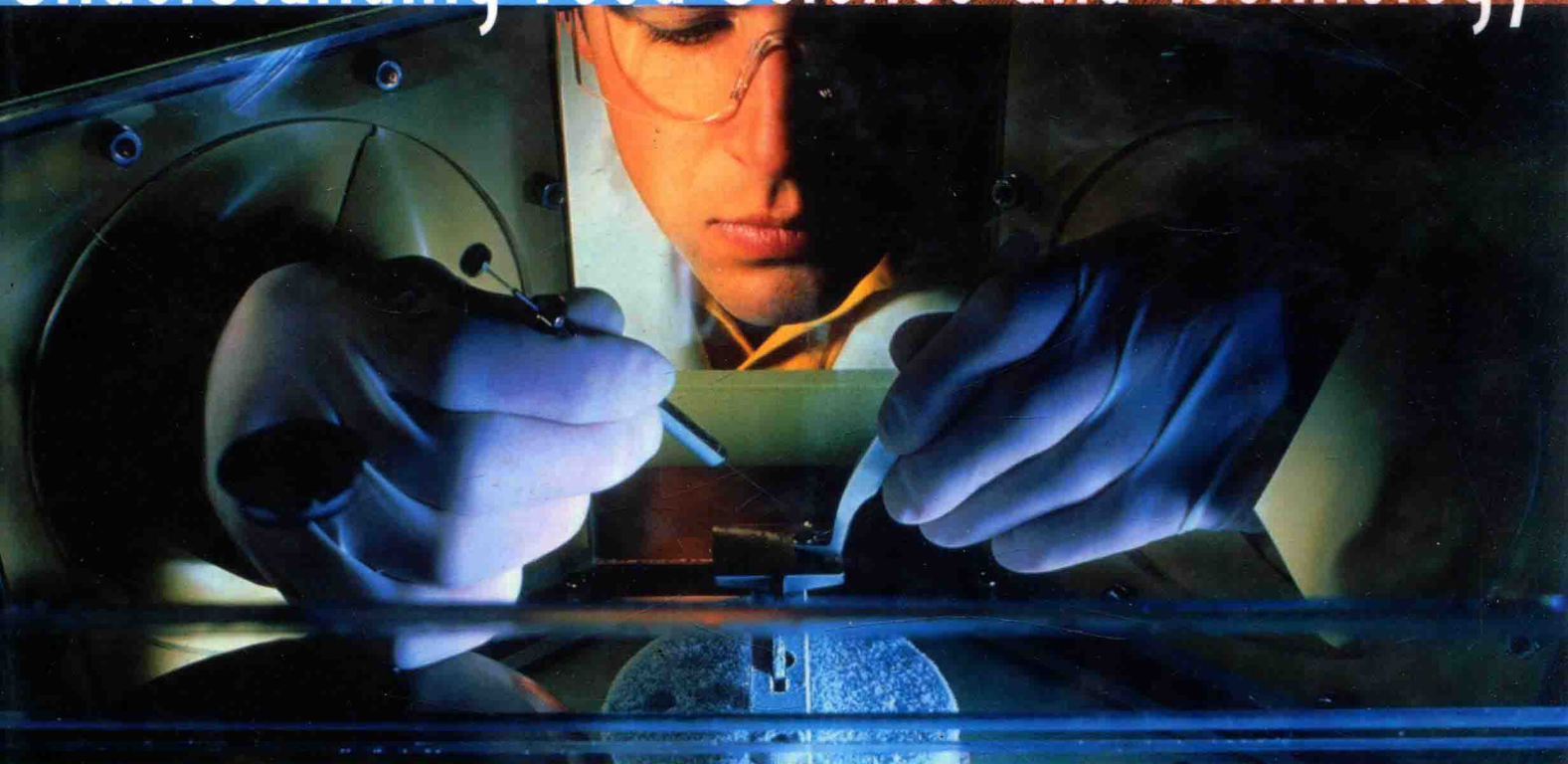




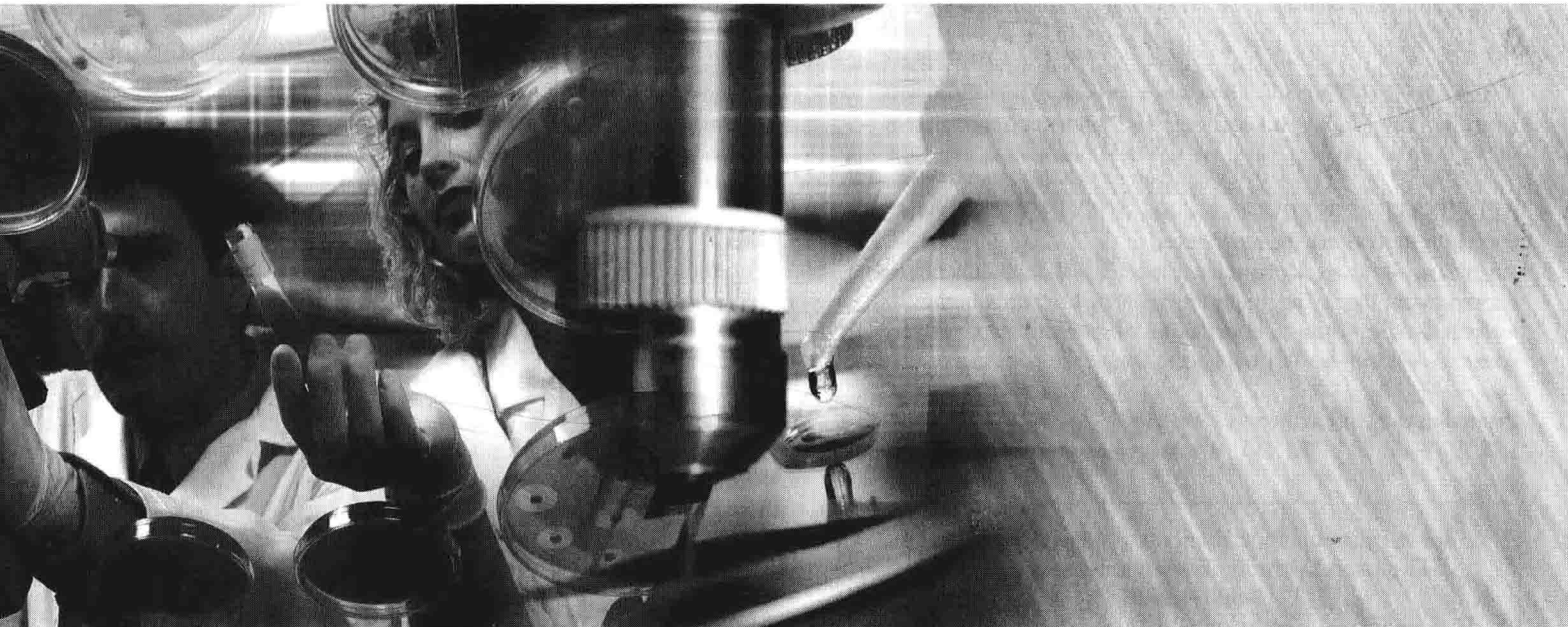
Understanding Food Science and Technology



Peter S. Murano



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Peter S. Murano

Texas A & M University

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Understanding Food Science and Technology

Food processing is one of the largest industries in the United States. The demand for food scientists is ever increasing because of the need to maintain a wholesome food supply and to improve the quantity, quality, safety, and variety of foods. To accomplish this task, the food scientist integrates knowledge of biology, chemistry, engineering, physics, and nutrition and applies them to the study of foods.

This comprehensive introductory food science and technology text introduces students to important food science concepts. This text meets the needs of undergraduate students in departments of food science, food technology, and nutrition at two- and four-year colleges and universities. *Understanding Food Science and Technology* is intended for use as an introductory course for food science and technology majors, or for a “science of foods” course for nutrition majors.

A unique fifteen-chapter organization makes this text stand out from other food science and technology texts. Traditional texts are compilations of information written in an encyclopedic style with little care to pedagogy. This fully illustrated textbook has been written specifically to facilitate student learning through the use of special features. Its design enables students to master the material in a traditional semester course. More than 250 easy-to-understand charts, photos, and illustrations enhance the text and provide visual reinforcement of chapter concepts.

This book provides thorough and up-to-date information (for example, bioterrorism and the food supply is mentioned in the food safety chapter), covering a broad range of topics in food science and technology and creates an awareness of the wide range of employment opportunities that exist for trained professionals. The text begins with an overview of food science, describes the interdisciplinary nature of the field, and presents avenues of advanced study and career opportunities in the field.

It then explores key food groups and composition and the functional properties of the major food components. Three chapters on food chemistry cover the chemical and physical properties of foods and include many figures, tables, and illustrations to enhance learning. The next chapters include an overview of food law that provides historical perspective as well as the latest information on food additives, nutrition labeling, and food regulation. Thorough coverage of processing methods is included for all major food commodities as well as a background in microbiology and fermentation, food handling and safety, food contamination, HACCP principles, and toxicology. The final chapters cover food engineering concepts and applications, biotechnology, and the field of sensory evaluation and food product development, including marketing principles.

Pedagogy Overview

- Each chapter opens with an **Outline** of main topics and series of **Chapter Objectives**, helping students preview chapter material and begin thinking critically about the core topics.
- Chapters are summarized with a **Key Points** summary to help students identify major areas for review.
- Each chapter includes introductory and advanced level **study questions**. An answer key is located on the book's Web site, www.nutrition.wadsworth.com.
- Key food science **Web sites** are identified at the end of each chapter and link students to the various online resources.
- A **Challenge!** feature following each chapter provides in-depth coverage of topics related to content of every chapter. For example, a feature on functional, GMO, and organic foods accompanies Chapter 7, “Food Additives, Food Laws, and Dietary Supplements.”

Challenge Topics

Reading the research

Phytochemicals as food products

Can a high-protein, high-fat diet work?

Food systems

Milk protein chemistry

Chemistry of sweeteners and sweetness

Regulation of functional foods, bioengineered foods, and organic foods

Food irradiation

Enzymes in food processing—what are protein hydrolysates?

Microbial sampling to verify food quality

Risk assessment for biological hazards

Food allergies and food intolerance

Food packaging

Bioengineering of β -lactoglobulin

Experimental design in product development

- **Challenge questions** follow each Challenge section to help students think critically about the topics covered.
- **Three food chemistry chapters** (Chapters 4, 5, 6) start with a preview of functional properties and conclude with discussions of food textures, flavors, and colors.
- Chapter 15, “Sensory Evaluation and Product Development,” **synthesizes knowledge** gained from the study of food additives, food chemistry, food safety, and food processing spanning functional foods, marketing, and sensory evaluation.

The world of food science is changing rapidly as new science and new research develops. *Understanding Food Science and Technology* is designed to meet the needs of students and instructors in an evolving and expanding discipline.

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I dedicate this book to my wife Elsa, and I am especially thankful for the expertise of Pat Brewer and Mary Douglas, and the support of Janet Johnson, Duane Suter, Ralph Waniska, Merle Pierson, and of course the Good Lord.

Peter S. Murano

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