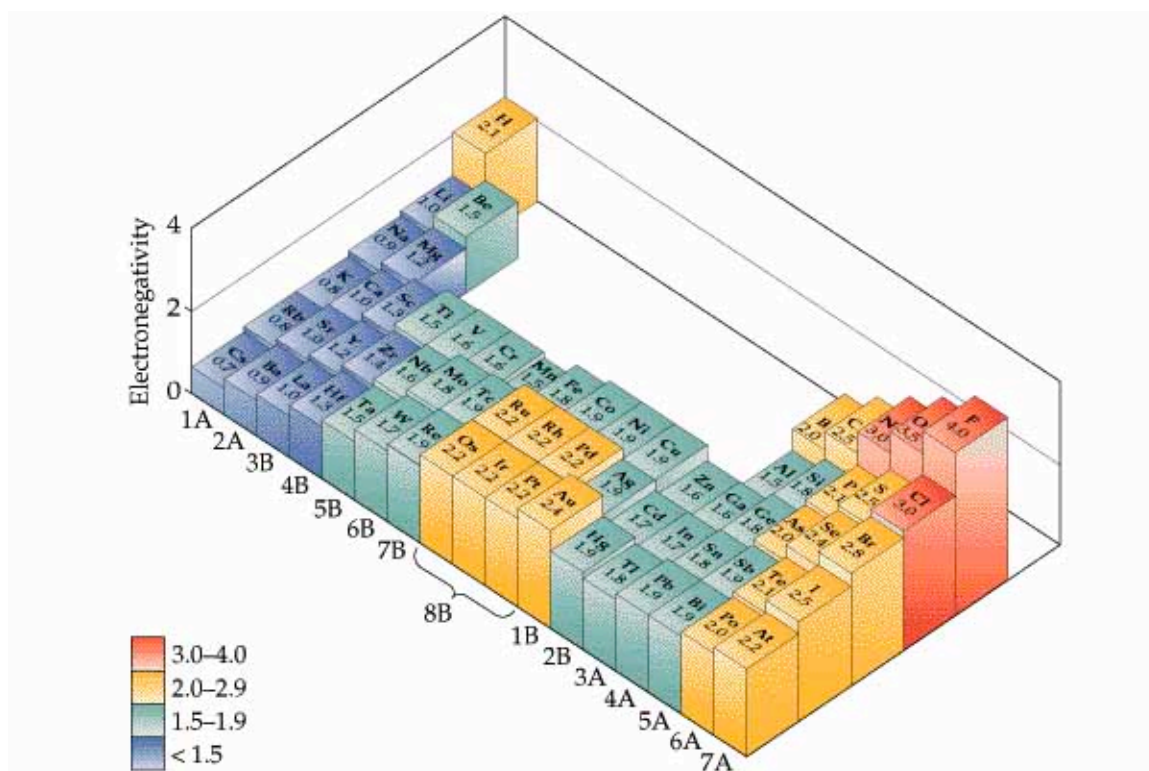


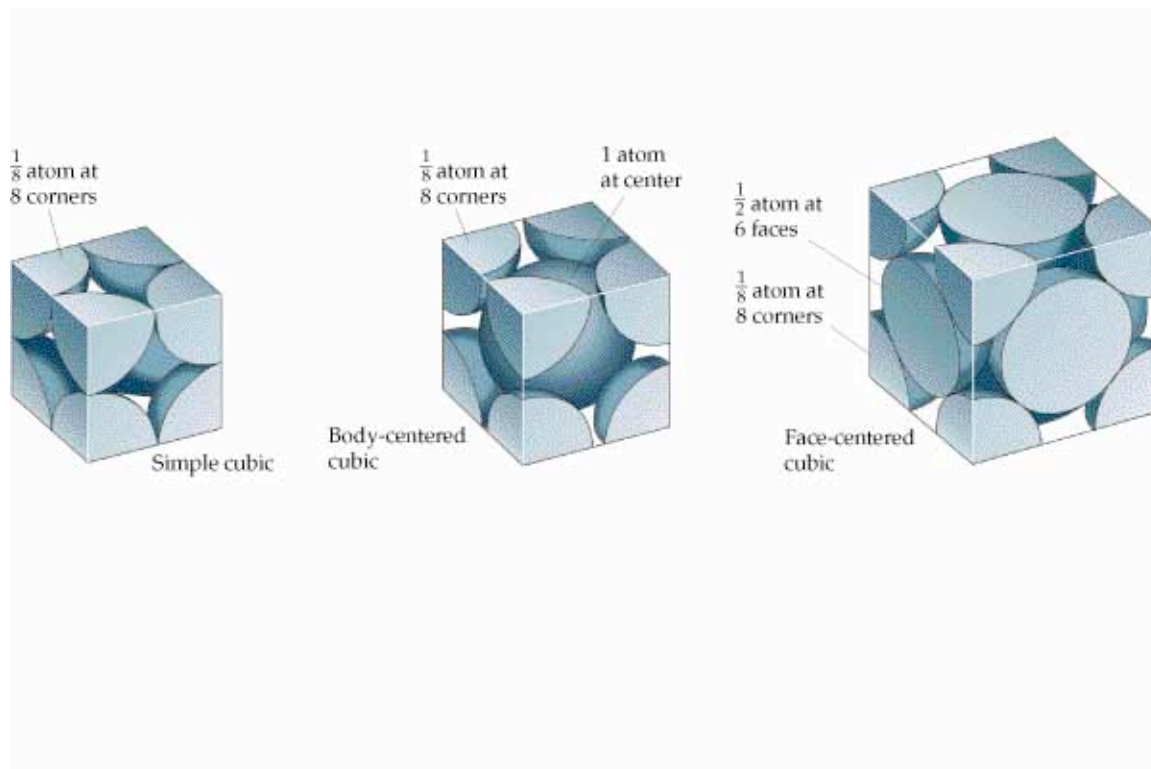
Practice General Chemistry Speaking Test
(by Kristen Chen, Spring 2005)



(Figure from p. 274 of the textbook)

1. Describe the general trends in electronegativity from left to right in any row, and from top to bottom in any column, and explain how these trends are related to those for ionization energy (30 seconds).
2. By looking at the table, say which element has the greatest electronegativity and which has the smallest. Explain the reason for this difference? (30 seconds).
3. Explain the relationship between electronegativity, bond polarity and bond dipole moment. (60 seconds).

Please look at these three pictures below, which show different space-filling views of cubic unit cells. The portion of each atom that belongs to the unit cell is shown. Consider these different structures, and then answer the questions below:



(Diagram from page 417 in the textbook)

1. Explain the differences between these three structures; your explanation should include the names of the different structures, the total number of atoms associated with each, and a description of the arrangement of the atoms in space. (60 seconds).
2. Explain why three different structures are possible for a cubic unit cell, and give one chemical example for each structure (30 seconds).
3. Describe the arrangement of the atoms in NaCl, ZnS, and CaF₂. (45 seconds).
4. A student claims that in every solid, the atoms, ions, or molecules must be ordered in well-defined periodic arrangement; there are no exceptions. Is his claim correct? If not, please explain why. (60 seconds).

For the following free response questions, be sure to say as much as you can in responding to each question.

(from Chapter 11 in the textbook)

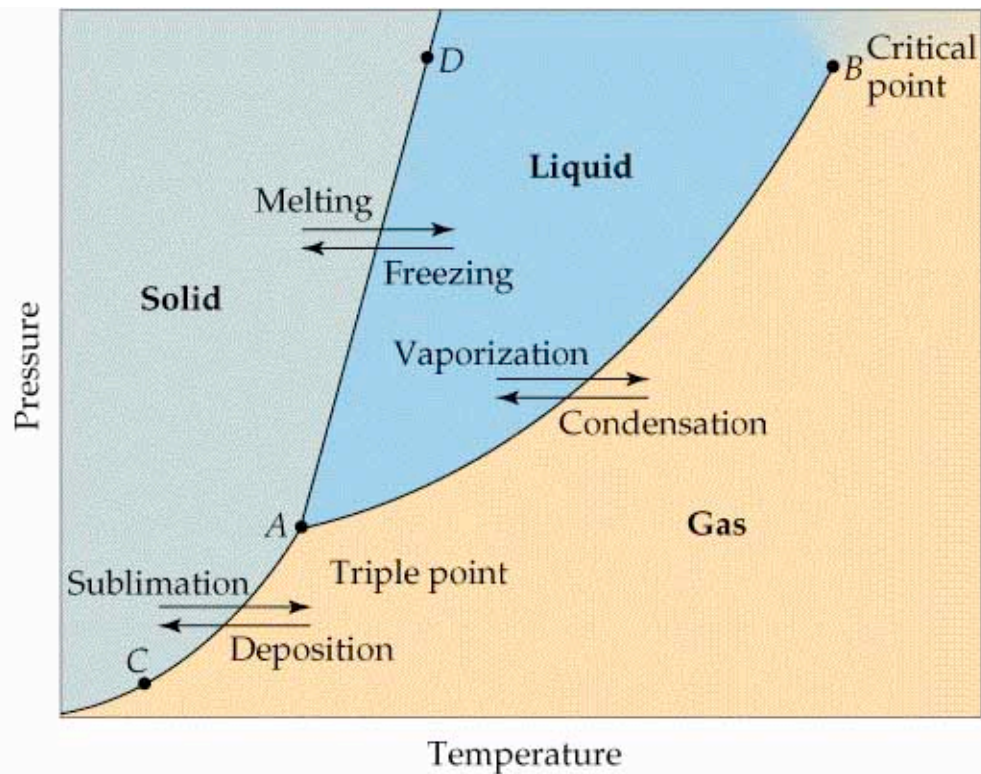
1. Many students know there are four different types of solids, but are often confused as to the differences between them. Please clarify this concept by describing the properties of the different solid forms, describe the factors that result in these differences, and give an example of each. (60 seconds)

2. In the discussion session of your lab, the students are having difficulty in understanding the differences between the different types of solids without seeing pictures of them. Describe how can you help your students to "see" the pictures of these structures in their minds. (60 seconds).

Please use the diagram given below to answer the following questions:

1. Describe the meaning of the lines in the diagram, and describe the processes associated with crossing each line (60 seconds).
2. Describe the significance of the critical point and the triple point on the diagram (45 seconds).

(The phase diagram can be found on p. 413 in the text book)



3. You are the TA for a lab section in Gen. Chem. 113. The following information has been provided to your students on the syllabus, but you need to reemphasize some important points. Please make this announcement to your class (60 seconds).

- **Attendance in the discussion period and laboratory are MANDATORY.** Labs that are missed without an excused absence cannot be made up.

- You must be present in discussion for the safety announcements pertaining to that week's lab. If you are not present, you will not be allowed to attend the lab.

- Bring your **lab manual, notebook and goggle** every time you come to the lab.

- Lab safety is very important, you must obey all the safety rules:
 1. **Goggles MUST be worn at ALL TIME in the lab.** Students found without goggles will be asked to leave the lab.
 2. **Appropriate clothing and closed-toed shoes** must be worn **at all times in the lab.** NO sandals, tank tops, or extremely short shorts and skirts.
 3. **Absolutely NO food, drink candy, gum or cosmetics** are allowed in the lab.

- Lab reports will be assigned for each lab and will be completed in groups. Lab reports must be submitted **by 4:30 pm, no later than two working days after the completion of the experiment** . Late lab reports will not be accepted—**NO EXCEPTIONS.**

- You are expected to use all of the available lab time. After you have completed your work, you can start to work on the report. **Never leave the lab without notifying your TA.**