

## APPENDIX VI: OPERATION OF THE SHIMADZU GC-17A GAS CHROMATOGRAPH

### A. Instrument Setup

1. Open the **high-pressure valves** on the three gas cylinders (air, hydrogen and nitrogen). Leave all other gas cylinders valves untouched! Verify that the low-pressure gauges read the following values.

air	40 psi
hydrogen	45 psi
nitrogen	85 psi
2. Push the **power** switch on the lower left side of the Shimadzu GC-17A gas chromatograph to turn on the instrument, if it isn't on already.
3. Push the **power** button on the Micron computer to turn on the computer. Windows 95 will load. Push the **power** button on the monitor to turn it on, also.
4. Push the **SYSTEM** soft pad on the Shimadzu GC-17A control panel and wait 3–5 minutes for the system to equilibrate thermally. Then press the **IGNIT**, **ON** and **ENTER** soft pads to ignite the flame ionization detector. A \* icon will appear next to the 1 icon after the detector has been lit.
5. Double-click the **Shimadzu CLASS VP** icon, followed by the **OK** button. The CLASS VP Chromatography Data System window will appear.
6. Click on the appropriate button to choose the desired instrument:
  - 1 **GC-17AAF V3** for the left gas chromatograph, or
  - 2 **GC-17AAF V3** for the right gas chromatograph

### B. Method Preparation

1. Select the **File > Open Method** menu item.
2. Choose the desired **method** (e.g., **cyclo.met**) and click the **OK** button.
3. If necessary, click the **oven** icon, just below the Analysis button in the tool bar, to change acquisition parameters. Leave these parameters alone unless you need to develop a new method. Click the **Download** button to load these parameters, even if no changes were made. Then wait approximately five minutes for the instrument to reach thermal equilibrium.

### C. Sample Preparation

1. Place your **sample** in a labeled vial. The approximate concentration should be one drop of a liquid sample per 1 mL of solvent. Recommended solvents include ethyl acetate and acetone.

### D. Data Acquisition

1. Click the **Single Run** icon in the tool bar to start the data acquisition. The Acquisition window will appear. Verify or enter the following information:
  - a. Sample ID: **description of your sample**
  - b. Method: **c:\class-vp\methods\method** where method is the method that was chosen above
  - c. Save Run As: **c:\class-vp\chrom\students\filename** where filename is the name of your sample
  - d. Sample Amount: **1**
  - e. Internal Standard Amount: **0**
  - f. Multiplier: **1**
2. Click the **Start** button. The status bar at the bottom of the window will read, " Waiting for Trigger..."
3. Inject **1  $\mu$ L of your sample** into the gas chromatograph and press the blue **START** soft pad.
4. The chromatogram will be printed automatically, once data acquisition is complete.

### E. Instrument Shutdown

1. After all data acquisitions are complete, select the **File > Open Method** menu item.
2. Choose the **bake.met** method and click on the **OK** button.
3. Wait approximately one hour for the gas chromatograph to cool to room temperature.
4. Press the **IGNIT**, **OFF** and **ENTER** soft pads to turn off the flame ionization detector. The \* icon next to the 1 icon will disappear when the detector is off. Then press the **SYSTEM** soft pad followed by the **OFF** soft pad to turn off the system.
5. Push the **power** switch in the lower left corner to turn off the GC-17A gas chromatograph.
6. Close the **high-pressure valves** on the three gas cylinders (air, hydrogen, and nitrogen). Once again, leave all other gas cylinders valves untouched!