Every LC-MS user can work to hone their skills in troubleshooting and maintenance.
Developing and Using System Suitability Testing (SST)

Establish Instrument Specific Ranges for:
- RT Variability
- Peak Area
- Peak Width
- Carry over
- Column conditioning
- Sensitivity

Define Pass/Fail Criteria
- GO
- No GO

Track system performance over time:
- Retention Time Stability of Replicate Injections
- Peak Area CV for Replicate Injections

Troubleshoot Problems:
- Autosampler
- HPLC pumps
- HPLC plumbing
- ESI stability
- MS sensitivity
- Sample loss
To Trap or Not to Trap?

Column ID
- 4.6 mm analytical
- 0.2 mm capillary
- 75 µm nano

1 mL/min
- 10-100 µL/min
- 200-600 nL/min

Column Packing Material
- Stationary Phase
  - Cation Exchange
  - Normal Phase
  - HILIC
  - Reversed Phase (C18)

Peak Shape and Sensitivity

Particle Diameter and Performance

Leaks, Gaps, and Overpressure Errors
Troubleshooting and Cleaning MS and Integrated System

Communications Issues

ESI Assembly, Cleaning and Tuning

Retention Shift and Peakshape Degradation

Cleaning Techniques

Source and Ion Optics Contamination

Sensitivity Losses

Among others...