

# Contents

## PART A

### Components

#### **Chapter 1**

Carbohydrate Chemistry. . . . . 1-1

*Kerry C. Huber, Armando McDonald, and James N. BeMiller*

#### **Chapter 2**

Carbohydrates: Physical Properties. . . . . 2-1

*Qi Wang and P.J. Wood*

#### **Chapter 3**

Carbohydrates: Starch . . . . . 3-1

*Lorraine L. Niba*

#### **Chapter 4**

Functional Properties of Carbohydrates:  
Polysaccharide Gums . . . . . 4-1

*Steve W. Cui and Qi Wang*

#### **Chapter 5**

Food Protein Analysis: Determination of Proteins in the Food and Agriculture System. . . . . 5-1

*Richard Owusu-Apenten*

#### **Chapter 6**

Protein: Denaturation . . . . . 6-1

*Srinivasan Damodaran*

#### **Chapter 7**

Food Protein Functionality. . . . . 7-1

*Jeff D. Culbertson*

#### **Chapter 8**

Lipid Chemistry and Biochemistry. . . . . 8-1

*Mark P. Richards*

#### **Chapter 9**

Fats: Physical Properties. . . . . 9-1

*Francisco J. Hidalgo and Rosario Zamora*

#### **Chapter 10**

The Water-Soluble Vitamins. . . . . 10-1

*Francene Steinberg and Robert B. Rucker*

<b>Chapter 22</b>	
Canned Vegetables: Product Descriptions .....	22-1
<i>Peggy Stanfield</i>	
<b>Chapter 23</b>	
Frozen Vegetables: Product Descriptions .....	23-1
<i>Peggy Stanfield</i>	
<b>Chapter 24</b>	
Fruits: Horticultural and Functional Properties .....	24-1
<i>Jiwan S. Sidhu and Sameer F. Al-Zenki</i>	
<b>Chapter 25</b>	
Frozen Fruits: Product Descriptions .....	25-1
<i>Peggy Stanfield</i>	
<b>Chapter 26</b>	
Milk Proteins .....	26-1
<i>Harjinder Singh and John Flanagan</i>	
<b>Chapter 27</b>	
Enzymes of Significance to Milk and Dairy Products. ....	27-1
<i>A.L. Kelly and P.L.H. McSweeney</i>	
<b>Chapter 28</b>	
Meat: Chemistry and Biochemistry .....	28-1
<i>Fidel Toldrá</i>	
<b>Chapter 29</b>	
Chemical Composition of Red Meat. ....	29-1
<i>Baowu Wang</i>	
<b>Chapter 30</b>	
Meat Species Identification .....	30-1
<i>Y.-H. Peggy Hsieh</i>	
<b>Chapter 31</b>	
Poultry: Chemistry and Biochemistry. ....	31-1
<i>Christine Z. Alvarado and Casey M. Owens</i>	
<b>Chapter 32</b>	
Chemical Composition of Poultry Meat .....	32-1
<i>Tomasz Lesidw</i>	
<b>Chapter 33</b>	
Poultry Processing Quality. ....	33-1
<i>Christine Z. Alvarado</i>	

<b>Chapter 34</b>	
Fats and Oils: Science and Applications. . . . .	34-1
<i>Jan Pokorný</i>	
<b>Chapter 35</b>	
Fish Biology and Food Science . . . . .	35-1
<i>R. Malcolm Love</i>	
<b>Chapter 36</b>	
Edible Shellfish: Biology and Science. . . . .	36-1
<i>Natalie A. Moltschaniwskyj</i>	
<b>Chapter 37</b>	
Aquaculture of Finfish and Shellfish: Principles and Applications . . . . .	37-1
<i>C.G. Carter</i>	
<b>Chapter 38</b>	
Frozen Seafood Products: Description . . . . .	38-1
<i>Peggy Stanfield</i>	
<b>Chapter 39</b>	
Freezing Seafood and Seafood Products: Principles and Applications. . . . .	39-1
<i>Shann-Tzong Jiang and Tung-Ching Lee</i>	
<b>Chapter 40</b>	
The Application of Gene Technology in the Wine Industry. . . . .	40-1
<i>Miguel A. de Barros Lopes, Eveline J. Bartowsky, and Isak S. Pretorius</i>	
<b>PART C</b>	
Food Analysis	
<b>Chapter 41</b>	
Food Analysis: Basics . . . . .	41-1
<i>S. Suzanne Nielsen</i>	
<b>Chapter 42</b>	
Analysis of the Chemical Composition of Foods . . . . .	42-1
<i>Eunice C. Y. Li-Chan</i>	
<b>Chapter 43</b>	
Spectroscopy Basics. . . . .	43-1
<i>Christine H. Scaman</i>	
<b>Chapter 44</b>	
Infrared and Raman Spectroscopy in Food Science. . . . .	44-1
<i>Ashraf A. Ismail, Robert Cocciardi, Pedro Alvarez, and Jacqueline Sedman</i>	

<b>Chapter 45</b>	
Application of Gas Chromatography to the Identification of Foodborne Pathogens and Chemical Contaminants in Foods . . . . .	45-1
<i>Magdi M. Mossoba, Frederick S. Fry, Sufian F. Al-Khaldi, Gregory O. Noonan, and Douglas G. Hayward</i>	
<b>Chapter 46</b>	
Modern Thin-Layer Chromatography in Food Analysis . . . . .	46-1
<i>Bernd Spangenberg</i>	
<b>Chapter 47</b>	
High Performance Liquid Chromatography . . . . .	47-1
<i>Anroine-Michel Siouffi</i>	
<b>Chapter 48</b>	
The Use of Mass Spectrometry in Food Analysis . . . . .	48-1
<i>Sherri B. Turnipseed</i>	
<b>Chapter 49</b>	
Food Analysis: Other Methods . . . . .	49-1
<i>Manoj K. Rout and Ching-Yung Ma</i>	
PART D	
Food Microbiology	
<b>Chapter 50</b>	
Microbiology of Food Systems. . . . .	50-1
<i>Joseph D. Eifert, Fletcher M. Arritt III, and David Kang</i>	
<b>Chapter 51</b>	
Microbial Food Spoilage . . . . .	51-1
<i>Lone Gram</i>	
<b>Chapter 52</b>	
Microbiology of Land Muscle Foods . . . . .	52-1
<i>Konstantinos P. Koutsoumanis, Ifigenia Geornaras, and John N. Sofos</i>	
<b>Chapter 53</b>	
Microbiology of Marine Muscle Foods. . . . .	53-1
<i>Paw Dalgaard</i>	
<b>Chapter 54</b>	
Microbial Analysis of Foods. . . . .	54-1
<i>Mieke Uyttendaele and Johan Debevere</i>	
<b>Chapter 55</b>	
Rapid Methods in Food Diagnostics. . . . .	55-1
<i>Mieke Uyttendaele and Johan Debevere</i>	