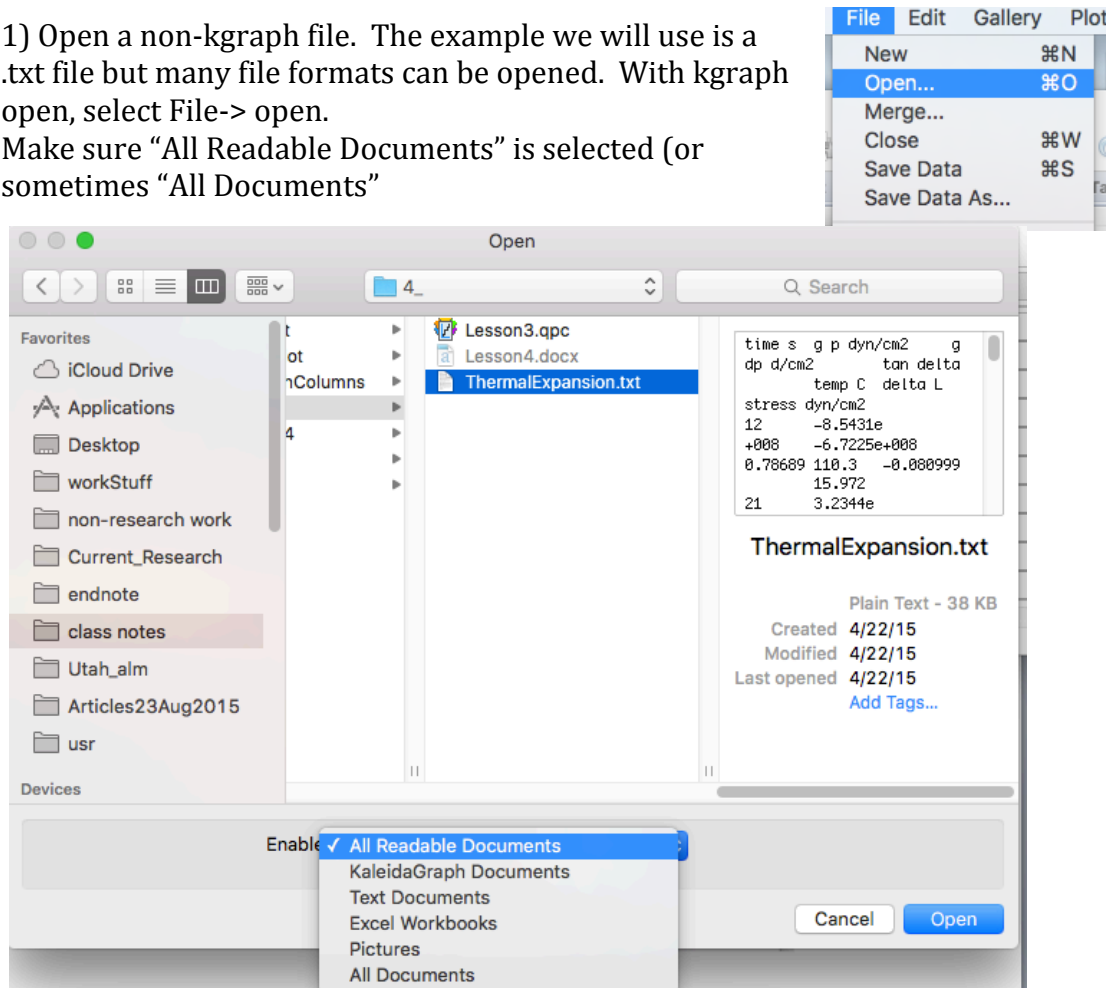


Lesson 4_Importing Data and Use of the Tool Palette

Goal: to import data from various file types and to be able to use the tool palette

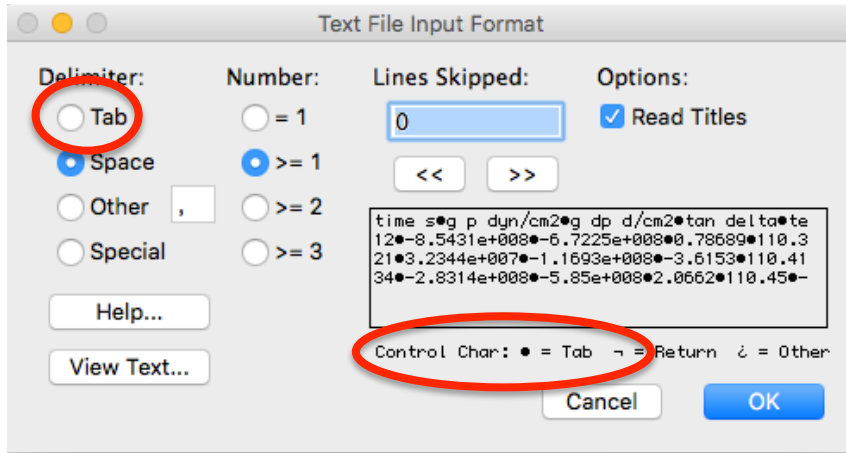
1) Open a non-kgraph file. The example we will use is a .txt file but many file formats can be opened. With kgraph open, select File-> open.

Make sure “All Readable Documents” is selected (or sometimes “All Documents”)



Choose document of interest (in this case, “ThermalExpansion.txt”) and click Open

2) The window that comes up gives you a lot of control of the data that gets imported. The Delimiter is the “break” between numbers. In this case, Tab will need to be selected (red circles). The “Lines Skipped” permits you to skip the top of a data file that may contain things like the date the test was run, the name of the lab, etc. (things you are not going to plot). In this case there are not any extra lines (so set to 0). The “Read Titles”, if checked, uses the first line of the data file to fill in the column titles. If Read Titles is unchecked, the content of the box must be only the numbers you will be plotting. Now choose Tabs and click OK

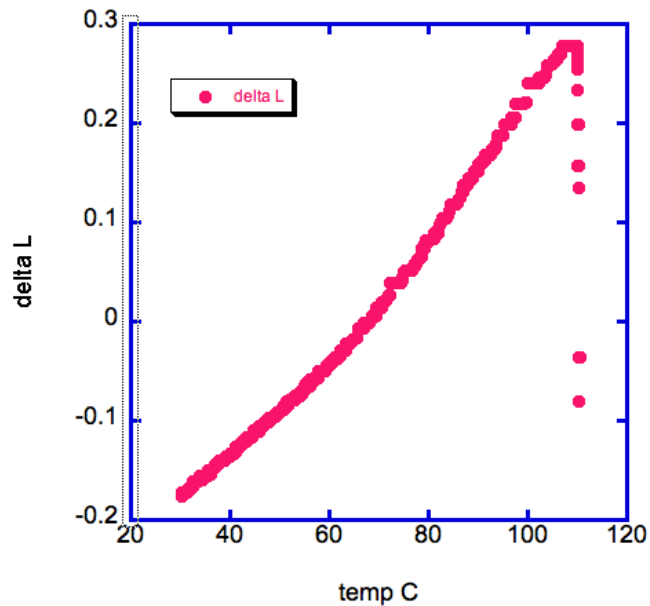


3) You will now see

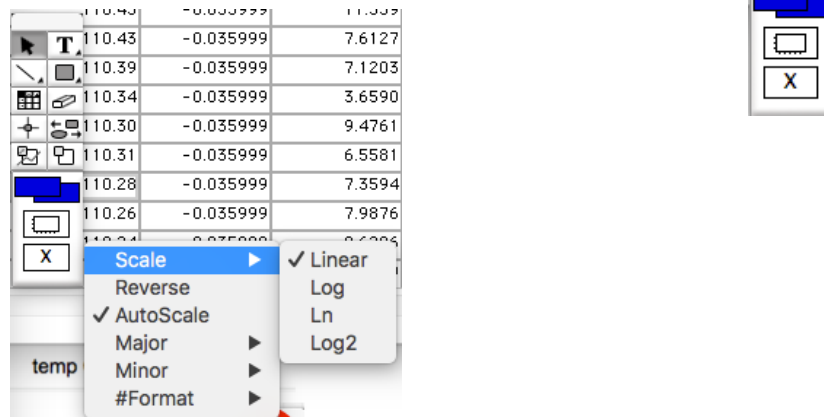
	time s	g p dyn/cm2	g dp d/cm2	tan delta	temp C	delta L	stress .../cm2
1	21.000	3.2344e+07	-1.1693e+08	-3.6153	110.41	-0.080999	2.5971
2	34.000	-2.8314e+08	-5.8500e+08	2.0662	110.45	-0.035999	11.539
3	47.000	-3.3673e+09	-1.9782e+09	0.58747	110.43	-0.035999	7.6127
4	64.000	-8.2066e+07	2.0736e+08	-2.5268	110.39	-0.035999	7.1203
5	76.000	-3.8238e+08	1.0354e+08	-0.27079	110.34	-0.035999	3.6590
6	85.000	-3.5072e+08	-2.0749e+08	0.59160	110.30	-0.035999	9.4761
7	94.000	-4.2624e+08	-2.9607e+08	0.69462	110.31	-0.035999	6.5581
8	103.00	-2.9545e+08	-1.2634e+08	0.42760	110.28	-0.035999	7.3594
9	112.00	-8.5758e+08	1.1663e+09	-1.3600	110.26	-0.035999	7.9876
10	121.00	-8.5114e+08	2.5159e+08	-0.29559	110.24	-0.035999	8.6286
11	130.00	1.7205e+08	3.1980e+08	1.8588	110.19	-0.035999	5.8719
12	144.00	5.9246e+07	1.0763e+08	1.8166	110.18	0.13500	3.8662
13							

Row: 0 Column: 0

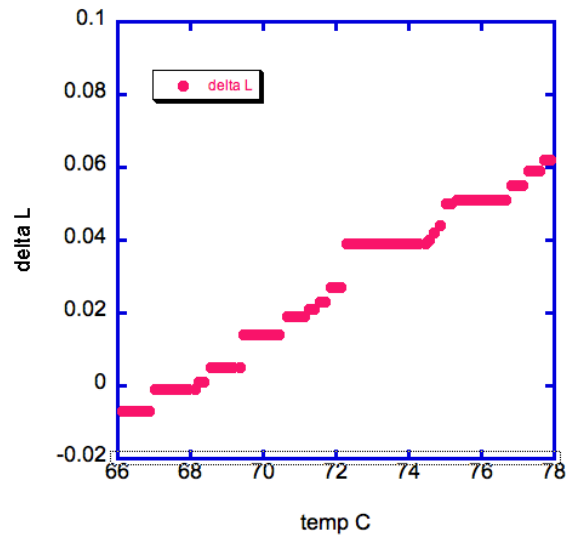
4) Plot delta L (the change in length) on the Y vs. T on the X using the tools from previous lessons and make the plot look like the following



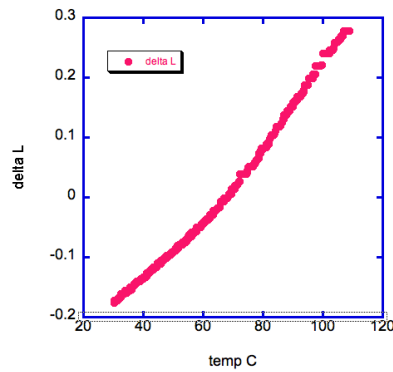
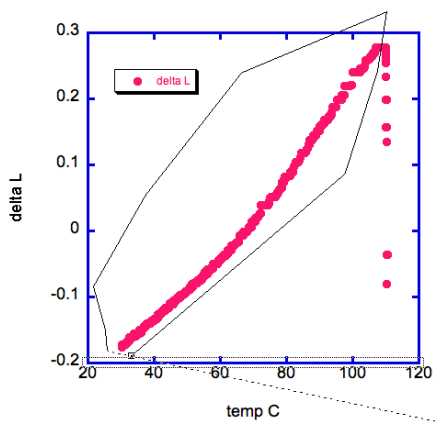
5) We will now clean this plot up using the Tool Palette. The arrow at the upper left is the select tool. The selections at the bottom vary with what you have selected (in this case the X-axis and if I now click on the X box at the bottom, I get a number of choices (none of which I want just now)



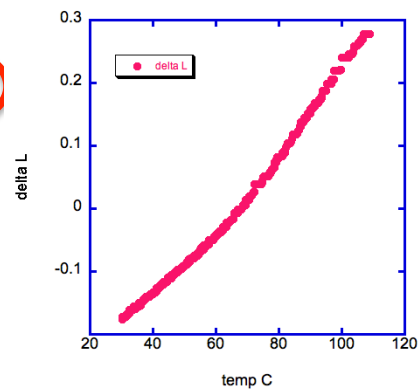
6) The box at the lower right when clicked gives a magnification tool. Double clicking on this box will return the plot to the original size



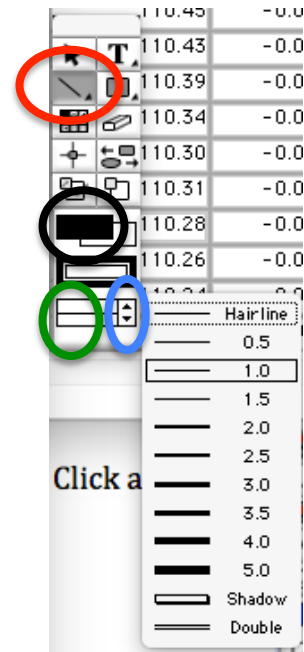
7) The box at the lower left is one of the most useful features. This allows you to mask data. Click and release and click and release until you have a closed figure around the data you want to keep. (In the figure I am just about to close the figure



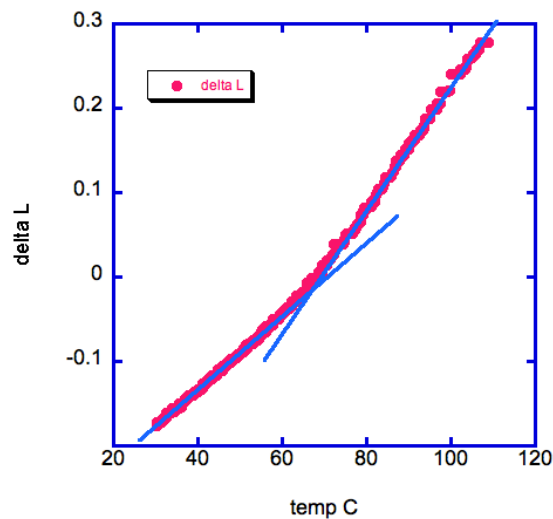
8) The middle box on the right is the erase tool. Select this and click on the "-0.2" on the y-axis.



9) The tool second down on the left is the line command. Click and hold in the box gives you a choice of line types. Line weights are given at the bottom. Click the up/down arrows (blue circle). Line style (dashed, solid, etc) click the line box (green circle). Line color is changed by the solid box (black circle)



10) With the line selected draw the trend lines by click and hold and drag. You can adjust the lines by using the select tool (arrow at upper left box) and selecting the line by clicking on it and then click and holding on the ends of the line. Position of the lines can be adjusted by the arrows on the keyboard.



11) Incidentally, this plot is for the length of an epoxy (828DEA) as the temperature is changes. Consequently, the slope is proportional to the thermal expansion coefficient the change in slope (where the two trend lines cross) is a measure of the glass transition temperature. We can find the value of this point by using the crosshair tool (red circle). Place it over the place you wish to know the x-y coordinates of and click and hold. In this example, you should find a $T_g = 67^\circ\text{C}$. We will do this in a more systematic manner in a later lesson.



12) The T at the top right (blue circle) is the text-box tool. Select this and click on the figure to create a text box. Place the following information on it: "828DEA, $T_g=67^\circ\text{C}$ ". Drag the text box to an appropriate location.

