

AA Flame Operating Instructions
Version 1.1
2/23/07

- 1) If the autosampler for the furnace is in the accessory mount, remove it by unscrewing the back screw and lifting out the assembly. Place the autosampler assembly carefully on the cart. If the flame head is already installed, lift it off of the spray chamber.
- 2) Add DI water to the spray chamber with a beaker or squirt bottle until water starts to drain from the waste line. This procedure ensures that the black U-shaped hose trap is filled with water to prevent explosions.
- 3) Mount the flame head on top of the spray chamber by pushing it down firmly. Plug in the flame head if necessary.
- 4) Turn on the power switch to the main AA unit (located in upper right hand corner on the right side). Turn on the air and acetylene tanks and the fume vent. The air tank should be set to greater than 30 psi and the acetylene tank should be set to 9-11 psi. Turn on the computer (if necessary) and launch Solaar32 software. Close the Wizard Launcher.
- 5) Files in which to save data are referred to as “databases” in the Solaar32 software. Make sure the desired database is active before running samples; if not, select *File*→*Open Results* from the drop-down menu. A new database can be created by selecting *File*→*New results* from the drop-down menu.
- 6) Parameters used to analyze samples are referred to as “Methods” in the Solaar32 software. Lists of samples to be analyzed are referred to as “Sequences” and are stored within Methods. To display the Method window, click the folder icon from the toolbar or *Edit*→*Method* from the drop-down menu.
- 7) Click the “General” tab. If an existing method is desired, click “Library” and load the appropriate method. If a new method needs to be created, click “New”. The “Element” dialogue box will be displayed.
- 8) Select the desired element(s), select “Flame” as the appropriate technique and click “OK” to return to the “General” page.
- 9) Type in a Method Name for the method. Type in a description of the analysis if desired. “Segmented flow injection” should be unchecked. Autosampler should be set as “None”. “Flame dilution” should be set at “None”. “Shared Standards” should be unchecked unless the method is analyzing multiple elements with the same standards.
- 10) Click the “Sequence” tab. Calibration is defaulted to be the first entry in the sequence table. Right-click in the second row of the sequence table, click “Insert Action”, and insert the desired action. If the action is “sample(s)”, the number of samples can be specified on the right-side of the window. Click “OK”. Click on “Sample Details” to rename the sample ID’s, if desired.
- 11) Click the “Spectrometer” tab. Set the desired measurement mode (usually “absorption”, sometimes “emission”). If in absorption mode, confirm that “D2 Quadline” is selected for Background Correction. If in emission mode, set Background Correction to “No background correction”. The other default

- settings are OK but can be modified if desired. The “Cook Book” button displays a Help window with information on analyzing the element selected.
- 12) Click the “Flame” tab. Review the default parameters and modify them if desired.
 - 13) Click the “Calibration” tab. Select the desired calibration method from the drop-down menu. Ensure that the concentration units are set to mg/L, then select the desired number of standards. Enter the standard concentrations in the table from lowest to highest. The other default values are OK.
 - 14) Unless QC actions are desired, the “QC” tab can be ignored.
 - 15) To save the method, return to the “General” tab. Click “Save”, then “Yes”. Click “OK” to exit the Method window.
 - 16) If in absorption mode, ensure that the proper lamp(s) is installed in the spectrometer. If in emission mode, no lamps are required. To install a new lamp, click the lamps icon or select *Edit*→*Lamps* from the drop-down menu to open the “Lamp Configuration and Status” window. Select the Carousel position for the lamp, and make sure the “Automatic Lamp Alignment” checkbox is selected. Line up the pins on the bottom of the lamp and insert it gently into the desired location (it should click into place). The Solaar32 software will automatically recognize the configuration of the lamp. To monitor and record the usage of the lamp, click “Lamp Usage”, then “Add Lamp”, enter the requested information, then click “Add”. In the Lamp Configuration and Status window, click in the serial number box for the lamp just added to import the serial number.
 - 17) To light the flame, press and hold the flashing IGNITE switch until the flame lights. Click the Flame Setup icon to set up the flame parameters specified in the Method. Aspirate DI water when the instrument is not running standards or samples. The burner needs to warm up for at least 10 minutes before taking any measurements.
 - 18) Click the Wizard icon and click “Run an Analysis”. This will prompt through several steps, including optical setup, gas flow and burner height, and flame and nebulizer optimization. A test solution containing the analyte at a concentration of 25 – 200X the characteristic concentration given in the Cook Book is needed for these optimizations. Continue following the prompts to analyze the standards and samples. If running in emission mode, these optimization steps should be skipped in the Wizard. The flame and nebulizer can be optimized for emission without the Wizard, if desired, by aspirating a suitable solution, making adjustments, and monitoring the change in emission.
 - 19) When all of the solutions have been measured, a prompt will be displayed to specify the next action. Select the desired action, or if none is desired select “Stop”. A prompt will then be displayed confirming that the analysis has been completed. Click “OK”.
 - 20) The results can be viewed in the Results window and the calibration can be viewed in the Calibration window. Different calibration curves can be selected by right-clicking in the Calibration window and selecting “change line fit”. When this is done the results are automatically recalculated.
 - 21) Results can be printed to a PDF file or exported as .txt or .csv files for importing into Notepad or Excel, respectively. To print to a PDF, click the Wizard icon and

- select "Print a Report". Select the items desired in the report, then click "Done". When the print window opens, select "PDFfactory" as the printer and click "Print". The PDF factory window will open. Click "Save" at the bottom of the screen, enter the desired file name and location for the file, then click "OK". To export files, click *File*→*Export* from the drop-down menu, select the desired format (.txt or .csv), then the desired file name and location for the file.
- 22) To turn the flame off, hold the red OFF button until the flame is extinguished.
 - 23) Empty the waste bottle when finished running samples.
 - 24) Close the gas cylinders when finished. Vent the acetylene and air lines (make sure the cylinders are closed first) by holding the red OFF button for approximately 10 seconds until the acetylene line vents. After this occurs, the air line will vent when the button is released. Turn off all equipment and close the Solaar32 software.