

# A Closer Look at Solubility

Peruse chapter 4, sections 2 and 6 in Chang.

Note Fig. 6.2, on page 226, while listening to Led Zeppelin I.

Note Table 4.2 on page 123. (Have you memorized this stuff yet?)

Answer Q's 17-20, 22, 24, 77, 78, and 79 on pages 157-160.

Peruse chapter 16.6-16.9, and 16.11 in Chang.

Note Table 16.2 (*really* useful).

Note Table 16.5 (puzzling at first glance, but useful; see Fig. 16.14 for another presentation of the same concept).

From pages 741-744, answer the following (redundancy alert ...):

40, 42, 43, 45, 46, 47, 48, 50, 51, 52, 53, 54, 55, 56, 57, 59, 60, 61, 64, 66, 68, 90, 94, 98, 99. For Qualitative Analysis: 79, 81, 82, and 110 - use Table 16.5 for these)

From page 693 in Chang, answer question 145. Very cool concept here. Ask in class.

From the APQ packet, answer questions **11**, **27**, and **57**. Then, answer the following:

## Q #1001

A saturated solution of magnesium hydroxide has a magnesium ion concentration of  $1.65 \times 10^{-4}$  M.

- What is the value of the solubility product constant,  $K_{sp}$ ?
- What is the molar solubility of magnesium hydroxide in 0.10 M magnesium nitrate solution?
- To 250 mL of a 0.150 M magnesium nitrate solution, 150 mL of a 0.500 M sodium hydroxide solution are added. What are the magnesium ion and hydroxide ion concentrations in the resulting solution?
- Describe how changing the pH would affect the solubility of magnesium hydroxide.

## Q #1002

At 25 °C, the solubility product constant for strontium sulfate is  $7.6 \times 10^{-7}$ . At the same temperature, the  $K_{sp}$  for strontium fluoride is  $7.9 \times 10^{-10}$ .

- What is the molar solubility of strontium sulfate?
- What is the molar solubility of strontium fluoride?
- An aqueous solution of strontium nitrate is added slowly to 1.00 liter of a well-stirred solution containing 0.020 mole fluoride ion and 0.10 mole sulfate ion at 25 °C. You may assume that the added strontium nitrate solution does not materially affect the total volume of the system.
  - Which salt precipitates first?
  - What is the concentration of strontium ion in the solution when the first precipitate begins to form?
- As more strontium nitrate is added to the mixture in (c), a second precipitate begins to form. At that stage, what percent of the anion of the first precipitate remains in solution?