

Weekly Lecture Schedule

CHEM 14A
FALL 2005

Instructor: Dr. Laurence Lavelle

WEEKS 8 & 9

Acids and Bases

Read: J

Do Problems: 1, 3, 5, 7

Read: Ch 10.1 to end of 10.14

Do Problems: 1, 3, 5, 7, 9, 13, 15, 17, 19, 21, 25, 27, 29, 31, 33, 35, 37, 41, 43, 45, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 101

After going through the readings & problems and attending the lectures & discussion groups, you should be able to:

- Describe chemical properties of acids, bases and amphoteric compounds.
- Recognize acids and bases from their formulas.
- Describe how acids react with water to form acidic solutions and how bases react with water to form basic solutions.
- Explain the difference between solutions of strong and weak acids and bases.
- Explain how the pH of a solution is related to its hydronium ion and hydroxide ion concentrations.
- Calculate the pH and pOH of a solution of a strong or weak, acid or base.
- Calculate the hydroxide ion concentration from a hydronium ion concentration, and vice versa.
- Identify species as Bronsted acids or bases or Lewis acids and bases.
- Explain why solutions of weak acids have higher pH values than solutions of strong acids at the same concentration.
- Write molecular and structural formulas for conjugate acids and bases.
- Show how the acidity constant of an acid is related to the basicity constant of its conjugate base.
- Use K_a values to predict the relative strengths of two acids or two bases.
- Calculate the percentage ionization (dissociation) of a weak acid or base.
- Polyprotic acids and bases.
- Explain why salts of weak bases produce acidic solutions and salts of weak acids produce basic solutions, and calculate the pH of salt solutions.
- Be able to explain why rain can be acidic and discuss possible options to reduce 'acid rain'.