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Título: Understanding And Controlling The Microstructure Of Complex Foods

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Sinopsis

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With its distinguished editor and array of international contributors, this book provides a review of current understanding of significant aspects of food structure and methods for its control. It begins with coverage of the fundamental structural elements present in foods and the forces which hold them together, discusses novel analytical techniques which can provide information on the morphology and behaviour of food materials, then examines how the principles of structural design can be employed to improve performance and functionality of foods. The book concludes with a discussion of how this knowledge can be implemented to improve properties of foods.

MICROSTRUCTURAL ELEMENTS AND THEIR INTERACTIONS

Polysaccharides: Their Role in Food Microstructure, V.J. Morris

Introduction

Food Polysaccharides

Functional Polysaccharides in Food

Microstructural Origins of Functional Properties

Polysaccharide Interactions with Other Food Components

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Proteins in Food Microstructure Formation, H.H.J. de Jongh

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Proteins and Their Functional Groups

Protein Aggregation and Network Formation

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Structure and Function of Fat Crystals and Their Role in Microstructure Formation in Complex Foods, D. Tang and A.G. Marangoni

Introduction

Physical Properties of Fat Crystal Networks

Physical Models of the Microstructure of Fat Crystal Networks

Microstructure of Fat Crystal Networks

Fractal Dimensions Used to Quantify Microstructure of Fat Crystal Networks

Fractal Dimension and Crystallization Kinetics

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Sources of Further Information and Advice

References

Effects of Water Distribution and Transport on Food Microstructure, E. Vittadini and Y. Vodovotz

Introduction

Measuring Water Distribution and Transport in Complex Systems and Its Effect on Food Microstructure

Controlling Water Distribution and Transport to Improve the Quality of Complex Foods

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Sources of Further Information and Advice

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Structure and Function of Emulsifiers and Their Role in Microstructure Formation in Complex Foods, N.M. Barfod and F.V. Sparso

Introduction: Emulsifiers in Complex Foods

Structure, Properties and Interactions of Three Important Food Emulsifiers

The Role of Emulsifiers in Microstructure Formation in Complex Foods

Controlling Surfactant Behaviour to Improve Microstructure in Complex Foods

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Colloidal Systems in Foods Containing Droplets and Bubbles, E. Dickinson

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Colloidal Particles in Complex Foods

Stabilization of Oil-Water and Air-Water Interfaces

Interactions of Particles, Droplets and Bubbles in Food Colloids

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Structure Formation by Particles, Droplets and Bubbles
Using Microscopy to Probe Stability and Instability Mechanisms
Using Microscopy to Monitor Aggregation and Gelation Processes
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Ingredient Interactions in Complex Foods: Aggregation and Phase Separation, V.B. Tolstoguzov
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Macromolecular Ingredient Interactions
Incompatibility of Biopolymers
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NOVEL METHODS TO STUDY FOOD MICROSTRUCTURE

Atomic Force Microscopy (AFM) Techniques for Characterizing Food Structure, V.J. Morris
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Confocal Fluorescence Microscopy (CLSM) for Food Structure Characterisation, N. Lorén, M. Langton and A.-M. Hermansson
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Principles of Modern CLSM
CLSM and the Study of Food Structure
Application of CLSM to Food Systems
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Advances in Image Analysis for the Study of Food Microstructure, J.M. Aguilera and J.C. Germain
Introduction: Obtaining Quantitative Microstructural Information About Food from Image

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Modelling and Computer Simulation of Food Structures, S.R. Euston, G. Costello, M.A. Naser,
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Creation of Novel Microstructures Through Processing: Structure Formation in (Semi-) Solid Food Materials, A.J. van der Goot and J. Manski

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The Effect of Processing on Structure and Molecular Properties

Effect of Deformation on Food Structure

Balancing Deformation and Solidification

Improving Structure Formation in (Semi-) Solid Foods

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Influence of Food Microstructure on Food Rheology, M.A. Rao

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Influence of Food Microstructure on Flavour Interactions, S. Ghosh and J.N. Coupland

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Relating Food Microstructure to Sensory Quality, G.A. van Aken

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Lipids in the Human Diet

Physicochemical and Structural Aspects of Lipid Ingestion, Digestion and Absorption

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Nanoscale Liquid Self-Assembled Dispersions in Foods and the Delivery of Functional Ingredients, N. Garti and A. Aserin

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MICROSTRUCTURAL APPROACHES TO IMPROVING FOOD PRODUCT QUALITY

Structure-Engineering of Ice-Cream and Foam-Based Foods, H.D. Goff and C. Vega

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Description and Formation of Microstructure

Methods to Study the Microstructure of Whipped Cream, Ice-Cream and Other Foam-Based Foods

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The Texture and Microstructure of Spreads, A. Bot, E. Flöter, J.G. Lammers, and E.G. Pelan

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Emulsion Microstructure: Ingredients

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Casein micelles: The Building Blocs of Yogurt and Cheese

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The Microstructure of Chocolate, D. Rousseau

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