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Freeze Drying Technology: Process Development in Practice Training Course

Freeze drying and related analytical techniques

7-9 July, 2026 | Winchester | United Kingdom

www.biopharmagroupcdmo.com

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 (QbD).

The laboratory-based sessions will include freeze drying microscopy, differential scanning calorimetry and impedance analysis of a simple formulation – the data is then used to create a freeze drying cycle, which is completed during the course.

What you'll learn:

- Understand the science and best practices behind the lyophilization process
- Explore product characterisation methods used before lyophilization cycle development
- Review formulation design strategies for stable lyophilized products
- Understand freezing, primary drying and secondary drying principles
- Learn key considerations for cycle development, loading and scale-up
- Explore process monitoring, PAT, QbD and software-based development approaches
- Evaluate lyophile appearance, product analysis, maintenance and troubleshooting considerations

Why this course?

- Your expert tutors will be Dr. Kevin Ward and Mervyn Middleton. Kevin is Biopharma Group's Director of R&D and has worked in lyophilization since 1993. Mervyn is a Senior Scientist, specialising in biopharmaceuticals, formulation and cycle development.
- A small group format allows direct access to expert instruction
- This course combines lyophilization science, best practice and practical application knowledge
- Coverage of core topics such as product, process and freeze-drying technology considerations
- Practical workshops and multidisciplinary group exercises are included
- It applies learning to real-life lyo cycle and development questions
- Certificate provided upon successful completion

What's included:

-  18 hours of freeze drying content
-  40% of the course is hands-on freeze drying and related analytical techniques in the laboratory
-  Printed learning materials (full course notes)
-  Morning and afternoon refreshments
-  Lunch and joint dinner with training participants

Who should attend?

- Professionals working in pharma, biopharma, diagnostics, medical and biotechnology settings
- Scientists using lyophilization from R&D through to manufacturing
- R&D and formulation scientists developing or supporting lyophilized products
- Lab managers and technicians involved in freeze-drying processes and analysis
- Production operatives supporting lyophilization in manufacturing environments
- Quality assurance teams supporting product quality and process control
- Anyone seeking a broader understanding of lyophilized product, process and system considerations
- Professionals working in:
 - Pharma R&D to production
 - Diagnostics
 - Lyo processing & production
 - Biotechnology
 - Cytotoxics



Course schedule highlights

DAY 1

Fundamentals & formulation in freeze drying

Get introduced to freeze drying with key concepts in freezing, drying stages, and formulation fundamentals. Dive into hands-on lab sessions with advanced tools like Lyostat 5 for freeze drying microscopy and Lyotherm 3 for frozen-state analysis, building a strong scientific foundation in formulation characterisation.

DAY 2

Cycle development & process monitoring

Explore both classical and software-driven approaches to cycle development, including SMART® and ControLyo™ technologies. Participants will engage in lab sessions covering preparation, loading, and real-time cycle monitoring. The day closes with a group evaluation on lyophile appearance, reinforcing practical cycle development skills.

DAY 3

Advanced product analysis & cycle termination

Focus on analysing freeze dried products with techniques for assessing residual moisture, thermal properties, and structural integrity. Lab sessions emphasise hands-on analysis using MDSC, KF titration, and structural testing with MicroPress, concluding with a Q&A session for a comprehensive wrap-up.

Course agenda available on request



About our instructors



Dr. Kevin Ward
Director of R&D

Biopharma Group's Director of R&D, Dr. Kevin Ward, is globally recognised as a lyophilization expert and has been actively working in the field of lyo technology since 1993, joining Biopharma Group in 2000. He's been involved numerous academic research projects and, together with his team, has worked on over 5,000 projects for customers worldwide. Kevin received his PhD for investigations into the freeze-drying of pharmaceutical formulations and drug/vaccine delivery systems.

Prior to joining the team, Kevin worked at Pfizer Central Research and as a Research Fellow in vaccine development at Aston University. Whilst working at Biopharma Group, Dr. Ward has become an editor and a contributing author of articles and texts on freeze drying, including the Springer book "Lyophilization of Pharmaceuticals and Biologicals". He is also in demand as a frequent lecturer to many of the leading regulatory agencies and prominent pharma companies.



Mervyn Middleton
Senior Scientist

After earning a BSc (Hons) in Biochemistry from the University of Portsmouth in 2009, Mervyn joined Biopharma Group where he worked through to 2015, gaining expertise in product analysis and lyo cycle development. Returning in 2021 as a Senior Scientist,

Mervyn has worked on over 50 projects, including prelyophilized and post-lyophilized product characterisation, formulation development, freeze drying cycle optimisation, process auditing, and consultancy across all stages of lyo development and scale-up.

Why choose Biopharma Group's lyophilization training course:

Each lyophilization training course is tailored to be up to date with contemporary material and industry relevant developments.

With over 6000 individuals trained and more than 500+ courses conducted in over 45 cities around the world, Biopharma Group has built a sound reputation as a trusted resource for lyophilization training to the pharma, diagnostics and biotech industries.

Our lyophilization, aka freeze-drying, training course options cover a range of topics from formulation characterisation and cycle-development, freeze-drying best practices to PAT (Process Analytical Technology), QbD and DoE methods and more, to eLearning modules, customisable courses onsite and/or online, webinars and accredited micro-courses.

At Biopharma Group we believe that well trained lab teams, production and engineering departments are empowered to use lyophilization technology and processes to produce successful product results and improve the overall processes of your facility.

Discover why lyophilization training courses are a lab essential

1

Lyophilization/ freeze drying is a complex science with only a few experienced expert personnel able to teach it; Biopharma Group has those experts in-house.

2

There is no such thing as a 'one cycle fits all' process when it comes to lyophilization, and we'll clearly explain why.

3

The pharma/ biotech industry is tightly regulated, so incorporating industry best practices can save you time and money.

4

There have been advances in technology to improve old formulations which many people are unaware of; our experts can help.

5

Well-trained maintenance and engineering departments for lyo related processes can help eliminate downtime of equipment.

6

Well-trained lab teams can identify and address specific issues companies might be experiencing in the manufacturing process.

"The content and both presenters were exceptional. I much appreciated the practical operation topics"

BIOMÉRIEUX

"The course was excellent, content great and excellent speakers. Learnt a lot, now I feel more confident about freeze drying"

VECTURA UK

"All workshops and presentations were thorough and great information detailed"

IPSEN UK

"Lecturers were great. I have hugely expanded my knowledge"

MHRA

"Very good interaction with speakers. All questions answered, patiently, professionally and so much knowledge"

OCTAPHARMA GERMANY

Logistics & enrollment

Course location:

Biopharma House, Winnall Valley Road, Winchester, SO23 0LD, United Kingdom

Date:

7-9 July, 2026

Inclusions:

- 18 hours of freeze drying content
 - Printed learning materials (full lecture notes)
 - Morning and afternoon breaks and lunch
 - Joint dinner with training participants
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Accommodation:

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.

Cost:

£3,220 (Ask about our group booking discounts)

Payment & registration:

Use our online form to register for this training course. We will contact you to confirm payment details, number of attendees and course choice. Please note that multiple bookings from the same organisation can qualify for a discount, contact us for more details.

Contact:

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