

Contemporary Food  
Engineering Series  
Da-Wen Sun, Series Editor



# Emerging Technologies for Food Quality and Food Safety Evaluation

Edited by  
**Yong-Jin Cho**



**CRC Press**

Taylor & Francis Group

Boca Raton London New York

---

CRC Press is an imprint of the  
Taylor & Francis Group, an **informa** business

---

# Contents

List of Figures .....	vii
List of Tables .....	xxi
Series Preface .....	xxiii
Series Editor .....	xxv
Preface .....	xxvii
The Editors .....	xxix
The Contributors .....	xxxix
<b>Chapter 1</b> Introduction .....	1
<i>Yong-Jin Cho</i>	
<b>Chapter 2</b> Instrumental Techniques for Measurement of Textural and Rheological Properties of Foods .....	5
<i>Oswaldo H. Campanella</i>	
<b>Chapter 3</b> Sensory Evaluation Using Artificial Intelligence .....	55
<i>Seung Ju Lee</i>	
<b>Chapter 4</b> Application of Computer Vision Systems for Objective Assessment of Food Qualities .....	79
<i>Patrick Jackman and Da-Wen Sun</i>	
<b>Chapter 5</b> NIR Spectroscopy for Chemical Composition and Internal Quality in Foods .....	113
<i>Sukwon Kang</i>	
<b>Chapter 6</b> Quality Measurements Using Nuclear Magnetic Resonance and Magnetic Resonance Imaging .....	149
<i>Michael J. McCarthy, Sandra P. Garcia, Seongmin Kim, and Rebecca R. Milczarek</i>	
<b>Chapter 7</b> Ultrasound Systems for Food Quality Evaluation .....	177
<i>Ki-Bok Kim and Byoung-Kwan Cho</i>	

<b>Chapter 8</b>	Hyperspectral and Multispectral Imaging Technique for Food Quality and Safety Inspection.....	207
	<i>Moon S. Kim, Kuanglin Chao, Diane E. Chan, Chun-Chieh Yang, Alan M. Lefcourt, and Stephen R. Delwiche</i>	
<b>Chapter 9</b>	Electronic Nose for Detection of Food Flavor and Volatile Components .....	235
	<i>Bongsoo Noh</i>	
<b>Chapter 10</b>	Biosensors for Evaluating Food Quality and Safety .....	257
	<i>Namsoo Kim and Yong-Jin Cho</i>	
<b>Chapter 11</b>	Nanotechnology in Food Quality and Safety Evaluation Systems.....	307
	<i>Sanghoon Ko, Jae-Ho Kim, Bosoon Park, and Yong-Jin Cho</i>	