CHEM 116 LECTURE NOTES [si]
09-18-08

CONTINUATION OF LECTURE 5 AND LECTURE 6

Today's Agenda

Heating curves and phase diagrams
Particle level models of phase changes
Remainder of polar and nonpolar molecules learnt in chem. 115
Phase diagrams
Comparison of intermolecular forces of attraction.

Dew Point

Curve of vapor pressure that weathermen call the Saturation Vapor Pressure
The maximum partial pressure of water that can be held in the air at a particular temperature.
Relative Humidity: The actual partial pressure of water in the air any given day/ (Saturation Vapor Pressure)

Therefore, Relative Humidity =actual partial pressure /saturation vapor pressure

Drop in temperature leads an increase in the relative humidity due to the saturation vapor pressure denominator decreases. Dew forms when the temperature drops to the point that the saturation vapor of water is equal to the partial pressure of water in the air.
Types of Curves
Heating curve
Temperature or energy is added
Characteristic; up cross, up cross shape
Cooling curve includes the removal of energy
Phase diagrams
Pressure vs. temperature
3 phases are shown
comparison between carbon dioxide and water phase diagrams

Vapor pressure for various materials.

1. All solids, liquids have some vapor pressure
2. Phase diagrams show pressure vs. time in 3 phases
3. Heating curves show temp changes as heat energy is added at constant pressure.

How to categorize materials

1. Macroscopic
2. Particle level and
3. Symbolic level of representation.

Molecular materials include;
Polar molecules like H_20,NH_3, and acetic acid
Nonpolar materials like octane, fats (olive oil)

Most molecular substances are either liquids or gases. Small molecules are gases and the bigger molecules are liquids, the largest are solids. They have low melting points near or below room temperature.

They are organic; contain carbon, hydrogen and oxygen and sometimes nitrogen
They don't conduct electricity. They are soft to touch.

Ionic particles

High melting points, solids at room temperature, do not conduct electricity in the solid state but do conduct electricity in solution, brittle and crystalline, formed on planar surfaces. If a transition metal, they are usually colored, no transition metals are white. Ionic molecules are usually salts

Metals

They are solid, lustrous, ductile, (can be easily cut into wires), the are malleable(can be easily bent) and are prone to rust if exposed to air. They are insoluble but do conduct electricity easily.