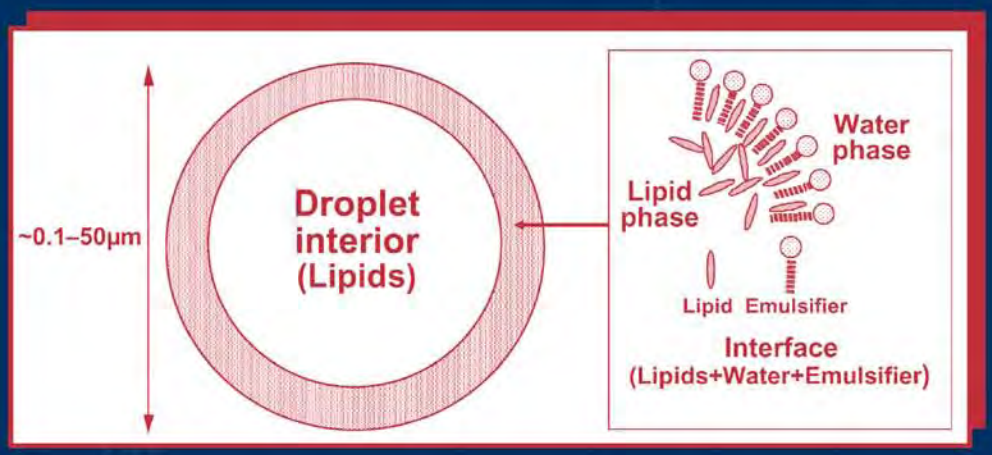
THIRD EDITION

FOOD LIPIDS

Chemistry, Nutrition, and Biotechnology



Edited by
Casimir C. Akoh • David B. Min

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Preface to the Third Edition

The first edition of *Food Lipids* was published in 1998 and the second edition in 2002 by Marcel Dekker, Inc. Taylor & Francis Group, LLC, acquired Marcel Dekker and the rights to publish the third edition. We firmly believe that this book has been of interest and will help those involved in lipid research and instruction. Many have bought the previous editions and we thank you for your support. The need to update the information in the second edition cannot be overstated, as more data and new technologies are constantly becoming available. We have received good comments and suggestions on how to improve the second edition. The response reassured us that there was indeed a great need for a textbook suitable for teaching food lipids, nutritional aspects of lipids, and lipid chemistry courses to food science and nutrition majors. The aim of the first and second editions remains unchanged: to provide a modern, easy-to-read textbook for students and instructors. The book is also suitable for upper-level undergraduate, graduate, and postgraduate instruction. Scientists who have left the university and are engaged in research and development in the industry, government, or academics will find this book a useful reference. In this edition, we have expanded on lipid oxidation and antioxidants, as these continue to be topics of great interest to the modern consumer. The title of Part III has also been changed to reflect the recent interest on the importance of antioxidants and health. Again, we have made every effort to select contributors who are internationally recognized experts. We thank them for their exceptional attention to details and timely submissions of their chapters.

Overall, the text has been updated with new and available information. We removed some chapters and added new ones. Chapter 2 includes a brief discussion of sphingolipids, and Chapter 31 includes one on diacylglycerols. The new additions are Chapters 13, 16, 17, and 25. Although it is not possible to cover all aspects of lipids, we feel we have added and covered most topics that are of interest to our readers. The book still is divided into five main parts: Chemistry and Properties; Processing; Oxidation and Antioxidants; Nutrition; and Biotechnology and Biochemistry.

We are grateful to the readers and users of the previous editions and can only hope that we have improved and updated the latest edition to your satisfaction. We welcome comments on the third edition to help us continue to provide our readers with factual information on the science of lipids. Based on the comments of readers and reviewers of the past editions, we have improved the third edition—we hope, without creating new errors, which are sometimes unavoidable for a book this size and complexity. We apologize for any errors in advance and urge you to contact us if you find mistakes or have suggestions to improve the readability and comprehension of this text.

Special thanks to our readers and students, and to the editorial staff of Taylor & Francis Group, LLC, for their helpful suggestions toward improving the quality of this edition.

Casimir C. Akoh
David B. Min

Editors

Casimir C. Akoh is a distinguished research professor of food science and technology and an adjunct professor of foods and nutrition at the University of Georgia, Athens. He is the coeditor of the book *Carbohydrates as Fat Substitutes* (Marcel Dekker, Inc.), coeditor of *Healthful Lipids* (AOCS Press), editor of *Handbook of Functional Lipids* (CRC Press), the author or coauthor of over 162 referenced SCI publications, more than 30 book chapters, and the holder of three U.S. patents. He is a fellow of the Institute of Food Technologists (2005), American Oil Chemists' Society (2006), and the American Chemical Society (2006). He serves on the editorial boards of five journals and is a member of the Institute of Food Technologists, the American Oil Chemists' Society, and the American Chemical Society. He has received numerous international professional awards for his work on lipids including the 1998 IFT Samuel Cate Prescott Award, the 2003 D.W. Brooks Award, and the 2004 AOCS Stephen S. Chang Award. He received his PhD (1988) in food science from Washington State University, Pullman. He holds MS and BS degrees in biochemistry from Washington State University and the University of Nigeria, Nsukka, respectively.

David B. Min's major research objective is to improve the oxidative and flavor stability of foods by understanding and controlling the chemical mechanisms for the flavor compound formation by a combination of GC, HPLC, IR, NMR, ESR, and MS. Dr. Min's group painstakingly, conclusively, and scientifically developed the novel chemical mechanisms for the formation of sunlight flavor in milk, reversion flavor in soybean oil, and light sensitivity of riboflavin. He is a pioneer for the formation, reaction mechanisms and kinetics, quenching mechanisms and kinetics singlet oxygen in foods. He has published 6 books and more than 200 publications.

He has been scientific editor of *Journal of Food Science* and *Journal of the American Oil Chemists' Society* and has been on the editorial board of *Journal of Critical Reviews on Food Science and Nutrition*, *Journal of Food Quality*, *Food Chemistry*, *International News on Fats and Oils*, *Food Science and Biochemistry*, and Marcel Dekker Publications.

He has received more than 30 national and international awards including the 1995 IFT Achievement Award of Lipid and Flavor Chemistry, the 1999 Distinguished Senior Faculty Research Award, the 2001 IFT Food Chemistry Lectureship Award, the 2002 Professor of the Year Award, and the 2004 Outstanding Teaching Award. He has been an elected member of the Korean National Academy of Science, and a fellow of the Institute of Food Technologists, the American Oil Chemists' Society, the American Institute of Chemists, and the International Academy of Food Science and Technology.