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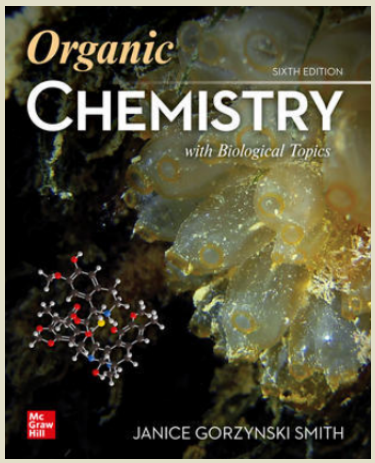
List of Changes



Organic Chemistry with Biological Topics
6th Edition
Janice Smith

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Janice Smith's *Organic Chemistry with Biological Topics* continues to breathe new life into the organic chemistry world. This new sixth edition retains its popular delivery of organic chemistry content in a student-friendly format. Janice Smith continues to draw on her extensive teaching background to deliver organic chemistry in a way in which students learn: with limited use of text paragraphs, and through concisely written bulleted lists and highly detailed, well-labeled teaching illustrations. Because of the close relationship between chemistry and many biological phenomena, *Organic Chemistry with Biological Topics* presents an approach to traditional organic chemistry that incorporates the discussion of biological applications that are understood using the fundamentals of organic chemistry.

SEE LIST OF CHANGES ATTACHED.

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Changes to Smith: Organic Chemistry with Biological Topics, 6e

New Features:

- **Spectroscopy**: The revisions to the spectroscopy coverage are designed to allow for more flexibility, making these chapters more portable to accommodate various lecture and lab arrangements. Three new spectroscopy chapters have been created for the sixth edition: Spectroscopy A Mass Spectrometry; Spectroscopy B Infrared Spectroscopy; and Spectroscopy C Nuclear Magnetic Resonance Spectroscopy.
- The **coverage and problem-sets for these new spectroscopy chapters** have also been expanded to include material previously covered in other sections of earlier editions. Extensive cross-referencing has been added so that whether spectroscopy is covered early or late in an organic chemistry course, students can readily find the material they need.
- The later chapters of the text are **re-organized** to emphasize the connection of biomolecules to prior sections. The chapter on Amino Acids and Proteins (Chapter 26) now directly follows the chapter on Amines (Chapter 25), followed by the remaining chapters on biomolecules, Carbohydrates (Chapter 27) and Lipids (Chapter 28).
- **Examples of biomolecules** are sprinkled throughout the chapters to illustrate common organic structural features and reactions.
- Each year, novel compounds are discovered, and new drugs are marketed, and these **compounds replace older examples** to illustrate particular concepts in new editions.
- The **Problems are followed by "More Practice,"** a list of end-of-chapter problems that are similar in concept. Students can find detailed solutions and verify their answers to all of the Problems from the book with the Student Study Guide/Solutions Manual for Organic Chemistry with Biological Topics.
- The **end-of-chapter summary sections have been expanded into parts**: Key Concepts, Key Skills, Key Reactions, and Key Mechanism Concepts, with structures and examples to illustrate each part, providing students with a broader and more detailed overview of each chapter's important concepts and skills.
- **Extensive cross-referencing** has also been added to connect this material with relevant Sample Problems, Problems, Figures, and Tables within the body of the chapter.

Chapter-by-Chapter Updates:

Chapter 3: Introduction to Organic Molecules and Functional Groups

- Contains an expanded section on biomolecules.

Chapter 6: Understanding Organic Reactions

- Examples of biomolecules are sprinkled throughout the chapters to illustrate common organic structural features and reactions, such as elimination reactions in Chapter 8.

Chapter 17: Chemical Equilibrium

- Additional discussion of aromatic heterocycles in DNA and new material on the binding of aromatase inhibitors used in treating breast cancer.

Chapter 19: Benzene and Aromatic Compounds

- Added a new section on the Henderson–Hasselbalch equation, including an explanation of the ionization of amino acids, and a new section on phosphoric acid esters.

Chapter 22: Amines

- A new Section 23.8D on protein denaturation has been added.
- Section 23.10 on enzymes illustrates how enzymes work with a specific example, how the serine proteases hydrolyze peptide bonds in proteins. The section concludes with a discussion of how enzymes are used to diagnose and treat diseases.
- Additional material on two common carboxylic acid derivatives—acyl phosphates and thioesters

Chapter 24: Chemical Equilibrium

- New section on biological carbonyl condensation reactions.

Chapter 26: Chemical Equilibrium

- This chapter is new to the sixth edition.
- This chapter provides an in-depth discussion of the structure and properties of the nucleic acids DNA and RNA.

Three key processes are also presented: replication—how DNA makes copies of itself; transcription—how the genetic information in DNA is passed onto RNA; and translation—how the coded genetic information in RNA is used to synthesize proteins. The chapter concludes with discussions of manipulating DNA in the laboratory and how viruses act.

Chapter 27: Chemical Equilibrium

- This chapter is new to the sixth edition.
- This chapter focuses on the biochemical reactions involved in metabolism. The discussion centers on three components: the breakdown of fats, the metabolism of the carbohydrate glucose to the three-carbon unit pyruvate by glycolysis, and the citric acid cycle, a key cyclic metabolic pathway used for amino acids, carbohydrates, and fats.

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