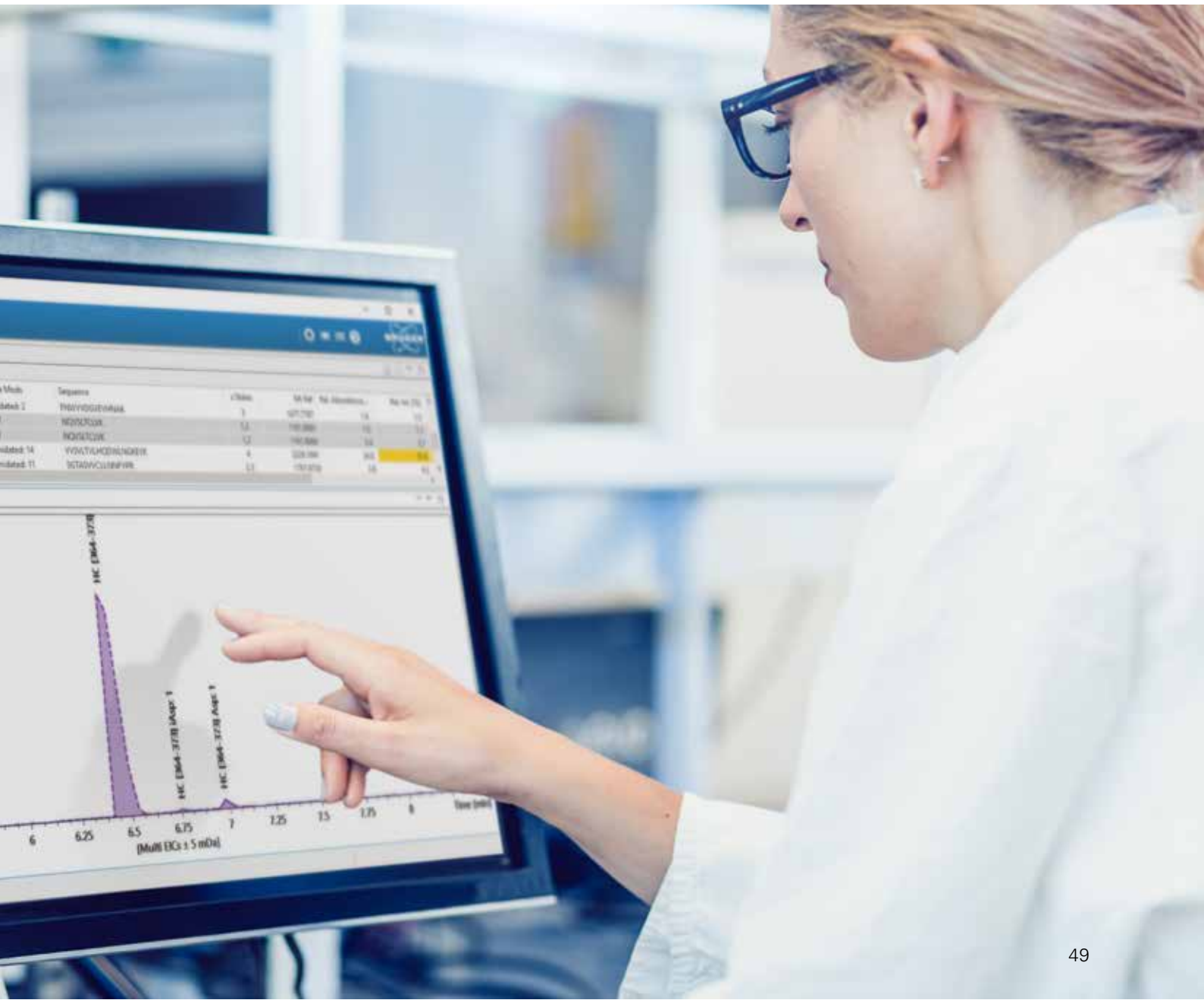
- Concentration Analysis

- Kinetic Assay for Protein-protein Interactions

- Kinetic Assay for Small Molecule-protein Interactions

- Thermodynamics

- Screening

- Conditional Binding

- Epitope Binning

Software courses

Training courses cover different software in depth for comprehensive knowledge and maximized efficiency

Software courses

Statistical analysis of MALDI imaging data using SCiLS™ Lab software

Intention
This training course provides a comprehensive introduction to the statistical analysis of imaging mass spectrometry data using the SCiLS™ Lab software.

Prerequisite
Attendees should be well familiar with the principle of imaging mass spectrometry. Users of Bruker MALDI mass spectrometers, ideally, should have completed an Essential Operator Training course MALDI Imaging.

Course Topics

Introduction and data import
Introduction to the data import, general software functionalities, user interface and main supported workflows.

Managing data in SCiLS™ Lab
Feature table computation. Adjusting general settings and file properties. Finding list of spectral features, normalizing data, handling and visualization of spectra and ion images.

Processing data with SCiLS™ Lab
Fully automated pipeline for unsupervised, multivariate analysis of imaging data (Segmentation). Application of further statistical methods of univariate and multivariate, unsupervised and supervised statistical data analysis (ROC, component analysis, colocalization analysis). Semi-supervised classification of spectra cohorts based on statistical models. Analyte quantitation based on dilution series.

Overview on workflows and extensions
SpatialOMx®, integration with digital pathology annotations, integration with Metaboscape® feature annotation tool, application programming interface (API).

Exporting data analysis results
Exporting options to Bruker or vendor neutral file formats.

Software courses

Polymer analysis using PolyTools

Intention
This training course addresses users of Bruker MALDI-TOF/TOF instruments working in the field of synthetic polymer analysis. The course focuses on Bruker´s PolyTools software and how to use it for the in-depth analysis of MS and MS/MS data obtained from polymer samples.

Prerequisite
Participants should have a basic knowledge of mass spectrometry-based workflows applied to polymer analysis.

Course Topics

Introduction and data import
Introduction PolyTools top-level functionalities and introduction of the main workflows which are supported.

Feature table computation
Definition of processing parameters to perform peak picking, retention time alignment, deconvolution, data recalibration, and recursive feature extraction.

Feature finding
Characterization of polymers based on their key features such as number-average molar mass Mn, mass-average molar mass Mw and dispersity. Analysis of end groups is discussed.

Statistics
Advantages of various Kendrick Mass Plots are explained: Standard KMD plot with the resolution enhanced option (KMD vs m/z), Kendrick Mass Defect vs Remainder of Nominal Kendrick Mass (RNKM), Remainders of Kendrick Mass (RKM) vs. m/z– Remainders of Kendrick Mass (RKM) vs. Remainder of Nominal Kendrick Mass (RNKM).

Data revision, filter, and export options
The influence of parameter settings for the graphical display as well as data exporting for further data analysis are demonstrated.

Software courses

MetaboScape®

Intention
For users familiar with Bruker ESI-QTOF systems, timsTOF systems (including imaging data aquired on timsTOF fleX) or MRMS systems who want to successfully use the MetaboScape® software for statistical analysis and compound identification in Metabolomics applications.

Prerequisite
Attendees should have a basic knowledge of ESI-QTOF or MRMS mass spectrometry with several weeks of experience with the instrument and the software. Additionally, they should have attended an Essential Operator Training course "Low molecular weight applications", previously. Basic knowledge about statistics is of advantage.

Course Topics

Introduction and Data Import
Introduction to the general software functionalities and main supported workflow. Steps to import Data-Dependent-Acquisition (DDA) experiments and definition of sample groups for statistics.

Feature table computation
Definition of processing parameters to perform peak picking, retention time alignment, deconvolution, data recalibration, and recursive feature extraction.

Feature annotation
Identification of compounds using different tools, such as matching with spectral libraries, target lists, SmartFormula and SmartFormula3D, Biotransformer, rule-based lipid annotation, CompoundCrawler, and in silico fragmentation using MetFrag.

Statistics
Use of statistical tests included in MetaboScape® such as for univariate statistics (t-Test/Wilcoxon test, ANOVA/Kruskal-Wallis test), and multivariate statistics (Principal Component Analysis, Partial Least Square, hierarchical clustering).

Pathway mapping
Targeted search of identified compounds in pathways of interested using a built-in MetaboScape® tool.

Data revision, filter, and export options
Introduction to the tools to differentially visualize data with graphs, as well as to filter features based on various rules using flags or direct exclusion before data exporting.

Software courses

TASQ®

Intention
This training course addresses users of Bruker mass spectrometry instruments working in the field of screening applications. The course focuses on Bruker´s TASQ® software and how to use it for organizing, and analyzing screening data.

Prerequisite
For users familiar with Bruker ESI-QTOF, ESI-timsTOF or ESI-TQ systems who want to use the TASQ® software for screening and quantitation applications.

Course Topics

Introduction
Introduction to the TASQ® workflows, prerequisites for data processing and most important functionalities.

General workflow
The general workflow of importing, processing, reviewing and quantitation of batches will be demonstrated.

Creating processing methods
The general method setting as well as analyte specific screening, scoring, integration, and quantitation settings are explained.

Quantitation options
The different quantitation options regular curve calibration with and without internal standards, single-point calibration, legacy calibration, surrogate quantitation, and standard addition will be demonstrated.

Reporting
Batch and analysis reports will be created.

C9AA32 # Software courses

Duration
2 x 0.5 Days -
online

Links
Registration Form
Table of Contents
Training Course
Index

BioPharma Compass®

Intention
This training course addresses users of
Bruker mass spectrometry instruments
working in the field of proteomic analysis.
The course focuses on Bruker´s BioPharma
Compass® software and how to use it
for organizing, analyzing, and archiving of
proteomics and glycomics data.

Prerequisite
Participants should have a basic knowledge of
mass spectrometry-based workflows applied
to proteomics / protein analysis.

Course Topics

Introduction
Introduction to BioPharma Compass® top-
level functionalities and introduction of the
main workflows which are supported.

Administrative tasks
Basic administrative tasks include user-,
station-, workflow- and method management.

Automation
BioPharma Compass® is a turnkey solution,
meaning that the whole process of acquiring
data, analysis of data, report generation
and result storage is executed without the
need of user intervention. In this section
it is explained how this automation is
implemented. The workflow and method
concept is discussed, samples will be
submitted, measured and analyzed. Finally,
the available tools for inspecting results are
customized and used.

Reprocessing and validation
The functionality for reprocessing of acquired
data sets and validation of obtained results
are discussed.

Workflows in detail
Details of the workflows Protein Screening,
Top-Down ESI, Peptide Mapping, Peptide
Mapping/PTM Comparison, Peptide
Screening and Peptide Screening/Batch
Comparison are presented.

D2AX01

SPR Software Online Training Course

SPR Pro Instruments,
Analyzer and Control Software

Intention
This training course focuses on the introduction into the acquisition and analysis software of Bruker SPR (Control and Analyzer).

The course covers the essentials of how to create racks and methods with examples for the Control Software. Additionally, the essentials in how to perform a kinetic and quantification analysis including examples with the Analyzer Software are discussed.

Recommended for new users in your group.

Prerequisite
Internal resources to train the attendee on the practical handling with the Bruker SPR Pro instrument.

Required infrastructure remote
Access to both the Control and Analyzer Software can be beneficial, but is not needed.

Course Topics

The training content in its fullest extend would be as following:

Data acquisition software training
Introduction into the handling of the data acquisition software (SPR Control Software) and joint generation of selected basic methods.

Data analysis
General data processing and evaluation using Sierra SPR Analyzer Software, introduction to SPR analysis software and practical training on data analysis from assay data. Discussion of application specific software questions.

Onsite Training Courses

General

Intention
Nearly all courses are offered onsite at the customer facility as well. Each course can be tailored for the specific needs and requirements of the customers.

The course will be held onsite at the customer facility utilizing their installed instrumentation. This ensures that all the relevant applications the customer would like to cover during the course will be applicable on the local installation. The number of customers trained during this training is defined by the customer's requirements. However, for practical and didactical reasons, groups should not be any larger than 6 trainees.

Prerequisite
Prerequisites depend on the actual training course content and should be discussed with the responsible application specialist from Bruker in advance of the training.

Course Topics

As these training courses are specifically tailored according to our customer's requirements, a general course outline cannot be provided. This depends on instrument, topics to be covered as well as duration of the course and will be discussed with the Bruker application specialist in advance of the training course. Check for language availability.

Individual Onsite Training Courses	MALDI-TOF	Ion Trap	QTOF	timsTOF	timsTOF fleX	MRMS	GC-TQ	LC-TQ
2 Days	S1AA02	S2AA02	S3AA02	S8AA02	S8AA02	S4AA02	S6AA02	S7AA02
3 Days	S1AA03	S2AA03	S3AA03	S8AA03	S8AA03	S4AA03	S6AA03	S7AA03
4 Days	S1AA04	-	S3AA04	S8AA04	S8AA04	S4AA04	-	-
5 Days	S1AA05	-	S3AA05	S8AA05	S8AA05	S4AA05	-	-

Notes

Your Access to Consumables
for your Bruker Instrument

Get Started!

10% first-time order discount at the
Bruker LabScape® Webshop

Promocode: ShopWelcome

LabScape® Webstore –
Online access to our premium
products

The Bruker LabScape® webstore is your access to the
original accessories and consumables.
Discover now the full range of mass spectrometry
portfolio and enjoy **10% first-time order discount
(Promo code: ShopWelcome)**

store.bruker.com

Other possibilities

Depending on your country you can order via phone,
mail, fax or other options. Please contact your local
Bruker representative for further information

Bruker Switzerland AG

Fällanden · Switzerland
Phone +41 44 825 91 11

ms.sales.bdal@bruker.com

Bruker Scientific LLC

Billerica, MA · USA
Phone +1 (978) 663-3660

bruker.com