



LYOPHILISATION TECHNOLOGY:
PROCESS DEVELOPMENT
IN PRACTICE HANDS-ON



COURSE SCHEDULE

Course Overview

This course offers an opportunity to combine class-based learning with a significant practical element, where approximately 40% of the time will be spent carrying out hands-on freeze drying and related analytical techniques in the laboratory. The class-based element covers the journey from formulation design and characterisation, through the fundamentals of freezing and sublimation and related Process Analytical Technology (PAT), to aspects of product analysis and Quality by Design. The laboratory-based sessions will include freeze drying microscopy, differential scanning calorimetry and impedance analysis of a simple formulation - the data are then used to create a freeze drying cycle, which is completed during the course.

+ Day One (Nov 21st)

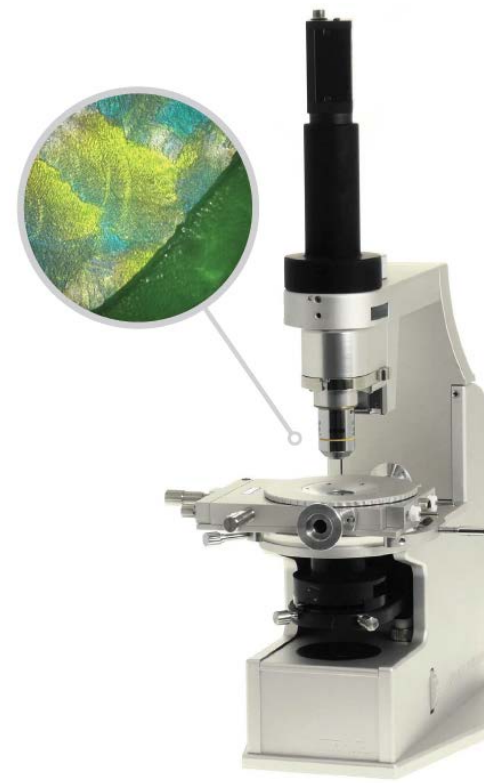
- Welcome & Course Opening
- Introduction to Freeze Drying Technology
- Freezing and Annealing
- Primary and Secondary Drying
- Fundamentals of Formulation
- Lunch
- Formulation Characterisation Techniques
- Lab Session: Freeze-Drying Microscopy (Lyostat 5)
- Lab Session: Frozen State Thermal and Impedance Analysis (Lyotherm 3)

+ Day Two (Nov 22nd)

- Classical Approach to Cycle Development
- Software-based Cycle Development - SMART® and ControLyo™
- Lab Session: Preparation, Filling, Loading, Programming, Initiating the Freeze-Drying Cycle
- Lunch
- Process Analytical Technologies (PAT)
- Lab Session: Monitoring Cycle Progress, looking at freeze-dryer accessories
- Group Work (in Lab): Critical Evaluation of Lyophile Appearance

+ Day Three (Nov 23rd)

- Lab Session: Monitoring Cycle Progress, programming Secondary Drying
- Product Analysis 1: Residual Moisture and dry-state Thermal Analysis
- Product Analysis 2: Structural and Mechanical Properties
- Lab Session: Reviewing / Terminating the Freeze-Drying Cycle
- Lunch
- Lab Session: Dry State Thermal Analysis (MDSC)
- Lab Session: Residual Moisture (KF titration) and Structural Analysis (MicroPress)
- Final Q&A and Wrap-up Session





IS THIS COURSE RIGHT FOR YOU?

If you're involved in the following, then yes:

- 1) Biotechnology
- 2) Pharmaceuticals
- 3) Freeze Drying Formulation and Cycle Development
- 4) Diagnostic Industries

MEET THE EXPERTS

+DR. KEVIN WARD

Dr Kevin Ward entered the world of freeze-drying in 1993 when he embarked on a PhD in the lyophilisation of proteins and liposomes. After working in the pharmaceutical industry and in vaccine development, he joined Biopharma in 2000. As R&D Director, he has built up a team of 9 dedicated freeze-drying scientists, worked on over 3000 projects for more than 500 client companies, developed 3 analytical instruments, run more than 200 training courses, and successfully secured funding for 15 collaborative research projects.

+DR. BHASKAR PANDYA

Bhaskar has a PhD from De Montfort University on the process monitoring of the freezing stage and primary drying endpoint using through vial impedance spectroscopy (TVIS). Prior to joining Biopharma Group in 2021, he had a brief stint in medical writing within health economics outcomes research (HEOR) at SmartAnalyst in India. He also holds a BSc (Hons) in Pharmaceutical and Cosmetic Science with a sandwich industrial placement within product development of Zydis® ODT at Catalent in Swindon, UK, as well as a Masters by Research (MRes) from University College London.

+MERVYN MIDDLETON

In 2009 Mervyn graduated from the University of Portsmouth with a Bachelor's degree in Biochemistry, after which he joined Biopharma Group for 6 six years, gaining significant experience of analytical methods associated with freeze-drying cycle development and optimisation. At the beginning of 2021, Mervyn re-joined Biopharma as Senior Scientist having worked as a Team Leader in Sterile Operations at Bio Products Laboratory (BPL). Whilst working at BPL, Mervyn attained a Master's degree in Biopharmaceuticals from King's College London, having conducted a research project within the R&D department at BPL.



PRICE
£2420

EARLY BIRD RATE
£2055

DEADLINE: **9TH OCTOBER**

21ST - 23RD NOVEMBER

BIOPHARMA HOUSE

WINNALL VALLEY ROAD, SO23 OLD,
WINCHESTER, UK

BOOK NOW

<https://intelligentfreezedrying.com/training-booking-form/>

Tel: +44 (0) 1962 841092

Website: www.intelligentfreezedrying.com



Please note that the cost of accommodation is not included in the course fee* and that bedroom bookings must be made by the participants.

A list of local hotels will be provided with the registration confirmation.

*fees include morning and afternoon breaks, lunch and full lecture notes

Payment must be made in full before the start of the course to guarantee a place. Payment by BACS or credit/debit card is acceptable - please note we cannot accept payment by cheque. An invoice will be issued on receipt of booking. Payments in credit/debit card will be charged in GBP at the prevailing exchange rate as set by xe.com. An invoice will be issued on receipt of booking. Discounts are also available for academia and multiple bookings from the same company, please contact Sally Potentier at spotentier@biopharma.co.uk for more information.

Cancellation in writing more than 5 weeks before the course start date will incur a service charge of 30% of the applicable fee. No refunds can be made for cancellation after this date. Substitutes will be accepted at any time. Transfer to another scheduled course must be made in writing and a service charge will be incurred. Full T&Cs available on request.

