

About the Book

This is an exciting time in chemistry. New discoveries are being made with awe-inspiring frequency, and those discoveries are changing our perceptions of ourselves and our universe, not to mention providing the basis for important new technologies.

Biotechnology began when chemists learned how to talk about biological processes in molecular terms. Now we are entering into a chemical revolution, because chemists are beginning to manipulate biological molecules. Chemistry plays a pivotal role in this revolution because no scientists are better qualified to tackle the problem of determining the structure and the shape of molecules than chemists. Our society is entering an era in which chemists have the opportunity to solve some of the most important problems in biology and biomedical science.

On the other hand, the disciplines of materials began to appear on the human scene 10,000 years ago, but only in the middle of this century has the term "materials science" come into explicit use. Materials science deals with substances and the processes that make them useful. Materials science is a multidisciplinary activity, in which chemistry has special prominence. Chemists are rapidly gaining the ability to design materials from the atom or molecule up. Starting with a list of desired properties, they can make educated guesses about what types of atoms or molecules, in what arrangement, would fit together to form the needed material.

Chemistry is not just the name of a scientific discipline. It reflects a particular perspective. All chemists think in terms of molecules: the structures of molecules and their inherent reactivity. Thus, chemistry brings biotechnology and materials science together. In this 11-chapter book, these exciting advances are discussed at a nontechnical level by outstanding researchers in these pivotal fields. This book will be of interest to anyone, scientist and nonscientist alike, who is interested in chemistry at its most exciting. As you read this book, you will get a sense of two major directions of chemistry today: biotechnology and materials science.

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