

Background: Mineral resources form an important component of the Nigerian Economy. When prospecting, how can you determine the quality of a potential ore? Elemental analysis by X-Ray Fluorescence provides one means to quantify the concentration of various elements within selected samples (Obiajunwa, 2001). Once you've collected the data, how would you determine if the material is economically viable?

E.I. Obiajunwa, Analysis of some Nigerian solid mineral ores by energy-dispersive X-ray Fluorescence Spectroscopy, Nuclear Instruments and Methods in Physics Research B, 437-440, 2001.

Objectives: Quantitative information can be expressed in either a tabular or graphical format. This exercise will introduce you to the use of spreadsheet programs (e.g. Excel) to tabulate and graph data.

You will learn to do: Enter data into excel, perform simple calculations using cell formulas, create a plot that is appropriate for the type of data, and label the plot.

What you will do:

1. Working in pairs, enter the data from the table assigned to your group into an excel workbook.
2. Studying the table, determine which sample has the lowest/highest concentration, and which sample/element has the largest errors. Are there large differences between samples or elements?
3. Now plot up the data so that the differences between samples are clearly displayed. Explain your choice of plots. Which plot types are appropriate to display the data? Which are not? Make sure that your plots are fully labeled and the units are clearly marked. Keep track of any new excel tricks that you learned to do this.
4. Is it easier to answer questions about the data using graphs or tables? Which approach gives you a better feel for the data as a whole? Which approach is more exact?
5. At the end of the class period, we'll come together to discuss what we found out.
6. Write out your answers and be sure to include the names of all the students in your group.

Some helpful excel hints:

- Keep in mind that there are usually multiple ways to do things in excel. You can access commands from the menus system, or by selecting an object. The help menu system provides detailed information and examples to get you started.
- You can use the chart wizard to help you quickly generate a plot. This menu button looks like a 3-D histogram with red, yellow and blue bars.
- To modify a graph, select the component you want to change and either right click, or double click to get to the pop-up menu that lets you alter its properties.
- To add data to a plot, you can copy the appropriate column(s), select the plot, then click on the "paste special" menu item. (See if you can figure out another way).
- To write a simple cell formula, enter the equal sign (=) in the cell followed by the arguments in the formula. An argument can be a number, cell address, or function. Some examples:
 - =A1+B1 will add the contents of cells A1 and B1
 - =4*5 will yield a result of 20
 - =20/5 will yield a result of 4