

## Calorimetry and Hess's Law

### Student MeasureNet Instructions CHE 120L

(MeasureNet v. 2.3.2, MeasureNet Controller v. 30716a)

1. Press the **ON/OFF** key to turn your MeasureNet station on. Note your station number, as you will need this to collect your printouts and data files.
2. Setup your MeasureNet station for this experiment by pressing the **MAIN MENU** key, followed by the **F2** key (Temperature), followed by the **F1** key (Temp v Time).
3. Before conducting your experiment, you must calibrate your temperature probe. Fill a 150 mL beaker half-full with water, and measure its temperature with a thermometer. While its temperature is stabilizing, press the **CALIBRATE** key. When the water temperature is stable, enter the thermometer reading and press the **ENTER** key.
4. Place the MeasureNet temperature probe into the water, being careful not to touch the probe to the beaker sides or bottom. Watch the temperature value displayed on the screen. When it stabilizes, press the **ENTER** key. The displayed temperature may not agree with the temperature value you entered in step 3, which is OK.
5. Now you need to define the acquisition limits. Press the **SETUP** key, followed by the **F1** key (Set Limits for New Acquisition). Change the displayed values to the values listed below, depending on the compound you will be studying in this trial (Note that RT = Room Temperature). Do this by entering in the new value for the parameter highlighted with asterisks on the screen, pressing the **ENTER** key, followed by the **→** key to move to the next value. When finished, press the **DISPLAY** key.

Setting	MgSO <sub>4</sub>	MgSO <sub>4</sub> •7H <sub>2</sub> O
Y MAX	35	RT + 3
Y MIN	RT - 3	RT - 3
X MAX	200	200
X MIN	0	0

6. The data acquisition screen is now displayed. You are now ready to proceed with your experiment according to the instructions in your lab manual.
7. When you are ready to start recording data, press the **START/STOP** key. The temperature of your solution will be plotted on the screen versus time. When the experiment is complete, the MeasureNet station will beep and stop recording data.
8. If your data plot goes off the screen, ask your instructor to help you change your setup parameters so that you can see your entire dataset.
9. Your instructor may have you print your dataset. To do so, press the **FILE OPTIONS** key, followed by the **F1** key (PRINT Standard). Enter in the number of copies you wish to print (two, one for each lab partner), and press the **ENTER** key. Your graphs will be printed out on the balance room printer (SC 422A). The graph title will be your lab room and station number (e.g., "SC426 - Station 4"). Be sure to collect your printouts promptly so you know which dataset it is.

10. Your instructor may have you save your dataset for later analysis. To do so, press the **FILE OPTIONS** key, followed by the **F3** key (SAVE). Enter in a unique three digit file number (e.g., 000), and press the **ENTER** key. Your dataset will be saved on the lectern computer with the name “staxyyy.txt”, with **x** being your station number and **yyy** being the file number you just entered. See your lab instructor to copy these files onto a disk or to send them to yourself as an email attachment.
11. When you are finished with this trial, press the **DISPLAY** key. Your current dataset will be erased, and you will be ready to begin another trial. If you are studying the same compound again, go back to step 7. If you are studying a different compound, go back to step 5.
12. When you are finished with all your trials, turn off your MeasureNet station by pressing the **ON/OFF** key.