

CHEMISTRY 263 - Section B6

Lecture Outline 5 & Assignment 5

TR 12:30-13:50
March 30, 2006
Dr. J. C. Vederas
Office: W5-09A

Read:

TWG Solomons and CB Fryhle "Organic Chemistry" 8th Edition (2004):

- Functional Group List on pp 70-71 and (Periodic Table) one page back from Inside Back Cover
- Relative Strength of Acids and Bases on Inside Front Cover - same table page 105
- Chapter 20 – Amines
- Special Topic E – Alkaloids
- Chapter 24– Amino Acids and Proteins – Read for general background

Problems:

Do Not turn in, answers available in "Study Guide and Solutions Manual for Organic Chemistry" by Solomons and Fryhle.

Chapter 20:

20.1 to 20.8; 20.11; 20.15; 20.16; 20.21; 20.46; 20.48

Special Topic E:

E1; E2; E3

Lecture Outline 5: Amines, Alkaloids & Introduction to Amino Acids

1. Structure and Nomenclature of Amines

- A. Nomenclature
 - 1. Common names - heterocyclic amines
 - 2. Systematic (IUPAC)
- B. Basicity of Amines and Physical Properties

2. Preparation of Amines

- A. Nucleophilic Substitution Reactions (SN2) on Alkyl Halides and Sulfonates
- B. Reduction of Nitro Compounds
- C. Reductive Amination of Imines Derived from Ketones and Other Amines
- D. Reduction of Alkyl Cyanides (Nitriles) or Amides
- E. Hofmann Degradation of Amides
- F. Gabriel Synthesis

3. Reactions of Amines

- A. Acid-Base Reactions
- B. Alkylation
- C. Acylation (Ammonolysis of Carboxylic Acid Derivatives to Form Amides)
- D. Reaction with Nitrous Acid
 - 1. Aliphatic Amines
 - 2. Aromatic Amines - Reactions of Diazonium Salts
 - a. Replacement reactions
 - b. Coupling reactions

4. **Some Alkaloids in Nature and Their Importance**

5. **General Structure and Properties of Amino Acids and Peptides**