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3.5 Application of LPSSD to Improve the Quality of Foods and Biomaterials
3.6 Concluding Remarks; References; 4 Intensification of Fluidized-Bed Processes for Drying and Formulation; 4.1 Introduction; 4.2 Intensification by Apparatus and Flow Design; 4.2.1 Different Types of Spouted Bed; 4.2.2 Operating Characteristics of Spouted Beds; 4.2.3 Mass and Heat Transfer in ProCell Units; 4.2.4 Discrete Particle Modeling; 4.3 Intensification by Contact Heating; 4.3.1 General Principle; 4.3.2 Main Effects and Influences; 4.3.3 Further Remarks on Modeling; 4.4 Further Methods of Intensification
4.5 ConclusionReferences; 5 Intensification of Freeze-Drying for the Pharmaceutical and Food Industries; 5.1 Introduction; 5.2 Exergetic Analysis (and Optimization) of the Freeze-Drying Process; 5.3 Process Intensification in Vacuum Freeze-Drying of Liquids; 5.3.1 Regulation of Nucleation Temperature During Freezing; 5.3.2 Use of Organic Solvents and Cosolvents; 5.4 Atmospheric Freeze-Drying; 5.5 Use of Combined Technologies for Drying Heat-Sensitive Products; 5.5.1 Microwave-Assisted Drying; 5.5.2 Ultrasound-Assisted Drying; 5.6 Continuous Freeze-Drying; 5.7 Conclusions; References
6 Drying of Foamed Materials6.1 Introduction; 6.2 Foam Properties; 6.3 Foam Spray Drying; 6.3.1 Processing Principles; 6.3.2 Final Product Properties; 6.4 Foam-Mat Drying; 6.5 Summary; References; 7 Process-Induced Minimization of Mass Transfer Barriers for Improved Drying; 7.1 Introduction; 7.2 Structural Characterization of Plant Raw Materials and Impact of PEF and Ultrasound; 7.2.1 Methods for Analysis of Tissue Structure and Quantification of Cell Damage; 7.2.2 PEF: Principles and Impact on Plant Tissue Structure; 7.2.2.1 Introduction to PEF Technology
7.2.2.2 PEF: Impact on Plant Tissue Structure

Sommario/riassunto

The five-volume series provides a comprehensive overview of all important aspects of drying technology like computational tools at different scales (Volume 1), modern experimental and analytical techniques (Volume 2), product quality and formulation (Volume 3), energy savings (Volume 4) and process intensification (Volume 5). Based on high-level cutting-edge results contributed by internationally recognized experts in the various treated fields, this book series is the ultimate reference in the area of industrial drying. Located at the intersection of the two main approaches in modern
