

Thermo ICP-OES Protocol

Oct 4th, 2018

Read this first. Failure to comply will result in revoking of trained user status.

It is the responsibility of the ICP user to:

1. **Make sure the ICP has an adequate argon supply. If you are unable to change out the argon tanks then ask GEL personnel for assistance. If you plan to use the ICP after work hours, you must complete Compressed Gas Training.**
2. **Make sure there is an adequate volume of nitric acid rinse in the autosampler rinse container. Do not let the container run dry. If the container is low when you are finished, add another liter of rinse solution before you leave.**
3. **Do not leave pump tubing in the clamped position. Unclamp and relax the tubing when you are finished. The sample and drain tubing should be pumped dry first.**
4. ***NEVER run the chiller without first turning on the argon tanks, or you may damage the chiller.***
5. **Do not use the ICP without a reservation.**
6. **Leave the ICP unattended at your own risk, especially after work hours!**
7. **Samples must be crystal clear without any particulates or cloudiness.**

Start Up:

1. **Verify tanks are Argon.** Open valves on Argon tanks **ALL THE WAY**. Regulator on manifold should read 90psi.
2. If Argon pressure is below 300psi on working cylinder, replace or switch valve to backup cylinder before starting run.
3. Allow instrument to purge for 5 minutes.
4. After purge, turn on chiller. Temperature should read 20.
5. Check autosampler rinse container. Fill with 2.0% HNO₃ in nanopure water if necessary.
6. Check drain tubing and waste container.
7. **Empty the autosampler waste container behind the instrument.**
8. Position pump tubing and set clamps on instrument.

9. Set clamp on autosampler rinse tubing.
10. Place sipper into manual rinse container.
11. Open iTeva software.
12. Open operating parameters by clicking on “torch” icon (lower right).
13. Click on “Instrument Status”. **Check carefully before proceeding.**
14. Set pump rate to 50rpm and set nebulizer to “on”. Click “apply”.
15. Confirm that rinse water is pumping through tubing and that drain is properly working.
16. Ignite plasma. Allow instrument to stabilize for at least 15 minutes.

Software:

1. Open “Analyst”.
2. Select method from list or create a new method.
3. If using autosampler:
 - a. Select sequence tab.
 - b. Open “new” autosampler session.
 - c. Click on computer icon to connect.
 - d. From pull down menu, select sequence -> add.
 - e. Type in number of samples. Click ok.
 - f. Right click on “rinse” and select “go to rinse”.
 - g. Connect sample pump tube to autosampler aspirator.
 - h. Right click on autosampler session name, and select “auto locate all”.
 - i. Positions for samples and standards will be highlighted.
 - j. Click on start button to begin auto session.

If Using Manual Method:

1. Select **sequence** tab (lower left)
2. Click on **autosession** (upper left), then **new manual**, then **OK**
3. Right click on **untitled (Manual)**, then click **Add Sequence**
4. Enter number of samples and click **OK**
5. Click on **analysis** tab (lower left)
6. Click **run** (upper left)
 - a. choose **calibration** to run standards
 - b. choose **QC standard** to run QCs (make sure to indicate table **QC1** in box that opens)
 - c. choose **unknown** to run samples
7. When finished continue with #3 of shutdown procedure

** Use **manual rinse probe** for sampling. **Do not remove autosampler probe!**

Printing Report

1. Click on 'publisher' icon
2. Click 'report' (upper left), then 'new'
3. Choose 'horiz table report'
4. Sample Query window opens – click on first '...' icon
5. Deselect all, then select your file, then click 'ok'
6. Click 'search' in Sample Query window
7. Select all, then deselect as needed if necessary, click 'ok'
8. New window with completed table pops up – click printer icon to print

Exporting Report

1. In publisher click on 'report', then 'export'
2. Save file as MS Excel (97-2003) (data only) format
3. Name file, save it to desktop

Shutdown:

1. Right click "Rinse" and select "Go to Home".
2. Connect sample pump tubing to manual rinse. Allow to rinse for 2-3 minutes.
3. **Remove sipper from rinse and allow to pump dry.**
4. Turn off plasma by clicking on "torch" icon. This will also turn off the pump.
5. **Release tubing from pump.**
6. Turn off chiller.
7. Release tubing from autosampler.
8. Allow a few minutes for Argon to purge, then shut valves on tanks. Leave instrument and autosampler ON.

Important Notes:

- Remember to use iLab calendar to reserve instrument.
- Always remember to release pump tubing to prevent damage.
- **Do not run chiller with Argon tank off.**
- Check waste container often to prevent overflow.
- Let lab personnel know when supplies are getting low.
- Use proper waste containers for unused samples and standards.
- Clean up the area when you are finished.
- **Please do not store your data on the desktop! Delete it or move it to:**

C:\Program Files\Thermo\Iteva\Export