

TechTIPS

Timely, Informative Productivity Solutions to Help You Work Smarter!

Mass Spectrometry

Molecular Spectroscopy

Elemental Analysis

Chromatography

TechTIP: Thermo Scientific Atomic Absorption Operations

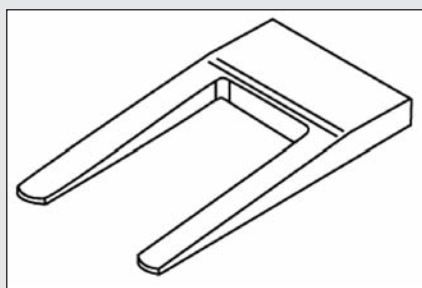
Removing the Windows from the Graphite Furnace

When you clean your instrument's graphite furnace, you are required to remove the two windows on either side of the furnace head.



With a new system in particular, the windows can be held in place rather tightly. In order to aid in removal of these windows, there is a tool that greatly assists in their removal.

The two tapered "fingers" on the tool fit between the windows and the furnace head. As the tool is inserted, the widening of the blades will move the windows away from the furnace. Now it will be easy to grab and pull the windows out of the furnace head.



**Furnace Window
Removal Tool**

Part Number
420316684441

Learn more when you attend:

Thermo Scientific Atomic Absorption Operations

This course covers all essential topics regarding flame/furnace optimization, methods development and efficient operation of the instrument. Both *D2* and *Zeeman* background correction techniques will be explored. Course topics include:

- Atomic spectroscopy theory
- Solaar atomic absorption software
- Instrument optimization
- Methods development
- Troubleshooting

Note: Flame and furnace AA users will have a four-day course. Flame ONLY users will attend the first two days of training at a cost of 50% of enrollment.



Work Smarter
and Gain a
Competitive
Edge in the Lab

Free Webinars!

Watch our free Essentials of Science Webinar Series that addresses the fundamental techniques associated with your work in the lab at www.thermo.com/education

TechTIP: Thermo Scientific iCAP 6000 Series Operations

Creating Custom ID Headers in iTEVA Sample Printouts

When using our iTEVA ICP software, you may want additional sample information besides the sample name to appear on the raw data printout. One option is to manipulate the three user definable fields at the top of each page.

Sample Name: -023	Acquired: 3/3/2010 11:54:17	Type: Unk						
Method: 6010	Mode: CONC	Corr. Factor: 1.000000						
User: admin	Custom ID1:	Custom ID2:						
Comment:	Custom ID3:							
Elem	Al3082	As1890	As1937	Ca3179	Cd2144	Cd2265	Cu3247	Fe2730
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm

Residing at the top of your raw data printout are three user definable fields for sample "Custom ID" fields. By default these are labeled as "Custom ID1", "Custom ID2", and "Custom ID3". To relabel these ID fields click on tool bar in the Analyst section of iTEVA and select "Tools" and then "Options..."

Method	Run	Results	Instrument	Tools	View	Help
6010 (Revision 1)				Options...		
Unk	-023	3/3/2010 1	Elem	Al3082	As1890	As1937
Unk	-023	3/3/2010 1	Units	ppm	ppm	ppm
Unk	-023	3/3/2010 1	Avg	F 6.149	F 38.66	F
			Stddev	.000	.00	

There you will see the three fields available for editing. Type in the headers you wish to appear on the printout and select "OK". In this example, "Batch", "Lot", and "Sample Location" were chosen as headers in this example.

Note: If you have default information that is applicable to the headers you have chosen, you may also enter this information here. It will show up on the raw data of all subsequent analysis.

Not only will these custom headers appear in the "Manual: Run Unknown Analysis" box, they will also appear in the "List View" of future Auto Sampler sequences. These fields may now be populated by the analyst with the applicable information.

Manual: Run Unknown Analysis

Auto-Sampler Sequence

Pos ID	Rack	Row	Col	Type	Sample Name	Comment	Batch	Lot	Sample Location	Contact	Check	Check Table
1	0	0	0	Unk	Sample-1		123456	L273146	Well C-17	1		
2	0	0	0	Unk	Sample-2		123456	L273146	Well C-18	1		
3	0	0	0	Unk	Sample-3		123456	L273146	Well C-19	1		
4	0	0	0	Unk	Sample-4		123456	L273146	Well C-20	1		
5	0	0	0	Unk	Sample-5		123456	L273146	Well C-21	1		
6	0	0	0	Unk	Sample-6		123456	L273146	Well C-22	1		
7	0	0	0	Unk	Sample-7		123456	L273146	Well C-23	1		
8	0	0	0	Unk	Sample-8		123456	L273146	Well C-24	1		
9	0	0	0	Unk	Sample-9		123456	L273146	Well C-25	1		
10	0	0	0	Unk	Sample-10		123456	L273146	Well C-26	1		

As a result, this information will appear at the top of the raw data printout as shown in the raw data example.

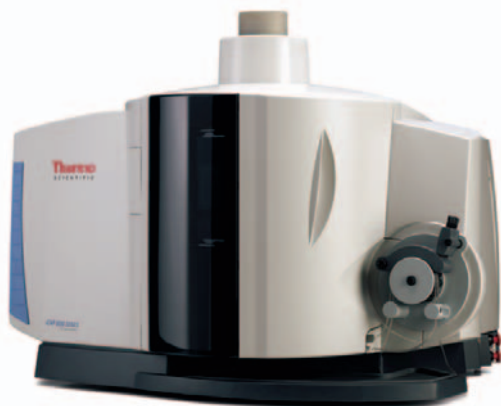
Sample Name: -023	Acquired: 3/3/2010 11:37:02	Type: Unk							
Method: 6010	Mode: CONC	Corr. Factor: 1.000000							
User: admin	Batch: 123456	Lot: L273146							
Comment:	Sample Location: Well C-17								
Elem	Al3082	As1890	As1937	Ca3179	Cd2144	Cd2265	Cu3247	Fe2599	Fe2730
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm

Learn more when you attend:

Thermo Scientific iCAP 6000 Series Operations

This course covers the essential aspects of instrument operation including iTEVA 32-bit software. Topics include atomic spectroscopy theory, instrument optimization, line selection, method development, and overcoming interferences. In the laboratory, students will put to use the information and practical spectroscopy presented in the lectures. Students will set up, optimize, and run real-world type samples. Special Thermo Scientific iCAP 6000 Series features will also be covered, including intelligent optimization routines and the *Precision* and *Speed* data collection modes. Course topics include:

- Theory of ICP
- Interferences in ICP
- Maintenance and instrument optimization
- Method development – this section covers calibration curves, setting background correction points, using interfering element correction, and setting up internal standards.
- iCAP software (post-processing of data, database backup, and security features)
- Use of Publisher for generating reports and trend charts
- Use of CETAC™ ASX520 autosampler



TechTIP: Thermo Scientific Fundamentals of FT-IR Microscopy and Nicolet Continuum Microscope Operations

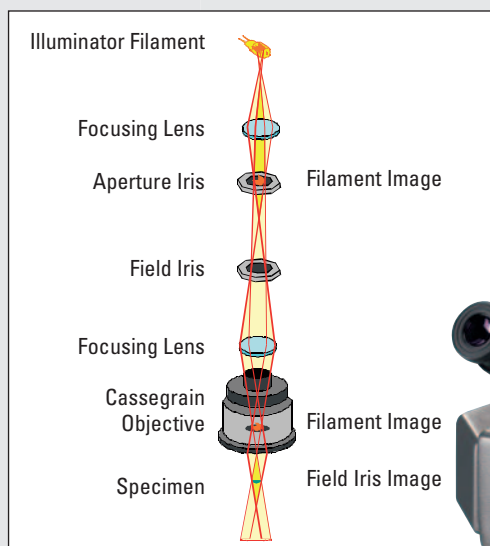
A Refresher on “Field” and “Aperture Iris” Dials

Have you ever looked at the left-hand side of your Continuum infrared microscope and wondered what the dials labeled “Field” and “Aperture Iris” were used for? In this TechTIP, we offer a friendly reminder as to the usefulness of these dials.

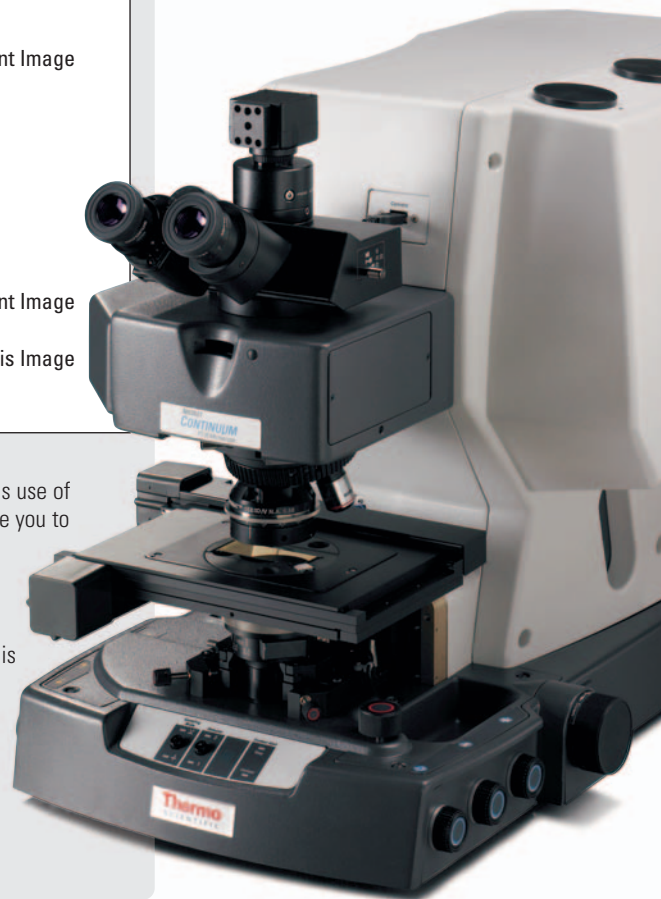
In addition to being a high-performance research infrared microscope, your Continuum is designed to be a high-end visible light microscope. For this reason, we provide you with the opportunity to illuminate your sample just as you would with a regular visible light microscope by using Köhler illumination. This illumination technique allows for even lighting across the sampling area that is free from glare. There are two separate Köhler illuminators located in the Continuum: One in the upper hemisphere of the instrument where you would set up for reflection experiments, and one in the bottom for transmission experiments.

The “Aperture Iris” is used to gently adjust the illumination on the sample when used in conjunction with the reflection or transmission illuminator. This dual light control allows the user to bring out contrast relationships in the sample without the need for external filters.

The Reflection Field Iris provides a conjugate plane of focus to the stage. This facilitates rapid focus on transparent or low contrasting samples by forming an image of the iris in the field of view. The Transmission Field Iris provides the same function when the condenser is in proper position.



For more TechTIPS like this and detailed information on sample analysis as well as use of your Continuum Microscope, we welcome you to attend the Continuum Microscope Operations Course. For users seeking an entry level of instruction including the use of OMNIC software and an Introduction to Spectral Interpretation, this type of material is also covered in our Fundamentals of FT-IR Microscopy course. Customized training for your specific application is also available through our custom onsite training offering where one of our instructors will come to your facility.



Learn more when you attend:

Fundamentals of FT-IR Microscopy Operations

This course is designed to provide all the tools necessary for users that would like to expand their knowledge of analysis with FT-IR microscopes. The course material is presented as a combination of software training, instrumental demonstrations, and hands-on activities through the use of desktop computers and instruments in a laboratory setting. This course is designed primarily for the Thermo Scientific Nicolet Continuum and Centaurus microscopes although users of other microscopes will find that the analysis techniques are universal. Course topics include:

- Basic FT-IR theory
- Creating Experiment files
- Creating user configurations
- Transmission Analysis with the FT-IR microscope
- Attenuated Total Reflectance (ATR) theory and data collection
- Reflection Analysis with the FT-IR microscope
- Sample preparation tips
- Spectral troubleshooting
- Post-collection data manipulation
- Creating custom user reports
- Creating user libraries and optimizing library search results
- An introduction to spectral interpretation

Nicolet Continuum Microscope Operations

This course is designed to provide users with detailed knowledge for the analysis of a wide range of samples using various microscopy techniques. Sample preparation and optimization of hardware settings on the microscope will be emphasized. The course utilizes a combined approach of lecture, demonstration, and hands-on training to show the user how to exploit the powerful advantages of the Thermo Scientific Continuum microscope. Students are encouraged to bring relevant samples to the course for analysis. Course topics include:

- Basic FT-IR theory
- Introduction to Microscopy
- Microscope alignment and performance testing
- Sample preparation techniques for transmission and reflection analysis
- Attenuated Total Reflectance (ATR) theory and analysis
- Creation of user libraries and optimizing library search results
- Sample mapping using Atlas software

Prerequisite: Students should be familiar with Thermo Scientific OMNIC FT-IR software. Only portions of the software specific to microscopy will be discussed.

TechTIP: Thermo Scientific LTQ Orbitrap XL Operations**Generating High Mass Accuracy Ion Lists**

Picture this... You're setting up a data-dependent method on your LTQ Orbitrap XL and you find yourself unable to define your parent mass or reject mass list(s) with high mass accuracy.

What to do... In order to alter Mass Lists in the instrument setup of the LTQ Orbitrap XL and allow the input of masses with the low ppm mass accuracy, simply perform an external instrument calibration.

Here's how:

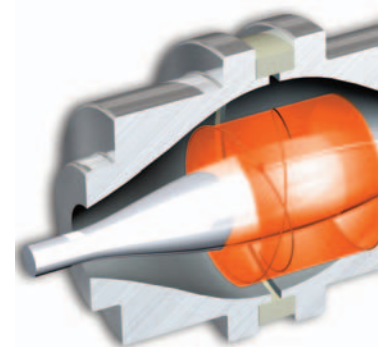
1. Open the Instrument Configuration icon on your desktop
2. Select Configured Devices – LTQ Orbitrap XL – Configure
3. Now, under Display in the LTQ Orbitrap XL configuration, change the mass precision of the mass lists to 5 ppm.
4. Once you've made the change (and this is important), restart Xcalibur and LTQTune.

Learn more when you attend:

LTQ Orbitrap Operations

This course is intended for new users to the Thermo Scientific Orbitrap system. This course covers the fundamentals of mass spectrometry, with emphasis on small molecule accurate mass applications. Users will gain hands-on experience using both ESI and APCI ionization techniques and learn the benefits of accurate mass detection. Course topics include:

- Ion trap theory
- Orbitrap™ theory
- Tuning and calibration
- Hands-on APCI and ESI MS
- Instrument method development for LC/FTMS
- Multi-stage MSⁿ method building
- Parallel detection methods
- Accurate mass methods
- Thermo Scientific Xcalibur software
- Basic Thermo Scientific LTQ maintenance

**TechTIP: Thermo Scientific LTQ XL Operations****How to Get Rich. (Information-Rich Spectrum, That Is.)**

A dissociation technique called Pulsed Q Collision Induced Dissociation (PQD) allows you to obtain lower m/z fragment ions. PQD generates spectra qualitatively similar to CID, but in addition, allows the observation of low m/z fragments that are usually excluded from CID spectra because of the "one-third cut-off rule".

How PQD works:

1. Using a short-burst, high-amplitude resonance excitation pulse, the precursor ion is activated at a high Q value of "0.7".
2. Next, the ions are held at the high Q value for a short period of time – just long enough for the kinetic energy of the ions to be converted into internal energy through collisions, but NOT too long that significant dissociation would occur.
3. Finally, the precursor ions' Q value is pulsed to a low value by rapidly dropping the RF amplitude, and then allowing the precursor ions to undergo fragmentation at this low Q value.

This combination of activating at high Q values (high energies) and collecting fragments at low Q values (to trap low m/z fragments) results in an information-rich mass spectrum.



Learn more when you attend:

LTQ Operations

This course is designed for users new to the Thermo Scientific LTQ mass spectrometer and covers mass spectrometry and chromatography in general, with emphasis on small molecule applications. The course includes lecture material, software training and intense hands-on sessions that involve tuning, calibration, and comprehensive LC/MS method development using both electrospray and atmospheric pressure chemical ionization.

A detailed training manual and a CD containing all data acquired during the training course are included, along with additional course materials. Course topics include:

- Ion trap theory
- Tuning and calibration
- Hands-on APCI and ESI MS
- Instrument method development for LC/MS
- Multi-stage MSⁿ method building
- Quantitative analysis
- Xcalibur software
- Basic Thermo Scientific LTQ maintenance

COURSE TITLE	April	May	June
CHROMATOGRAPHY AND MASS SPECTROMETRY			
LCQ™ Operations	26-29 FL		28-1 FL
LTO Operations (for LTO, LTO XL and LTO Velos courses)	6-9 FL	24-27 FL	
LTO Biotech Operations (for LTO, LTO XL and LTO Velos courses)		10-13 FL	
LTO with ETD Operations		17-20 FL	
LTO Orbitrap Operations		3-6 FL	7-10 FL
LTO Orbitrap Biotech Operations	12-15 FL		21-24 FL
Exacte Operations		18-20 NJ	
TSQ™ Operations	6-9 FL	10-13 FL	7-10 FL
Protein Quantitation			14-17 FL
GC Quantum Operations			21-24 NJ
MSQ Plus (Surveyor) Operations	6-8 FL		
Veterinary Drug Detection in Food – LC/MS	27-29 FL		
Melamine Detection in Food – LC/MS		4-6 FL	
Pesticide Detection in Food – LC/MS			22-24 FL
Pesticide Detection in Food – GC/MS		11-13 CA	
PolarisQ/ITQ (with TRACE GC Ultra) Operations		17-20 FL	
DSQ/DSQ II (with TRACE GC Ultra) Operations	19-22 FL		7-10 FL
ToxLab Software Operations		18-20 FL	
Basic HPLC Training Operations			
Proteome Discoverer Operations		10-11 PA	
Xcalibur™ Software Operations		12-13 PA	
ChromQuest™ Software Module – GC	30-1 FL		
ChromQuest Software Module – HPLC		18-20 FL	
Accela™ UHPLC Training	29-1 FL		
MetWorks™ Software Operations	14-15 PA		
Mass Frontier™ Software Operations	12-13 PA		
EI/CI Interpretation Module			
Basic Gas Chromatography	13-14 FL		
Gas Chromatography Method Development	27-28 FL		
EnviroLab™ (ELF) Software Operations			21-24 FL

COURSE TITLE	April	May	June
MICROANALYSIS			
NSS/NS7 Operations			22-25 WI
ELEMENTAL ANALYSIS			
XSERIES ICP-MS Operations			15-18 CA
iCAP 6000 Series Operations		17-21 CA	15-18 MD
Atomic Absorption Operations		11-14 FL	
QUANT'X EDXRF Operations			
XRF Operations with WINXRF Software	13-16 FL		
XRF Operations with OXSAS Software			15-18 FL
OE Operations with WINOE Software	20-23 FL		28-1 FL
OE Operations with OXSAS Software		25-28 FL	
MOLECULAR SPECTROSCOPY COURSES			
OMNIC™ Software Operations		4-6 WI	
Basic Macro Development		7 WI	
DXR Micro Raman Operations	13-15 WI		
Spectral Interpretation Applications	5-9 PA		21-25 CA
Fundamentals of FT-IR Analysis Operations	12-16 WI		
Fundamentals of FT-IR Microscopy Operations			7-11 WI
Nicolet Centaurus™ Microscope Operations			
Nicolet Continuum™ Microscope Operations		4-7 FL	
Quantitative TQ Analyst Software Operations		11-13 WI	
Nicolet Almega™ XR Raman Spectroscopy Operations			
Nicolet NXR FT-Raman Spectroscopy Operations			
Nicolet iN10™/iN10 MX Microscope Operations	20-22 FL		15-17 FL
MULTI-VENDOR COURSES			
Agilent 1100 Basic Operations			
Agilent 1100 Maintenance and Qualification	20-22 NJ		
Agilent 6890 Basic Operations			
Agilent 6890 Maintenance and Qualification		11-13 MD	
Waters Alliance Basic Operations			14-15 NJ
Waters Alliance Maintenance and Qualification			16-18 NJ

For the most current course schedule or to pre-register,
visit www.thermo.com/education
or call 1-800-532-4752



Localized Training

Throughout 2010 we will be offering short courses at various conferences and trade shows. To see full calendar, visit www.thermo.com/education

Course times and locations are subject to change.
©2010 Thermo Fisher Scientific Inc. All rights reserved. All trademarks are the property of Thermo Fisher Scientific Inc. and its subsidiaries.

DM51708_E 03/10M