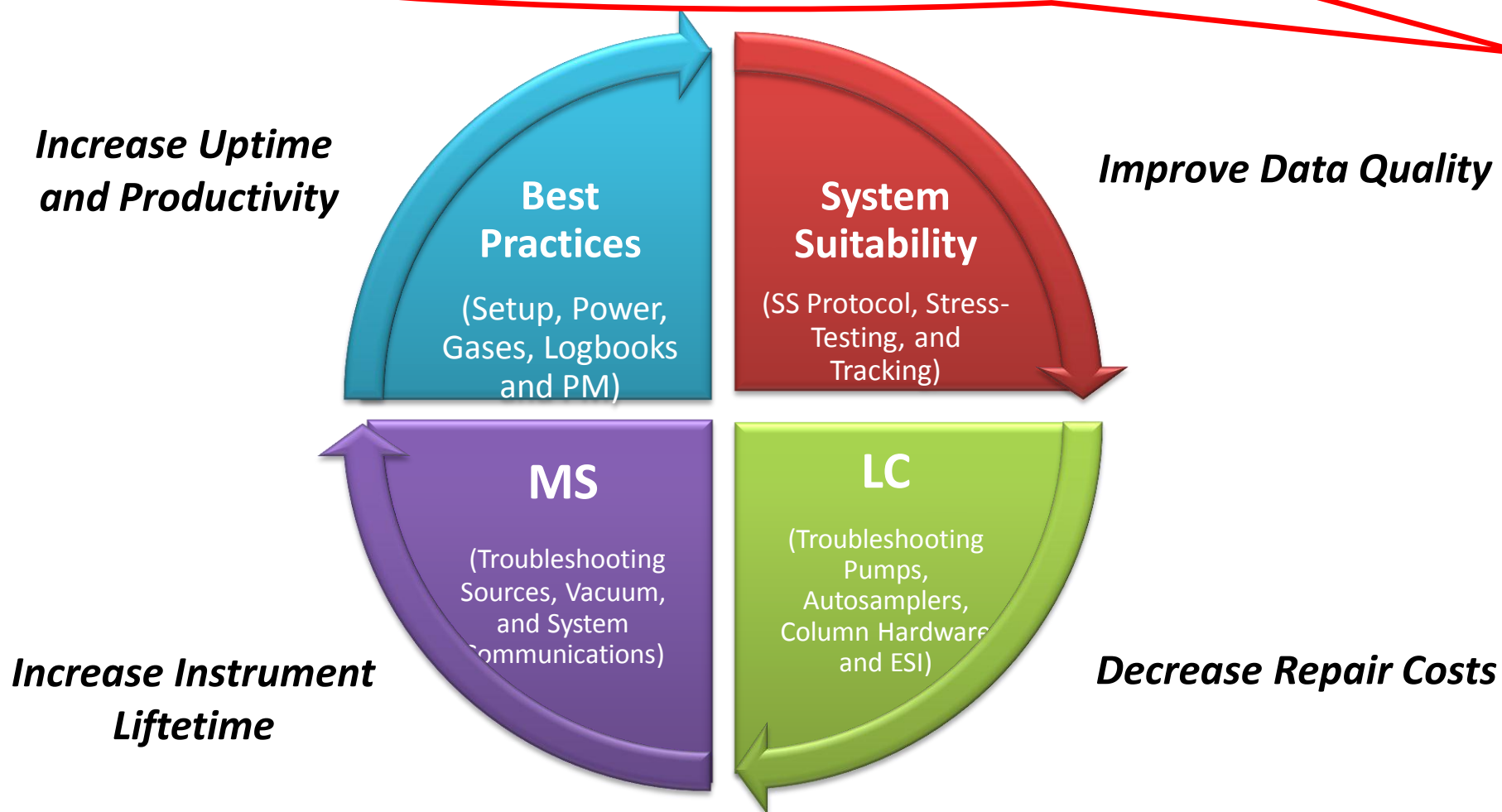


**Tell me about the new ASMS Short Course on
Practical LC-MS Maintenance and Troubleshooting**

**Every LC-MS Practitioner should work to hone their skills in
troubleshooting and maintenance, and here's why...**



How well is my system working?

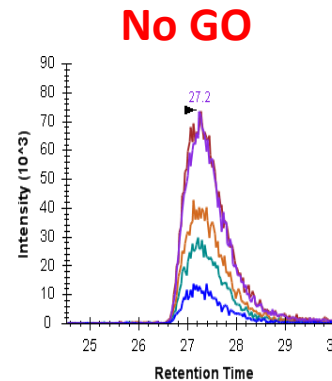
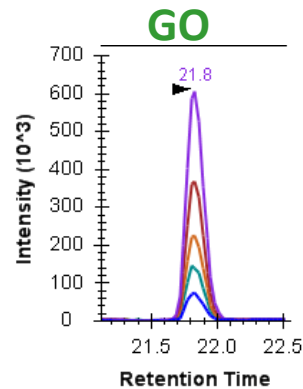
That's the value of proper system suitability!

Establish Instrument Specific Ranges for

- RT Variability
- Peak Area
- Peak Width
- Carry over
- Column conditioning
- Sensitivity



Define Pass/Fail Criteria

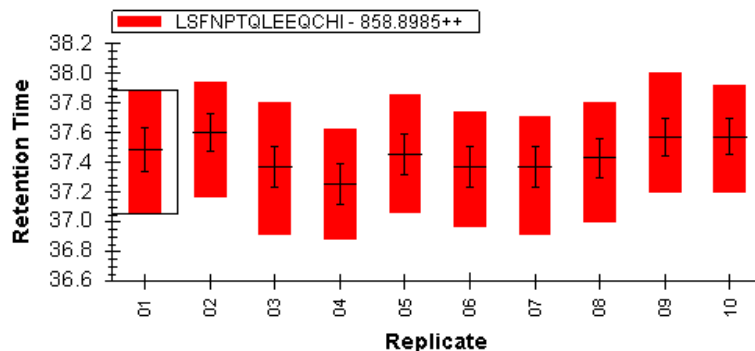


Troubleshoot Problems

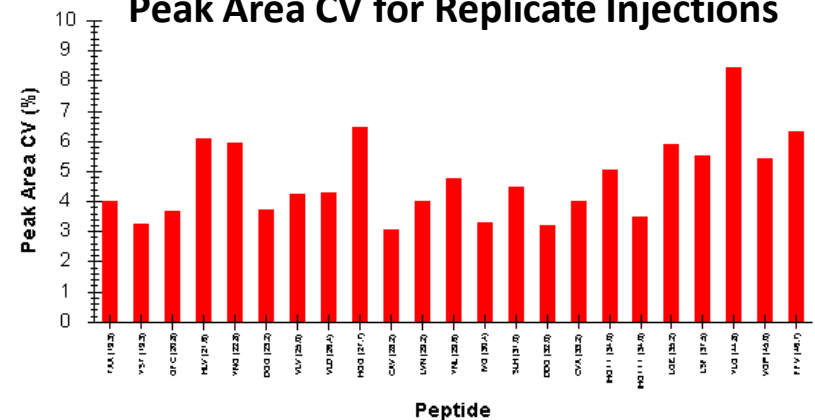
- Autosampler
- HPLC pumps
- HPLC plumbing
- ESI stability
- MS sensitivity
- Sample loss

Track system performance over time




Retention Time Stability of Replicate Injections



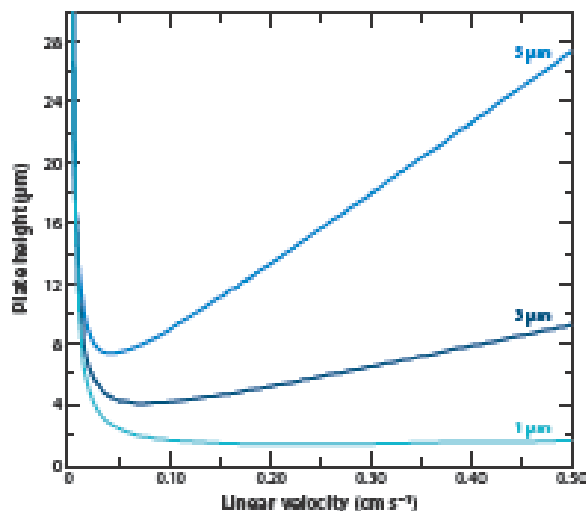
Peak Area CV for Replicate Injections



What about Column Hardware?

Column ID		
		
4.6 mm analytical	0.2 mm capillary	75 µm nano
1 mL/min	10-100 µL/min	200-600 nL/min

Particle Diameter and Performance



Column Packing Material

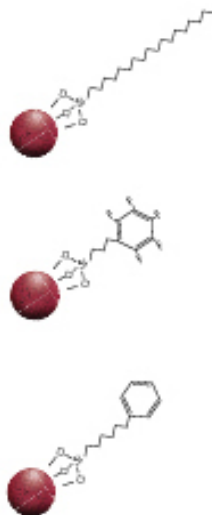
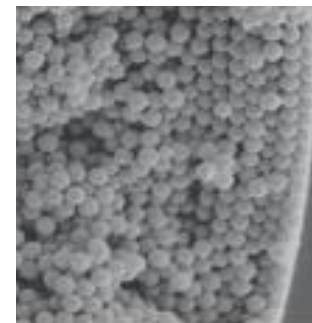
Stationary Phase

-Cation Exchange

-Normal Phase

-HILIC

-Reversed Phase (C18)



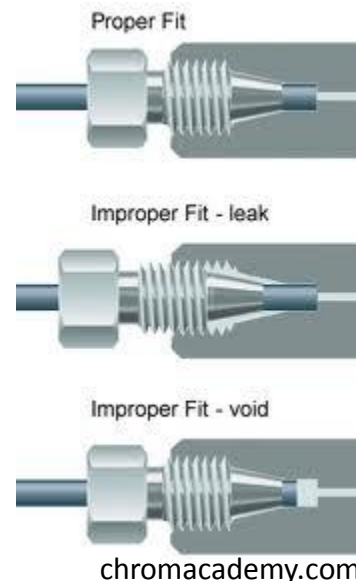
Column Connections!

Peak Shape and Sensitivity

To Trap or Not to Trap?



Leaks, Gaps, and Overpressure Errors



chromacademy.com

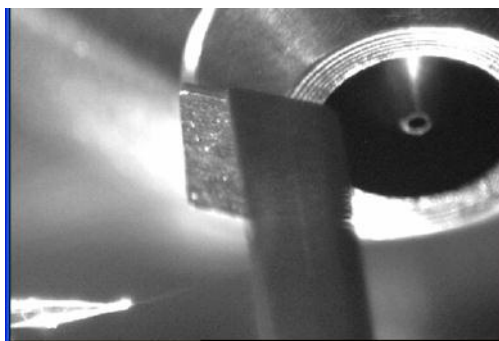
What types of problems might I learn to address?

Communications Issues

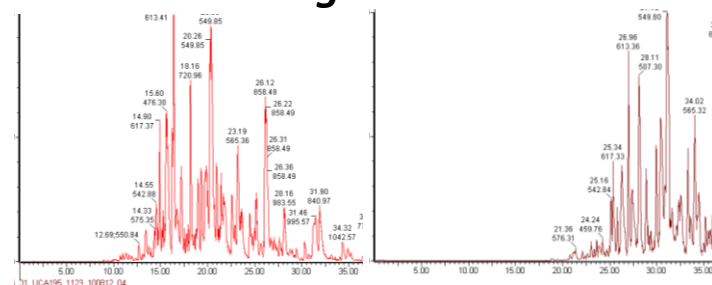
```
Thermo LTQ Orbitrap XL Instrument Console

1286 Trap Offset Calibration:
1287   Min value = 0.000000   Max value = 0.000000
1288 End Section Offset Calibration:
1289   endsecslope = 0.000000   endsecint = 12.000000
1290 Reagent Ion Isolation Calibration:
1291   MPislope = 5.990099   MPiint = -7.433474
1292 ITCL executed: RECOMPILE(TempITCL2);TempITCL2();
1293   result = 0.000000
1294 Adjusting Readbacks.
1295 Initializing waveform buffer...
1296 Initializing background waveforms...
1297 Background Ionization Waveform Rescale Factor: 501.891937
1298 Background Isolation Waveform Rescale Factor: 898.818604
1299 Background High Mass Isolation Waveform Rescale Factor: 791.732178
1300 Initializing tuning parameters...
1301 Source ID Readback Voltage is 1.946718
1302 Ion source type = ESI.
1303 Textcode 10(0): 3.000000 0.000000 0.000000 0.000000 0.000000
1304 Recompile function TempITCL
1305 Textcode 100(0): 0.000000 0.000000 1.000000 0.000000 0.000000
1306 Textcode 300(0): 0.000000 0.000000 1.000000 0.000000 0.000000
1307 Textcode 300(0): 0.000000 0.000000 1.000000 0.000000 0.000000
1308 Textcode 300(0): 0.000000 0.000000 1.000000 0.000000 0.000000
1309 Signal 11
```

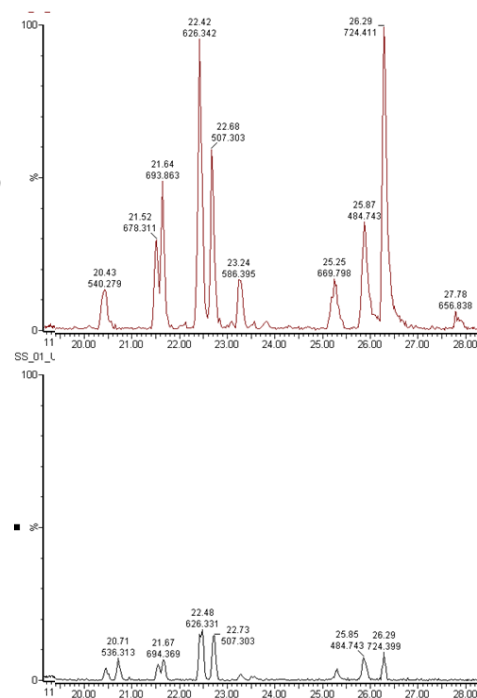
ESI Assembly, Cleaning and Tuning



Retention Shift and Peakshape Degradation



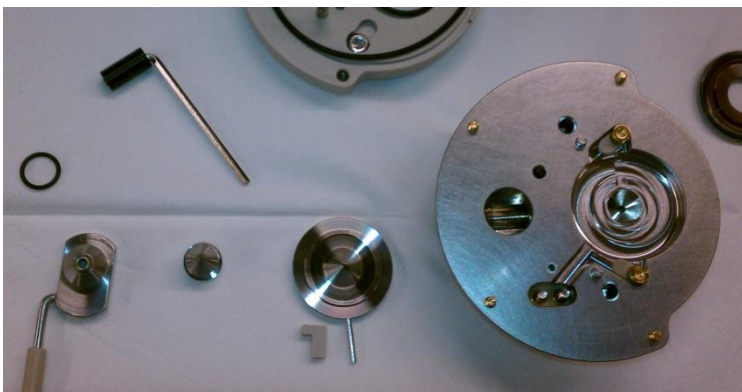
Sensitivity Losses



Cleaning Techniques



Source and Ion Optics Contamination



Among others...

Will I learn to cook barbeque?

That's a different course!



Will I learn to troubleshoot this?

We need to leave something for next year...



Practical LC-MS Maintenance and Troubleshooting

A new ASMS Short Course in 2013!