Announcements

To join clicker to class today (Clickers with LCD display join automatically):

- Turn on the Clicker (the red LED comes on).
- Push "Join" button followed by "20" followed by the "Send" button (switches to flashing green LED if successful).

- Will start last section on Wednesday.
- Suggested reading and problems will be e-mailed to you.
- Last exam 1 week from Friday.

- Discussion quiz this week will cover everything since last exam through today's lecture.
- Next week you will have an analytical reasoning quiz in discussion.

Review

- Attractions explain properties of liquids (surface tension, meniscus, capillary action, viscosity).
- Properties of liquids determined by intermolecular interactions.
- Ion-ion interactions and Lattice energy: $U=k(q_1q_2/d)$
  - U is energy per mole of formula units (e.g. mole of NaCl or $CaCl_2$, etc)
  - k = a constant that accounts for geometry and the factor of N_A
- Solubility of ionic compounds depends on the balance between the energy released by solvation (hydration) of ions and the energy necessary separate the ions.

CO_2

H_2O

Chang Fig. 12.31

Chang Fig. 12.30

Raoult's Law of Vapor Pressure

- Raoult's Law: $P_{vap} = X_{solvent} P^{\circ}_{solvent}$
  - P_{vap} = vapor pressure of solvent above the solution
  - $X_{solvent}$ = mole fraction of solvent particles in the solution
    - note $n_{tot} = n_{solv} + in_{solute}$ (may include + & - ions)
    - $X_{solvent} = n_{solv}/(n_{solv} + in_{solute})$
  - $P^{\circ}_{solvent}$ = vapor pressure of pure solvent at the temperature of interest.
- Implication: increasing non-volatile solute concentration lowers the vapor pressure of the solvent.

Blocking of evaporation by solute

Chang Fig. 13.9