



Brief introduction to Mr. Duan Xu

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Mr. Duan, a Chinese, was born in 1973 and acquired master's degree in Henan university of Science & technology in 2002. He has been a teacher in food and biology engineering college, Henan university of Science & technology for 6 years, and engaged in process and storage of agricultural products all along. Recently, he is studying such drying technology as impinging stream drying, freeze drying and microwave drying. Since 2005, he has been advised by Professor Zhang Min for Ph.D. in Southern Yangtze university. His thesis will be the research on microwave freeze drying technology in food processing.

The research on microwave freeze drying in food processing

Supervisor: Prof. Zhang Min (SYU) and Co-Supervisor :Prof. Arun S. Mujumdar (NUS)

(Outline)

Abstract

General Introduction

1. Introduction
2. Aim and Motivation of the Thesis Research
3. Objectives and scope

Chapter I General Literature Review

1. Development of microwave freeze drying technology
2. Application aspects of microwave freeze drying methods
3. Characteristics of microwave freeze drying
4. Developments of microwave freeze drying in China and Overseas

Chapter II Principles of microwave freeze drying of foods

1. Heat and mass transfer in foods subjected to microwave freeze drying
2. Measures of classic freeze drying curves and study of drying processes
3. Effects on quality of foods under different operation conditions
 - 1) Microwave power
 - 2) Size of samples
 - 3) Continuum or intermission operation
 - 4) Vacuum degree

- 5) Different pretreatments
4. Analysis of results

Chapter III Storage characteristics of microwave freeze dried products

1. Effects of sterilization in different operation parameters
2. Effects of different operation parameters on enzyme activity
3. Optimal technics parameters for good storage quality of microwave freeze drying products

Chapter IV Simulation of microwave freeze drying processes for foods

1. Heat and mass transfer equations of foods (coupled thermo-electricity model)
2. Numerical simulation
3. Comparison between numerical prediction and experimental results

Chapter V Optimal the process parameters

1. Pre-treatment of samples
2. Optimal process parameters of microwave freeze drying

Chapter VI Conclusion and future work

1. Conclusions and Summary of results
2. Recommendations for future work

Acknowledgements

References