

Agilent 500 Ion Trap LC/MS with the Agilent 1200 Infinity Series

Quick Start Guide

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Use this guide to learn how to set up the Agilent 1200 Infinity Series to automatically inject samples for analysis on Agilent 500 Ion Trap LC/MS and MS Workstation software. See Figure 1 for an overview of the workflow.





Figure 1 Workflow overview

Step 1. Set up and learn about the system

- Refer to the Agilent 1200 Infinity Series and ChemStation user guides, the Agilent 500 Ion Trap LC/MS operator manuals, and online Help to become familiar with the two systems.
- Refer to the *Agilent 500 Ion Trap LC/MS with the Agilent 1200 Infinity Series Set-Up Guide* for an overview of how the two systems are physically integrated.
- Open the MS Workstation Configuration Window and make sure that the **500-MS** icon is *not* in the AutoStart Module box. See for Figure 2.

🗒 System Control - Configuration	
File Edit Inject Automation Recalculate Instrument Windows Help	
Instrument 1: Varian LC/MS #1	
Operator:	
Suspended	
And a Chinak Mandrula	
Autostart module	
500-MS	
56	
Instrument 1 Parameters	
Available	
Modules	
Configuration : Son 15 14:29:41 Suptam Control Convright @ 1990 2000 Vision Inc.	_

Figure 2 MS Workstation Configuration Window with empty AutoStart Module box

Step 2. Create method and Sequence Sample List

1 Make sure the Sample List (MS Workstation) and the Sequence entries (ChemStation) are synchronized, including number of injections per vial.

Refer to these documents:

- 500-MS LC/MS Quick Reference Guide and 500-MS Software Operation Manual for method development guidelines
- 500-MS Software Operation Manual for MS method and Sample List creation
- Agilent 1200 Infinity Series user guides and ChemStation online Help for LC method and Sequence creation
- **2** Make sure the LC program run time is equal to or longer than the MS program run time.

The LC run time needs to account for the time taken by MS Workstation to do post-run processing actions (such as autolink or data processing). In general, when a post-run action has been selected, you can set the LC method post-run time in ChemStation to 2 minutes.

When multiple post-run processing actions are done in MS Workstation, you may need to extend the LC method post-run time. Do a test run to measure the time taken from sample injection to the completion of the MS post-run processing actions.

Step 3. Start the Sample List in MS Workstation and Sequence in ChemStation

Generic SampleList: Example sample list.SMP									D			
	Sample Name	Sample Type	, Cal. level	Inj.	Injection Notes	AutoLink	Amount Std (IS, N% only)	Unid Peak Factor	Multiplier	Divisor	MultiChannel MultiStandard	Add
1	Sample 1	Analysis	-	1	none	none	1	0	1	1	none	Incent
2	Sample 2	Analysis	-	1	none	none	1	0	1	1	none	Inseit
3	Sampe 3	Analysis	-	1	none	none	1	0	1	1	none	Delete
4	Sample 4	Analysis	-	1	none	none	1	0	1	1	none	Fill Down
5	Sample 5	Analysis	-	1	none	none	1	0	1	1	none	1111000001
6			-									Add Lines
7			-									Defaults
8			-									D'ordano
9			-									
10			-				1					
Begin	Suspend Resume										Data Files	Recalc

1 In MS Workstation, in the Sample List window, click **Begin** to start the Sample List in MS Workstation

Figure 3 MS Workstation Begin button in Sample List window

Step 3. Start the Sample List in MS Workstation and Sequence in ChemStation

When the yellow Waiting indicator flashes, the LC/MS has achieved equilibration. The LC/MS is now waiting for sample injections. See Figure 4.

📱 System Control - Varian LC/MS #1 - Waiting for Injection of Sample										
File Edit Inject Automation Recalculate Instrument Windows Help										
● 🖆 📴 API WEIGHT LOSS TDDS MSMS 6W_TP. ▶ 📄 🗐 🗐 🎽 月記品語語 🔟 ▶ ■ Waiting										
🛅 500-MS.56 - Ready	📅 500-MS.56 - Ready									
Manual Control Auto Tune Diagnostics Startup/Shut	down Ad	quisition								
Status And Control Run Time: 0.00 minutes Start Acquisition	Status And Control Run Time: 0.00 minutes Statt Acquisition Generic SampleList: Example sample list.SMP									
End Time: 29.00 minutes Edit Method		Sample Name	Sample Type	Cal. level	lnj.	Injection Notes	AutoLink	Amount Std (IS, N% only)	U	
🕒 No Fault 🔲 Wait For Readyln	1	* Sample 1	Analysis 👻		1	none	none	1		
	2	Sample 2	Analysis 👻		1	none	none	1		
	3	Sampe 3	Analysis 💌 💌		1	none	none	1		
	4	Sample 4	Analysis 🗾 💌		1	none	none	1		
Liide Kausad Casadama and Charachaman	5	Sample 5	Analysis 🗾 👻		1	none	none	1		
	6									
	7									
	8		•							
kCounts RIC 9-20-2010 10-34-27 AM	9		_							
370-3	•									
Begin Suspend Resume										
360-3										
Instrument 1 : Sep 20 10:49:42 Results will append to new RecalcList EXAMPLE SAMPLE LIST.RCL										

Figure 4 MS Workstation System Control window with yellow flashing Waiting indicator

2 In the ChemStation program, in the Instrument Control tab, click **Start** to start the Sequence.



Figure 5 ChemStation Start button in the Instrument Control tab

Step 3. Start the Sample List in MS Workstation and Sequence in ChemStation

strument 1 (online): Method and Run Con - - × 🛅 🧧 Methods 🛅 🔒 🖌 Sequences 🔐 🛃 - 🗈 📾 📇 🛄 🔜 🕚 ence Running/Data Acqui nRdy Wait 8.5 Method: EPA 538 SELECTEMP.M 🧟 Sequence: DEF_LC.S EMF sition Instrument Control Easy Sequence Sequence Queue Easy Sequence Setup DGALSTST.M 2 DI DGCALAS.M Sinto Stop DGCALOQ1.M DGCALOQ2.M DGCALOO3.M GLP 115 bar , DI DGCALOO4.M DGCALOQ5.M DGCALOQ6.M DI DGCALPS.M DI DIGCHPTST.M DGCPTEST.M ł DGFLDTST.M on off DGI FAKT M DGNOISE.M DGNPTEST.M 1 of 3 9 DGTHMTST.M Sequence Running Lef Righ DGVWDDC.M 1 Flow: 0.200 ml/min A: B: 90.0 % EPA 538 SELECTEMP.M 10.0% Press: 115 ba Actual 35.2 °C 35.0 °C 35.5 °C 35.0 °C Data Acquisition Setpoint Valve one temp 500ppb INFINITY-CHECKOU... n/a 114 nRdy Wait 8.5 minutes Data File ISOCRA M 001-0101.D 001-0101.D ISOPLOT.M U LOADTEST.M C:..\def lc 2010-08-04 16-08-47\ Inject MILLISIG.M 🕱 System Control - Varian LC/MS #1 - Waiting for Injection of Sample File Edit Inject Automation Recalculate Instrument Windows Help 1 🖆 🚔 500 MS ESI 538 cmpds low temp opt3.mth 🕨 📰 🔡 🔡 🚵 🚮 🚮 🔢 🔳 🗑 500-MS.56 - Ready Manual Control | Auto Tune | Diagnostics | Startup/Shutdown Acquisition Status And Control MS Method emperatures Operating Conditions Start Acquisition Segment Number: 1 of 1 ST low temp opt31 Drying Gas Setpoint: Run Time: 0.00 minutes Data File: End Time: 33.00 minutes Segment Description: Full Scan SelecTemp s. Scan Number: 0 100 C E dit Method Ready Scan Description: ESI Auto - Full Ionization Time: 0 50 - 350 Wait For Beadvin Scan Range: Ion Count: 0 No Fault Hide Keypad Spectrum and Chromatogram 💌 Default View 🔺 🔹 🗉 🖬 🖬 📶 🗠 📥 ▲ | **∻** | 🚳 I[• 📅 • 🕅 • kCounts 525-500-RIC ST low temp opt3 1 8-4-2010001 XMS 100% 114.1 120347 1 50% 475-0% 150 100 200 250 0.1 02 0.4 0.6 300 Acquired Range 350 m/z 0.5 minute 🛃 start 👘 🤌 🚱 🛇 😽 Instrument 1 (onl 27_21_10 test 👮 System Control 🔇 🕉 🔎 4:10 Př Method Builde

The Automated Liquid Sampler (ALS) prepares to inject the sample as specified by the ChemStation method. See Figure 6.

Figure 6 ALS prepares to inject the sample

When the sample is injected, the LC method (specified by ChemStation) and the LC/MS method (specified by MS Workstation) is started. See Figure 7.

😽 Instrument 1 (online): Metho	d and Run Control						_ 7 🛛
File RunControl Instrument Method	Sequence View Abort Help	equences 🔐 🛃 DEF LC.5	- 8				
Sequence Running/Date	Acquisition Elapse	1 0.1 Metho	d: EPA 538 SELECTE	MP.M Sequence: DEF			
Method and Run Control 🛛 🕂	Method and Run Control	- \					
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DGCALOQ1.M DGCALOQ2.M DGCALOQ2.M		~					
DGCALOQ4.M DGCALOQ5.M DGCALOQ6.M DGCALOQ6.M		101.0 μl 0.00 μl 0.200 ml/mir 101 μl 101 μl	34.8°C	.			
- W DGCHPTST.M - W DGCPTEST.M - W DGFLDTST.M - W DGLEAKT.M		<u> </u>				on off	
DGNOISE.M DGNPTEST.M DGTHMTST.M DGTWDDC.M	Done sample runs: 1 1 of 3	Binary Pump Status Run A: 90.0 % Flow: 0.200 ml/min P: 10.0 % Flow: 0.200 ml/min		mn Thermostat Status Bun Left Right Left 34.8 °C 34.7 °C		ChemStation Status Sequence Ru	nning
UI EPA 538 SELECTEMP.M UI FINITY-CHECKOU UI ISOCRA.M UI ISOPLOT.M	one temp 500ppb 001-0101.D	102-I Injector Status	See Va	tpoint: 35.0 °C 35.0 °C Ive n/a		Data Acquisit Data File 001-0101.D	Elapsed 0.1 minutes
- MILITISIG.M		Run					
System Control - Varian LC/	MS #1 - Running Joulate Tostrument Windows Help						
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500-MS.56 - Running		S Project and and the state					
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Status And Control	MS Method	Operating Cor	nditions	Temperatures			
Run Time: 0.13 minutes Sti	op Acquisition Segment Number:	of 1 Data File:	ST low temp opt3 2 o	Drying Gas Setpoint:			
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Figure 7 Sample injection starts the ChemStation method and the MS Workstation LC/MS method

Troubleshooting

If you have problems with the injection automation, please refer to this chart.



Troubleshooting

www.agilent.com

In This Book

This guide describes how to set up the Agilent 1200 Infinity Series to be used with the Agilent 500 Ion Trap LC/MS and the MS Workstation software.

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