Preface to the First Edition

Bioprocess engineering is the application of engineering principles to design, develop, and analyze processes using biocatalysts. These processes may result in the formation of desirable compounds or in the destruction of unwanted or hazardous substances. The tools of the engineer, particularly the chemical engineer, will be essential to the successful exploitation of bioprocesses.

This book's main purpose is to introduce the essential concepts of bioprocessing to traditional chemical engineers. No background in biology is assumed. The material in this book has been used as a basis for a course at Cornell University. Although it was designed primarily for seniors and entering graduate students from chemical engineering, students from agricultural engineering, environmental engineering, food science, soil science, microbiology, and biochemistry have successfully completed this course.

Parts 1 and 2 outline basic biological concepts. These eight chapters are not intended to be a replacement for good courses in microbiology, biochemistry, and genetics. They simply provide sufficient information to make the rest of the book accessible to the reader. A reader who desires a more in-depth understanding of the key biological concepts is referred to the suggested readings at the end of each chapter. Chapters 3 and 6 differ in that they are more detailed and introduce concepts not normally found in the standard biological textbooks.

In Part 3, "Engineering Principles for Bioprocesses," we focus on the generic components of bioprocessing that do not depend on the type of cell used in the process. In