Private Mineral Project

This semester you will be doing a private mineral project. This means you will become an expert on one mineral. Then you will write a paper on that mineral and publish it the key information on a web page. Your web page will be well designed, will have lots of photos and graphs, and will be something that others around the world will find when they use Google.

Some general guidelines for your paper (and web page):

-Sentences must have both verbs and nouns! Don't just put down words. (Tables are OK if appropriate.)
-Word processors have spell checkers! Use them. There should be zero spelling errors.
-AND, use a grammar checker.
-Use headings to separate various parts of your paper/web page - it will help with organization and make reading easier.
-Subscripts should be subscripts - word processors can handle it - so can html - don't be lazy.
-Your web page should be pretty, well-organized, and all links must function.

You can organize as you wish, but here is a list of the information that should be included:

1	Provenance-where is it found? What kinds of rocks? What are some well known localities, etc.? What is the origin of its name?	
2	Physical properties - Describe its physical properties and list all/any key features that aid in identification.	
3	Composition-Give its ideal formula. Convert that to weight% oxides. Then find some analyses of natural samples in the literature and put in a table to compare with ideal values. Discuss the common compositional variations found in nature.	
4	Find some (5 or more) recent (or as recent as possible) articles in the literature that are about your mineral. Web sites DO NOT COUNT. Get copies of the articles – you will hand them in to me. You may have to go through interlibrary loan. That can take a while. Summarize the articles- in several paragraph. It is best to read them and use your words, don't just read the abstract. I will, at some time, question you about the content of the articles, so if you don't understand the article, come and ask me and I will help you.	
5	Take photos of samples that demonstrate the properties described above.	
6	Optical properties-Give its optical properties. Describe what it looks like in thin section. Take photos if you can. For those of you with opaque minerals or obscure minerals - you may need to check with me on this	
7	X-ray pattern: X-ray a sample, if one is available. (Check with me or the TAs.) Compare your results with those in the CD data base. If no samples are available, then just include the information from the database. Put a copy of the X-ray pattern on your web page (see below).	
8	Crystallography: List point group and space group. Describe the unit cell and give the cell parameters. Use **SHAPE** and make several different drawings of the ideal crystal and put them on your web page (see below). Your drawings should be based on descriptions or drawings you find in the literature.	
9	Find more (10 or more total) recent (or as recent as possible) articles in the literature that are about your mineral. Get copies to hand in, and summarize the articles. I will, at some time, question you about the content of the articles, so if you don't understand the article, come and ask me and I will help you.	
10	Discuss the mineral's economic value, if any.	
11	Atomic structure-Describe the atomic structure in a page or so. Include drawings on web page (see below). Your own made with **ATOMS**, or copies from good books.	
12	What other minerals are closely related to your mineral? What is the relationship?	
13	Any cool stories or myths, etc. associated with your mineral.	

14	Anything else that is cool or important: you should be able to find lots of stuff.	
15	A complete list of references. Author, title, year, etc. For internet sources, give URL and title and organization/individual that created the page AND the date the page was posted, and the date you accessed it. If you do not have ANY of that info, do not use the website - it is not reliable - except perhaps as a source of picture. CHECK IN ANY GEOLOGICAL SOCIETY OF AMERICA PUBLICATION FOR THE CORRECT FORMAT FOR BOOK OR ARTICLE CITATIONS.	

Technical Hints

The program **Atoms** provides good **atomic drawings** for most of you. (It is on my machine and two computers in the lab.)

However:

1. If the data for shape does not contain all minerals. If you are out of luck: Find a drawing of atomic structure in one of my books are on the **WEB** and use it. Or check with me about other minerals in Shape that are similar to yours.

To use **ATOMS**

- click on the ATOMS icon on the desktop
- go to the directory \Minlib
- follow logic and find your mineral=>get a real cool drawing
- you can change colors, background color, line width
- on top bar select file>raster files, select TIF, don't worry about size right now
- hit OK twice, and save it
- go into Photoshop, and open the TIF file
- edit as you wish
- save as jpg at high resolution (don't use max resolution - it makes files too large)

Using **SHAPE** to make a crystal drawing:

- you will already know how to use shape when we get to this part of the project
- check with me for a good model drawing
- then draw your own that is somewhat like it with SHAPE and follow same procedure as for **ATOMS**

To get an **X-ray pattern** for your web page:

- if we don't have many specimens, or if they are of high quality, DO NOT crunch them up for X-ray or I will hurt you!
- otherwise you can grind some up and collect an X-ray pattern. Then:
- use **JADE** program and load scan.
- check to make sure mineral is what it is supposed to be.
- there are two ways to save a digital image - try both and see which you like.
    1. On top bar, select Edit>Copy to image file. Then save a jpg file.
    2. Right click on printer icon to get to a viewing screen. Right click on drawing, then Copy to image file.
- the two methods give different results
- if you want to change colors, on top bar select View>Bars and boxes.
- if it won't let you save a jpg file, on top bar select Edit>Preferences and chose jpg at the bottom.