

Customer Training 2011 / 2012

**ICP-MS:
ELEMENT 2 / ELEMENT XR
XSERIES 2**

**GD-MS:
ELEMENT GD**

Training Courses 2011 / 2012

Contents

1.	General Information	2
	Visa Information	3
2.	ICP-MS: XSERIES 2	4
	2.1 XSERIES 2 Operator Training Course Outline	4
	2.2 XSERIES 2 Operator Training Registration Form	5
3.	ICP-MS: ELEMENT 2 / ELEMENT XR	6
	3.1 ELEMENT 2 / ELEMENT XR Operator Training Course Outline	7
	3.2 ELEMENT 2 / ELEMENT XR Operator Training Registration Form	9
4.	GD-MS: ELEMENT GD	10
	4.1 ELEMENT GD Operator Training Course Outline	11
	4.2 ELEMENT GD Operator Training Registration Form	13
5.	Customer Operator Trainings Overview	14

1. General Information

Thermo Fisher Scientific offers a number of training courses throughout the year for advanced mass spectrometry product systems, peripherals and software. The courses are designed to suit the requirements of beginners and advanced operators. In order to get the most from your system, we would like to encourage you to take advantage of getting in-depth knowledge of the instrument and technology from our highly experienced application specialists. Certificates are provided upon completion of the training.

Scheduled training courses take place at our Application Laboratory at

Thermo Fisher Scientific (Bremen) GmbH
Hanna-Kunath-Str. 11
28199 Bremen
Germany

Each course requires a minimum of three participants, but each group will not exceed a maximum of six participants. The training course language will be English unless specified otherwise.

For **training fees** please contact your local Thermo Fisher Scientific sales representative. The training fees include catering during training session (two coffee breaks and lunch). The training fees do not include individual travel costs, hotel accommodation or per diem expenses. However, we offer to arrange your hotel accommodation in Bremen. Preferably, we book our training guests into the Holiday Inn Express Bremen Airport, which is conveniently located next to our facilities, in walking distance of the airport (6 minutes) and 15 minutes by tram from the main railway station. Our preferred rate of 77 € includes breakfast and internet access.

Registration deadline is six weeks prior to scheduled dates. For registration please use our registration form. You can also register online at <http://training.thermo-bremen.com>

In case of **cancellation** we strongly recommend to nominate a substitute if possible. Cancellation prior to registration deadline is possible. Cancellations two weeks prior to scheduled courses are subject to a 50 % cancellation fee. Cancellations a week prior to scheduled courses are subject to a 90 % cancellation fee.

Training courses may be rescheduled or cancelled due to a lack of participants or other reasons. Already registered attendees will be informed as soon as possible.

On-site training Thermo Fisher Scientific can also conduct the training courses at your facilities. The on-site training courses will be customized according to your instrument(s), software and application requirement(s). Your own instrument(s) will be used to train operation and maintenance procedures.

Training upon request: Training courses with a very special content will be held upon request only.

Visa Formalities

In case you need a visa for Germany, please fill in the form below to enable Thermo Fisher Scientific (Bremen) GmbH to issue the visa invitation letter. Please mail the form to training.bremen@thermo.com or fax to No. +49 421 54 93 396.

Please allow 2-3 weeks for processing and mailing of the invitation letter.

Last name (surname)	
First name(s) (given name(s)):	
Title:	
Gender (male / female)	
Date of birth DD - month (in letters) - YYYY	
Number of passport:	
Dates of planned entry into and exit from Germany	
Correct and complete name and address of customer's company or institute, including telephone and fax numbers (no postbox):	
Expenses for travel, lodging, health insurance and per diem will be borne by:	
Correct and complete address of the embassy where to apply for visa, including telephone and fax numbers:	
Correct and complete address (no postbox) of where the originals of the invitation letters shall be sent by courier, including contact person, telephone and fax numbers:	

2. ICP-MS: XSERIES 2

This basic 3.5 day training course on inductively coupled plasma mass spectrometry (ICP-MS) is designed for customers who have purchased the XSERIES 2. Please note that all hands-on training will be made using the XSERIES 2 instruments in the Bremen factory. The general objective of this training course is to familiarize new customers with instrument features as well as routine operation and maintenance. Topics covered will include:

- Introduction to ICP-MS
- Principles of operation of ICP-MS
- Evaluation of different interface designs and the use of collision cell technology (CCT)
- System optimization, instrument calibration routines
- Data acquisition (using a variety of calibration techniques), QA/QC and interpretation
- Routine maintenance

Selected additional topics, depending on the customer's installed equipment and its availability in the application laboratory, include cold plasma analysis, isotope ratio analysis and the use of additional sample introduction equipment (for example laser ablation, liquid or gas chromatography and desolvating or ultrasonic nebulizers) in conjunction with the XSERIES 2.

Participants' profile: General understanding of mass spectrometry (MS), English language.

XSERIES 2	Training Courses 2011 / 2012
3,5-day operator training	06. – 09. December 2011
3,5-day operator training	26. – 29. June 2012

To check the currently available training dates, please visit
<http://training.thermo-bremen.com>

Training Sessions:

Tuesday	10:00 – 16:30 h
Wednesday – Thursday	09:00 – 16:30 h
Friday	09:00 – 12:00 h

2.1 Registration Form

XSERIES 2 Operator Training

Please mail this form to training.bremen@thermo.com
or fax it to our office at ++49 (421) 54 93 396. Thank you.

<p>Participant</p> <p>Last name: _____</p> <p>First name: _____</p> <p>Title: _____</p> <p>Company/Institute: _____</p> <p>Address (street): _____</p> <p>Postal code: _____</p> <p>City / State: _____</p> <p>Country: _____</p> <p>Phone: _____</p> <p>Fax: _____</p> <p>E-Mail: _____</p>	<p>Training Course</p> <p>XSERIES 2</p> <p>Date: _____</p> <p>Accommodation</p> <p>Hotel reservation Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Smoking <input type="checkbox"/> Non-smoking <input type="checkbox"/></p> <p>At Holiday Inn Express Bremen Airport <input type="checkbox"/> (77 € including breakfast and internet access)</p> <p>Other <input type="checkbox"/> (please specify price range / location)</p> <p>Date of Arrival: _____</p> <p>Date of Departure: _____</p>
<p>Instrument type(s)</p> <p>_____</p> <p>Service number (if known): _____</p> <p>S/N _____</p> <p>We use the following software</p> <p>_____</p> <p>Our main application is</p> <p>_____</p>	<p>Remarks:</p>

Date _____

Signature _____

3. ICP-MS – ELEMENT 2/XR

The **inductively coupled plasma mass spectrometer** training courses are designed for customers who have purchased either the ELEMENT 2, ELEMENT, or ELEMENT XR. Please note that all hands-on training will be made using the ELEMENT 2/XR. The general objective of this training course is to familiarize the customer with the instrument features, operation and maintenance. Topics that will be covered include system optimization, mass calibration, data acquisition (using a variety of calibration techniques) and interpretation. Selected additional topics, depending on the customer's installed equipment and its availability in the application laboratory, include cold plasma analysis, isotope ratio analysis and the use of additional sample introduction equipment (for example laser ablation and desolvating or ultrasonic nebulizers) in conjunction with the ELEMENT 2/XR.

Participants' profile: General understanding of mass spectrometry (MS), English language.

ELEMENT 2/ ELEMENT XR	Training Courses 2012
5-day operator training	20. – 25. February 2012
5-day operator training	24. – 28. September 2012
5-day operator training	12. – 16. November 2012
German language course	04. – 08. June 2012

To check the currently available training dates, please visit

<http://training.thermo-bremen.com>

Training Sessions:

Monday	10:00 – 16:30 h
Tuesday – Thursday	09:00 – 16:30 h
Friday	09:00 – 14:00 h

3.1 ELEMENT 2 / ELEMENT XR Operator Training Course Outline

Introduction

- The ICP as an ion source
- High mass resolution coupled to the ICP
- ELEMENT 2/XR hardware summary
 - o ICP
 - o Interface
 - o Acceleration and focusing
 - o High mass resolution
 - o Ion detection

Customer Instrument Servicing

- Routine maintenance
- Q&A

Sample Introduction

- Sample introduction equipment
 - o Choosing the right system for your sample
 - o Nebulizers
 - o Spray chambers
 - o Injectors
 - o Cones
 - o Autosamplers
 - o Maintenance and cleaning

Instrument Optimization

- Tuning
 - o Hot plasma
 - o Cold plasma
 - o Isotope ratio
 - o Multiple resolutions
 - o Autotuning
- Mass calibration
 - o Manual
 - o Automatic
 - o Recovery from a lost mass calibration

Method Development

- Choosing the right isotope and resolution
- Fully quantitative analysis
- Isotope ratio analysis
- Mathematical interference correction
- Quality control

3.1 ELEMENT 2 / ELEMENT XR Operator Training Course Outline - continued

Setting up your analyses

- Writing sequence files
- Calibration strategies
 - o External calibration
 - o Standard addition calibration
 - o Addition calibration
 - o Isotope dilution
 - o Semi quantitative
 - o Isotope ratio
- Autosamplers

Data Interpretation & Export to 3rd Party Software

- Re-evaluation
- Quality control of data

Alternative Methods of Sample Introduction (optional)

- Laser ablation
- Desolvating and ultrasonic nebulizers

Conclusions & Q&A

3.2 Registration Form

ELEMENT 2/ ELEMENT XR Operator Training

Please mail this form to training.bremen@thermo.com
or fax it to our office at ++49 (421) 54 93 396. Thank you.

<p>Participant</p> <p>Last name: _____</p> <p>First name: _____</p> <p>Title: _____</p> <p>Company/Institute: _____</p> <p>Address (street): _____</p> <p>Postal code: _____</p> <p>City / State: _____</p> <p>Country: _____</p> <p>Phone: _____</p> <p>Fax: _____</p> <p>E-Mail: _____</p>	<p>Training Course</p> <p>ELEMENT 2 / ELEMENT XR</p> <p>Date: _____</p> <p>Accommodation</p> <p>Hotel reservation Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Smoking <input type="checkbox"/> Non-smoking <input type="checkbox"/></p> <p>At Holiday Inn Express Bremen Airport <input type="checkbox"/> 771 € including breakfast and internet access)</p> <p>Other <input type="checkbox"/> (please specify price range / location)</p> <p>Date of Arrival: _____</p> <p>Date of Departure: _____</p>
<p>Instrument type(s)</p> <p>_____</p> <p>Service number (if known): _____</p> <p>S/N _____</p> <p>We use the following software</p> <p>_____</p> <p>Our main application is</p> <p>_____</p>	<p>Remarks:</p>

Date _____

Signature _____

4. GD-MS – ELEMENT GD

The **glow discharge mass spectrometer** training courses are designed for customers who have purchased the ELEMENT GD. The general objective of this training course is to familiarize the customer with the instrument features, operation and maintenance. Topics that will be covered include system optimization, mass calibration, and data acquisition. Selected additional topics will be trained, depending on the customer's installed equipment and its availability in the application laboratory in conjunction with the ELEMENT GD.

Participants' profile: General understanding of mass spectrometry (MS), English language.

ELEMENT GD	Training Course 2012
5-day operator training	18. - 22. June 2012

To check the currently available training dates, please visit <http://training.thermo-bremen.com>

Training Sessions:

Monday	10:00 – 16:30 h
Tuesday – Thursday	09:00 – 16:30 h
Friday	09:00 – 14:00 h

4.1 ELEMENT GD Operator Training Course Outline

Introduction

- The GD as an ion source
- High mass resolution coupled to the GD
- ELEMENT GD hardware summary
 - GD
 - Interface
 - Acceleration and focusing
 - High mass resolution
 - Ion detection

Customer Instrument Servicing

- Routine maintenance
- Q&A

Sample Introduction

- GD source
 - Choosing the right system for your sample
 - Anodes
 - Flow tubes
 - Cones
 - Cleaning procedures
 - Maintenance
- Sample preparation procedures

Instrument Optimization

- Tuning
 - Soft metals
 - Hard metals
 - Low melting metals
 - Semiconductors
 - Pressed pellets
- Mass calibration
 - Manual
 - Automatic
 - Recovery from a lost mass calibration

Method Development

- Choosing the right isotope and resolution for selected matrices
- Fully quantitative analysis
- Mathematical interference correction

4.1 ELEMENT GD Operator Training Course Outline - continued

Setting up your analyses

- Writing sequence files
- Calibration strategies
 - o RSF calibration
 - o Standard RSF
 - o Ion Beam Ratios IBR
- Measuring complicated samples
- Pre-sputter times

Data Interpretation & Export to 3rd Party Software

- Re-evaluation
- Analysis Reports

Conclusions & Q&A

4.2 Registration Form

ELEMENT GD Operator Training

Please mail this form to training.bremen@thermo.com
or fax it to our office at ++49 (421) 54 93 396. Thank you.

<p>Participant</p> <p>Last name: _____</p> <p>First name: _____</p> <p>Title: _____</p> <p>Company/Institute: _____</p> <p>Address (street): _____</p> <p>Postal code: _____</p> <p>City / State: _____</p> <p>Country: _____</p> <p>Phone: _____</p> <p>Fax: _____</p> <p>E-Mail: _____</p>	<p>Training Course</p> <p>ELEMENT GD</p> <p>Date: _____</p> <p>Accommodation</p> <p>Hotel reservation Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Smoking <input type="checkbox"/> Non-smoking <input type="checkbox"/></p> <p>At Holiday Inn Express Bremen Airport <input type="checkbox"/> (77 € including breakfast and internet access)</p> <p>Other <input type="checkbox"/> (please specify price range / location)</p> <p>Date of Arrival: _____</p> <p>Date of Departure: _____</p>
<p>Instrument type(s)</p> <p>_____</p> <p>Service number (if known): _____</p> <p>S/N _____</p> <p>We use the following software</p> <p>_____</p> <p>Our main application is</p> <p>_____</p>	<p>Remarks:</p>

Date _____

Signature _____

5. Customer Operator Trainings Overview

To check the currently available training dates, please visit <http://training.thermo-bremen.com>

Instruments	Training Course
ICP-MS / GD-MS XSERIES 2 ELEMENT ELEMENT 2 ELEMENT XR ELEMENT GD	XSERIES 2 Operator Training <i>3,5-day course</i> ELEMENT2 / ELEMENT XR Operator Training <i>5-day course</i> ELEMENT2 / ELEMENT XR German Language Operator Training <i>5-day course</i> ELEMENT GD Operator Training <i>5-day course</i>
Thermal Ionization Mass Spectrometer TRITON / TRITON Plus	TRITON and TRITON <i>Plus</i> Basic Operator Training <i>5-day course</i> Instrument Maintenance Training <i>2-day course</i>
Multicollector ICP-MS NEPTUNE / NEPTUNE Plus	NEPTUNE and NEPTUNE <i>Plus</i> Basic Operator Training <i>5-day course</i> Instrument Maintenance Training <i>2-day course</i>
DFS	DFS Instrument Operator Training for Quantitative Applications <i>5-day course</i> DFS Instrument Operator Training for Qualitative Applications and Characterization <i>5-day course</i> DFS Dual Data Operator Training <i>3-day course</i>
Exactive Q Exactive Orbitrap Elite Orbitrap Velos Pro LTQ Orbitrap Velos LTQ Orbitrap XL LTQ Orbitrap Discovery LTQ FT	These trainings will be organized by the European Training Institute ETI. For more information please contact: euro.training.hemel@thermofisher.com or catherine.lemardele@thermofisher.com Individual training available upon request.

5. Customer Operator Trainings Overview – continued

To check the currently available training dates, please visit

<http://training.thermo-bremen.com>

Instruments	Training Course
Isotope Ratio Mass Spectrometers DELTA Series MAT 253 / MAT 252	GC-EA: GC IsoLink, ConFlo III/IV and Elemental Analyzer and TC/EA Peripherals <i>5-day course</i>
	GB-EA: GasBench II, ConFlo III/IV and Elemental Analyzer and TC/EA Peripherals <i>5-day course</i>
	EA: Elemental Analyzer and TC/EA Peripherals <i>3-day course</i>
	GC-GB: GC IsoLink, ConFlo III/IV and GasBench II <i>5-day course</i>
	GC-EA: Elemental Analyzer and TC/EA Peripherals and GC IsoLink, ConFlo III/IV <i>5-day course</i>
	LC: LC IsoLink and Peripherals <i>3-day course</i>
	Dual Inlet: Dual Inlet and Peripherals <i>3-day course</i>
	GB-GC: GasBench II and GC IsoLink, ConFlo III/IV <i>5-day course</i>
	GC-EA: GC IsoLink, ConFlo III/IV and Elemental Analyzer and TC/EA Peripherals <i>5-day course</i>
	Isodat Workshop Basic Software Training Advanced Software Training, Hardware programming