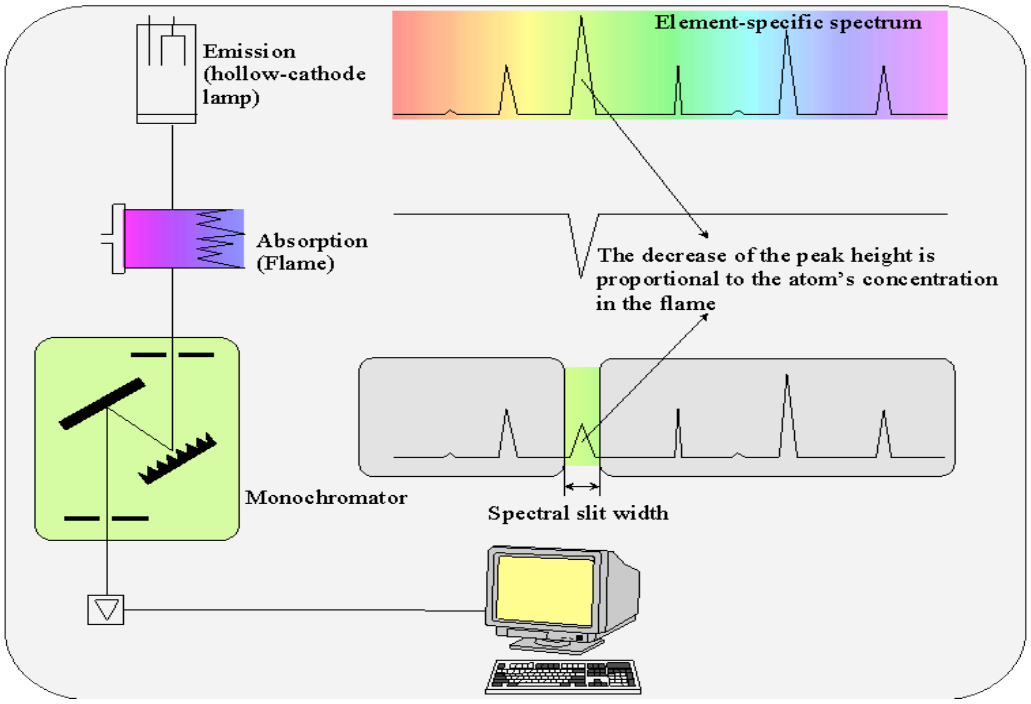
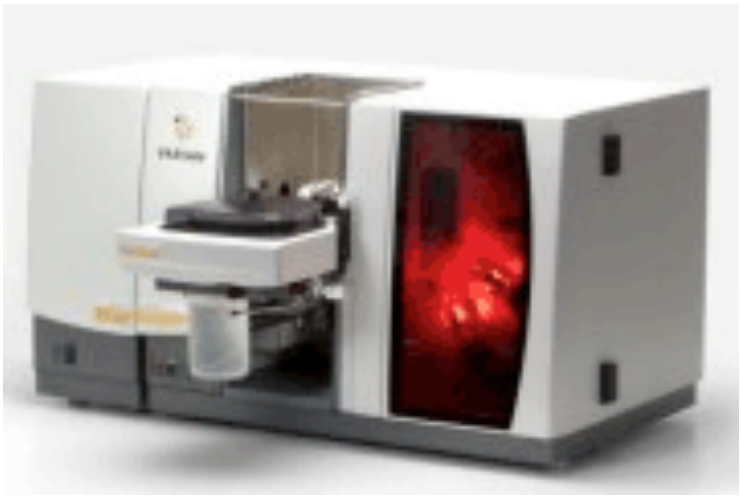
Using the Varian AA240 Atomic Absorption Spectrometer

Varian AA240 Operations

http://www.varianinc.com/cgi-bin/nav?products/spectr/aa/s140240/s140240&cid=ILKLJLQHFQ





Varian AA240 at Miramar College

Located in S5-209, Science Building, Miramar College

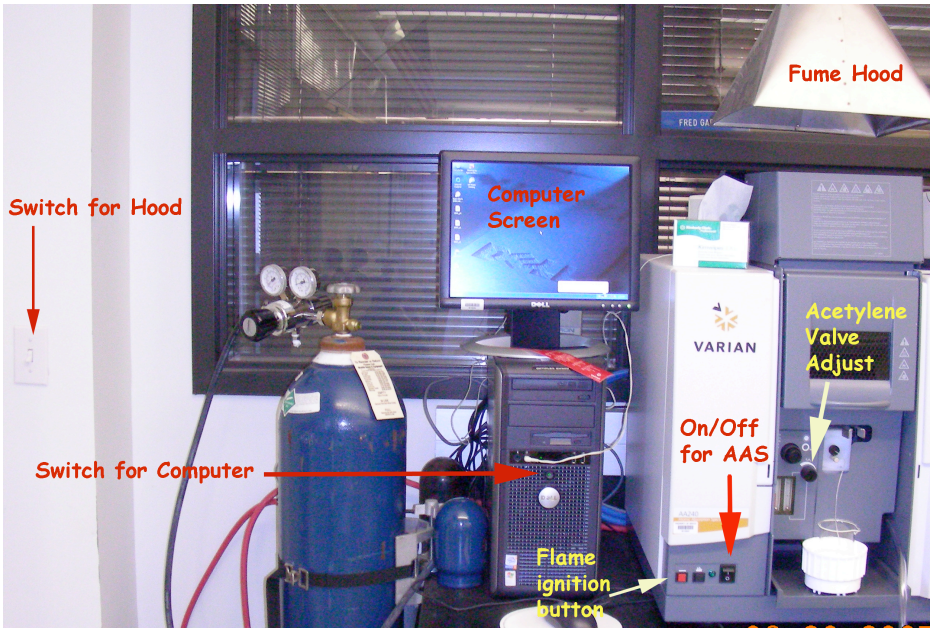
Preparing instrument for operation

Flip the switch to turn on the fume hood above the spectrometer
Turn on the oxygen and acetylene gas cylinder

Check to make sure that the acetylene tank does not go below 400 psi
Acetylene pressure 2nd stage set for 75 psi
Oxygen pressure 2nd stage set for 40 psi

Turn on the AAS spectrometer by switching the power button, (bottom left corner of spectrometer)
When you turn on the spectrometer, wait a few seconds and listen for the "burp"
The burp from the instrument is an indicator that the instrument is positioning all setting to the zero point

Turn on the computer by pressing the power button of the CPU.



Opening screen using Windows XP

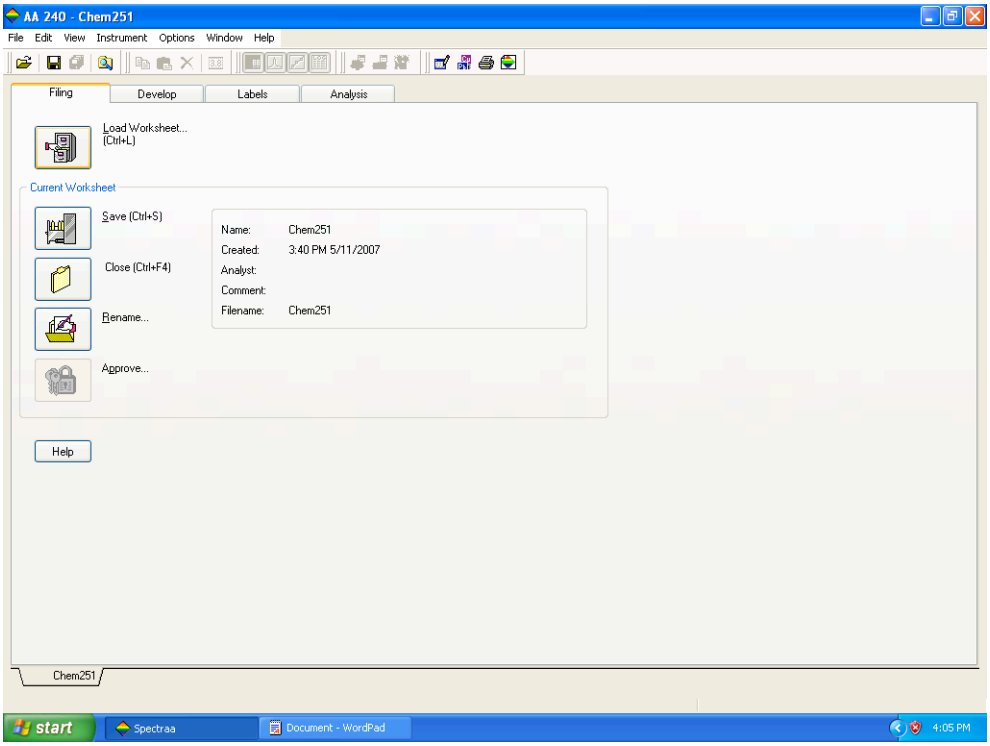
Click on **worksheet**

Click on worksheet (create new worksheet)

Click on New

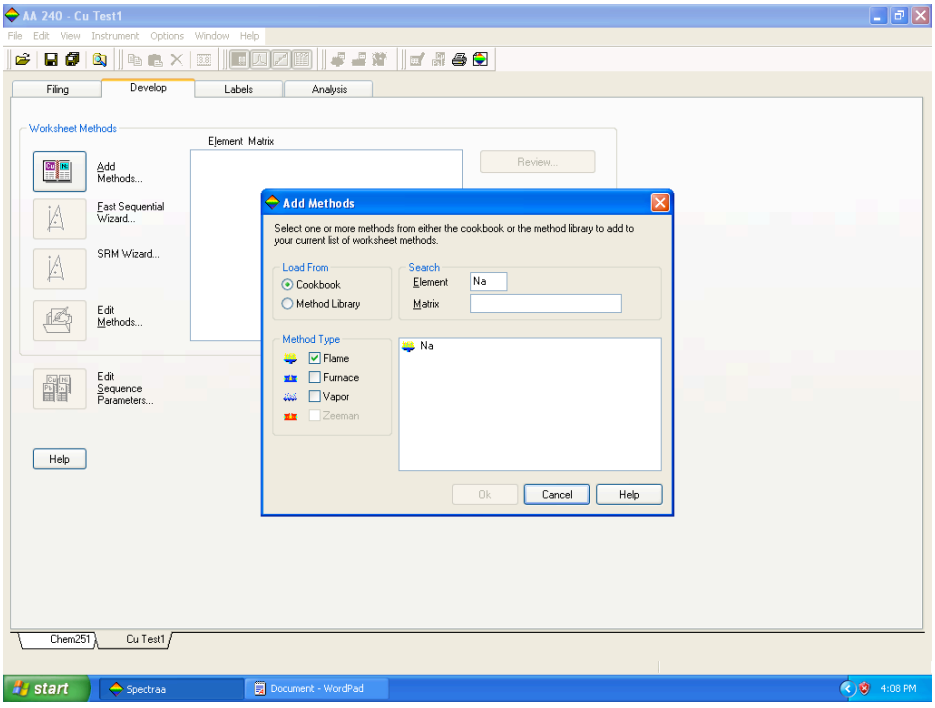
Type in file name

Opening menu after new worksheet is open
Note the menu - Filing - Develop – Labels - Analysis



Click on the Develop tab and choose add methods

Select Method Type -- Flame
Choose the Element – **Sodium, copper, calcium**

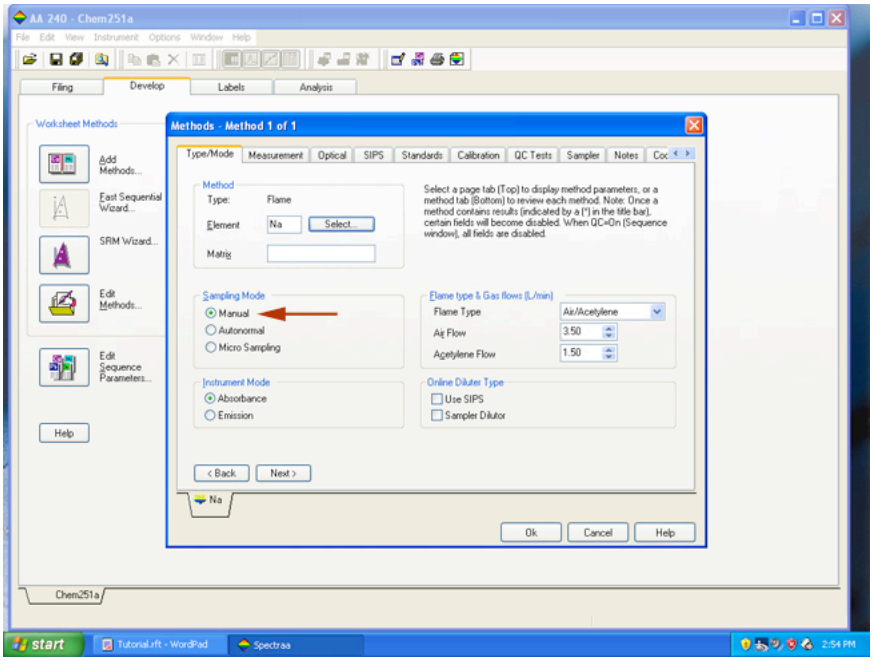


Click on the element (i.e., Na) to get Method menu for the element to be analyze

Double check that the element selected is under the Flame.

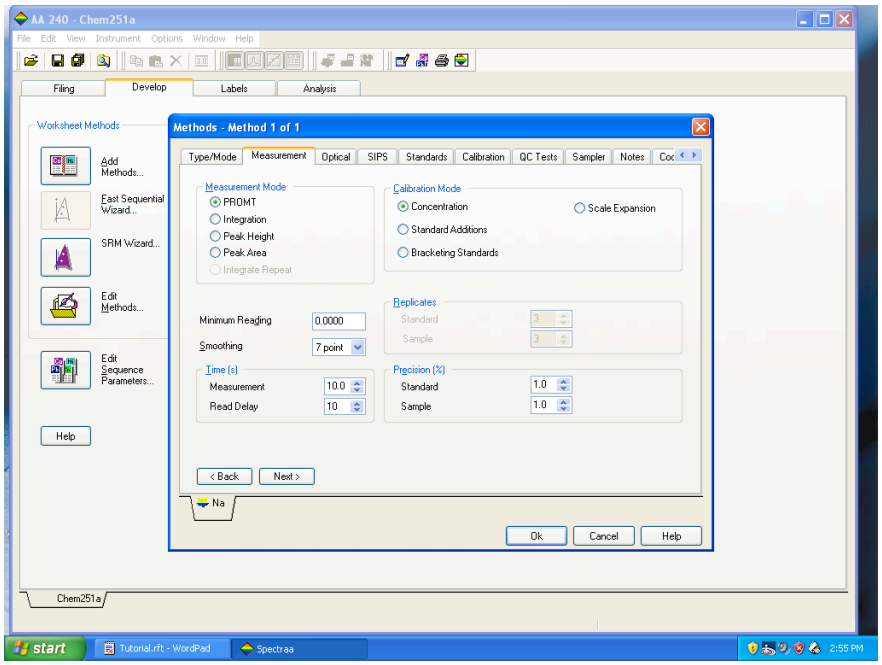
Choose under Sampling Mode: **Manual**

Choose Flame type: Acetylene with Air flow = 3.50 and Acetylene Flow = 1.50



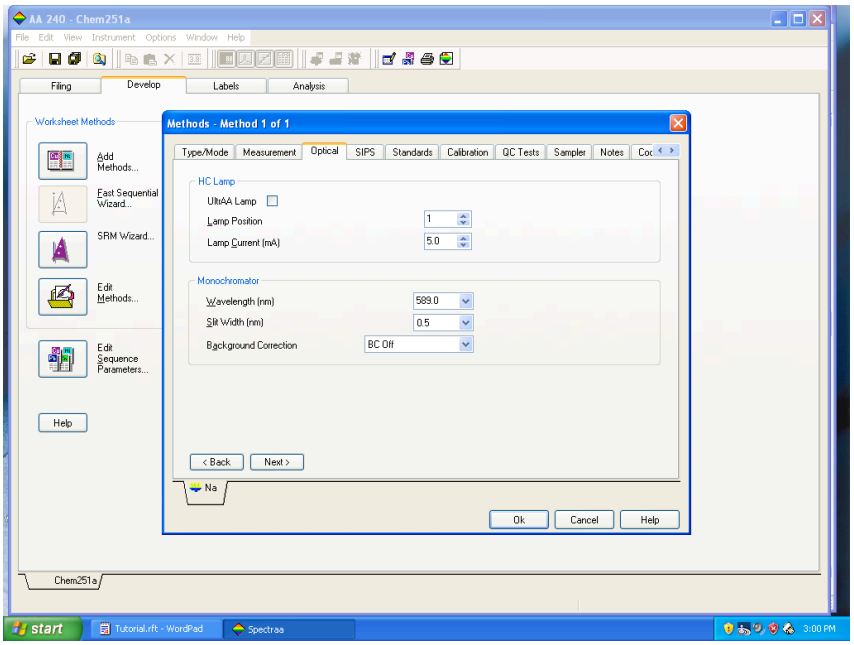
Click the measure tab

Select Measure mode: **integration**
Select Calculation mode: **Concentration**



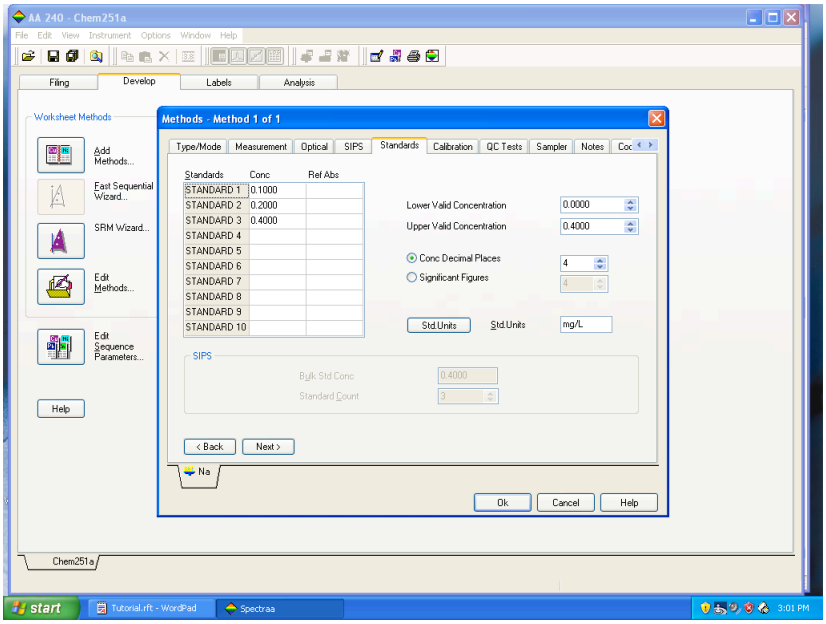
Select Optical tab

The lamp position is set for the element selected
The wavelength is set for the line max of the element source
Click on optics, this will allow the selection of lamp and metal to be analyze
Select the wavelength that will be used from the lamp



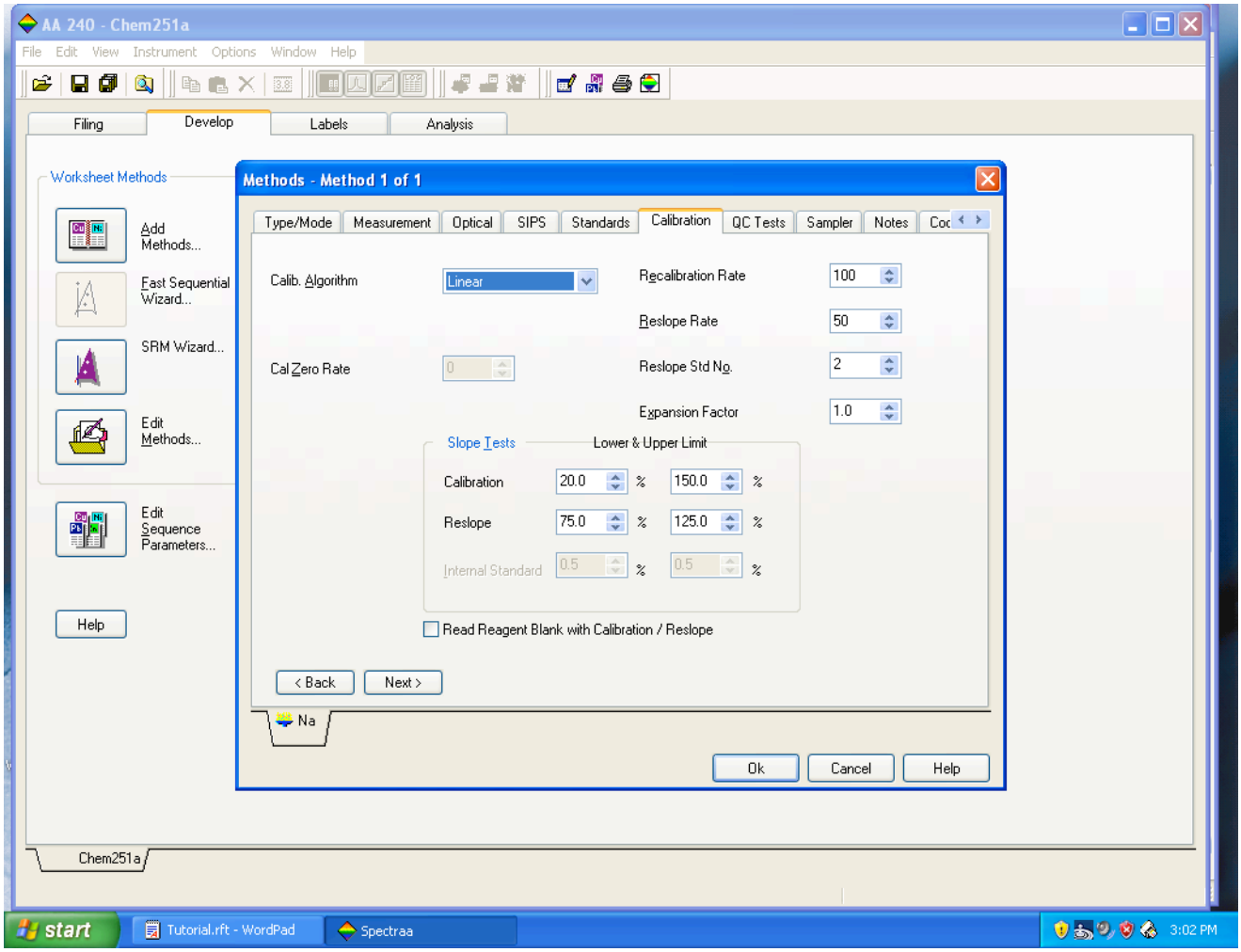
Skip the sips tab, the instrument does not have sips accessories.

Select the standard tab
These are the standards that will be analyze in a Beer-Lambert analysis
Concentrations are entered and the units are assigned. (mg/L = ppm)



Click on the Calibration tab

Select the **Linear** (Beer-Lambert) Calibration algorithm

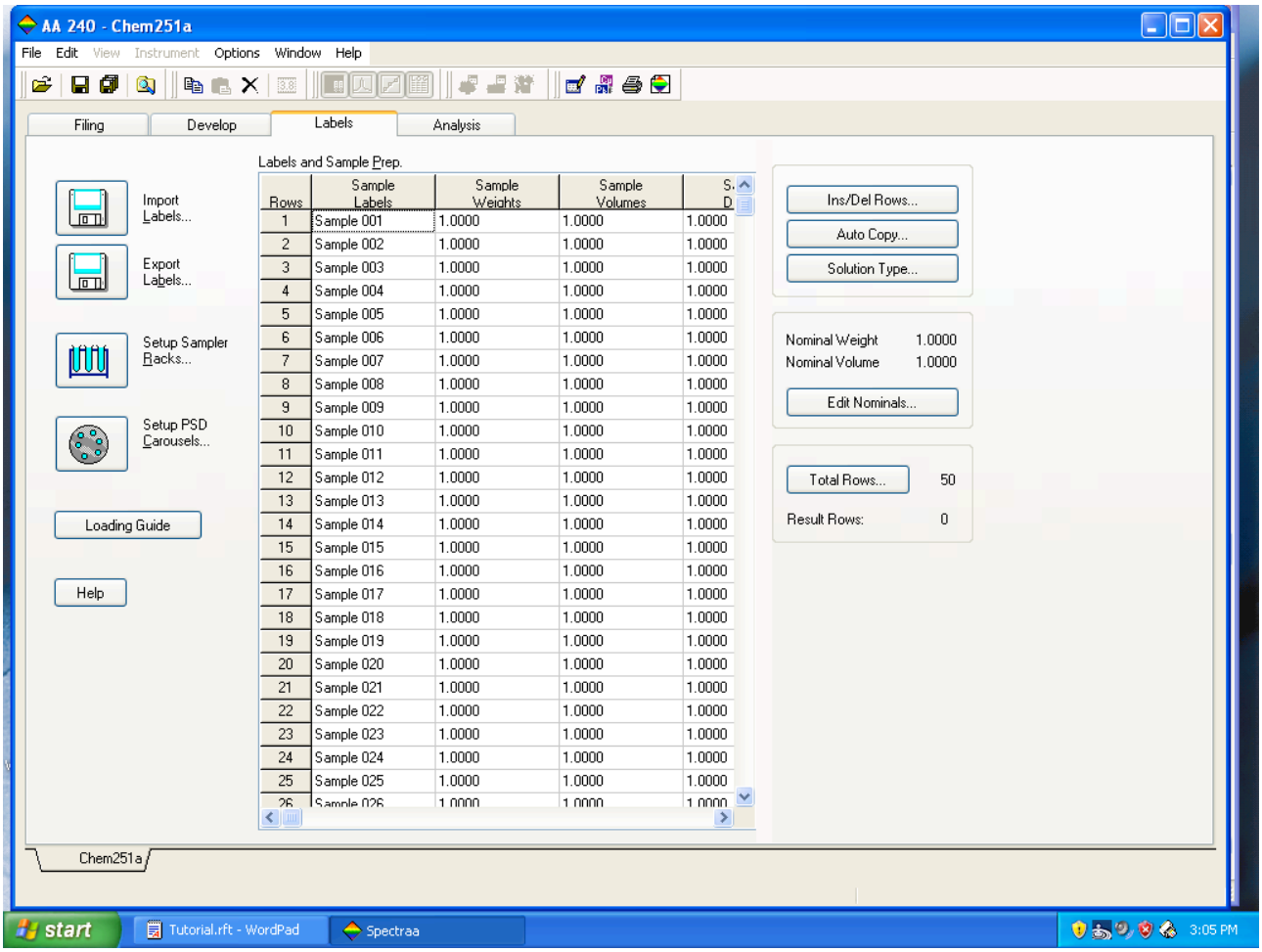


Skip the:
QC Tests
Sampler
Notes
Cookbook tab

Click OK

Click on labels tab

Label the sample to be analyze.
i.e., Na in snack #1, Na in snack #2 …



Select the Analysis Tab to begin optimizing the flame and signal.

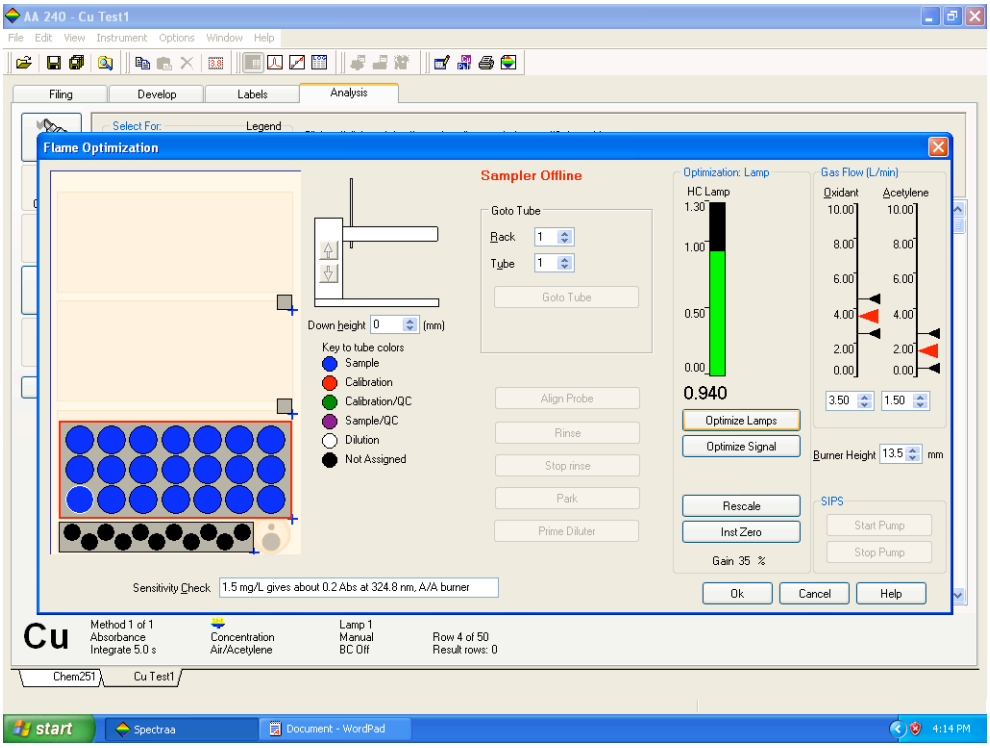
At this point the instrument should have already been turned on,
if not, turn on the spectrometer (listen for the burp) and wait 1-2 min for instrument to warm up.

Click on Optimize (under the Select button) from the menu on the left.

Click on Optimize Lamp, and adjust the lamp (i.e, screws at the bottom of Na lamp)
to maximize the signal (green bar).
If the signal max out, then click on rescale to lower the gain (S/N)

When the lamp signal is optimized, click on OK.

It is time to optimize the signal from the sample



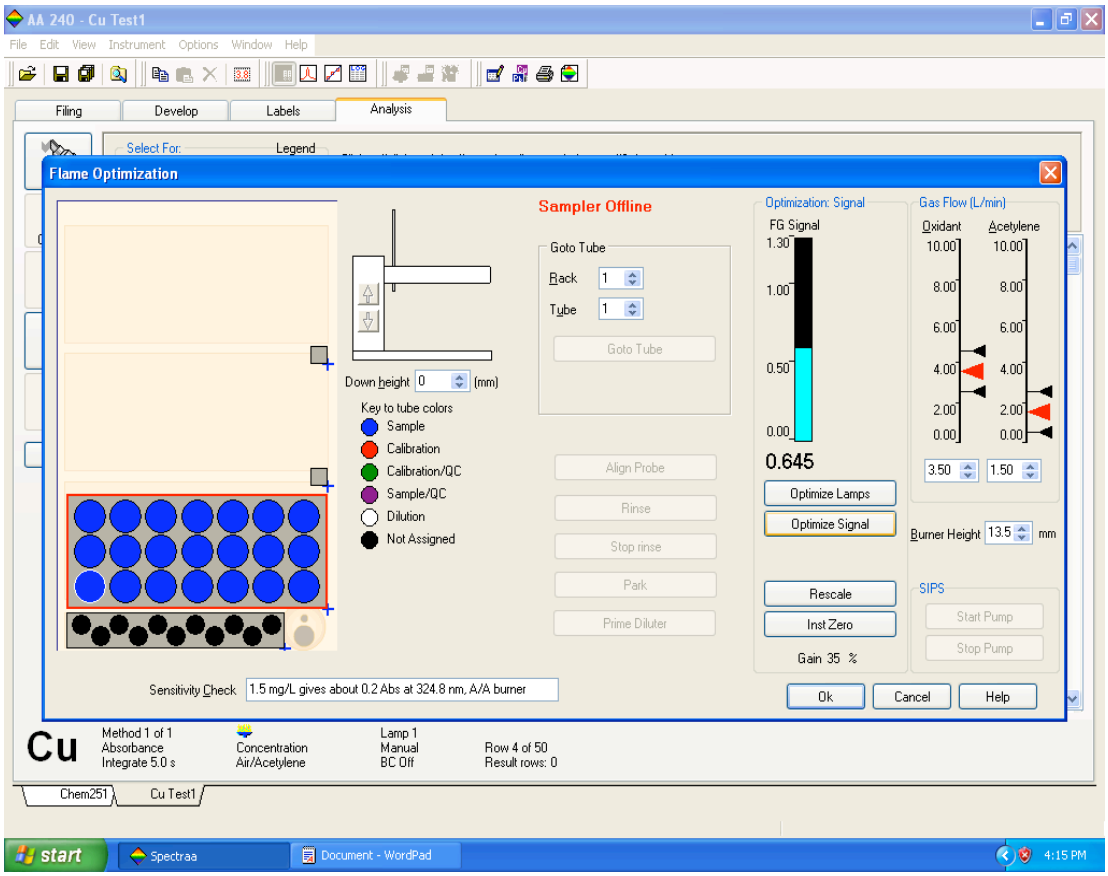
Optimize the signal.

Remove the capillary from the water sample and place into one of your standards.

Click on the Optimize signal button under the Optimize Lamp button.

A turquoise bar should display. Optimize this signal to about 0.6.
You may have to adjust the flow rate (brown knob beneath the capillary inlet to instrument)
As well as adjust the flame and angle of nebulizer

When the signal is optimize, click on OK



The menu will return to the element , click on cancel.
This will take you out of optimize mode.

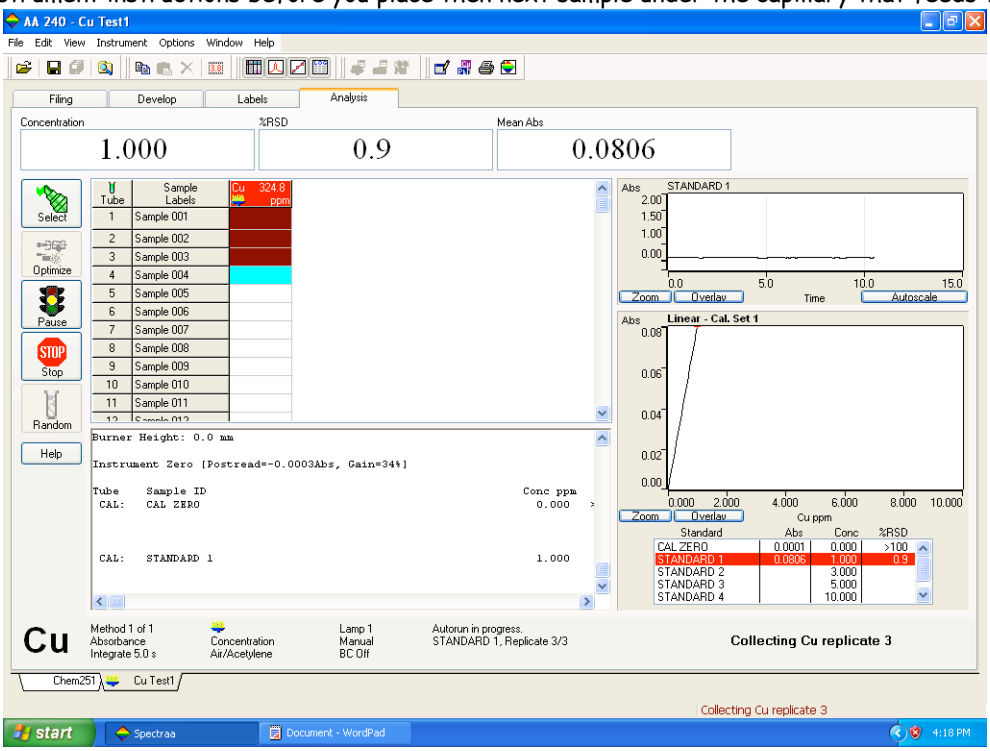
Under Analyze

Click on select
Select the standards and samples to be analyze, with the marker pointer.
Be sure that all others are not highlighted in maroon.

You are now ready to run the standards and then the samples.

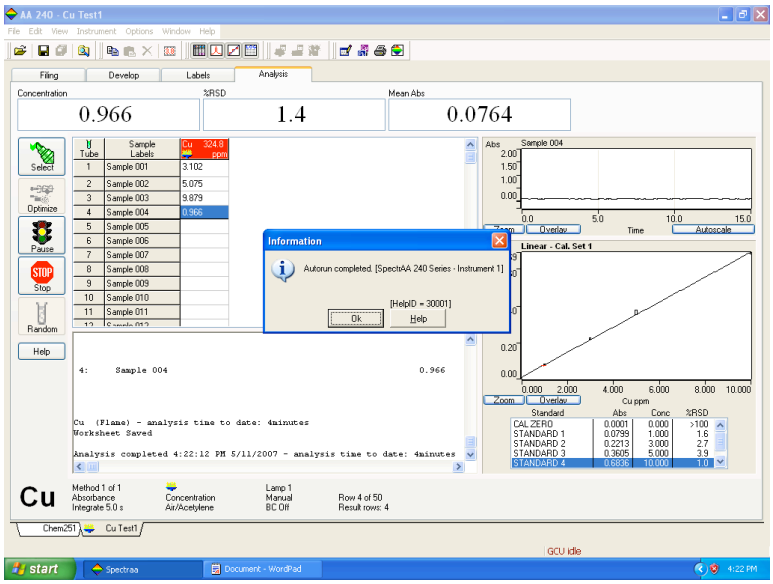
Click on start

The instrument will run a zero and then prompt for the standards.
Wait for the instrument instructions before you place then next sample under the capillary that feeds to the nebulizer



Instrument will ask for standards and samples and do a Beer's Lambert Calculation

When experiment is complete, the flame will be extinguish by the instrument



Print results

Allow instrument to cool down for 15 minutes then turn off AA instrument

Turn off AA spectrometer

Turn off gas

Turn off computer.