**Types of IMF**

*Types of Solids*

Crystalline Solids

As solid whose atoms, ions, or molecules are arranged in an orderly geometric structure. They are represented on a framework called a crystal lattice. See the picture below for various cell types and shapes.

Molecular Solids/ Atomic Solids

Solid crystal structures held together by intermolecular forces.

Examples:

Covalent network solids

A solid that forms multiple covalent bonds.

Examples:

Ionic Solids

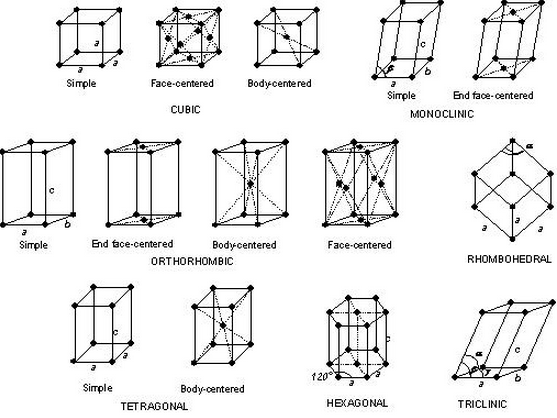
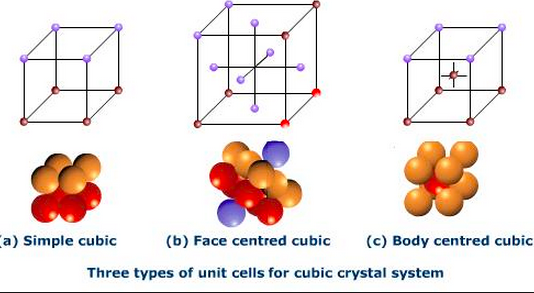
Ions of opposite charge held together by ionic bonds.

Examples:

Metallic Solids

Positive metal ions surrounded by a sea of mobile electrons. There are pure metals and mixtures of metals called alloys.

Examples:



Amorphous Solids

Solid where the particles are not arranged in a regular, repeating pattern.

Examples:

**Questions**

1. Describe the difference between a molecular solid and a covalent network solid.

2. Predict which solid will be amorphous – one formed by allowing molten material to cool slowy to room temoerature or one formed by quickly cooling the same material to room temperature. Why?

3. Ionic solids typically have melting points hundreds of degrees higher than the melting points of molecular solids. Explain why.

4. Match the following terms to the definition or description:

a. alloy b. specific heat c. crystalline solids d. dipole-dipole interactions

e. equilibrium vapor pressure f. intermolecular g. intramolecular h. ionic solids

i. London dispersion forces j. molar heat of fusion k. molar heat of vaportization

l. Molecular solids m. normal boiling point n. semiconductor

\_\_\_\_\_ boiling point at a pressure of 1 atm

\_\_\_\_\_ energy required to melt 1 mole of a substance

\_\_\_\_\_ forces between atoms in a molecule

\_\_\_\_\_ forces between atoms in a solid

\_\_\_\_\_ instantaneous dipole forces for nonpolar molecules

\_\_\_\_\_ lining up of opposite charges on adjacent polar molecules

\_\_\_\_\_ maximum pressure of vapor that builds up in a closed container