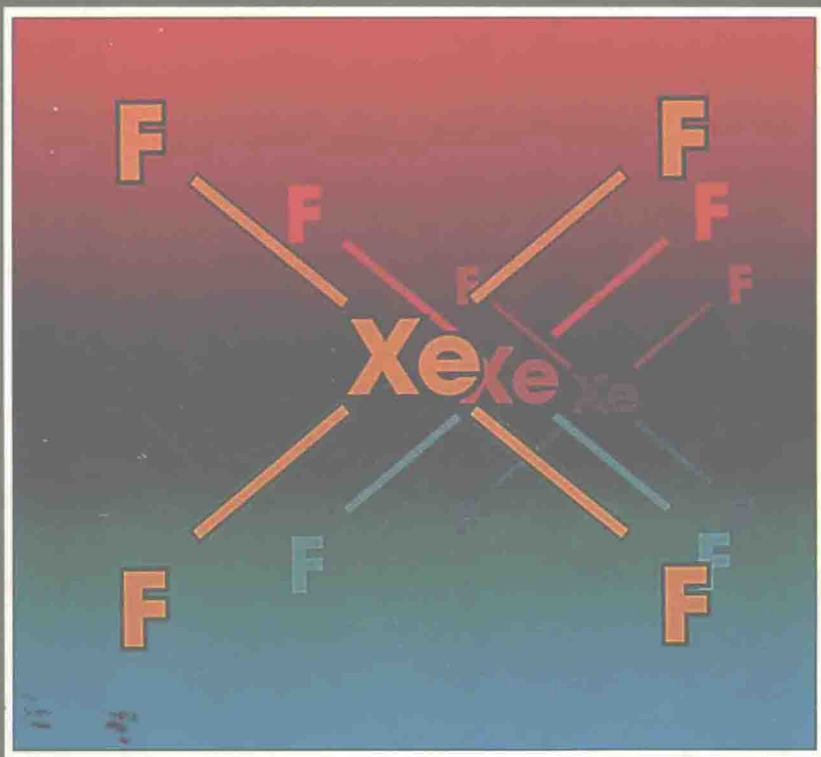


CHEMISTRY

An Introduction



Michael R. Slabaugh/Spencer L. Seager

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Chemistry

An Introduction

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To our wives: Jan and Vee Ann

Preface

The Image of Chemistry

What do beginning students think when they hear the words *chemistry* or *chemical*? We have asked our students to describe chemistry using only a single word. Some of the more frequent responses are: hard (difficult), dangerous, boring, required, smelly, hazardous, toxic, and dull. Only rarely do we get a positive response. Unfortunately, this same negative image is perpetuated by the mass media as they describe such newsworthy topics as toxic chemical spills, hazardous waste disposal problems, water supplies contaminated with poisonous chemicals, and the latest evidence that yet another chemical food additive has been found to be dangerous to our health. Far too few people in our society are aware of the many important benefits derived by all of us from the efforts of those who work directly in chemistry or in areas that utilize chemical knowledge.

We hope this textbook will help those who use it to gain a more balanced understanding of the true role of chemistry in our society. We also hope they find their study of chemistry to be less of a difficult and boring chore, and more of a satisfying (maybe even exciting) experience than they thought it would be.

Theme and Organization

We have used the positive and useful contributions of chemistry in today's world as a theme for this text. This is most obvious in the 15 chapter-opening "Chemistry Meeting a Challenge" features, numerous "Chemistry Around Us" and "Key Chemical" boxes, and the frequent use of examples and exercises taken from everyday situations.

This text is designed for use in a one-quarter or one-semester course of study that provides an introduction to general chemistry. The omission of Chapters 14 and 15 (nuclear and organic chemistry) makes the text appropriate for use in a preparatory course. Such courses are for students with no previous chemistry who plan to take further courses in college chemistry. We used experience from our combined 30 years of teaching to guide us in making the necessary decisions about what to include and what to leave out. This same experience was used as we decided what learning aids to include. We think of a textbook as a personal tutor that is available for student use at any time. In this role, it must be more than a collection of facts, data, and exercises. With this in mind, we have included the features described below.

Softcover, Black and White

Having a quality text is the number one priority of both instructors and students. We also realize that a very great concern of students is the spiralling cost of textbooks. For these reasons we have tried to prepare a text which represents the highest quality at the best price. To keep the price low, the text has been produced in black and white with a softcover. At the same time every effort has been made to insure that the text represents a solid introduction to chemical principles. Furthermore, it is packed with features to help students both learn and enjoy chemistry.

Features

Each chapter has features especially designed to help students organize, study effectively, understand, and enjoy the material in the course.

Chemistry Meeting a Challenge. Each chapter begins with a photo and caption describing the positive contributions of chemistry in solving a major problem of society. Many of these features highlight the recent breakthroughs of current research.

Study Objectives. A short list of objectives at the start of each chapter alerts students to the important concepts ahead.

Key Terms. These are identified within the text by the use of bold print, and are defined in the margin near the place where they are introduced. Students reviewing a chapter are able to quickly identify the important concepts on each page with this marginal glossary. A full glossary of key terms and concepts appears at the end of the text.

Chemistry Around Us. These boxed features present everyday applications of chemistry that emphasize in a real way the significant role of chemistry in our lives.

Key Chemicals. These boxed discussions focus on specific chemicals which have present or historical significance. Their prime role in important chemical developments and current applications is pointed out.

Examples. There are carefully worked out solutions in numerous examples to reinforce students in their problem-solving skill development.

Learning Checks. Short, self-check exercises follow examples and discussions of key or difficult concepts. A complete set of solutions is included in Appendix B. These allow students to immediately measure their understanding and progress.

Study Skills. Poor performance in chemistry is often the result of poor study habits. This boxed feature is designed to get students off to a good start and provide strategies for doing well on exams.

Concept Summary. Located at the end of each chapter, this feature provides a concise review to reinforce the major ideas.

Key Terms and Concepts. These are listed at the end of the chapter for easy review.

Key Equations. This boxed feature provides a useful summary of general equations and reactions from the chapter. This feature is particularly helpful to students as they review.

Exercises. There are 500 end-of-chapter exercises arranged by section. Half of the exercises are answered in the back of the text; these exercises are indicated by an asterisk.

Ancillaries

Just as many students would prefer to have their chemistry lecturer also be their instructor in help sessions and in laboratory classes, we feel that it is important for the supplementary materials to be prepared by the text authors. Accordingly, we have prepared the following ancillary package:

Laboratory Experiments. A well-tested collection of experiments that provides a blend of laboratory skills and experiences illustrating concepts from the text.

Student Study Guide. Each chapter contains a programmed review of important concepts, detailed solutions to exercises answered in the text, and self-test questions.

Instructor's Guide. Each chapter contains suggestions for chemical demonstrations and answers to all text questions. Additionally, exam questions are provided, and a list of transparency masters is included. A second section gives directions for preparing the reagents for the laboratory experiments, helpful comments concerning the experiments, and answers to experiment questions.

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M.R.S.
S.L.S.

Chemistry

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