## **Graphing Using Excel**

This exercise shows you how to handle Beer's Law and kinetics data using Excel.

## Beer's Law

Type in [K2CrO4] in the A1 cell (x-axis) and Absorbance in the B1 cell (y-axis). Enter the data for concentration and absorbance.

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Highlight the concentration and absorbance columns and click on **Insert** on the top menu and click on **Chart** on the drop down menu.

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Click on the xy scatter option and click Finish.

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Right click in the graph area and click on **Chart Options**. You can remove the **Legend**, add **gridlines**, **Graph Title**, **and labels** for the x and y axes. Then click **OK**.

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By clicking in the graph area and using the cursor you can enlarge the graph.



Click on **Chart** in the top menu and click on the **Add Trendline** option. This will put in the linear regression line or best fit straight line through the data points.



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Click on Automatic, Display equation on chart, and Display R=squared value on chart (how well the values correlate to a straight line) then click OK.



## Kinetics

Two experiments were done to obtain absorbance versus time data for the reaction:

$$2N_2O_5(g) \rightarrow 4NO_2(g) + O_2(g)$$

The data were entered into Excel as shown. Columns A and B are experiment one and columns C and D are experiment two.

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Click on **Insert** then **Chart** on the drop down menu, then **Scatter**, then **Next** and finally **Series** to get the following.

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Click on **Time, min** in the **series** box to highlight it and click **Remove**.

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With the **lower Ln(Absorbance)** highlighted the Y Values should read D2 to D7 and if the **top Ln(Absorbance)** is highlighted the Y Values should read B2 to B7. Now click **Next**. Type in the **Chart title**, **X and Y Axis values**, add **Gridlines**, and then click **Next**.

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Now click on **Chart** in the top menu bar and click on **Add Trend line**. Highlight the top Ln(Absorbance and click **Options** and select **Display equation** and **Display R=** then click **OK**.

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Select **Chart** and **Add Trend line** again. Highlight the bottom Ln(Absorbance and repeat the above process and click **OK**.

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3	10.0	-4.880	10.0	-4.689							
4	20.0	-5.382	20.0	-4.991							
5	30.0	-5.810	30.0	-5.298							
6	40.0	-6.377	40.0	-5.599							
7	50.0	-6.725	50.0	-5.878							
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You can left click in the chart area to increase the size of the chart and move the statistics to convenient places.

