

# Perkin Elmer, DRC-e ICP-MS Quantitative Instructions

Revised (9/9/16)

## Initial Setup

1. Log into the logbook, record your name, date, and matrix
2. Check the argon supply at the tank. There should be at least 500 psi in the active tank and the pressure in the line should be between 70-85 psi
3. Check that the regulator on the back of the instrument is set to ~ 70 psi
4. Check the DRC gas supply and turn on if using
5. Check the level of the waste container
6. Replace rinse solution (1% HNO<sub>3</sub>) if needed
7. Check the instrument ventilation, let the Science Support Center know if it is not on
8. Turn on monitor and log in
9. Click on the **Elan** icon on the desktop
10. Click on the **Instrument** button, click on the **Front Panel** tab
  - a. Make sure that the vacuum is on, let the Science Support Center know if it is not
  - b. Log base vacuum into the logbook
11. Check the tubing for solids, check for flat spots, and then snap the tubing and pump clamps into position
12. Turn on the chiller
13. Turn the plasma on, record the start-up time in the log book
14. Click on **File, Open Workspace**, choose **Evergreen Daily Performance**
15. Click on the **Method** button, **Sampling** tab, **Probe...**, and then select **Goto Rinse**
16. Adjust the tension on the peristaltic pump tubing by watching some air bubbles
17. Ensure that the waste line from the spray chamber is draining, adjust the tension if necessary
18. Five minutes after start-up, click on the **Sample** button, select the **Manual** tab, and aspirate the Daily Performance solution. Wait for the solution to reach the plasma then click on the **Analyze Sample** button
19. Recap the Daily Performance solution, evaluate the performance report, and place in binder
  - a. If there is a problem with the performance report contact Jenna or Clyde
20. Allow the system to warm up for 30 min if the vacuum was on
21. Click on the **Instrument** button and the **Diagnostics** tab
  - a. Record and evaluate the running vacuum, main water temperature, interface water temperature, and torch box temperature

## Running Samples

22. Click on **File, Open Workspace**, then select your workspace
23. Click on the green **R** on the left side of the screen to review all of the files associated with the chosen workspace
  - a. Method: If you are using a method other than the one listed in the workspace, select **Load...** to load it
  - b. Dataset: Change the file name of the data set by clicking **New...**, entering a new file name and then clicking on **Load...**
  - c. Sample: If you have already created a sample batch, select **Load...** to load it
  - d. When you are done manipulating workspace files, click **Ok**
24. Click on the **Method** button to review standard parameters
  - a. Click on the **Calibration** tab to adjust the concentration of the standards (check units)
  - b. Click on the **Sampling** tab, enter standard/blank IDs and respective autosampler positions
  - c. Click on the **Report** tab (right-hand side) to review printing and exporting parameters

25. Click on the **Sample** button

- a. To use the autosampler to run samples as a group, click on **Batch** tab (if you have already created your sample batch you may skip i-iii)
  - i. Enter your sample names and A/S position (the **Sample Template** can autofill columns)
  - ii. The third line on your sample table should be **Run Blank, Stds and Sample**
  - iii. Change all other lines appropriately (in most cases will be **Run Sample**)
  - iv. Ensure that the file listed in the Method column matches the method to be run
  - v. Highlight the rows for the samples you want run, then click **Build Run List**
  - vi. To start the run, click on **Analyze Batch**
- b. To run your samples manually, click on the **Manual** tab
  - i. To run a blank for blank subtraction: click on **Analyze Blank**
  - ii. To analyze a standard: set **number** to 1 click on **Analyze Standard**, increment the #, click **Analyze Standard** repeat until all of the standards have been run
  - iii. To analyze samples: enter the sample name click on the **Detail** button, if using the autosampler enter the A/S position, then click **Analyze Sample**

Reviewing Standardization and Sample Data

26. To review data as it is being collected click on the **Realtime** button
27. Click on the **Calib View** button to see calibration curves
  - a. Click on **Next** or **Prev** to view calibration curves for different elements
  - b. Click on **Stats** to see calibrations statistics
28. To review the results for the last sample ran, click on the **Rpt View** button
29. To review or reprocess data from a previous sample or run, use the "ICP-MS Reprocessing, Exporting, and Printing Guide" located in the back of the workshop binder

Shutdown

30. Rinse the system after the last sample for at least one minute
31. Click on **Method** button, **Sampling** tab, **Probe...**, and then **Go to Standby**
32. Wait for the drain tube to go dry
  - a. To speed up the draining process, click on the **Devices** button, then click on **Fast**
33. Click on the **Instrument** button, **Front Panel** tab
  - a. Leave the vacuum on
  - b. To shut down the plasma, choose plasma **Stop** and record shut down time
34. Release the clamps on the peristaltic pump and then release the tubing
35. Make sure that the argon supply for the instrument has shut off by clicking on the **Diagnostics** tab and then checking to see if **Plasma Gas** has been disabled. If it is not disabled contact Jenna, Clyde, or the Science Support Center immediately.
36. Shut off the chiller
37. Click on **File, Exit**, log out of Windows, and shut off the monitor
38. If you were using DRC gasses, shut them off at the tank
39. Record comments in the logbook
40. Clean up your work area