



Freeze-Drying of Pharmaceutical and Food Products (Woodhead Publishing Series in Food Science, Technology and Nutrition)

Tse-Chao Hua, Bao-Lin Liu, Haimei Zhang

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Freeze-drying is an important preservation technique for heat-sensitive pharmaceuticals and foods. Products are first frozen, then dried in a vacuum at low temperature by sublimation and desorption, rather than by the application of heat. The resulting items can be stored at room temperature for long periods. This informative text addresses both principles and practice in this area.

The first chapter introduces freeze-drying. The authors then review the fundamentals of the technique, heat-mass transfer analyses, modelling of the drying process and the equipment employed. Further chapters focus on freeze-drying of food, freeze-drying of pharmaceuticals and the protective agents and additives applied. The final chapter covers the important subjects of disinfection, sterilization and process validation.

Freeze-drying of pharmaceutical and food products is an essential reference for food, pharmaceutical and refrigeration engineers and scientists with an interest in preservation techniques. It will also be of use to students in these fields.

- Addresses the principles and practices used in this important preservation technique
- Explains the fundamentals of heat-mass transfer analysis, modelling and the equipment used
- Discusses the importance of disinfection, sterilization and process validation

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