CHEM 116
Lecture 11 Notes
10-9-0-8 (JR)

- Pressure: force per unit area

- In diagram, Osmosis is the higher concentration moving into the concentration of the lower concentration. Since there is a barrier, the concentration cannot move through it, so the smaller water molecules do (in the opposite direction to make the higher concentration in equilibrium with the lower one).

- Osmotic pressure: pv=nRT
    o n/v: molarity
    o p: osmotic pressure

- In ideal solutes:
    o Ionic compounds dissolve completely in water, and molecular compounds do not break up.
    o The van't Hoff factor for molecular compounds = 1 (only one molecular compound that stays as one)
    o The van't Hoff factor for an ionic solute equals number of ions that an ionic unit breaks into.

- In non-ideal solutes:
    o Some ionic compounds only partially dissociate in water, and molecular compounds can dissociate a little bit (example: organic acids where a small fraction of the H^+ ions break off).
    o The van't Hoff factor can be greater than one for molecular compounds.
    o The van't Hoff factor can be a number less than the number of ions the ionic compound is supposed to break into.

The van't Hoff factor depends on **concentration.**
- **Higher** concentrations of ions see each other and are attracted to each other and DO NOT act as independent ions.

Boiling point depends on **molality.**

Solids/Liquids:
- Pressure has no effect on solubility
- Increase of temperature leads to an increase in solubility

Gases:
- Increase of pressure will increase solubility
- Increase in temperature will decrease solubility

Solubility increases as molecular weight increases because the bigger a molecule is, the stronger its intermolecular forces are and the harder it is to break them apart.

- Colligative properties: are helpful in figuring out the unknown.
  LIKELY SIMILAR PROBLEM ON TEST:
- Molecular formula determination by boiling point elevation
  - Write out all information given
  - Make sure you know the difference between solute and solvent
    - Solvent: usually the one with more, the one you are comparing to the pure properties of
    - Solute: usually the one with less