

Pulsed Electric Fields Technology For The Food Industry

[DOWNLOAD HERE](#)

1;PREFACE;6 2;Table of Contents;8 3;CONTRIBUTORS;13 4;PART I INTRODUCTION;15
4.1;CHAPTER 1 PULSED ELECTRIC FIELDS PROCESSING OF FOODS: AN OVERVIEW;16 4.1.1;1.
INTRODUCTION;16 4.1.1.1;1.1. Historical Evolution and Chronological Developments in Pulsed Electric
Field Processing;17 4.1.1.2;1.2. Present Status of Pulsed Electric Field Technology and Applications;20
4.1.2;2. FUNDAMENTAL ASPECTS OF PULSED ELECTRIC FIELD TREATMENT;22 4.1.2.1;2.1. System
Components;23 4.1.2.1.1;2.1.1. Power Supply;23 4.1.2.1.2;2.1.2. Treatment Chamber;24 4.1.2.2;2.2.
Effectiveness of Pulsed Electric Field Treatment;27 4.1.2.2.1;2.2.1. Technological Factors;27
4.1.2.2.2;2.2.2. Biological Factors;29 4.1.2.2.3;2.2.3. Media Factors;30 4.1.2.2.4;2.2.4. Inactivation
Kinetics and Modeling;31 4.1.3;3. FUTURE ASPECTS AND ECONOMIC ANALYSIS OF PEF
PROCESSING;32 4.1.3.1;3.1. Combination Studies;32 4.1.3.2;3.2. Drawbacks/Limitations;33
4.1.4;REFERENCES;34 4.2;CHAPTER 2 GENERATION AND APPLICATION OF HIGH INTENSITY
PULSED ELECTRIC FIELDS ;40 4.2.1;1. INTRODUCTION;40 4.2.2;2. ELECTRIC LOAD
REQUIREMENTS;41 4.2.2.1;2.1. Specific Power Consumption;41 4.2.2.2;2.2. Average Power;43
4.2.2.3;2.3. Voltage Waveforms;45 4.2.2.4;2.4. Pulse Lengths and Repetition Rates;46 4.2.2.5;2.5.
Conclusion;46 4.2.3;3. PULSED POWER SYSTEMS;47 4.2.3.1;3.1. General Remarks About Switches in
Pulsed Power Generators;48 4.2.3.2;3.2. PEF Treatment Chambers;48 4.2.3.3;3.3. High-Power
Sources;49 4.2.3.3.1;3.3.1. Basic Pulsed Power Circuits;50 4.2.3.3.1.1;3.3.1.1. Capacitive circuits;50
4.2.3.3.1.2;3.3.1.2. Inductive circuits;51 4.2.3.3.1.3;3.3.1.3. Ringing circuits;51 4.2.3.3.2;3.3.2. Circuits
with Transformers or Other Voltage Multipliers;53 4.2.3.3.2.1;3.3.2.1. Circuits with pulse transformers;53
4.2.3.3.2.2;3.3.2.2. Circuits with storage transformers;54 4.2.3.3.2.3;3.3.2.3. Voltage multiplier I
(MARX-generator);55 4.2.3.3.2.4;3.3.2.4. Voltage multiplier II (GREINACHER cascade);56
4.2.3.3.2.5;3.3.2.5. Current multiplier (XRAM-generator);56 4.2.3.3.3;3.3.3 . Pulse Forming Networks;58
4.2.3.3.3.1;3.3.3.1. Pulse fanning lines;58 4.2.3.3.3.2;3.3.3.2. Pulse forming networks;60 4.2.3.3.4;3.3.4.
Networks with Pulse Forming Switches;63 4.2.3.3.5;3.3.5. Concluding Remarks;64 4.2.3.4;3.4.
Components of High Power Sources;65 4.2.3.4.1;3.4.1. High-Power Capacitors;65 4.2.3.4.2;3.4.2.

Switches;67 4.2.3.4.2.1;3.4.2.1. Trigatrons;67 4.2.3.4.2.2;3.4.2.2. Ignitrons;69 4.2.3.4.2.3;3.4.2.3. Thyratrons and pseudospark switches;69 4.2.3.4.2.4;3.4.2.4. Thyristors, diodes, and IGCT switches;72 4.2.3.4.2.5;3.4.2.5. Concluding remarks;75 4.2.3.5;3.5. Low-Power Source;75 4.2.3.5.1;3.5.1. Basic Considerations;75 4.2.3.5.2;3.5.2. Typical Devices;76 4.2.4;APPENDIX A: DIFFERENTIAL EQUATION SYSTEM OF INHOMOGENEOUS PULSE FORMING NETWORKS;78 4.2.5;ACKNOWLEDGMENT;83 4.2.6;REFERENCES;84 4.3;CHAPTER 3 FUNDAMENTAL ASPECTS OF MICROBIAL MEMBRANE ELECTROPORATION ;86 4.3.1;1. INTRODUCTION;86 4.3.2;2. ELECTROPORATION OF BIOMEMBRANES;87 4.3.3;3. ELECTROPORATION OF MICROORGANISMS OF INTEREST IN FOOD PRESERVATION;90 4.3.3.1;3.1. Electron Microscopy Examination;90 4.3.3.2;3.2. Leakage of Intracellular Material;91 4.3.3.3;3.3. Loss of Osmotic Response;91 4.3.3.4;3.4. Permeabilization to Nonpermeant Dyes;92 4.3.3.4.1;3.4.1. Effect of Process Parameters: Electric Field Strength, Treatment Time, and Specific Energy;92 4.3.3.4.2;3.4.2. Effect of Type of Microorganism;94 4.3.3.4.3;3.4.3. Effect of Product Characteristics;97 4.3.3.5;3.5. Occurrence of Sublethal Injury;99 4.3.4;4. CONCLUDING REMARKS;103 4.3.5;REFERENCES;104 5;PART II EFFECTS OF PULSED ELECTRIC FIELDS;108 5.1;CHAPTER 4 MICROBIAL INACTIVATION BY PULSED ELECTRIC FIELDS;109 5.1.1;1. INTRODUCTION;109 5.1.2;2. CRITICAL FACTORS DETERMINING MICROBIAL INACTIVATION BY PULSED ELECTRIC FIELDS;110 5.1.2.1;2.1. Processing Factors;111 5.1.2.1.1;2.1.1. Electric Field Strength;111 5.1.2.1.2;2.1.2. Pulse Shape;112 5.1.2. EAN/ISBN : 9780387311227 Publisher(s): Springer, Berlin, Springer US Discussed keywords: Lebensmittelindustrie Format: ePub/PDF Author(s): Raso, Javier - Heinz, Volker

[DOWNLOAD HERE](#)

Similar manuals: