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).

- Spring break next week. We will continue from where we get to today on March 26.

- You should have got suggested reading and problems for the next section yesterday by e-mail.
- There will be a quiz in discussion the week after break.

Review

- Colligative properties depend on the concentration of solute particles.
  - Bp elevation $\Delta T_b = imK_b$ -– Fp depression $\Delta T_f = imK_f$
  - uses concentration units of molality (mol/kg solvent).
  - $T_b = T_b$(pure solvent) + ΔT_b — $T_f = T_f$(pure solvent) - ΔT_f
- Molar mass from colligative properties.
  - Solve $\Pi = iMRT$, $\Delta T_b = imK_b$, $\Delta T_f = imK_f$ for *M* or *m*.
  - Use to convert mass of solute in solution to mass per mole.
- Acid base RXNs.
  - $H^+(aq) + OH^-(aq) \rightarrow H_2O$
  - Acids = compounds that release H^+ in water.
  - Bases = compounds that release OH^- in water.
- Precipitation RXNs

Solubilities (M)

	F^-	Cl^-	NO^{3-}	SO_4^{2-}	CO_3^{2-}	S^{2-}	OH^-
Na^+	1	6	10	1	2	2	11
Mg^{2+}	2×10^{-3}	6	5	3	9×10^{-6}	RXN	3×10^{-5}
Al^{3+}	8×10^{-2}	3	8	1	-	RXN	3×10^{-4}
K^+	16	5	3	6×10^{-1}	11	high	19
Ca^{2+}	3×10^{-4}	3	5	4×10^{-3}	9×10^{-5}	3×10^{-3}	2×10^{-2}
Fe^{2+}	-	5	5	2	7×10^{-6}	1×10^{-9}	1×10^{-5}
Cu^{2+}	low	5	7	1	1×10^{-5}	1×10^{-18}	6×10^{-7}
Ag^+	14	1×10^{-5}	13	4×10^{-2}	2×10^{-4}	2×10^{-17}	1×10^{-9}
Pb^{2+}	3×10^{-3}	1×10^{-2}	2	1×10^{-4}	4×10^{-7}	1×10^{-14}	2×10^{-5}

Soluble, slightly soluble, insoluble

Solubility Vocabulary

- Unsaturated solution = a solution which can still dissolve more of the solute.
- Saturated solution = a solution in which no more solute can dissolve (solid stays on the bottom).
- Super saturated solution = a solution which temporarily has more solute in it than it can hold. A sudden shock can cause it to come out of solution.

Chapter 6 – Chemical Bonds

- Valence Electrons
- Review of Ionic Bonding
- Covalent Bonding
  - octet rule – electronegativity
  - electron affinity – bond polarity
- More complex examples:
  - Ozone and CFCs – resonance
  - formal charge – octet exceptions
  - bond order – bond length
- Continuum between ionic and covalent bonds (classification using bond-type triangle)

Valence Electrons (Chang Fig 9.1)

Electronegativities (Chang Figs. 9.4 & 9.5)