



CfPA

The Center for Professional Advancement
Accredited Technical Training Worldwide
PO Box 7077, East Brunswick NJ 08816
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ON-DEMAND Online Training Course

Lyophilization 101: Principles, Physical Properties and Characterization Techniques

Location: Your Computer

Offering # 0809-705

Priority Code: 520

WHO SHOULD ATTEND

This course is designed for personnel in the pharmaceutical, diagnostic, biomedical engineering and biotechnology industries including:

- Biochemists/Chemists
- Chemical Engineers
- Microbiologists
- Pharmacists
- R&D personnel
- Pilot Plant Operations
- Production Supervisors
- QA/QC professionals
- Managers

LEARNING OBJECTIVES

Upon completion of this training, you will be able to:

- Explain the basic scientific and engineering principles of freeze-drying
- List the physio-chemical properties of materials commonly encountered in pharmaceutical freeze-drying including crystalline systems, amorphous systems (stable and metastable) and mixed systems
- Describe the current analytical techniques used to characterize the physio-chemical properties; Interpret the data to get a complete understanding of the thermal properties of the formulation; Determine the purpose and procedure for annealing metastable systems to form stable eutectic phases

COURSE DESCRIPTION

This 90-minute **accredited** online course is designed to provide an introduction to the basic scientific and engineering principles of freeze-drying. In addition, this course will provide insight into characterizing and understanding the thermal properties of the formulation through techniques such as differential scanning calorimetry (DSC) and freeze-dry microscopy.

By understanding the complete thermal picture of the formulation, the process development scientist will be able to develop optimized, robust lyophilization cycles in a much more efficient manner in addition to being able to troubleshoot and correct problematic cycles and formulations more effectively.

Module 1: Introduction to Freeze-Drying

- Basic theory
- Basic system components
- Temperature monitoring devices
- Vacuum monitoring devices

Module 2: Physical Properties of Materials

- Crystalline, amorphous, and mixed systems
- Eutectic melts, glass transitions, and collapse temperatures
- Physical loss of structure: collapse and meltback
- Examples of failed products

Module 3: Materials Characterization Techniques

- Principles of thermal analysis
- Thermal analysis equipment
- Freeze-dry microscopy equipment and techniques
- Applications of thermal analysis and freeze-dry microscopy for frozen and dried systems

Question and Answer Session

COURSE DIRECTOR

J. Jeff Schwegman Ph.D., Founder/CEO AB BioTechnologies

ACCREDITATIONS



The Center for Professional Advancement has been approved as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 8405 Greensboro Drive, Suite 800, McLean, VA 22102. In obtaining this approval, The Center for Professional Advancement has demonstrated that it complies with the ANSI/IACET Standards which are widely recognized as standards of good practice internationally. As a result of their Authorized Provider membership status, The Center for Professional Advancement is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standards.

REGISTRATION

TUITION* - **Single Rate: U.S. \$99.00 per person** **Group Rate: U.S. \$99.00 per person****

Register at www.cfpa.com. Enter **Course Offering #0809-705** into **Quick Jump**. To register use **Priority Code: 520**.

For Questions and Information call Customer Service at 732-613-4500.

Please Note: Multiple participants are not authorized to share access provided to a single registrant, a single dedicated seat license must be purchased for each individual. CfPA reserves the right to cancel access or collect the group rate payment if this requirement has been violated. Only registered participants will receive accreditation.

ABOUT ON-DEMAND:

Our pre-recorded on-line training courses are available for viewing at your convenience at your computer. Register for a CfPA on-demand course, your registration will be processed within two (2) business days, after payment and registration are complete you will receive an email from olinetraining@cfpa.com with your password to access the on-demand course. You will have two (2) business days to view the course. You **MUST** complete all polls and the course evaluation to receive your accreditation certificate for this course.

TERMS AND CONDITIONS

***Payment:** Tuition payable in US funds net of all charges. Payment is due at time of registration in the form of a credit card. Please contact CfPA's Customer Service for other payment options.

****Group Rate:** The Group Rate is for two or more enrollments, up to five registering from the same company at the same time. For groups of six or more, please contact Customer Service for group pricing. **Cancellations/No Show: "Live"** - Registrants may cancel up to two working days prior to the course start date and will receive a letter of credit to be used towards a future course up to one year from date of issuance. No credit will be issued for no-shows and/or cancellations less than two working days prior to the course. : **"On-Demand"** - No refund or credit will be issued for no-shows and/or cancellations of on-demand training courses. CfPA is not responsible for any outside related costs incurred by registrant's cancellation.