

Chem 310
5th Homework Set
Due Date: Mar. 2, 2004

1. Sketch a graphite furnace atomic absorption spectrometer and label the parts. Show the details of the graphite furnace.
2. Sketch a hollow cathode lamp and describe how it works. Why is it necessary to use a HCL rather than a continuum source in AAS?
3. Sketch a nebulizer + slot burner and describe how they work. Show the light path through the flame.
4. Briefly describe the temperature program in a graphite furnace and what happens in the furnace at each point in the program.
5. What is the role of the monochromator in the atomic absorption spectrometer?
6. Harris, Problem 21-16, both parts (a) and (b). Also, calculate the concentration of element X by using just the first two measurements and setting up two equations in two unknowns.
7. Sketch a ICP atomic emission spectrometer with a Rowland circle monochromator. Show the details of the the triple torch and the monochromator. Explain why more than one element can be determined simultaneously.
8. Harris, Problem 21-18. Include a calibration curve plot with a linear regression line. Also, calculate the concentration of potassium using the signal for two of the standards. Justify your choice of which standards you used in your calculation.
9. Why is an internal standard used in atomic emission spectroscopy?