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Changes to This Edition: New Features You'll See in *Organic Chemistry*, 6e

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AUTHOR: Janice Smith
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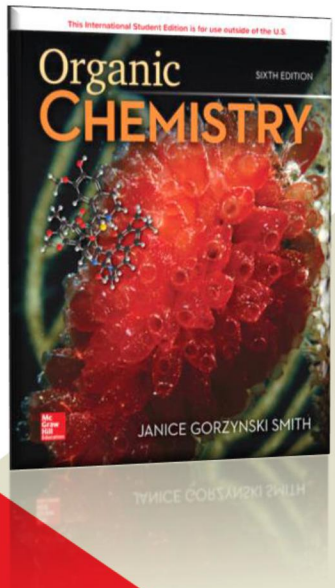

About the New Edition: From the Author

Students sometimes ask me if the facts of organic chemistry have significantly changed since the last edition. While the basic principles remain the same—carbon forms four bonds in stable compounds and oppositely charged species attract each other—organic chemistry is a dynamic subject that is continually refined as new facts are determined, and new editions reflect current understanding.

Each year, novel compounds are discovered and new drugs are marketed, and these compounds replace older examples to illustrate particular concepts. Also of significance is *how* the material in the text is presented.

I continue to endeavor to make this difficult subject as student-friendly as possible, by redesigning sample problems and end-of-chapter material, and rewriting sentences and paragraphs for improved clarity

Janice Smith

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New to This Edition: General Changes

Expanded Problem-Solving Approach:

- Sample Problems (which illustrate how to solve key elements of the chapter) are now always paired with a follow-up problem. This allows students to apply what they have just learned.
- The problems are followed by "More Practice," a list of end-of-chapter problems that are similar in concept.

Chapter Review:

- 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.
- 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.

Artwork and Chemical Structures:

- The colors in artwork throughout the text were revised for emphasis, clarity, and consistency.
- Color has also been used in many areas to help students better understand three-dimensional structure, stereochemistry, and reactions.

Problems:

- Over 300 new problems have been added, increasing the variety of problems for instructors and students alike.

New How to's, Sample Problems, and Illustrations:

- Much new content has also been added throughout the new edition to clarify topics and enhance the student learning experience.

Online Only Content:

- The chapter on Lipids appears online and is available in customizable versions of the text in McGraw-Hill Create.
- A supplement covering Imine Derivatives is also available in the Instructor Resources, via the Library tab in Connect.

New to This Edition: Notable Revision to the Text

Three new Spectroscopy chapters have been created for the sixth edition. 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.

Spectroscopy A Mass Spectrometry:

- There has been extensive revision of the molecular ion, molecular formulas, and fragmentation coverage. A new "How to" was added on proposing molecular formulas from molecular ions.
- **New Sample Problems** on using molecular ions and degrees of unsaturation to propose molecular formulas and on determining isomer identity using fragmentation were also added. Several mass spectra have been added to the text and in problems.

Spectroscopy B Infrared Spectroscopy:

- A new "How to" on analyzing an IR spectrum has been added. The chapter also includes a new Sample Problem B.1 on carbonyl absorptions. Section B.3 has been expanded to include the effect of resonance on a carbonyl absorption, and a new section on IR absorptions based on functional groups also appears in the chapter.

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A new Table B.1 summarizes IR absorption by functional group.

Spectroscopy C Nuclear Magnetic Resonance Spectroscopy:

- Section C.7 on complex splitting was extensively revised to add clarity and deeper understanding for students who often struggle with this topic.
- There are also two new sample problems: Sample Problem C.3 on determining proton equivalency in cyclic compounds and Sample Problem C.8 on looking for points of difference in the NMR spectra of similar compounds.
- More complex NMRs, previously found in later chapters, were imported to expand the breadth of the problems.

Coverage of nitriles

- Has been moved to the chapter on carboxylic acids, forming Chapter 19, Carboxylic Acids and Nitriles.
- This chapter has been moved to follow Aldehydes and Ketones, making this coverage closer to the chemistry of acyl derivatives of carboxylic acids.

These revisions also allow for the coverage of the nucleophilic addition reactions that occur with nitriles in closer proximity to the coverage of nucleophilic additions of aldehydes and ketones.

Several Sections include new material:
The title of section 4.7 changed from "Fossil Fuels" to "Natural Occurrence of Alkanes".

- **Added:** Material in this section on sources of methane, a greenhouse gas, in the atmosphere
- **Added:** Material to section 5.5 on drawing an enantiomer of a complex compound.
- **New:** Material added to section 7.4 on drugs that contain fluorine
- **Updated:** Section 13.9, the latest ozone map and new information on CFC alternatives now in use
- **New:** Drugs that contain nitriles are added to section 19.4. Two new sample problems are added, one on extraction and one on naming nitriles.
- **New:** Section 26.12 on human milk oligosaccharides.
- **New:** Material added to Section 29.7 on how isoprene units are connected.