

PREFACE

This book is intended as a companion to *Thermodynamics and Kinetics for the Biological Sciences*, published in 2000. These two books are based on a course that has been given to first-year graduate students in the biological sciences at Duke University. These students typically do not have a strong background in mathematics and have not taken a course in physical chemistry. The intent of both volumes is to introduce the concepts of physical chemistry that are of particular interest to biologists with a minimum of mathematics. I believe that it is essential for all students in the biological sciences to feel comfortable with quantitative interpretations of the phenomena they are studying. Indeed, the necessity to be able to use quantitative concepts has become even more important with recent advances, for example, in the fields of proteomics and genomics. The two volumes can be used for a one-semester introduction to physical chemistry at both the first-year graduate level and at the sophomore-junior undergraduate level. As in the first volume, some problems are included, as they are necessary to achieve a full understanding of the subject matter.

I have taken some liberties with the definition of spectroscopy so that chapters on x-ray crystallography and mass spectrometry are included in this volume. This is because of the importance of these tools for understanding biological phenomena. The intent is to give students a fairly complete background in the physical chemical aspects of biology, although obviously the coverage cannot be as complete or as rigorous as a traditional two-semester course in physical chemistry. The approach is more conceptual than traditional physical chemistry, and many examples of applications to biology are presented.

I am indebted to my colleagues at Duke for their assistance in looking over parts of the text and supplying material. Special thanks are due to Professors

David Richardson, Lorena Beese, Leonard Spicer, Terrence Oas, and Michael Fitzgerald. I again thank my wife, Judy, who has encouraged, assisted, and tolerated this effort. I welcome comments and suggestions from readers.

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