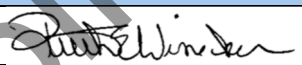
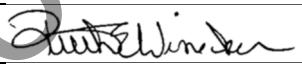
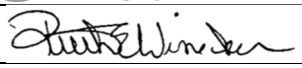
SOP 071 Routine LC-MS Maintenance

Table of Contents

SOP Name: Routine LC MS Maintenance		SOP #: 071
North Carolina Office of the Chief Medical Examiner Toxicology Laboratory	**Revision:** 3.5 – Deleted 4.1, 5.1, 5.3 – Updated Hyperlinks 5.2 – Added mention of hard copy maintenance procedures.	**Revision Date/Initials:** JOB 09/12/2017 MSF 09/12/2017

Approving Authority Name	Approving Authority Signature	Approval Date
Ruth E. Winecker, Ph.D.		04/15/2015
Ruth E. Winecker, Ph.D.		06/10/2016
Ruth E. Winecker, Ph.D.		09/12/2017

SOP 071 Routine LC-MS Maintenance

1. **Purpose**
   1.1. This SOP gives the procedures and references for routine maintenance of Thermo Scientific LC/MS analytical instruments.

2. **Reagents and Materials**
   2.1. Nitric Acid
   2.2. Distilled water (HPLC grade or 18.2 MΩ·cm preferred)
   2.3. HPLC grade methanol
   2.4. HPLC grade acetone (optional)
   2.5. 50mL graduated cylinder
   2.6. Paper towels and/or Kimwipes
   2.7. Hypodermic needle (P/N 00106-20000 RevB, 28 gauge RW)
   2.8. Ion transfer tube removal tool (P/N 70111-20258)

3. **Procedure for Ion Transfer Tube and Sweep Cone Cleaning**
   3.1. Turn instrument to standby

      3.1.1. Note: It is not necessary to vent the system or reduce the capillary temperature.

   3.2. Remove ion source housing from front of the MS detector (see respective instrument hardware manual for more details).

   3.3. Remove the ion sweep cone by grabbing the outer ridges and pulling it straight off. Set aside to cool.

      3.3.1. Caution: the sweep cone is very hot; use paper towels to help grab the sweep cone to avoid getting burned

      3.3.2. Clean by rinsing (can gently rub using paper towels or Kimwipes) with distilled water followed by methanol.

   3.4. Using the special removal tool, remove ion transfer tube by turning it counterclockwise until you can pull it free. Set aside to let cool for 5 minutes.

      3.4.1. Be careful not to lose the O-ring that fits between the ion transfer tube and the spray cone.

   3.5. Sonicate the ion transfer tube for 30-45 minutes in a solution of nitric acid (15-20% v/v) (a 50mL graduated cylinder works well for this step).

   3.6. Rinse with distilled water.

   3.7. Sonicate for 5-10 minutes in methanol.

3.7.1. Use HPLC grade methanol (or better) that has not come into contact with plastics such as the repeater pipette tips.

3.8. (Optional) Sonicate for 5 minutes in acetone.

3.8.1. Use HPLC grade (or better) that has not come into contact with plastics.

3.9. Replace ion transfer tube (ensure that the O-ring is present), carefully rotating as it is inserted.

3.10. Using the special removal tool, rotate clockwise () until it is finger tight.

3.11. Reinstall the ion sweep cone.

3.12. Reinstall the ion source housing.

4. Procedure for Trimming ESI Fused-Silica Sample Tube

4.1. See S:\toxicology\QAQC\SOP\Media\IonMax_API_IonSouce_Hardware.pdf (page 12-13).

5. References

5.1. LXQ Hardware Manual

5.2. Hard copies of maintenance procedures can be found in binders located next to each instrument.

5.3. Ion Max and Ion Max-S API Source Hardware Manual

5.3.1. S:\toxicology\QAQC\SOP\Media\IonMax_API_IonSouce_Hardware.pdf