Preface

When a new entry-level textbook in chemistry comes out, the obvious first question is “Why?” Why write another book when there are other texts available?

Actually, we had two main reasons. First, of all the textbooks that are available for a one-semester general chemistry, organic chemistry, and biochemistry (GOB) course, virtually all are single-author textbooks. Why this one stands out—and, we would argue, why this textbook might be preferable—is that the author team is composed of chemistry faculty who specialize in the G part, the O part, and the B part. One of us (DWB) is a physical chemist who spends a lot of time in the general chemistry sequence, whether for nonscience majors, health profession majors, or science and engineering majors. Another author (JWH) is an organic chemist by training and an experienced textbook author, while the third author (RJS) is a biochemistry professor and also a successful textbook author. All three authors are experienced, successful teachers. Thus, right from the start, this author team brings the appropriate experience and expertise that can combine to write a superior textbook for this market.

The second reason was the opportunity presented by the unique publishing strategy of Unnamed Publisher. The entire author team is excited about the potential for online presentation of content in this Internet age. In addition to having the content online, print copies of the textbook are readily available, as are individual chapters, vocabulary cards, exercise solutions, and other products. The easy availability of these items maximizes the ability of students to customize their personal tools, increasing their chances for success in a one-semester chemistry course.

This textbook is intended for the one-semester GOB course. Although a two-semester GOB sequence is available at many colleges and universities, one-semester GOB offerings are increasing in popularity. The need to cover so many topics in one semester or quarter places additional pressure on the tools used to teach the course, and the authors feel that a textbook developed explicitly for the one-semester course will provide students with a superior educational experience. Many one-semester GOB courses employ either a rewritten, watered-down two-semester textbook or a bona fide two-semester textbook with cherry-picked topics. In the opinion of this author team, neither choice provides students with the best learning experience. This textbook does not have a two-semester counterpart. It was developed specifically for the one-semester GOB course. As such, the chapters are short and succinct, covering the fundamental material and leaving out the

extraneous. We recognize that students taking this particular course are likely interested in health professions, such as nursing, occupational therapy, physical therapy, physician assistance, and the like. As such, we have focused certain examples and textbook features on these areas so students realize from the beginning how these basic chemistry topics apply to their career choice.

This textbook is divided into approximately one-half general chemistry topics, one-fourth organic chemistry topics, and one-fourth biochemistry topics. We feel that these fractions provide the appropriate mix of chemistry topics for most students' needs. The presentation is standard: there is no attempt to integrate organic and biological chemistry throughout a general chemistry textbook, although there is an early introduction to organic chemistry so that carbon-containing compounds can be included as soon as possible. The first chapter stands out a bit for covering a relatively large amount of material, but that is necessary. There is a certain skill set that students *must* have to be successful in any GOB course, and rather than relegate these skills to an appendix that is too often overlooked, the first chapter covers them explicitly. Some of these topics can be omitted at the instructor's discretion.

The G part of the textbook then continues into atoms and molecules, chemical reactions, simple stoichiometry, energy, the phases of matter, solutions, and acids and bases (including a short treatment of equilibrium) and then ends with nuclear chemistry. The O part of the textbook starts with hydrocarbons and quickly covers aromatic compounds and the basic functional groups, focusing on those functional groups that have specific applications in biochemistry. The B part starts by immediately applying the organic knowledge to carbohydrates and other biologically important compounds. This section ends with a chapter on metabolism, which is, after all, the ultimate goal for a textbook like this—a discussion of the chemistry of life.

Each chapter is filled with example problems that illustrate the concepts at hand. In the mathematical exercises, a consistent style of problem solving has been used. We understand that there may be more than one way to solve a mathematical problem, but having a consistent problem-solving style increases the chance for student comprehension. Particular emphasis is placed on the units of quantities and how they have to work out appropriately in algebraic treatments. For each example problem, there is a Skill-Building Exercise immediately following that will help students practice the very same concept but without an elaborate answer worked out.

Every section of each chapter starts with one or more Learning Objectives that preview the section. These Learning Objectives are echoed at the end of each

section with Key Takeaways as well as Concept Review Exercises that ask about the main ideas of the section. Sections then end with a set of exercises that students can use to immediately put the knowledge of that section into practice. Most of the exercises are paired, so that students can work two similar exercises for additional practice. Finally, Additional Exercises at the end of each chapter ask more challenging questions, bring multiple concepts together into a single exercise, or extend the chapter concepts to broader perspectives. The complete exercise portfolio of the textbook—Skill-Building Exercises, Concept Review Exercises, end-of-section exercises, and Additional Exercises—provides multiple opportunities for students to practice the content.

Other features in the textbook include Looking Closer, a chance to expand on a topic more than a typical textbook would. We have selected topics that are relevant and should appeal to students at this level. There are essays titled To Your Health that focus on how some of the topics relate directly to health issues—the focus of most of the students in this course. Do students realize that the simple act of breathing, something most of us do without thinking, is a gas law in action? Most chapters also have a Career Focus that presents an occupation related to the health professions. Students at this level may not know exactly what they want to do in the health professions, so having these essays gives some information about the career possibilities awaiting them.

These features are kept to a minimum, however; this is a one-semester textbook covering general chemistry, organic chemistry, and biochemistry. We recognize that users appreciate features like this, but we also recognize the need to focus on the core chemistry content. We hope we have reached an appropriate balance with the amount of additional features.

We hope that this textbook meets your and your students' goals.

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