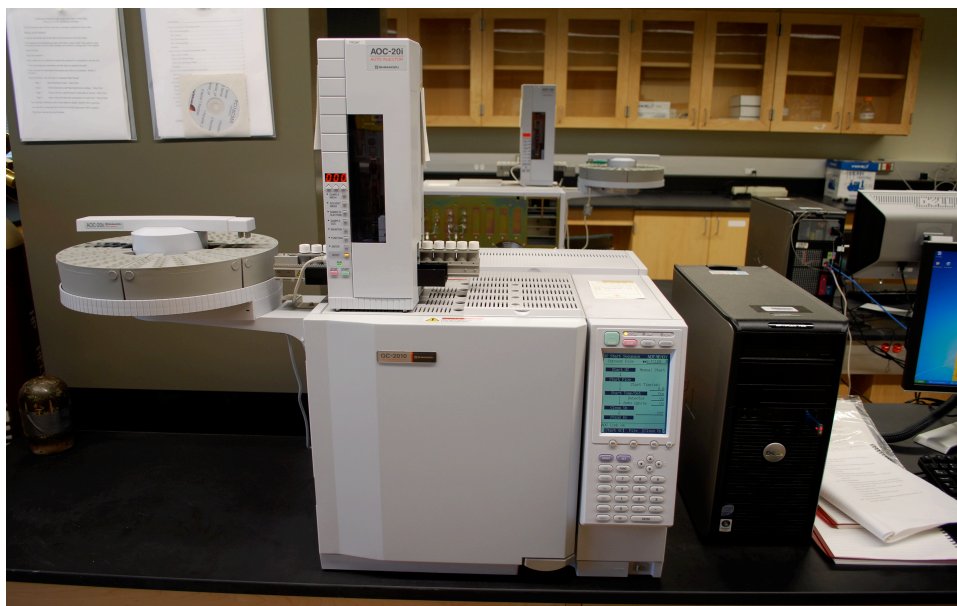# Gas Chromatography

1.   How to start up of a GC2010 FID with GC Solution software:

1.1   Turn on the regulators of all four cylinders.

1.2   Turn on the flow controllers of all 4 pipes at the back of GC machine.

1.3   Power on the GC. After a brief initialization, press the PF1 button on the panel,

which will activate the heaters and the automatic flow controllers.

1.4   Open GC Solution by double clicking on the icon. Use your own user ID and password.

1.5   Select File-open and select the appropriate method. Then select Download.

1.6   Wait until all of the indicator lights above the panel turn green, and Ready is shown on the software screen, and then you can start your analysis.

1.7   Tips:

1.7.1   Please do not adjust the output pressure of the cylinder, which are fixed: N_2: 110 psi; Air: 70 psi; He: 110 psi: H_2: 70 psi

1.7.2   When the inner pressure of either of the cylinder is lower than 200 psi, please let the responsible persons know, so the cylinders will be replaced in time.

1.7.3   The gas flow should never read 0 except during the shutdown method. If it does, even after you download your method, check whether you open the regulator.

2.   **How to set up a method:**

2.1   Click on the Instrument Parameters Icon in the Analysis Assistant bar.

2.2   Click on Advanced.
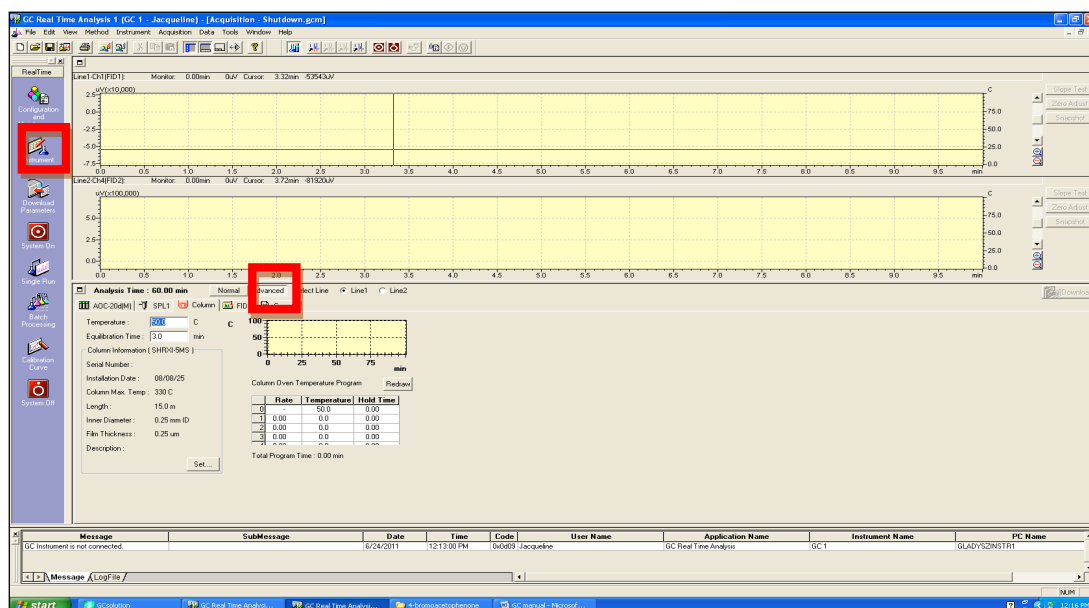
2.3   Click on the AOC tab if applicable.

2.4   Enter values for the autosampler: injection volume, solvent rinses pre injection, rinses with sample and rinses with solvent post injection.

2.5   Click on SPL tab.

2.6   Input injector temperature and select sample injection mode: split, splitless or direct.
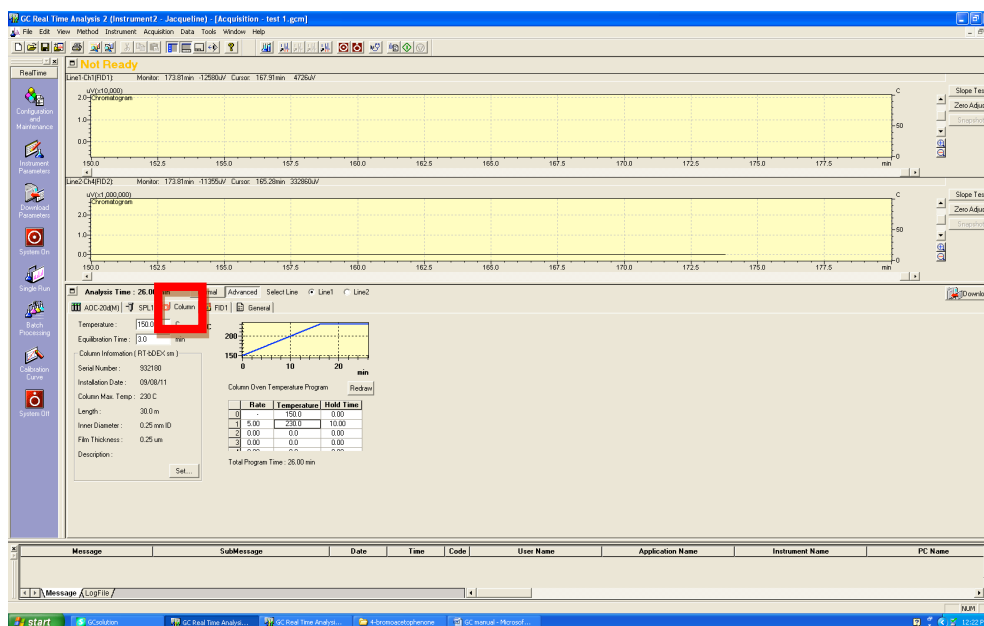
2.7   Select carrier gas mode: pressure, linear velocity.

2.8   Enter sampling time (only for splitless injection mode).

2.9   Verify correct column is listed; if not, go to step 12.

2.10   Input values for either column flow or linear velocity and a split ratio.

2.11   Click on Column tab.

2.12   Input initial oven temperature, equilibration time and temperature programming.

2.13   Select correct column by clicking on Set, highlighting the correct column, clicking on Select, Apply, and OK.

2.14   Click on Detector tab.

2.15   Input temperature and all appropriate values for the type of detector being used.

2.16   Select File-Save Method As and enter a file name.

2.17   Tips:

2.17.1 The oven temperature should be lower than the maximum temperature the column can tolerate, which is labeled on the column. Right now the maximum temperature is 330 °C. So please do not set temperature higher than 300 °C in order to be safe.

2.17.2 If your sample is dilute, go to injection volume. If it doesn't work, you can change the injection mode to splitless or direct.

2.17.3 For GC, the most important factors for separation are temperature and gas flow. So if you want to change separation condition, go to these two.
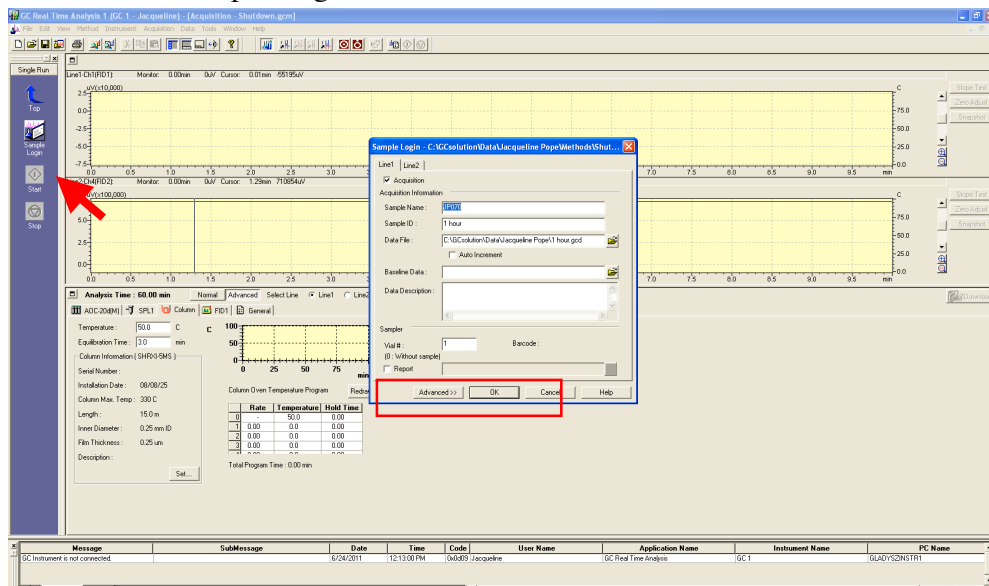
3. How to do data acquisition:

3.1 Select File-open and select the appropriate method. Then select Download.
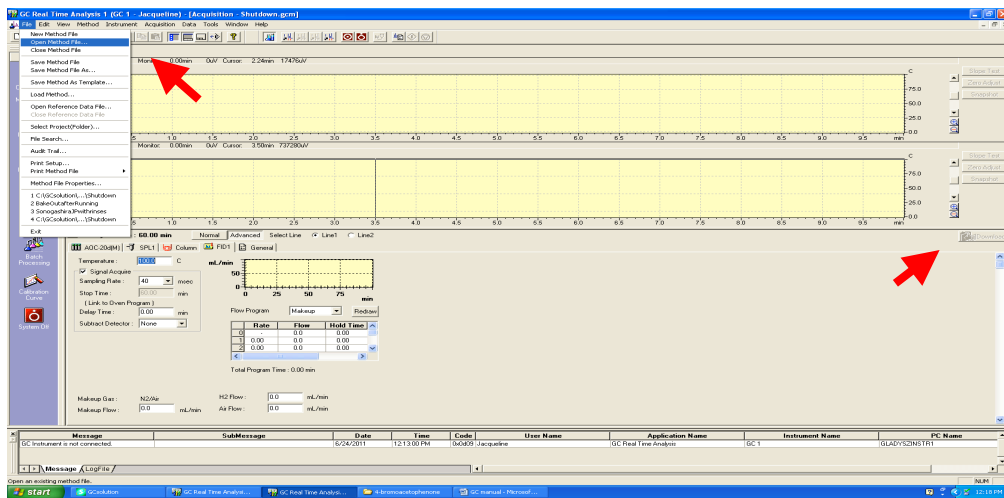
3.2 Wait until all of the indicator lights above the panel turn green, and Ready is shown on the software screen, then you can start your analysis.

3.3 Click on Single Run in the Acquisition Assistant bar.

3.4 Click on Sample Login in the Assistant bar.

3.5 Check Acquisition.

3.6 Enter sample name, ID, data file name, and vial number.

3.7 Check Report and select the appropriate report format file if needed.

3.8 Click OK.

3.9 Verify the method name and date file name appearing in the title bar.

3.10 Click Start.

3.11 Tips:

3.11.1 In order to make everyone start much easier, a method file named "starting up" will be saved in everybody's name file after you check out, so you can start from this method. If it doesn't work very well, or you have separation conditions from the reference, you only need to change a few conditions.

3.11.2 After you click on Sample Login in the Assistant bar, the vial number is mandatory to be changed; otherwise the error will be reported.

3.11.3 If you want your data saved after a single running, please click Report in Sample login.

3.11.4 Filter your sample before injection if your sample has some insoluble solids.

4. How to create and run a batch:

4.1 In the real time window, select Batch Processing.

4.2 Select Batch Table Wizard.

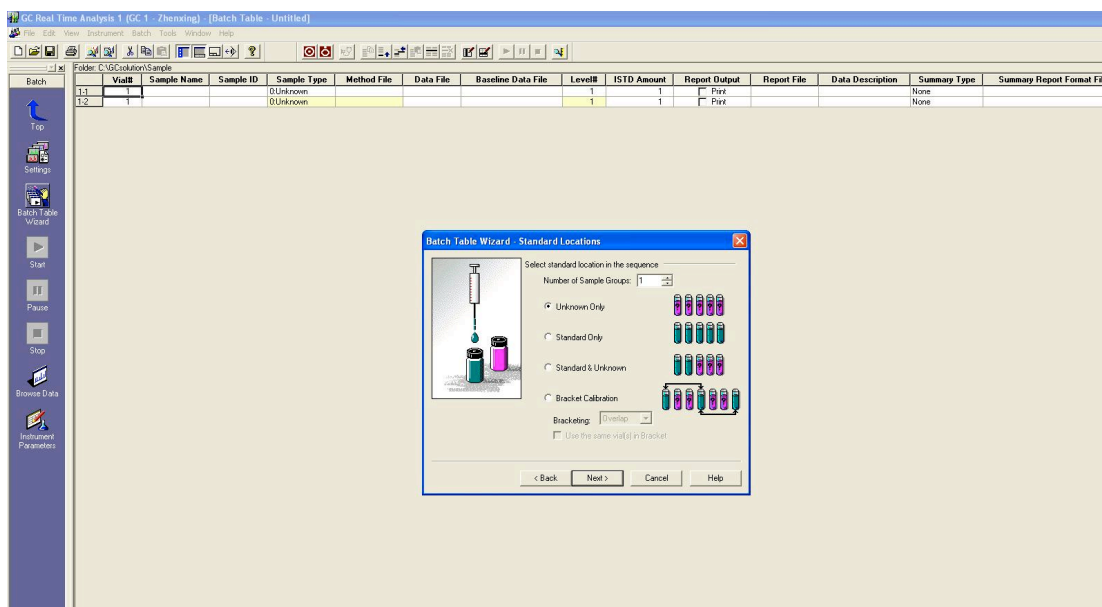4.3   Open a new batch or append an existing batch.
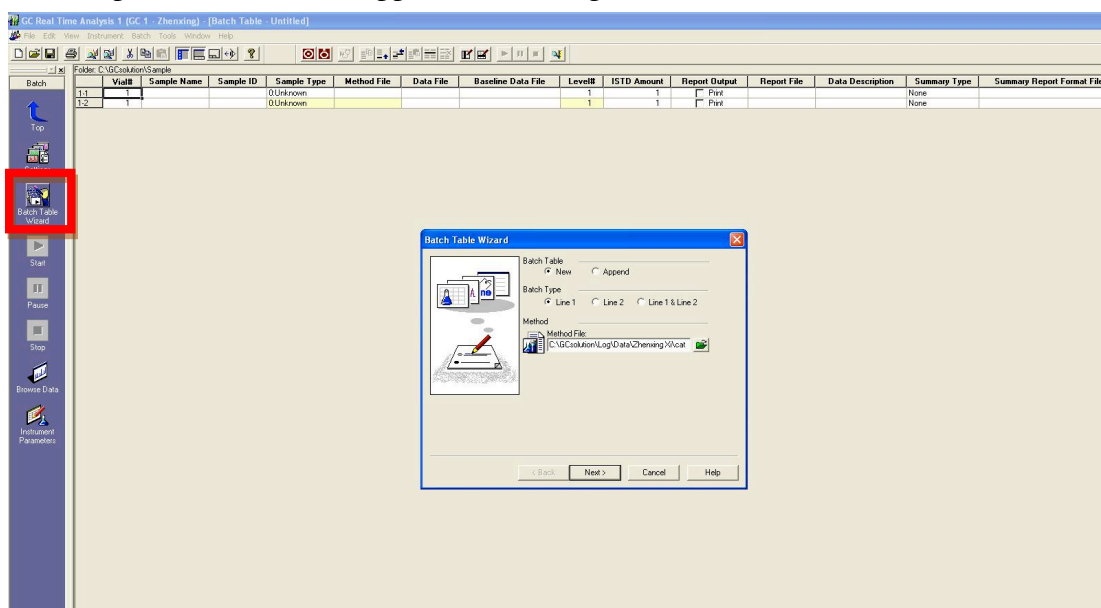
4.4   Select the analytical line or lines to be used.

4.5   Select the method to be used.
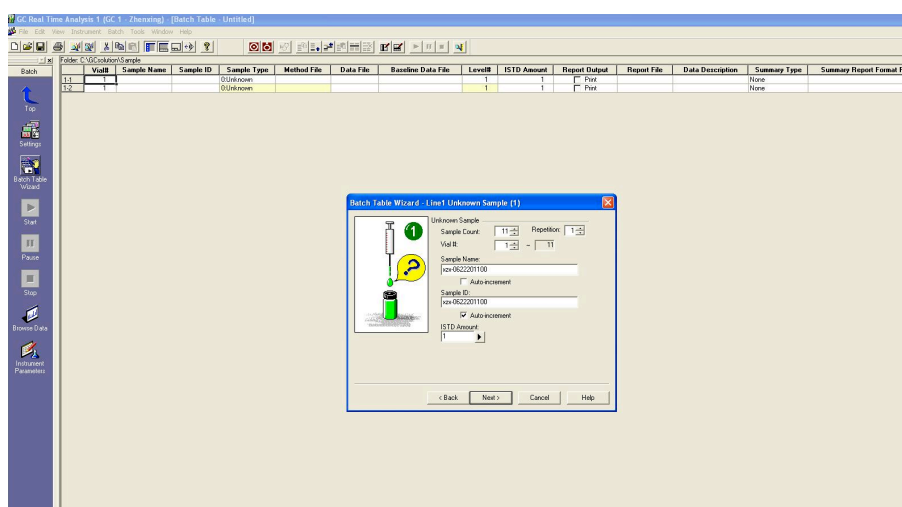
4.6   Select Next.

4.7   Select the number of sample groups (usually 1) and the type of samples (standards or unknowns). If unknown, skip to step 15.


4.8   Select Next.

4.9   Input the number of standards for calibration and the number of replicates.

4.10   Input vial number for first standard.

4.11   Enter a sample name and sample ID (use autoincrement).

4.12   Select Next.

4.13   Select data file name (use autoincrement) and report format file.

4.14   Select Next.

4.15   For unknowns, input number of unknowns, replicate number, starting vial number, and sample number and ID.

4.16   Select Next.

4.17   Enter Data file names (use autoincrement) and select a report format file.

4.18   Select Next.

4.19   Select and print a summery report if needed.

4.20   Select Finish.

4.21   Select Edit, choose Add Row.

4.22   Select Shutdown method as the method file for last row, and give a random name its data file.
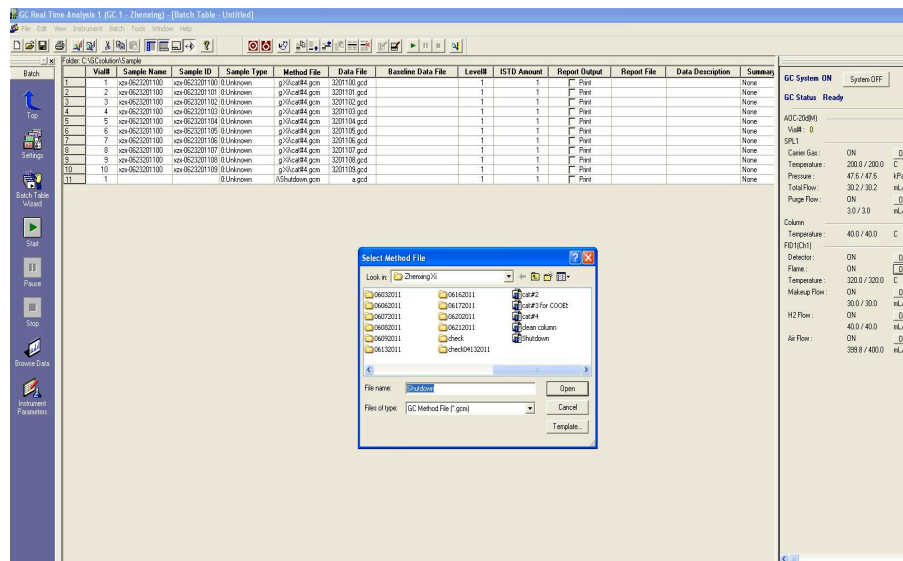
4.21   Select File-Save Batch File As and name the batch file.

4.22   Click on Start in the Batch Processing Assistant Bar to initiate batch processing.

5.   How to shut down the program:

5.1   Select File-open and select the Shutdown method. Then select Download.

5.2   Wait until all of the indicator lights above the panel turn green, and Ready is shown on the software screen.

5.3   Close the program window. Then close the GC Solution window.

5.4   Power off the GC machine.

5.5   Turn off all the regulators and the flow controllers.

5.6   Fill out the log book.

5.7   Tips: After every user finishes the checkout, a method file named "Shutdown" will be saved in your name file.