

RESUME

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Education

- 2006.3- present** Jiangnan University, Wuxi, Jiangsu Province
Candidate for PHD in Food Science and Technology degree
- 1993.9-1997.7** China Agriculture University, Beijing
Received Bachelor in Food Science and Technology degree

Experience

1997.9-1999.7

Worked in an instant tea plant, DaMin food in Fujian Province, China

1999.9-2006.1

Studied food additives for flavor and taste using technologies such as Maillard Reaction, Micro-encapsulation, Decomposition of Enzymes and different drying methods

Projects completed

1993.9-1997.7

Tea processing with technology for concentrating by membrane processing, vacuum freeze drying and spray drying

2007.9- present

Combination drying using heat pump for marine products to save energy and improve quality.

Research on combination drying using heat pump for marine products to save energy and improve quality.

Supervisors: Prof. Zhang Min (SYU) and Prof. Arun S. Mujumdar (NUS)

(Outline)

Section A: the research on combination drying using Heat Pump and Hot-air drying (HHD) for marine products.

Abstract

General Introduction

1. Introduction
2. Importance and aim of the Thesis Research
3. Objectives and scope

Chapter I General Literature Review

1. Advantage and disadvantage of traditional single drying method
2. Applications of heat-pumps drying in food processing
3. Development of combination heat-pump and hot-air drying in food processing

Chapter II Effect on rate of drying of the Pre-treatment

1. Effects of ultra pressure (pressure, temperature and time of processing, kinds of materials and the shape of materials) on the rate of combinational drying
2. Effects of ultrasonic (frequency, power, temperature and time of processing, kinds of material and the shape of materials) on the rate of combinational drying
3. Effects of water structure (denseness and proportion of inert gases, pressure of gases, time of processing) on the rate of combinational drying
4. Analysis of the results

Chapter III Studies on the application of HHD in sea product processing

1. Heat and mass transfer in foods subjected to heat-pump drying
2. Measure the parameters of classical combinational drying processes
3. Effects on energy of different operational conditions
 - a. The temperature and humidity of the hot air in the combinational drying
 - b. Size of samples
 - c. Continuous or interruptive operation
 - d. Different pre-treatments
4. Analysis of results

Chapter IV Simulation of combinational drying in foods

1. Heat and mass transfer equations of foods
2. Numerical simulation
3. Comparison the numerical prediction and experimental results

Chapter V Storage characteristics of the combinational drying products

1. The Effects of water activity on Storage characteristics
2. The Effects of Glass transition temperature on Storage characteristics
3. Optimal techniques parameters for good storage quality of combinational drying products

Section B: the research on combinational drying of Heat Pump and vacuum freezing drying, microwave drying in food processing

Chapter VI studies on high-pressure pulsed electric and microwave fields for exterminating pests at low temperatures

1. Effects of High-pressure pulsed electric field on parasite (eggs) in foods.
2. Studies on different operational conditions of High-pressure pulsed electric field
 - a. Intensity of electric field
 - b. Temperature and time of treatment
 - c. Species and shape of the materials
3. Effects of microwave field on parasite (eggs) in foods.
4. Studies on different operational conditions of microwave field
 - a. Microwave power
 - b. Microwave frequency
 - c. Temperature and time of treatment
5. Optimal techniques parameters of High-pressure pulsed electric field and microwave field

Chapter Studies on combination drying using heat pump, vacuum freeze drying (HFD) and microwave drying (HFMD) technology in food processing

1. Study on energy consumption of HFD and the quality of it's products
2. Study on energy consumption of HFMD and the quality of it's products
3. Optimal techniques parameters for good quality and energy Saving processing

Chapter VIII Conclusion and future work

1. Conclusions and Summary
2. Recommendations for future work

Acknowledgements

References