

LAB: Ionization Energy & Electronegativity

Students: Please read the following information given below, and then come to class on your lab day with the following already prepared in your notebooks:

1) Date, 2) Partner, 3) Title, 4) Purpose, 5) Materials, 6) Safety, and 7) Procedures (no observation section is needed)

For this lab, an excel graph will be made using ionization and electronegativity data that has already been installed on the computers in the science computer room. This data will be used to graph atomic number vs. ionization energy and atomic number vs electronegativity.

No formal report necessary.

Questions on the last page need to be printed out. You will hand in these questions and the two graphs one week after the completion of the lab.

The following are instructions on how to find excel on the science room computer. Do not write them in your notebook.

1. Open Macintosh HD.
2. Open the Applications folder
3. Open the Microsoft Office 2004 folder and then open excel
4. Once excel is open make sure Excel Workbook is highlighted and then click open

Please use the following procedures.

Once Microsoft excel is open, label:

Column A: Name Column B: Symbol Column C: Atomic #
Column D: Ionization Energy Column E: Electronegativity.

Then enter in the information from Table 6.2.

After the table of information has been completed it is necessary to click on the "Chart Wizard icon" in the upper right hand corner of the program. This program will assist you in creating a graph of your data. If you do not see this icon, please complete the following task. Select View on the toolbar at top, then select Toolbars, then select Standard. This should open up the toolbar that contains the "Chart Wizard icon." Under Chart Type select XY Scatter Plot and then Next in the lower right hand corner. Under Data Range, select the icon to the right (Up Arrow). Once you are now back in excel, select all of the data, and hit enter. Select the Series Tab at the top. Under the name section type: Ionization Energy. Under the X Axis select the icon and then highlight only the atomic number column in excel, then hit enter. Under the Y Axis select the icon and then highlight only the Ionization Energy column in excel, then hit enter. Remove all of the series except for Ionization Energy. Select the Next Tab at the bottom. Label the X and Y axis in the space provided. Select the Data Label Tab at the top and then select the Show Label box radio dial. Select the Next Tab at the bottom. Select Place chart as NEW SHEET and then select FINISH.

. Add your name and class period to the graph. To do this, select View on the toolbar, then select Toolbars, then select drawing. Once the drawing toolbar opens, select the topmost letter A icon. Then click

and drag to add a textbox to the graph. Add your name and class period. Then print out the graph (one copy for each group member).

Repeat using the electronegativity data (you will have an additional graph for this data, giving you a total of two graphs for the lab).

Connect the points of the elements in the second period (atomic # 3-9). Do the same for the elements in the third period (atomic # 11-17). At each point, write only the chemical symbols next to the atomic numbers.

Students, you need to place the following chart into your data section and fill in the missing information before coming to class.

Name	Symbol	Atomic #	Ionization Energy (pm)	Electronegativity (pm)
Hydrogen			13.6	2.1
Helium			24.6	0
Lithium			5.4	1
Beryllium			9.3	1.5
Boron			8.3	2
Carbon			11.3	2.5
Nitrogen			14.3	3
Oxygen			13.6	3.5
Fluorine			17.4	4
Neon			21.6	0
Sodium			5.1	0.9
Magnesium			7.6	1.2
Aluminum			6	1.5
Silicon			8.2	1.8
Phosphorus			10.5	2.1
Sulfur			10.4	2.5
Chlorine			13	3
Argon			15.8	0

Table 6.2

Questions on the next page need to be printed out. You will hand in these questions and the two graphs one week after the completion of the lab.

Name _____

Date _____

Period _____

Lab Group # _____

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QUESTIONS: (Answer in complete sentences)

1. What changes do you observe between the two graphs (be very specific)?
2. Define ionization energy.
3. Define electronegativity.
4. Which elements moved the most as you changed the Y axis (be specific)? _____
5. What type of elements are these? _____
6. Why would these elements have the highest reading for ionization energy and the lowest reading for electronegativity? Be specific