Maintaining lab operations in extraordinary times

Dealing with operating impacts from the COVID-19 Coronavirus

LC/QQQ & LC/QToF Thursday, April 23rd

Agilent
Trusted Answers

Important general information for managing lab operations

Follow your SOP's – but here are some additional things to consider

- **How has operational changes affected your SOP's**? Are there impacts to instrument maintenance, qualifications, etc? Has instrument usage changed as this may affect service/consumable replacement intervals? Document these and prepare a plan to bring them online once you resume normal operations.
- **Develop a new schedule/routine for working in the lab**. This is a challenging time for everyone and routine helps everyone acclimate to these impacts.
- **Prioritize time in the lab** - Can any tasks be shifted remote or online (training, remote monitoring, data analysis)? Is your IT department aware of these and is bandwidth/VPN/remote access capable of handling this.
- **Are service providers allowed on-site?** Or is there remote work they can do? Discuss this before any scheduled visit. Our service teams are currently offering free live video conferences to support labs around the world – more info at the end of the presentation.
- **Proactively replace lab consumables** before you see performance issues. If ordering supplies, check if shipping/receiving/logistics for your company has been affected.
- When you return to normal operations, have a **detailed restart plan** that outlines priorities and timelines. Agilent will provide additional information on **returning/restarting your lab in a few weeks**.

Maintaining Lab Operations in Extraordinary Times

Multishift 24/7 Operations to Normal Load with Limited Lab Access

We are in unique times, full of uncertainty, stress and concerns. The goal of this webinar is to provide you the necessary knowledge (Tips/Tricks) to keep your laboratory's LC's, LC/TQ, and LC/Q-TOF's fully operational no matter the workload and varying laboratory access conditions.

- **Peek a Boo**: Using Remote Access Tools to Keep Systems up and Healthy
- **A Clean LC is a Heathy LC**: From Mobile Phase to Sample Preparation
- **A Clean MS is a Healthy MS:** Key Activities to Keep LC/TQ and LC/Q-TOF Operational
- **Limited Access:** Prioritizing Key Activities to Keep Operational with Limited Lab Access
- **Running 24/7 Operations**: Keeping Systems Operational Under High Load Conditions
- **Be Prepared:** Key Consumables and MS Parts for Routine DIY Maintenance
- **My Systems Down** ☹ We got you Covered ☺ New Field Service Remote Access Capability

Remember… Agilent is Open, We are Working and Ready to Help You in Many Ways

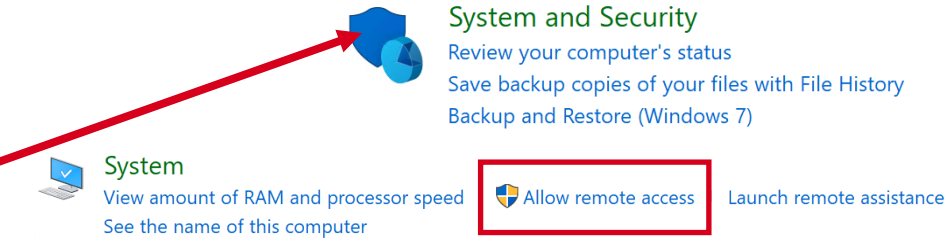
Remote Access of LC/TQ and LC/Q-TOF Systems

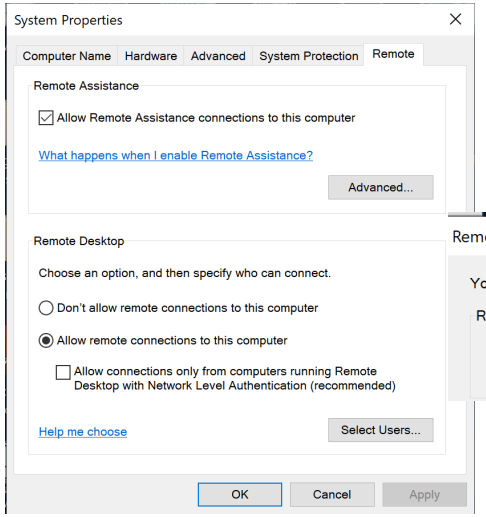
Enabling Desktop Remote Access on LCMS PC

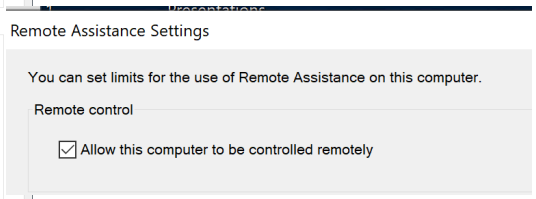
- Launch “Control Panel”, Click on “System and Security tab”
- In Systems Area click on “Allow remote access” line to launch the System Properties Window and Select “Remote” tab
- Check “Allow remote access connection to this computer” and then click on Advanced Tab
- Check box “Allow this computer to be controlled remotely”

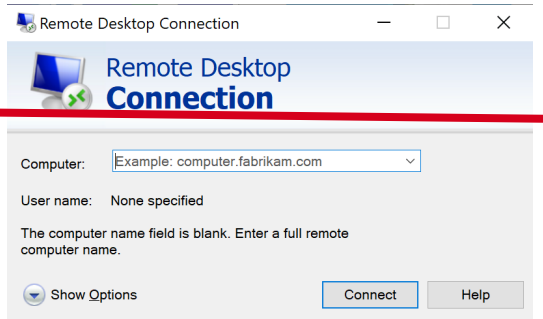
Next, try logging into LCMS PC from a different PC. Remember you need to have the **IP address** or “**PC name**”; User name and Password for the LCMS PC.

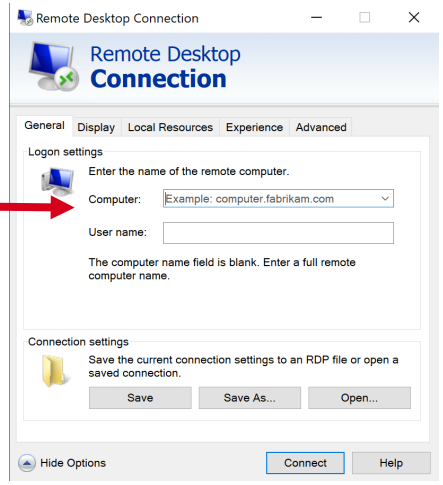
- Launch “Remote Desktop Connection” and select “Show Options”
- Type in the Computer name or IP address
- Type in User Name
- When Prompted Type in Password





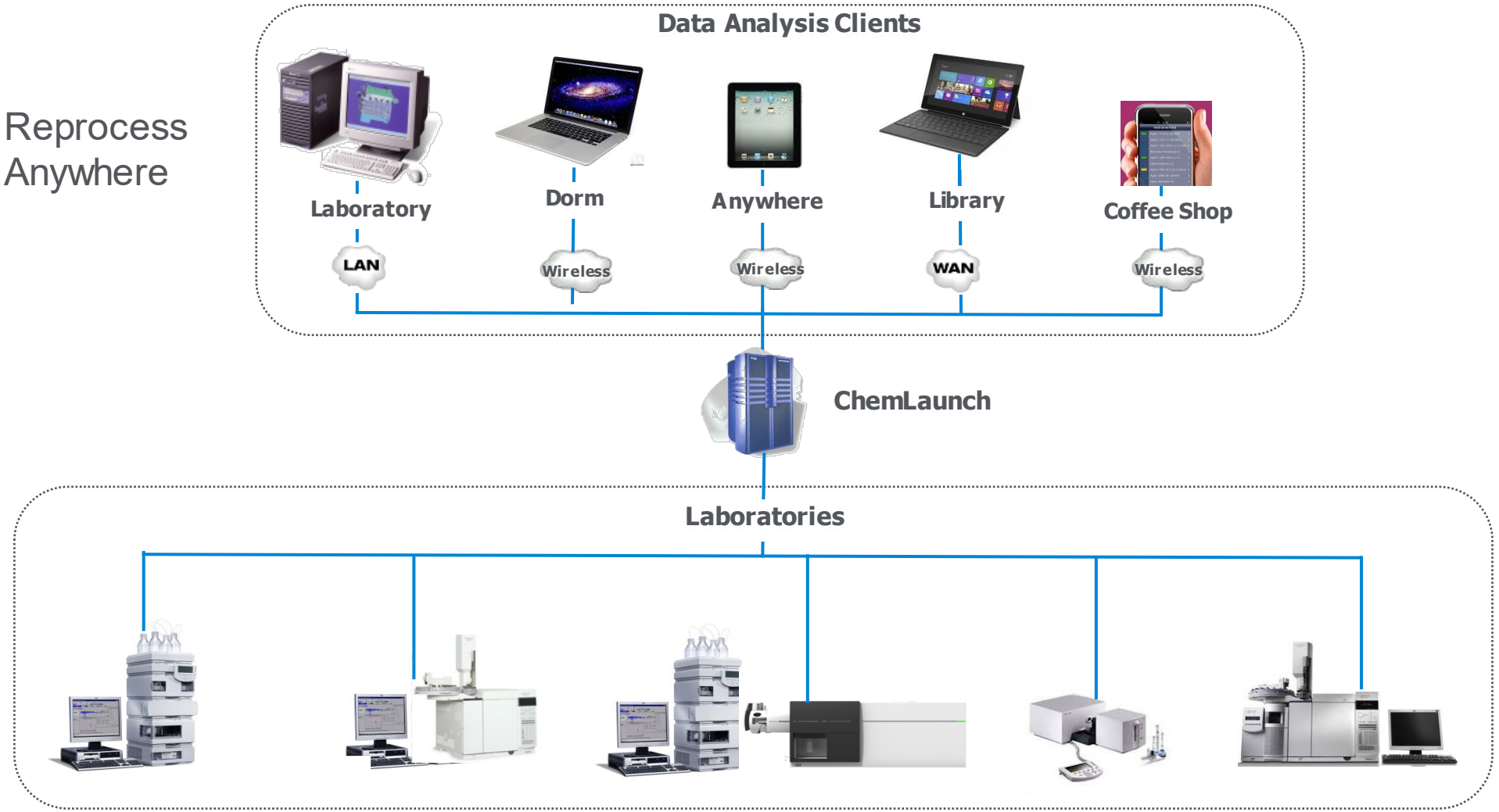






Remote Access of MassHunter LCMS Systems Possible with ChemLaunch Software

Reprocess Anywhere



Workstations in lab

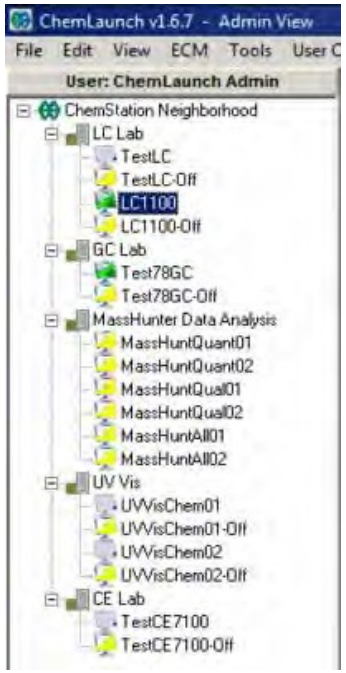
ChemLaunch for MassHunter

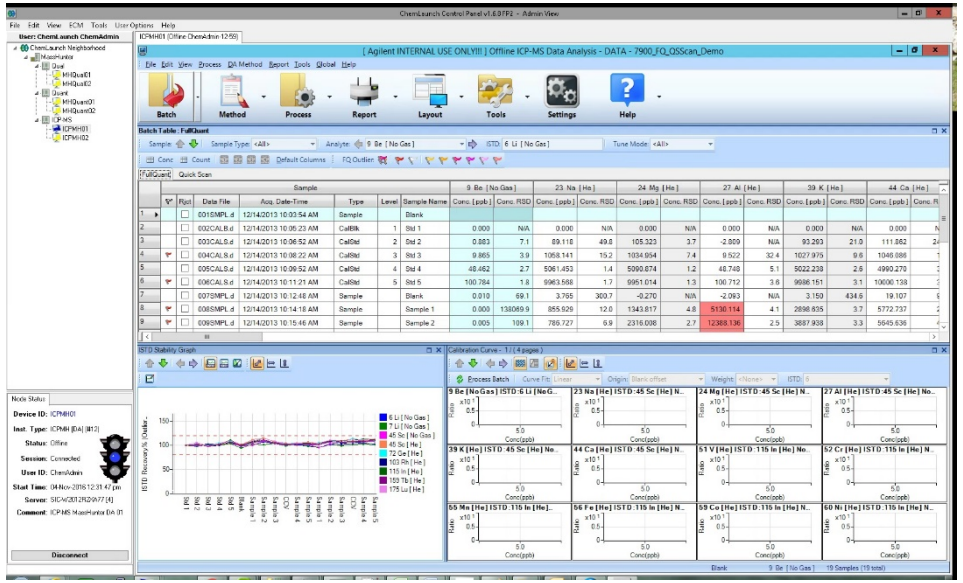
Takes MassHunter Data Analysis and provides it outside the lab

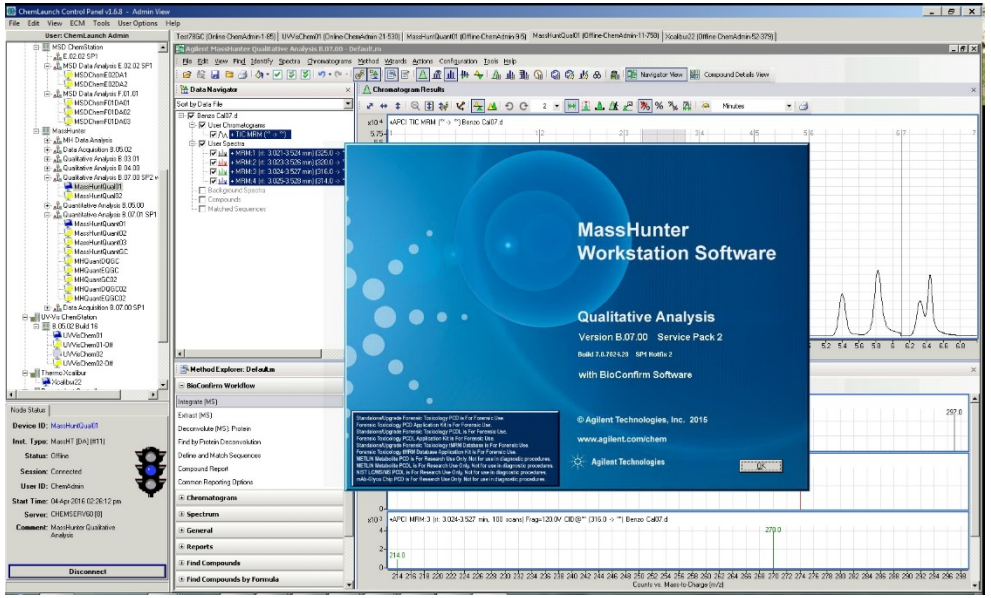
- Thin client
  - Web Access to MassHunter DA
  - No software loading at clients
  - No validation needed

- GCMS
- LCMS
- Quant
- Qual
- ICPMS

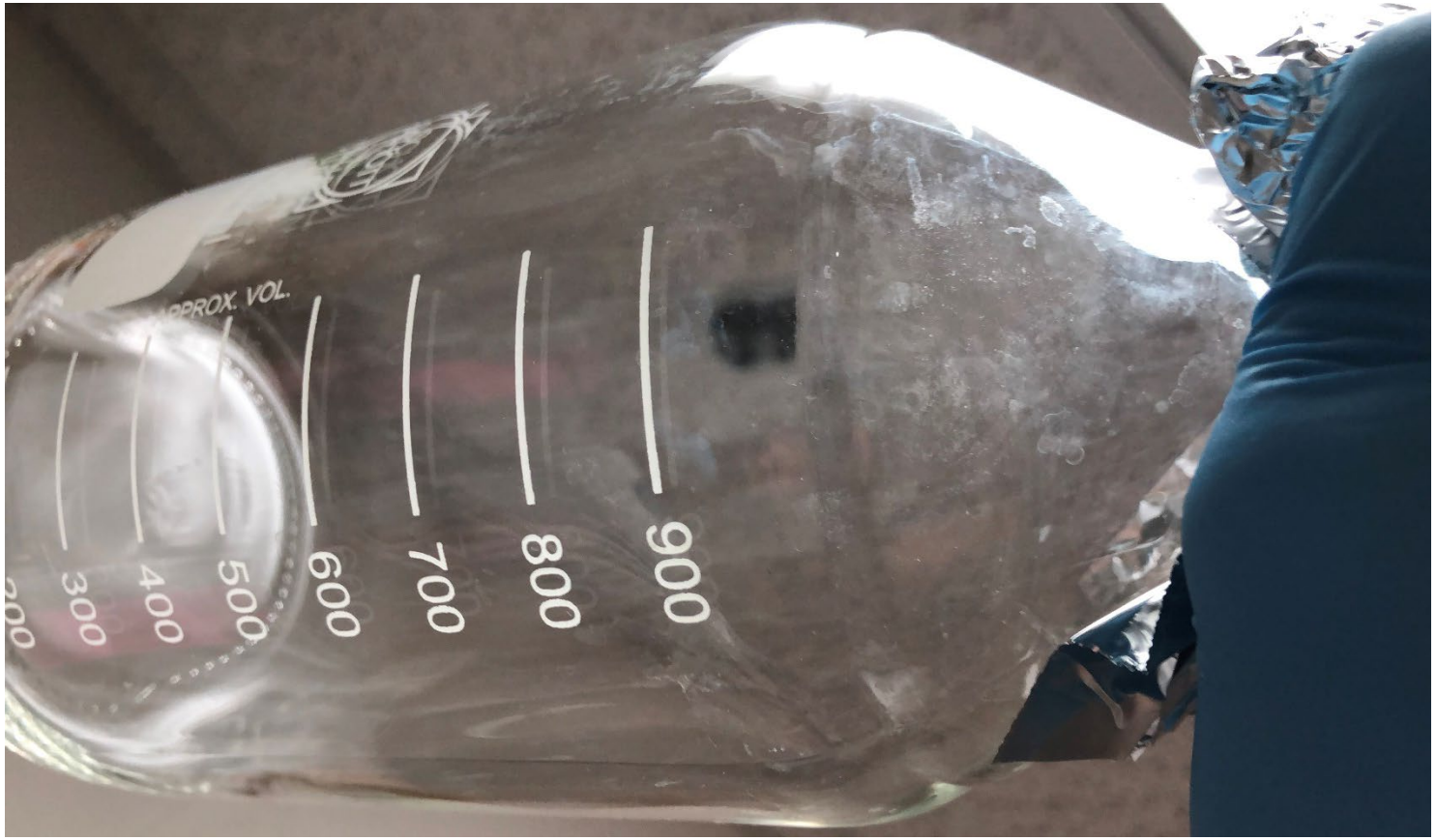
- HPLC
- GC
- MPP and BioConfirm

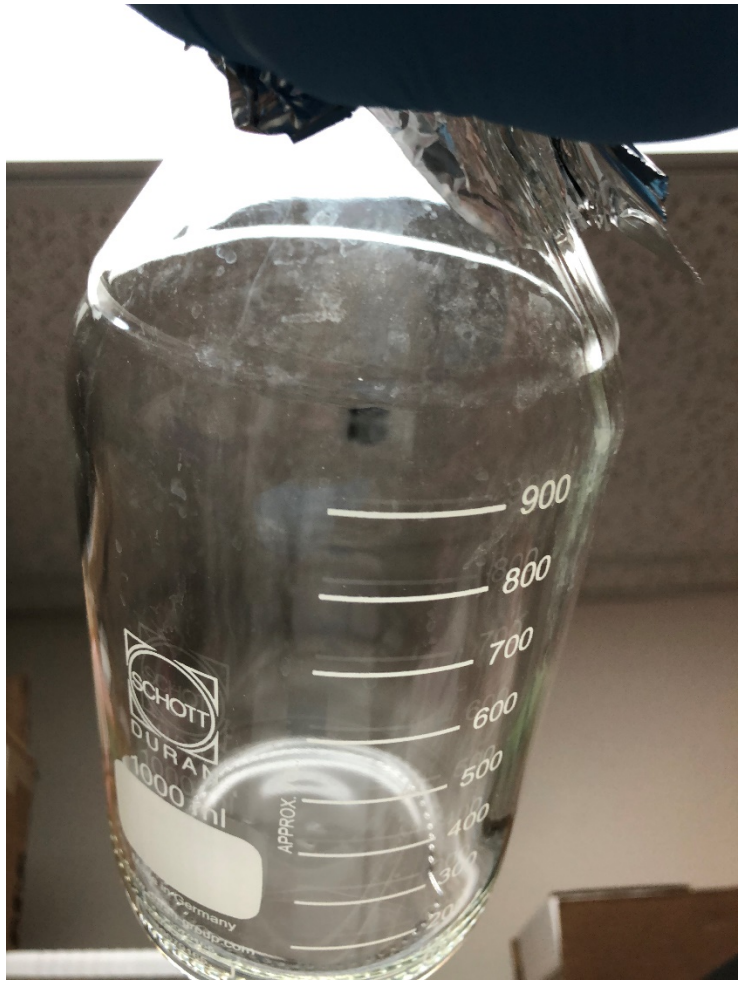






Hygiene – Do you want the hands that washed these bottles to touch your instrument? I don't think so





Tips and Trick to Keeping your LC System Up and Running

A ***Clean*** LC is a **HAPPY** LC/MS…

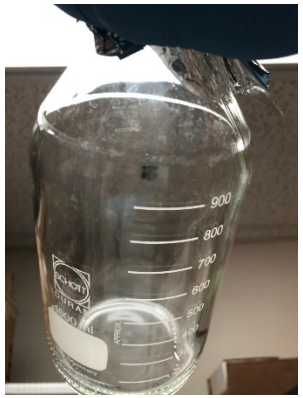
- Keep Glassware and Mobile Phase Bottles CLEAN
- Avoid SOAP and Detergents and Dishwashers!
- To Avoid growth of Bacteria and Algae
  - Make-Up Fresh Mobile Phase Solvents Weekly
  - Use 99% Water 1% Organic in Bottle A
  - 1% Water to Organic mobile phase
- Prevent High Pressure Issues:
  - Filter Samples Prior to Placing into AutoSampler
  - Guard Column before Analytical Column
  - Install an Inline Filter after Autosampler

Previously Recorded Tips and Tricks LC and LCMSD Webinar April 17th

Mobile Phase Hygiene: Glassware Cleaning, Filters and Caps

Improper cleaning of solvent bottles can cause contamination of mobile phases and resulting in major chemical background and poor MS performance

- Wash solvent bottles with hot water, deionized water, and organic solvent (IPA or acetonitrile).
- Leave glassware inverted on paper towels on bench or on clean pegboard dowels to dry.
- **Avoid using detergents** If it is necessary to use detergents to get glassware clean, re-wash with plenty of hot water and cold water so that all detergent residues are removed.
- Clean Bottles, **Mobile Phase Bottle Caps**, **Solvent Filters,** UltraPure LCMS Grade Solvents



Dirty Solvent Bottles

Stainless steel filter, solvent inlet, 10 µm pore size, 01018-60025

Replace Glass Filters with Stainless Steel

5043-1222 InfinityLab Stay Safe cap starter kit

Use Mobile Phase Caps not AL Foil or Parafilm

Agilent Infinitylab UltraPure

5191–4496 Acetonitrile

5191–4497 Methanol

5191–4498 Water

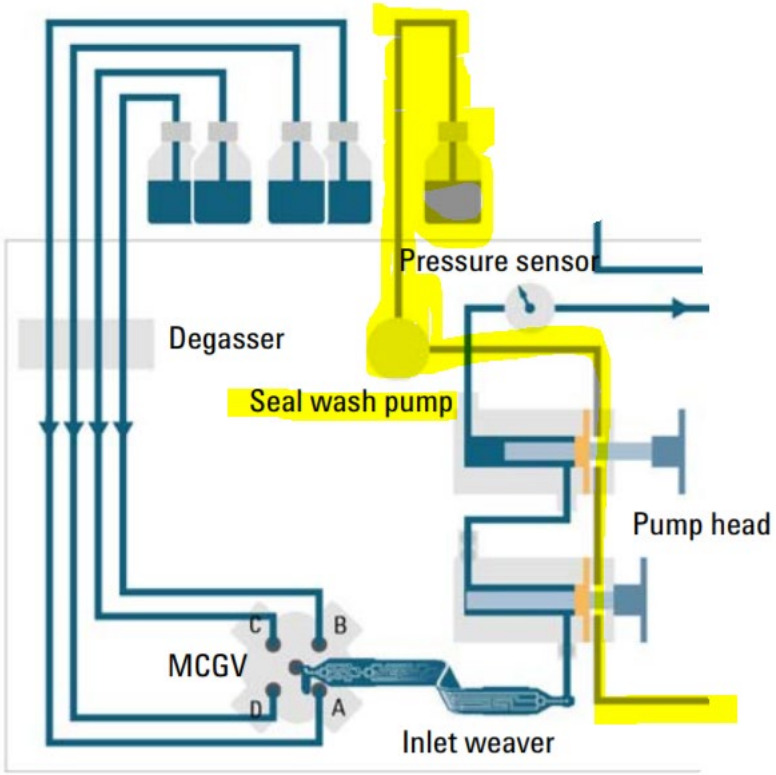
Keep HPLC Healthy: Don't Forget the Seal Wash and Needle Wash

Using pump seal wash will prevent buffer salt from building up on pump seals.

- Seal wash solvent – Water with 10% Isopropanol (IPA)
- Seal wash should be set to run periodically regardless of instrument is acquiring data or not.
- Seal wash is set to run automatically for 1290 pumps
- *Make sure seal wash solvent bottle is not empty*

Using needle wash option will reduce carryover

- Keep needle wash solution bottles filled with fresh solvent



Do I have Enough Mobile Phase to Keep LC Running?

Real Time Monitoring Mobile Phase and Waste Levels

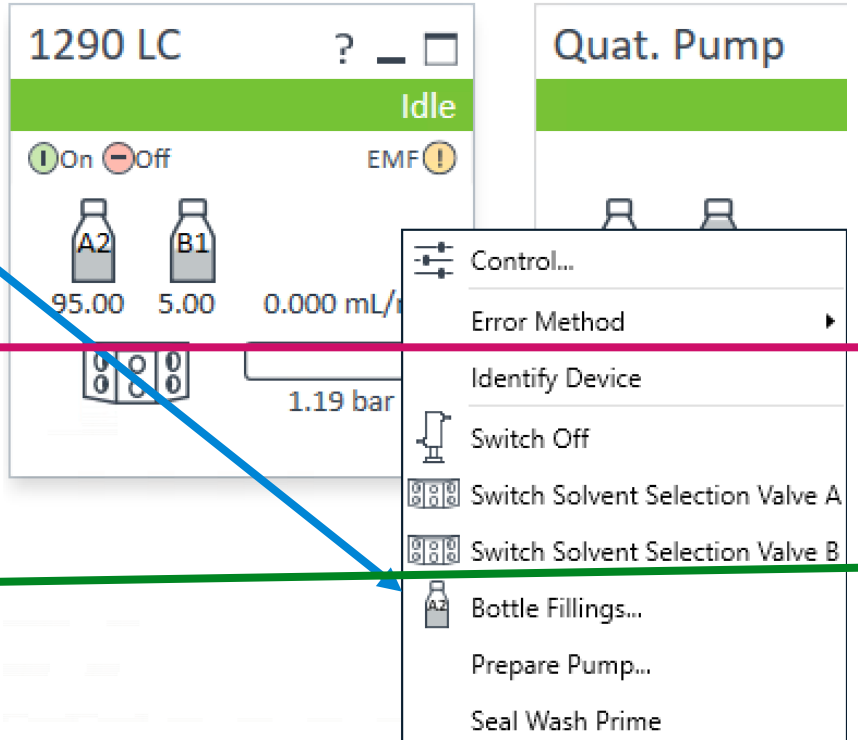
- Right Click in LC Icon
- Click on “Bottle Fillings..”
- Brings up new window
- Fill in Actual Volume and Total Volume for all bottles

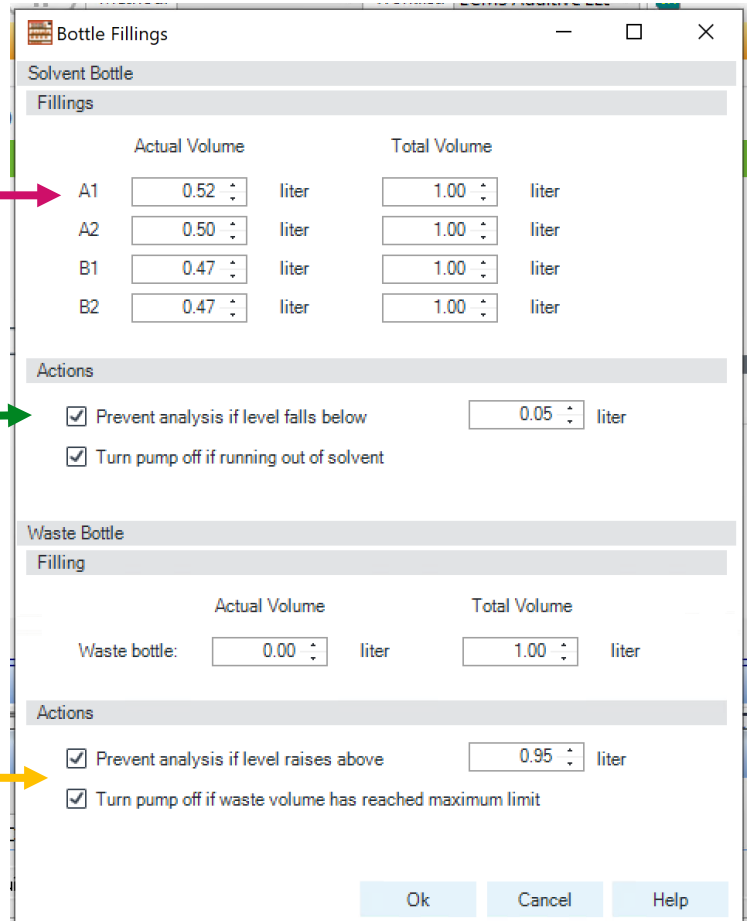
To prevent pump for going dry

- Check both boxes here
- Set solvent level to 0.05 L
- Position solvent filter at the bottom of the mobile phase bottle

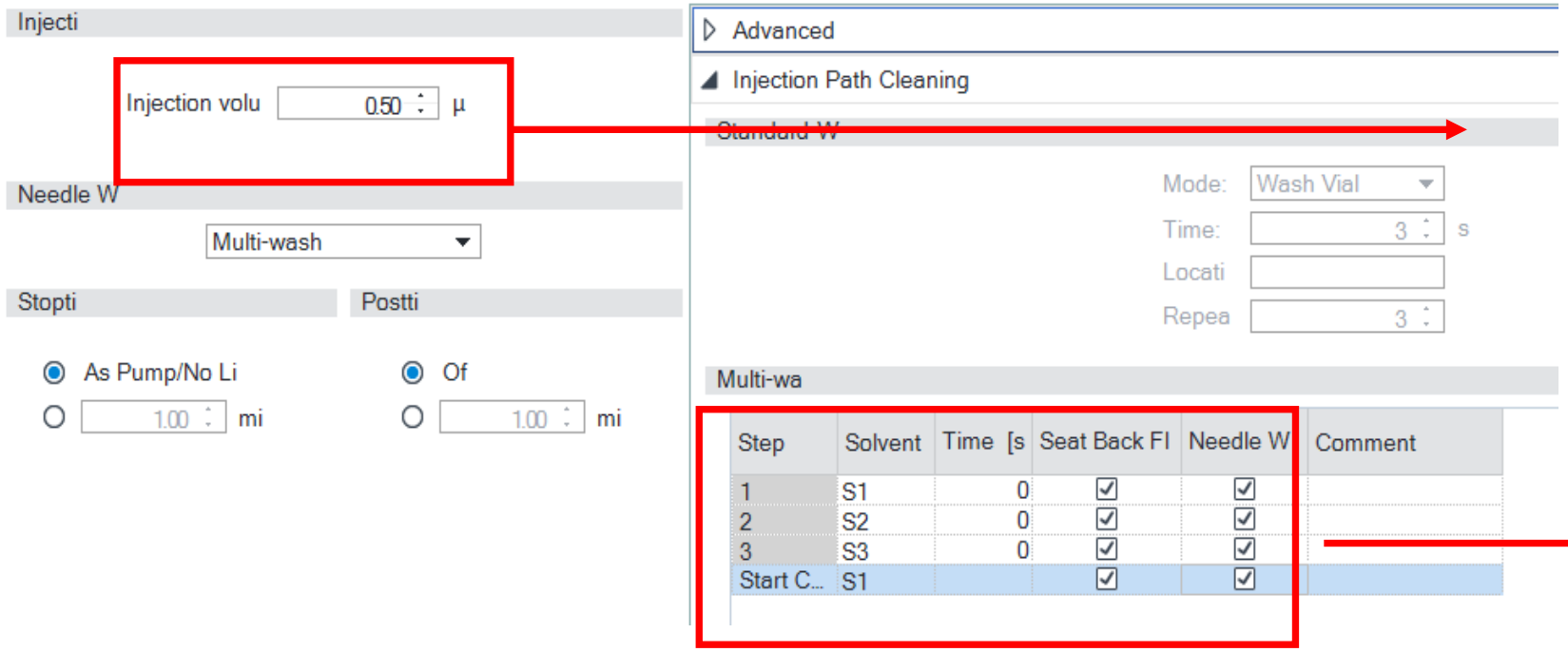
Remember Waste Bottle also

- *Fill in Total Volume of Waste*





Carry-Over Reduction is Key for Trace-Level Quantitation using LCMS/MS



Newer, UHPLC methods may have lower injection volumes

'Sticky samples or more sensitive detectors may require aggressive cleaning

Composition and order of Rinse Solvent is key to good performance…
e.g. S1: 2% Organic/water S2: 90/10 ACN/Water S3: 50/50 MeOH/ACN

Always Remember to go back to Initial Mobile Phase S1 Bottle to ensure best Chromatography

Early Maintenance Feedback Limits (Lab Advisor and MassHunter)

1290 Infinity II - Agilent Lab Advisor

Agilent Lab Advisor — EMFs — FSE Version

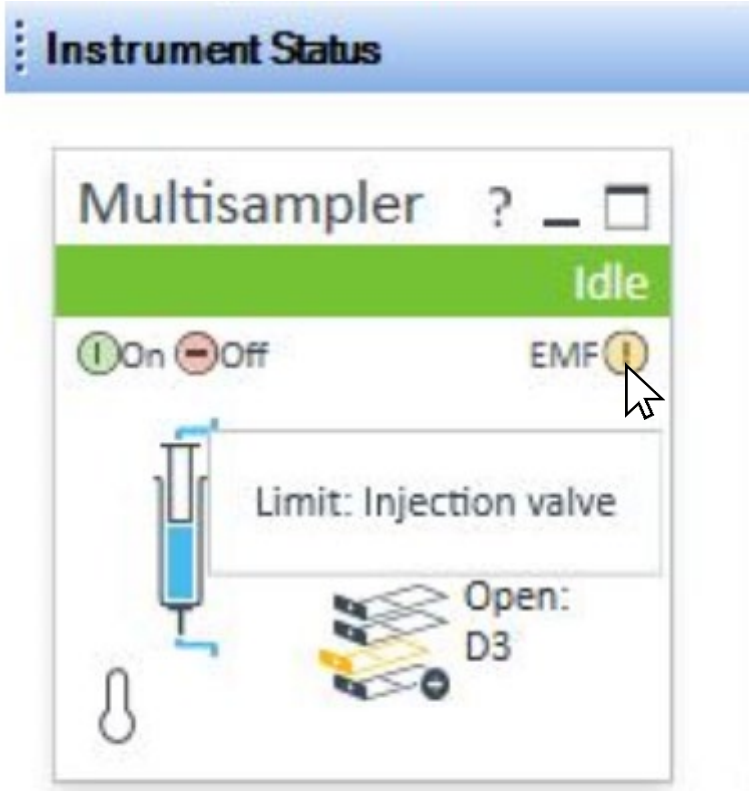
Tasks: Lab Advisor — System Overview, Configuration, Apps, Firmware Update, Logs & Results; 1290 Infinity II — Service & Diagnostics, Instrument Control, EMFs, System Report; Help — Context Help (F1), Help Topics, What's New?

Filter: All Counters / Counters with Limit

Title	Value	Unit	Limit	Progress
1290 Infinity II				
G7120A 1290 High Speed Pump, Serial # HD89840063				
Pumped Volume Channel A	0	L	0	0%
Pumped Volume Channel B	0	L	0	0%
Seal Wash Pump On-Time	0.07	h	0	0%
Automatic Purge Valve Switches	6	Count	0	0%
Solvent Selection Valve Switches (A)	0	Count	0	0%
Solvent Selection Valve Switches (B)	0	Count	0	0%
G7167B 1290 Multisampler, Serial # YW35360117				
Right Needle Up-and-Down Counter	0	Count	0	0%
Right Seat Wearout Counter	0	Count	0	0%
Injection Valve Switches	2	Count	200	0% Send
Peristaltic Pump On-Time	0	h	0	0%
G7116B 1290 MCT, Serial # DH84176433				
Valve Switches	1	Count	0	0%
G7117B 1290 DAD, Serial # GX93314356				
Accumulated UV Lamp On-Time	0	h	0	0%
Number of UV Lamp Ignitions	1	Count	0	0%

Activate EMF | Deactivate EMF | Refresh Counters

Connection Address: localhost — Version B.02.12 [342] - FSE | Licenses 16/Unlimited | Expiry 6/2/2020



Back Home in Chicago…No Sunbathing We Have Snow in April..

A Clean Mass Spectrometer is a Healthy Mass Spectrometer

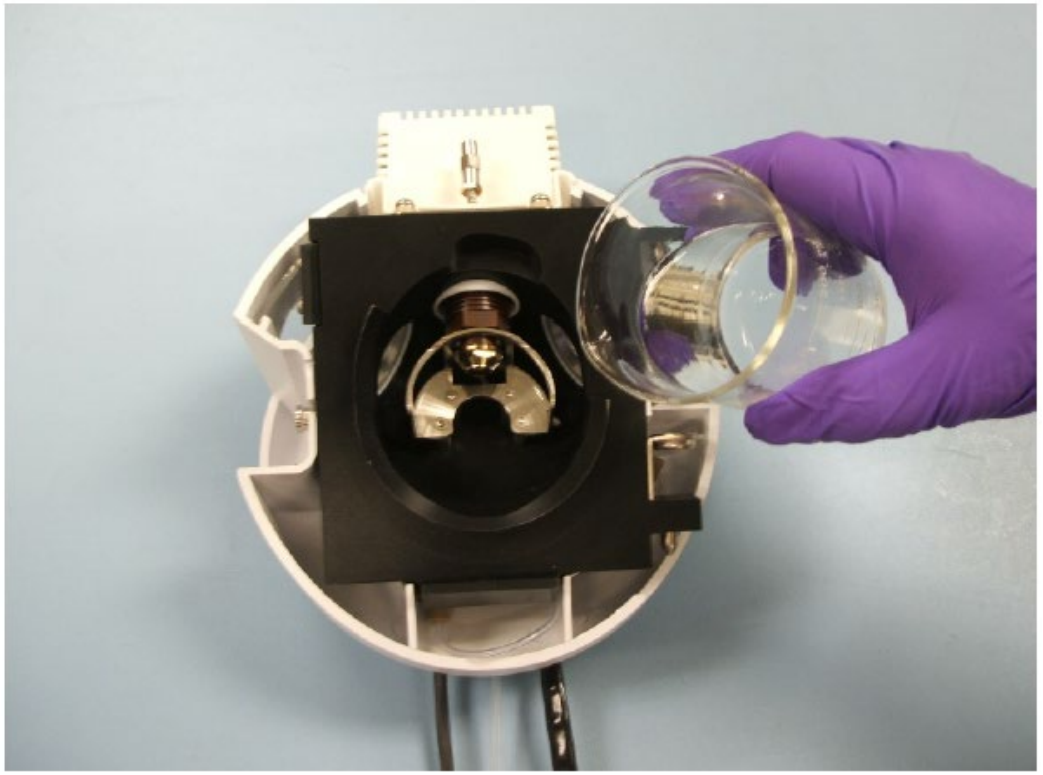
Top Ten Activities to Complete Each Week no Matter Access

1. Make up ***new mobile phase solvents*** and check solvent waste
2. Clean ***LCMS source, spray shield and the cap*** on glass capillary
3. Visually ***check spray nebulizer*** ensure not blocked or damaged and has a good spray
4. Refill if needed ***calibration/tuning solution*** from stock solution
5. For LC/Q-TOF refill if needed ***reference solution*** bottle A from stock solution
6. For LC/Q-TOF do a ***mass calibration*** to ensure good mass accuracy
7. For LC/TQ always a good idea to run ***new calibration curves***
8. Make up new samples
9. ***Backup data*** make sure hard drive is not full
10. Check for any ***software service patches*** on Agilent.com website

Quick ESI/Jet Stream Cleaning Procedure:

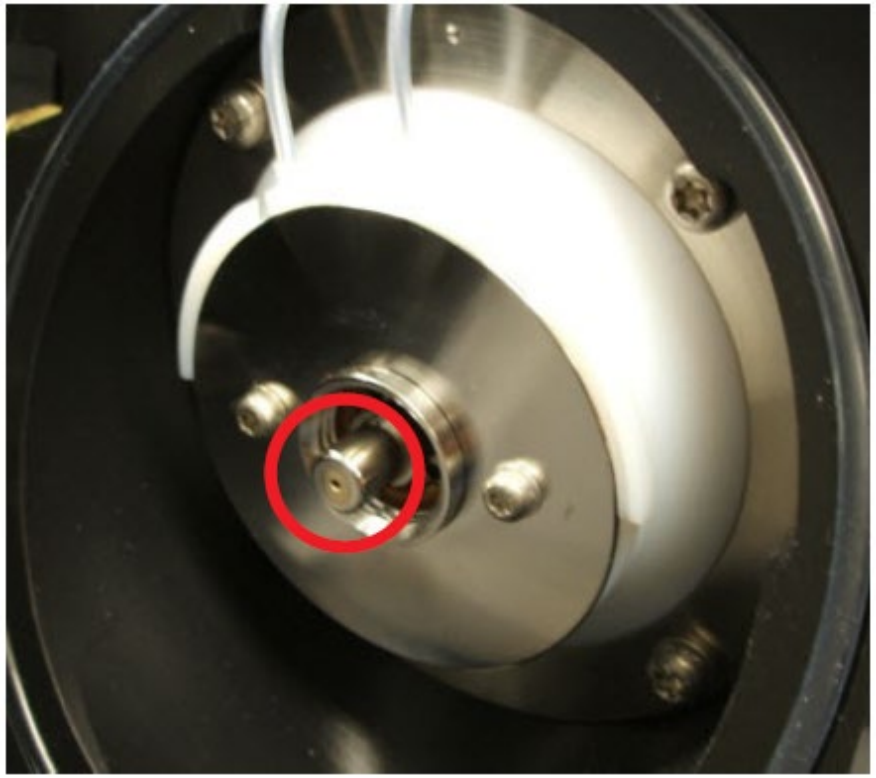
Clean spray chamber with 100% Water followed by 100% Organic

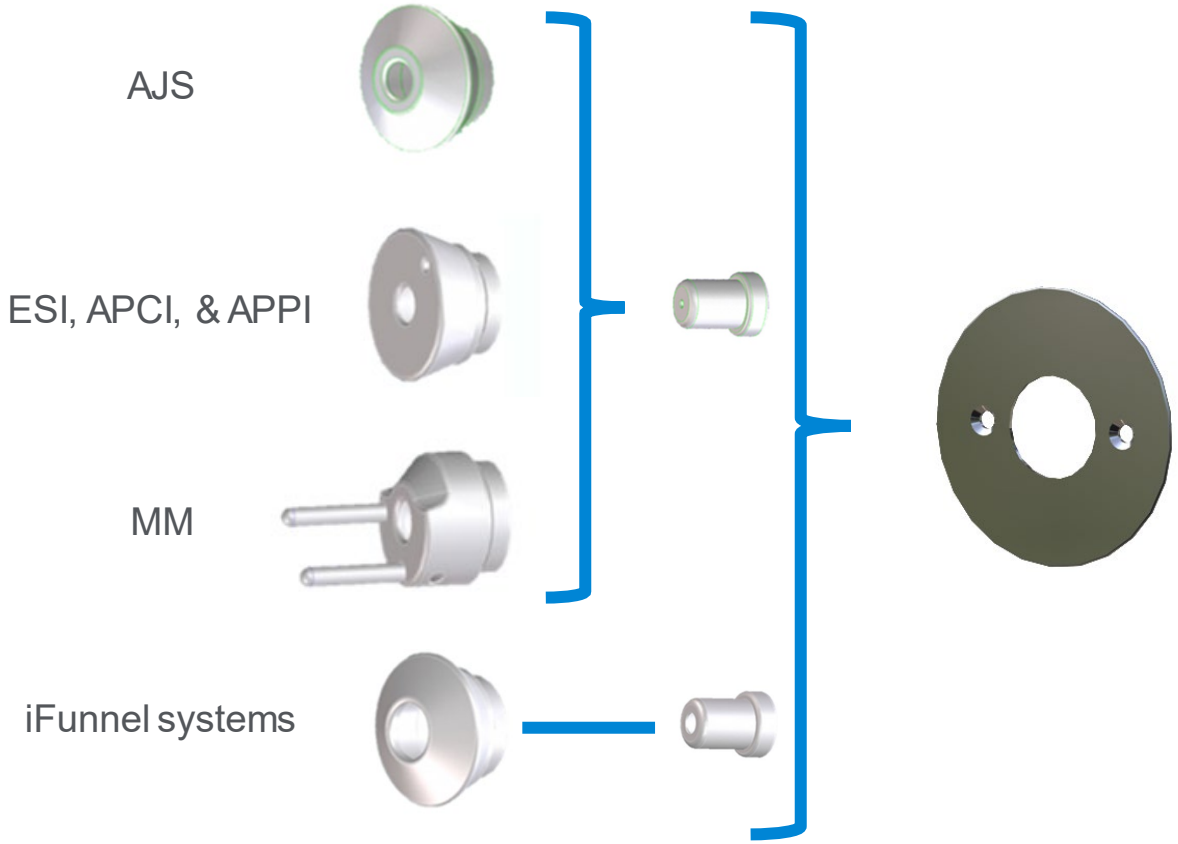
Do not Use Chemwipes Use Lint free Clothes



Don’t spray solvent directly into the ion transfer capillary as that may affect vacuum.

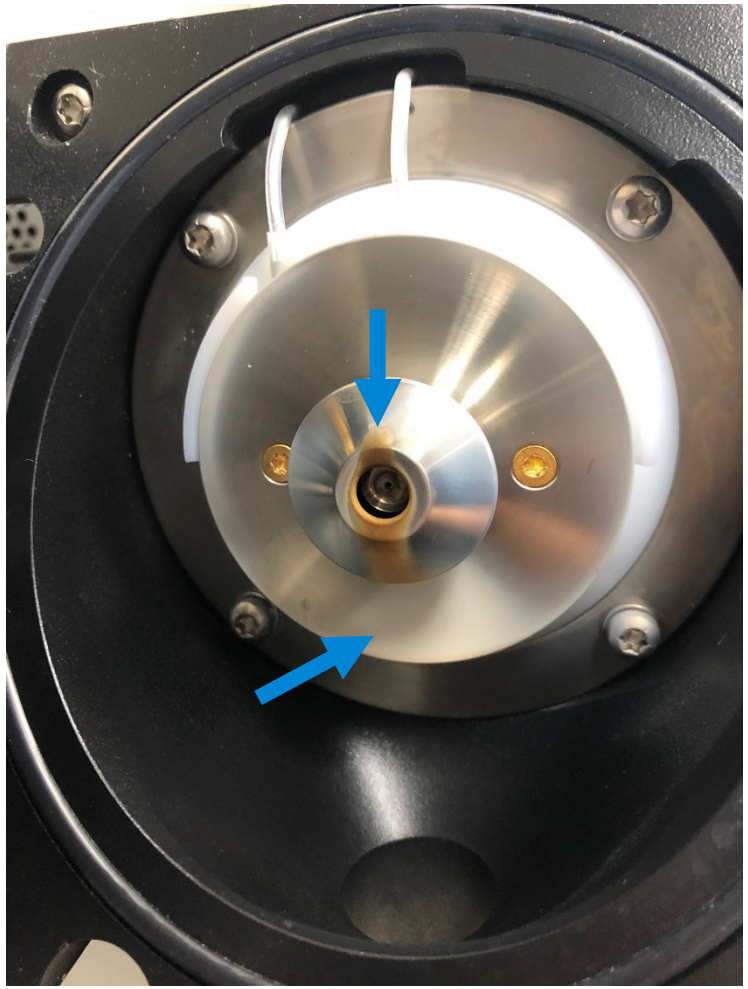
LC/MS Source Maintenance





Clean the spray shield, capillary cap and end plate with 4000 grit paper

Quick ESI/Jet Stream Source Cleaning Procedure:



'Dilute & Shoot' Application

4000 Grit Paper

8660-0827

After Cleaning Spray Shield and Cap Recommend to Sonicate in 50/50 Water/ACN for at least 20 minutes

Always Wear Gloves When Handling MS Parts

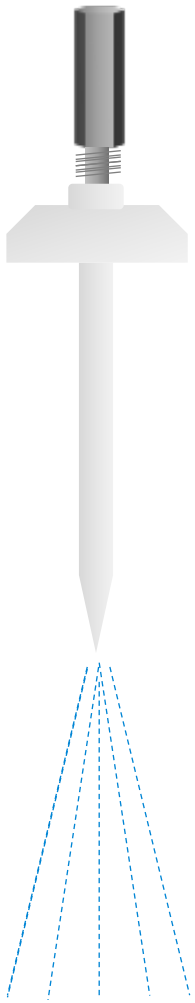
Checking Performance of LC/TQ and LC/Q-TOF Systems

Proper Spray is required for good signal

→ Check Nebulizer with Magnifier

→ Adjust / Clean / Service Nebulizer as needed

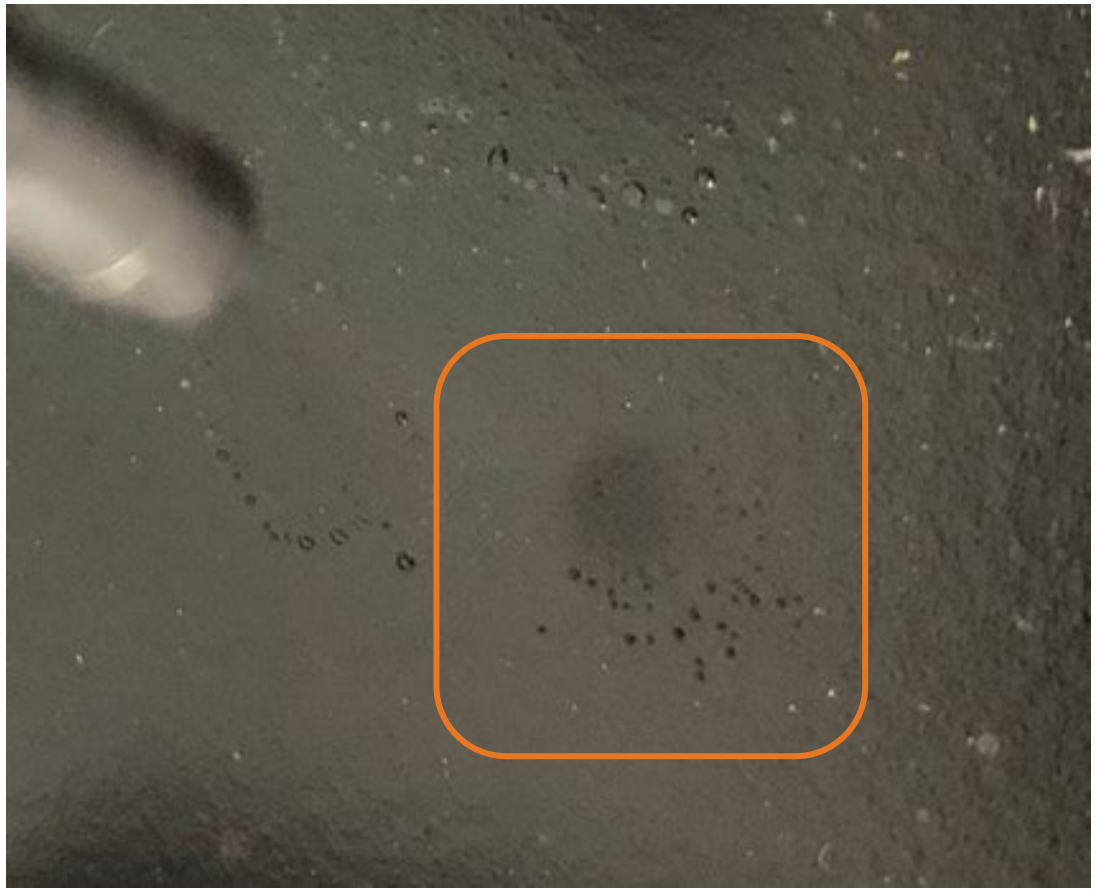
→ Check CDS tubing/fluidic



Why Checking the LCMS Nebulizer is so Critical

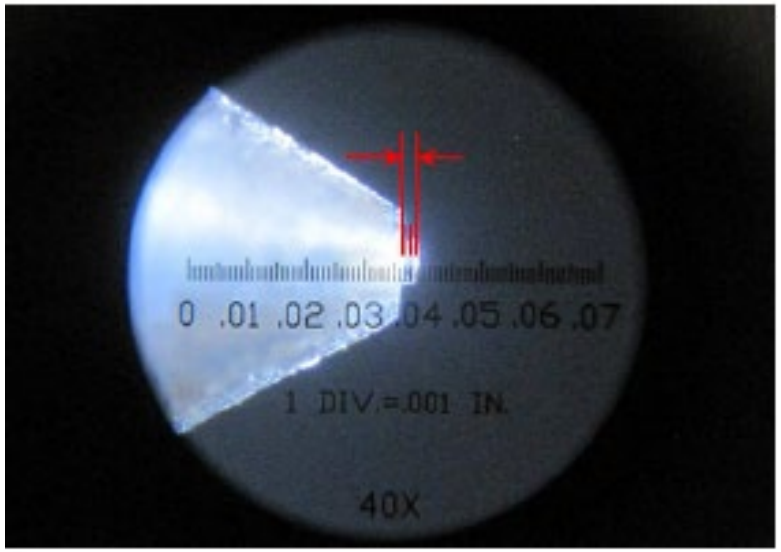
Indications the spray needle may be blocked or damaged include:

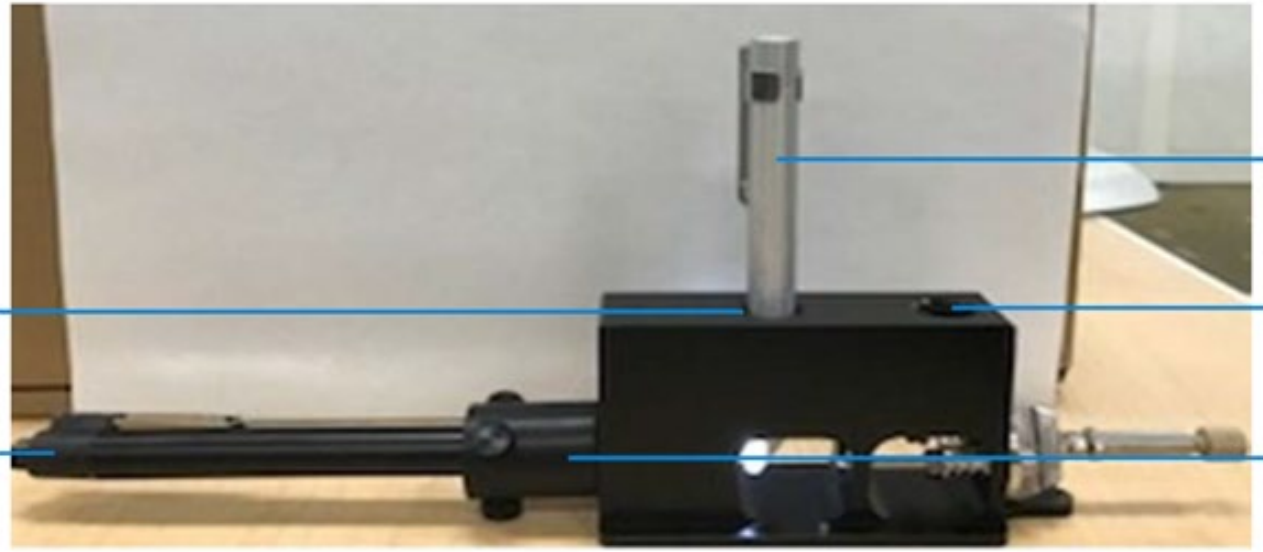
- Loss of signal
- Inconsistent or sputtering signal
- Increased LC back pressure
- Off-axis spraying
- Dripping from the nebulizer



Checking Performance of Nebulizer

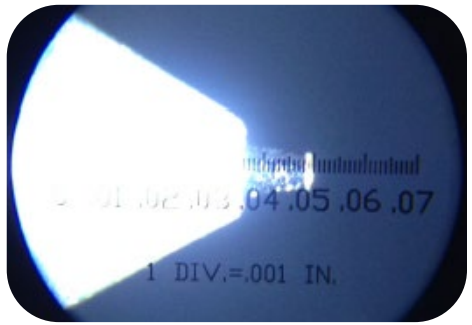
New Nebulizer Needle Adjustment Tool





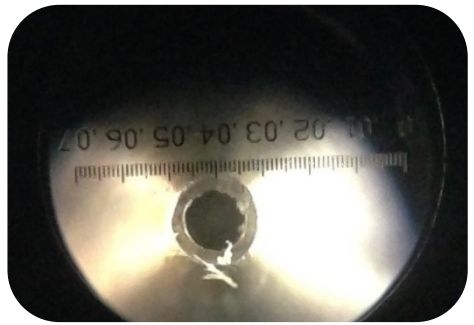
Examples of Bad Nebulizers.. Good Spray Critical for Good LCMS!

1



Needle is too far out of the nozzle

2



Needle too far in

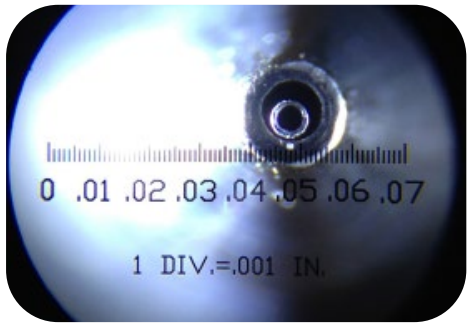
3

Needle is clogged with salt

4

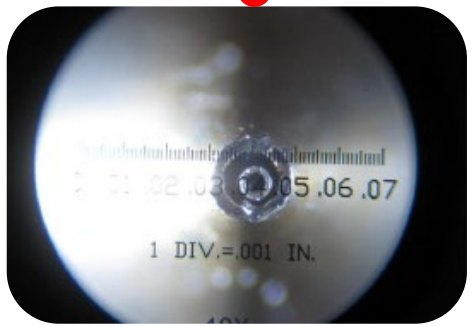
Needle is partially blocked

5



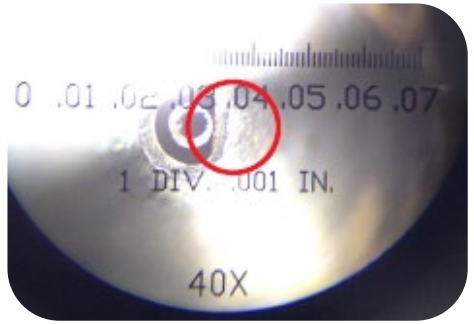
Needle is touching the nozzle

6



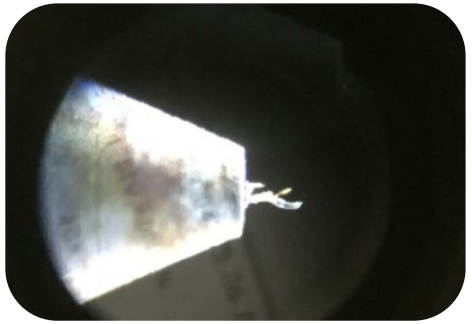
Needle is not concentric in nozzle

7



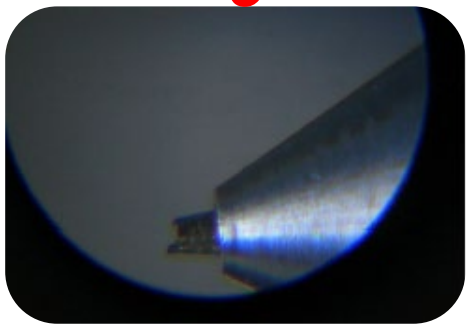
Nozzle body is damaged

8



Needle is damaged

9



Needle is damaged

10

Nozzle is dirty

LC/TOF & LC/Q-TOF AJS Tuning/Calibration Mix 10:1 Dilution

Add components in order to a clean glass CDS bottle

- 10 mL ESI-L Low Concentration Tuning Mix
- 85.5 mL LC/MS-grade acetonitrile
- 4.5 mL Water, 18 MΩ-cm resistivity or better
- 3 µL HP-0321 solution from **G1969-85003** Biopolymer Reference Mass Kit

9300-2576

G1969-85000

When Placing on LC/MS System Always Check to Make Sure you have “Good/Tight Seal”
If one sees waves when tuning/calibrating that indicates a poor seal that may cause problem with tune: Best replace bottle with new bottle.

LC/TOF & LC/Q-TOF AJS Reference Mix Dilution

Add components in order to a clean 1L Nalgene bottle, mix, & transfer 100mL to clean CDS bottle

- 950 mL Acetronitrile
- 50 mL 18MΩ DI water
- ES-TOF Reference Mass Kit **G1969-85001***
  - 0.4 mL purine (121)
  - 1.0 mL HP-921(922)

9300-2576

9301-6460

Actual concentrations of reference masses varies by LC/Q-TOF model and parameters
Abundances should be < 150,000 counts at scan rate 1 spectrum/sec, If higher then dilute

Additional Resources for Maintenance and Troubleshooting for LC/TQ

PC Based LC/TQ Resources

Triple Quad LC/MS Resources

6400 Series Triple Quad LC/MS

Resources

Below is a list of resource information for the Triple Quad LC/MS.

- **MassHunter Data Acquisition**
- **Mass Spectrometer**
  - Maintenance Guide (animated), 日本語, 中文
  - Safety Guide
- **eFamiliarization**
- **Installation Guide**

Self-Paced Course Online At Agilent University

7) Troubleshooting - LC/MS
Need guidance on how to plan and execute an investigation of your LC/MS? Are you aware of how important the vacuum system is to the performance of your LC/MS? The modules in this series address some of the most common issues and provide in-depth solutions.

LCMS-MULTI-2270s - Troubleshooting Series for Agilent LC/MS Instruments

8) Maintenance - LC/MS
Are you responsible for taking care of the LC/MS in your lab? Do you know the recommended Best Practices and Maintenance Schedules for your Agilent 6400 Series Triple Quadrupole LC/MS? The modules in this series will answer these questions.

LCMS-6400-1201s - Essential Housekeeping Tasks and Best Practices for Agilent 6400 Series QQQ LC/MS

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LCMS-ULTV-1200s - Essential Housekeeping Tasks and Best Practices for Agilent Ultivo LC/TQ

Additional Resources for Maintenance, Troubleshooting for LC/Q-TOF

Time of Flight and Quadrupole Time of Flight LC/MS Resource App

6500 Series LC/Q-TOF

Resources

This version supports MassHunter Data Acquistion:

- B.09.00 for all 6200 Series LC/TOF and 6500 Series LC/Q-TOF (except 6546 LC/Q-TOF)
- 10.0 for 6546 LC/Q-TOF
- 10.1 for all 6200 Series LC/TOF and 6500 Series LC/Q-TOF (except 6560 Ion Mobility LC/Q-TOF)

MassHunter Data Acquisition Manuals

Mass Spectrometer

Maintenance Guide (animated), 中文, 日本語
Safety Guide
Drift Gas Setup Guide (for IM-QTOF)
G2582A Drift Gas Upgrade Kit Quick Start Guide

eFamiliarization

Installation Guides

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LCMS-MULTI-2270s - Troubleshooting Series for Agilent LC/MS Instruments

8) Maintenance - LC/MS
Are you responsible for taking care of the LC/MS in your lab? Do you know the recommended Best Practices and Maintenance Schedules for your Agilent 6400 Series Triple Quadrupole LC/MS? The modules in this series will answer these questions.

LCMS-6400-1201s - Essential Housekeeping Tasks and Best Practices for Agilent 6400 Series QQQ LC/MS

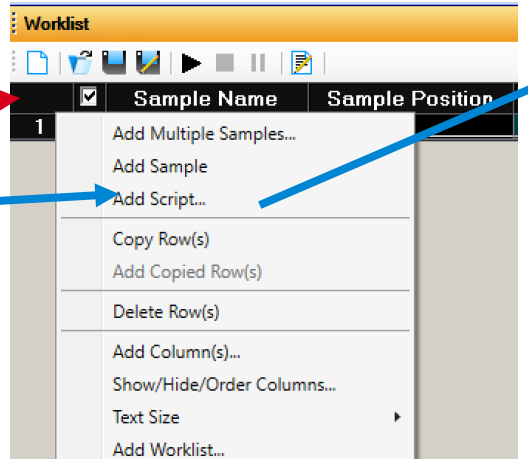
Using Scripts in Worklists.
Reduce Mobile Phase Solvent Consumption

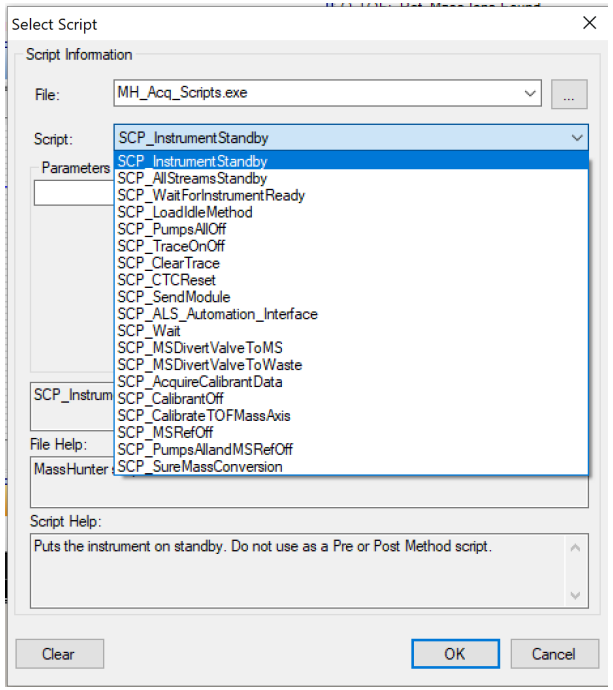
From Worklist…

Right click in upper left box..

Select “Add Script” which brings up

Select Script Box contains pull downs for all the various scripts available in worklist





To Reduce Mobile Phase Consumption Use the following Scripts

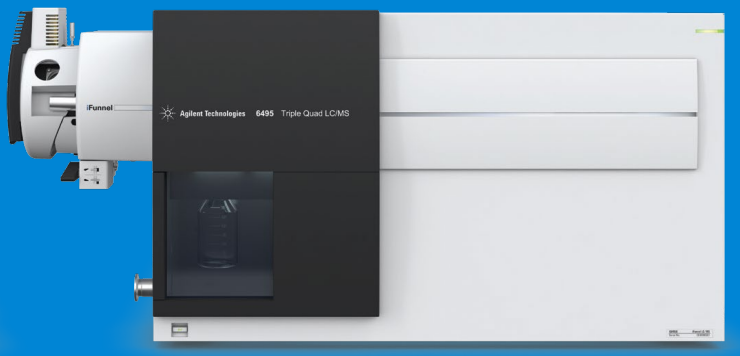
SCP_InstrumentStandby	Puts the instrument on standby
SCP_LoadIdleMethod	Loads an idle method which may have LC at low flow
SCP_PumpsAllOff	Turns off any LC Pumps
SCP_PumpsAllandMSRefOff	Turns off any LC Pumps and Turns off Ref Bottle A

Be Prepared.. Key Consumables and LCMS Parts to Always Have

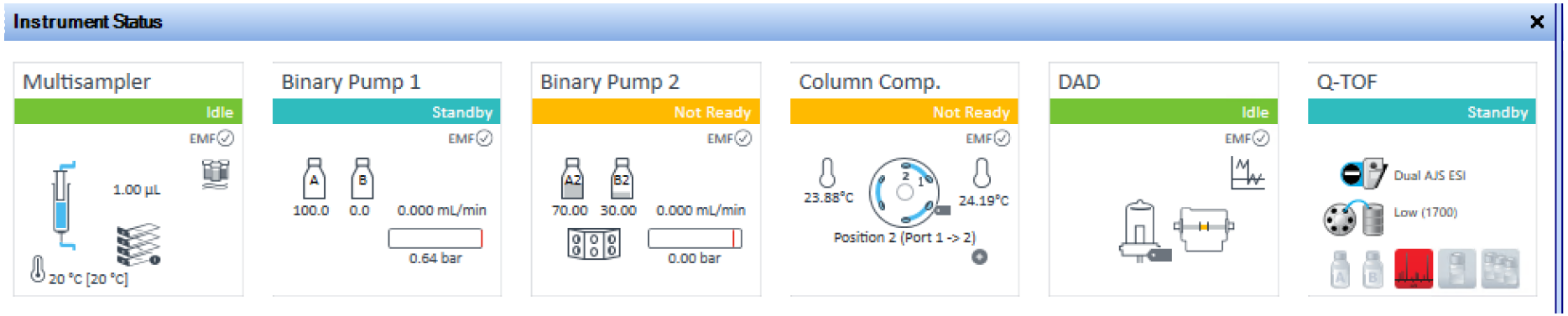
Agilent Part Number	Part Description
G1958-67098	LCMS ESI, MMI, AJS Nebulizer
G1946-67037	LCMS APCI and APPI Nebulizer
G1958-60137	ESI, MMI, AJS Needle Replacement Kit
G1946-68704	APCI APPI Needle Replacement Kit
G1947-20029	Corona Needle for APCI
Replacement Capillaries	
G7604-60000	0.6mm x 180mm Dielectric Ion injector
G1960-80060	0.6 mm ID Fast Polarity Switching
G6301-80004	Ultivo Ion Injector
G1964-80659	0.61mm x 90mm Hexabore for 6550B, 6490, & 6495 iFunnel
G1969-85000	ESI-L Low Concentration Tuning Mix
G1969-85001	ES-TOF Reference Mass Kit
G1969-85003	ESI Biopolymer Reference Kit
5043-1222	InfinityLab Stay Safe cap starter kit

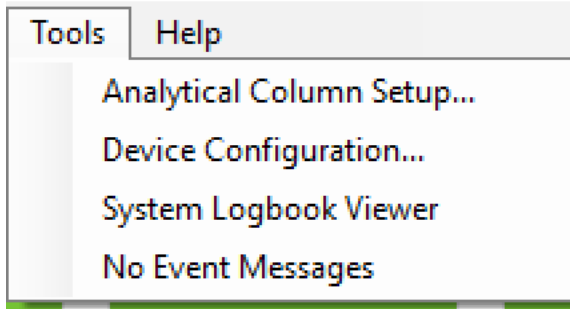
Don’t Forget to Order Sample Vials, Sample Caps, Needle Seat Capillaries and LC Parts!!

DIY Trouble Shooting Mass Spectrometer Hardware Issues



Check the Dash Board and Instrument Logbook for Errors





System Logbook Viewer (Default System Log)

File Edit View Tools Help

Time	EventType	EventSource	Category	Description
04/09/2020 08:27:25 AM	Warning	AcqEng		MSQTOF_1: Vacuum: insufficient high vacuum was reset.
04/09/2020 08:27:17 AM	Normal	System	Startup	System Engines started.
04/09/2020 08:27:15 AM	Error	AcqEng		MSQTOF_1: Vacuum: insufficient high vacuum [69]
04/09/2020 08:25:59 AM	Error	System	Startup	Failed to start System Engines.
04/09/2020 08:25:54 AM	Error	AcqEng	Startup	Module not recognized by the system. No Module type found for module 'MSQTOF'. Module Type is null.
04/09/2020 08:19:17 AM	Error	System	Startup	Failed to start System Engines.
04/09/2020 08:19:12 AM	Error	AcqEng	Startup	Module not recognized by the system. No Module type found for module 'MSQTOF'. Module Type is null.
04/09/2020 08:09:23 AM	Error	AcqEng		MSQTOF_1: The instrument is not responding.
04/09/2020 08:08:30 AM	Error	AcqEng		BinPump_1: G7112B:DEAEP00735 - Communication error.
04/09/2020 08:08:30 AM	Error	AcqEng		HiP-ALS_1: G7167B:DEBAS01940 - Communication error.
04/09/2020 08:08:30 AM	Error	AcqEng		BinPump_2: G7120A:DEBA202991 - Communication error.
04/09/2020 08:08:30 AM	Error	AcqEng		DAD_1: G7117B:DEBAW02451 - Communication error.
04/09/2020 08:08:30 AM	Error	AcqEng		TCC_1: G7116B:DEBA404321 - Communication error.
04/09/2020 08:08:25 AM	Normal	AcqEng		BinPump_2: G7120A:DEBA202991 - Pump off
04/09/2020 08:08:25 AM	Normal	AcqEng		BinPump_2: G7120A:DEBA202991 - Error
04/09/2020 08:08:25 AM	Normal	AcqEng		BinPump_2: G7120A:DEBA202991 - Shutdown
04/09/2020 08:08:25 AM	Error	AcqEng		BinPump_2: G7120A:DEBA202991 - Shutdown [EE 00063, 0]
04/09/2020 08:08:25 AM	Normal	AcqEng		TCC_1: G7116B:DEBA404321 - Thermostat off
04/09/2020 08:08:25 AM	Normal	AcqEng		TCC_1: G7116B:DEBA404321 - Error
04/09/2020 08:08:25 AM	Normal	AcqEng		TCC_1: G7116B:DEBA404321 - Shutdown
04/09/2020 08:08:25 AM	Error	AcqEng		TCC_1: G7116B:DEBA404321 - Shutdown [EE 00063, 0]
04/09/2020 08:08:25 AM	Normal	AcqEng		DAD_1: G7117B:DEBAW02451 - Error
04/09/2020 08:08:25 AM	Normal	AcqEng		DAD_1: G7117B:DEBAW02451 - Shutdown
04/09/2020 08:08:25 AM	Error	AcqEng		DAD_1: G7117B:DEBAW02451 - Shutdown [EE 00063, 0]
04/09/2020 08:08:25 AM	Normal	AcqEng		BinPump_1: G7112B:DEAEP00735 - Degasser turned off
04/09/2020 08:08:25 AM	Normal	AcqEng		BinPump_1: G7112B:DEAEP00735 - Pump off
04/09/2020 08:08:25 AM	Normal	AcqEng		BinPump_1: G7112B:DEAEP00735 - Error
04/09/2020 08:08:25 AM	Normal	AcqEng		HiP-ALS_1: G7167B:DEBAS01940 - Error
04/09/2020 08:08:25 AM	Normal	AcqEng		BinPump_1: G7112B:DEAEP00735 - Shutdown
04/09/2020 08:08:25 AM	Normal	AcqEng		HiP-ALS_1: G7167B:DEBAS01940 - Shutdown

Always Check for Errors in the System Logbook Viewer

Common Errors are Leaks and Overpressure!

Simple Trouble Shooting Procedures for LC/TQ and LC/Q-TOF

That don't require venting system!

- **Is LC operating correctly?** Check Pressure Trace, Ripple, Air Bubbles, Purge, Leak
- **Inspect/Replace nebulizer needle**
  - New needle (G1960-20031); or use the kit with the needle, ferrule, and needle holder (G1958-60137)
- **Clean Source:**
  - Wipe with no lint cloth (05980-60051) and water followed by organic solvent
  - Clean Capillary Cap and Spray Shield – remove residue with 4000 grit mesh (8660-0827), sonicate in water then organic solvent
- **For gate valve/vac shield enabled** systems (Ultivo, 6495B/C, 6545XT, 6546) can remove capillary
  - For transmission loss across all the tune masses, clean the capillary using procedure document.
- **For only for low *m/z* ions transmission loss**, replace with new capillary
  - 180 mm single bore dielectric capillary ("Ion injector", not for polarity switching): G7604-60000
  - 180 mm single bore resistive capillary (fast polarity switching): G1960-80060
  - 90 mm hexabore capillary for QQQ (1 GigOhm resistance): G1964-80659
  - 90 mm hexabore capillary for QTOF (120 MegOhm resistance): G1964-80661
- **Retest and Retune system! Run System Suitability Standard Mixture!**

Check Vacuum

Instrument Model	Rough Vacuum	High Vacuum (CC Gas ON)	High Vacuum* (CC Gas OFF)	TOF vacuum, (QTOF only) With CC gas ON
Ultivo	~1.5 Torr	~2.5*10^{-5} Torr		
G6470	≤ 2.5 Torr	2– 3.5 * 10^{-5} Torr	3 – 6 * 10^{-6} Torr	
G6495B G6495C	≤ 3.3 Torr <2 Torr	3.0 – 4.5 * 10^{-5} Torr 3.0 – 4.0 * 10^{-5} Torr	2 – 5 * 10^{-6} Torr 1 – 5 * 10^{-6} Torr	
G6530	1.5-2.5 Torr	~2* 10^{-5} Torr	~3 * 10^{-6} Torr	~2 * 10^{-7} Torr
G6540, G6545	1.5-2.5 Torr	~5* 10^{-5} Torr	~3 * 10^{-6} Torr	~2 * 10^{-7} Torr
G6545XT	1.5-2.5 Torr	~2– 3.5 * 10^{-5} Torr	~2– 3.5 * 10^{-5} Torr	~8 * 10^{-8} Torr
G6546	1.5-2.5 Torr	~5* 10^{-5} Torr	~3 * 10^{-6} Torr	~2 * 10^{-7} Torr
G6550	2.5-3.5 Torr	~5* 10^{-5} Torr	~3 * 10^{-6} Torr	~2 * 10^{-7} Torr

*Please note that turning “off” CC gas does not immediately show the ultimate HV pressure. The CC gas tubing has very small conductance and it takes ~20-30 minutes for compete evacuation.

Common Problems Associated with Pressure Problems

	Vacuum Level "too good" possible causes	Vacuum Level "not good enough" possible causes
Rough Vacuum	Plugged Capillary	• Gross Vacuum Leak • Low Oil Level • Insufficient Drying Gas Flow • Insufficient Drying Gas Temperature • Defective Rough Pump
High Vacuum	Insufficient Collision Cell Gas Flow	• Too much Collision Cell Gas Flow • Vacuum Leak • Failing Turbo Pump

More Details can be found in the online Agilent University Troubleshooting Course

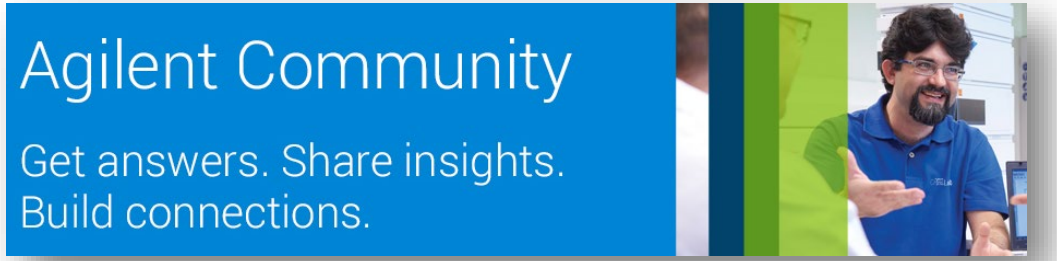
Wishing you all Good Memories of Past Vacations..
Till we are back to traveling

Webinar on restarting your LC/TQ and LC/Q-TOF systems will take place in Early May

Resources for Support

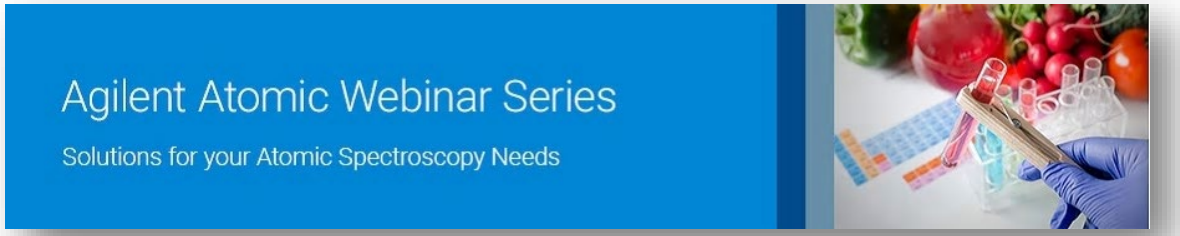
https://community.agilent.com/

- Agilent support resources: https://community.agilent.com/community/resources
- Collection of support material https://community.agilent.com/docs/DOC-1856
- Agilent chemistries and supplies information: http://www.agilent.com/chem/agilentresources
- Agilent University http://www.agilent.com/crosslab/university
- Youtube – Agilent Channel



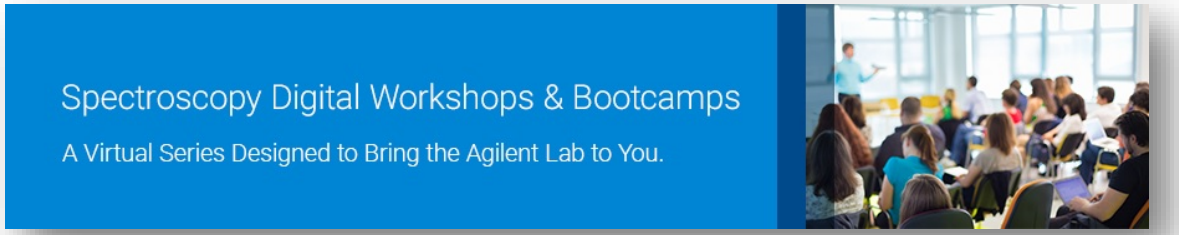
Additional online e-seminars and educational material

https://www.agilent.com/en/training-events/eseminars



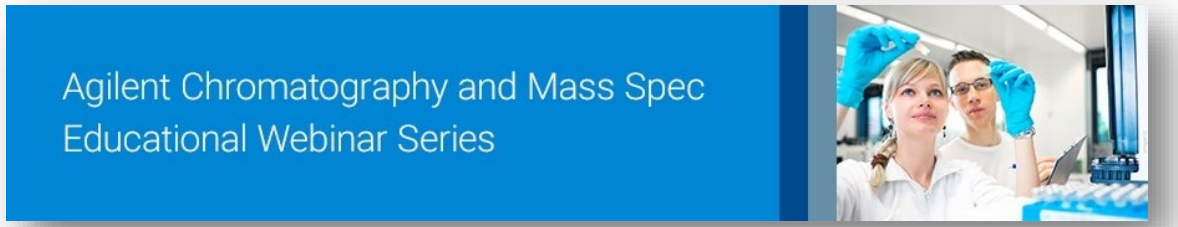
https://www.agilent.com/en/training-events/eseminars/atomic-spectroscopy

https://www.agilent.com/en/training-events/eseminars/openlab2



Register here

https://www.agilent.com/en/training-events/eseminars/lc-lc-ms-column-e-seminars
https://www.agilent.com/en/training-events/eseminars/gc-gc-ms-webinars



https://www.agilent.com/en/training-events/eseminars/832

https://www.agilent.com/en/training-events/eseminars/etff-webinars

Whether you are away from your lab or are limiting access to your lab, Agilent can support you with remote, digital solutions.

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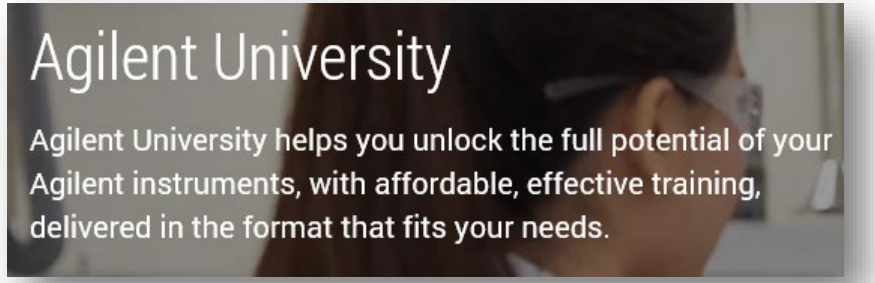

https://www.agilent.com/en/training-events/events/agilent-university

Agilent University Online Education

Training without the Travel: *Virtual Instructor-led Training*

Remote Custom Training

Agilent offers customized live Instructor-led Training delivered remotely to a single customer site at a time of your choosing. For additional information, please reach out to your Regional Customer Education Coordinator team.

Virtual Instructor Led Training

Agilent has now introduced Live Instructor-led Training; delivered remotely to a group of customers covering standardized contents (https://inter.viewcentral.com/events/cust/catalog2.aspx?cid=agilent&pid=1&lid=1&app_id=3). This live e-Learning offers many of the benefits of classroom training without the need to travel.

Contact Agilent Technical Support

1-800-227-9770 Option 3, Option 3:

Option 1 for GC/GCMS Columns and Supplies

Option 2 for LC/LCMS Columns and Supplies

Option 3 for Sample Preparation, Filtration and QuEChERS

Option 4 for Spectroscopy Supplies

Option 5 for Chemical Standards

800 Phone lines available 8-5 in all US time zones

Phone Tree Navigation Assistance

gc-column-support@Agilent.com

lc-column-support@agilent.com

spp-support@agilent.com

spectro-supplies-support@agilent.com

chem-standards-support@agilent.com

Additional support – Live one-on-one video conference with our service team

- Agilent Service Engineers are currently running live video conferences to remotely support labs around the world.
- To request a one-on-one video conference with one of our service engineers, please send your request through the polling survey and indicate the following:

  Name, Company, and instrumentation requiring support or questions

- We will get back to you shortly to schedule a video conference

In Summary

We at Agilent understand the restrictions and hardship many of you are going through because we're experiencing them as well

Given all that we are going through, Agilent remains a stable and continuing resource to meet and exceed your analytical measurement needs

We are open for business and here to help

Any questions?

All unanswered chat questions will be followed up post-event.

Slides will be distributed to the email address you registered with.

Agilent

Trusted Answers