Faculty of Engineering
and Physical Sciences

UNIVERSITY OF LEEDS

100% of 2025 respondents rated the course as excellent or good.

Crystallisation Science and Engineering

Tuesday 21 – Thursday 23 April 2026

For full course details or to register visit the course website at:
https://tinyurl.com/Crystallisation2026Course

CPD CERTIFIED
The CPD Certification Service

Crystallisation Science and Engineering

Tuesday 21 – Thursday 23 April 2026

About the course

Join us for a transformative three-day short course exploring the science and engineering of crystallisation processes. The 2026 programme emphasises digital transformation and integrates experimental and computational workflows.

Participants will engage in hands on laboratory sessions that illustrate crystallisation processes, the application of advanced process analytical technologies (PATs), and particle characterisation techniques. Additionally, delegates will have the opportunity to utilise crystallisation modelling software.

The course will be led by renowned academic and industrial experts in the field and will include insightful case studies.

Course aims

Delegates will leave the course with:

- A solid understanding of crystallisation science and technology to enhance process development.
- Practical skills applicable to the scale-up of manufacturing crystals with desired properties.
- Essential tools and a knowledge framework for effectively supporting company project teams.
- Strategies for engaging with experts and improving collaboration on crystallisation-related projects.

Who should attend

This course is designed for engineers and scientists in industries such as agrochemicals, biotechnology, food, fuels, personal care, pharmaceuticals, and specialty chemicals. It is particularly relevant for those involved in crystallisation process development, scale-up, control, and operations. Additionally, it will appeal to post-graduates and post-docs engaged in research on solid form selection, particle design, and crystallisation.

Course Directors

Dr Tariq Mahmud is an Associate Professor in Chemical Engineering. His expertise lies in industrial crystallisation process development, scale up and control. He also has extensive expertise in integrated CFD-process modelling encompassing development and validation of process models coupled with CFD of turbulent and multi-phase flow systems and nano-/micro-size particulate synthesis processes via crystallisation, reactive precipitation and spray drying. He has led a number of experimental and modelling projects in these areas, as Principal – or Co-investigator, funded by the UK EPSRC, Innovate UK and industry including AstraZeneca, GSK, Pfizer, P&G, NNL and Syngenta. Tariq is currently a committee member of the British Association for Crystal Growth (BACG) and a Council member of the European Network for Crystal Growth.

Dr Xiaojun Lai is a Lecturer in Chemical Engineering and has research interests in the application of process-related analytical and characterisation techniques to studies of crystallisation and precipitation processes. He has used reaction calorimetry for studying process thermodynamics, Raman technique for multiple component crystallisation system characterisation, and in situ XRD for phase transformation investigation. He has also recently developed instrumentation of laser interferometry for visuallising crystal growth interface and mass transfer in the boundary layer, and combined X-ray topography and multiple diffraction to characterise crystal defects and made significant use of SR techniques, for in situ probing of crystal structure during practical processing and X-ray spectroscopy for probing impurity impact on crystal growth.

Other relevant short courses:

Spray Drying and Atomisation of Formulations 9 – 11 June 2026

Sponsored by:

Technobis · CrystEngComm · MSDE · Reaction Chemistry & Engineering

What our previous delegates say:

"The course is excellent in every aspect; the classes are dynamic and engaging. It's worth every penny invested." – Vinicius Pellicci – Instituto Mauá de Tecnologia

"The Crystallisation Science and Engineering course was fantastic, the perfect blend of presentations, interactive demonstrations and panel discussions with the academics and presenters." – Shannon Kennedy, Quotient Sciences

Tuesday 21 April 2026

08.45 Registration and coffee

09.15 Introduction

Crystallisation Fundamentals

09.25 Crystallisation route map
Professor Kevin Roberts,
School of Chemical and Process Engineering, University of Leeds

10.35 Coffee

10.50 Supersaturation generation, Nucleation and crystal growth
Dr Antonia Borissova,
School of Chemical and Process Engineering, University of Leeds

11.50 Fundamentals of polymorphism
Professor Sven Schroeder,
School of Chemical and Process Engineering, University of Leeds

12.40 Lunch

13.25 Laboratory Demonstrations

13.30 Nucleation kinetics – Crystal16
Thomas Kendall,
Technobis, Netherlands and
Dr Tariq Mahmud,
School of Chemical and Process Engineering, University of Leeds

Growth kinetics
Dr Xiaojun Lai and
Gabriele Sumanskaite,
University of Leeds

14.45 Tea

15.00 Screening for polymorphs (solid form selection)
Dr Bob Docherty,
Visiting Professor,
University of Leeds.

15.45 Solid-state analysis for the characterisation of polymorphs and hydrates
Dr Bob Docherty

16.35 Fundamentals of co-crystallisation and case studies of recent developments
Professor Mingzhong Li,
De Montfort University,
Professor Anant Paradkar,
University of Bradford

17.15 End of day one

19.00 Course dinner

Wednesday 22 April 2026

08.40 Coffee

Crystallisation Process Engineering

08.45 Hydrodynamics, mixing and heat transfer in batch crystallisers
Dr Tariq Mahmud,
School of Chemical and Process Engineering, University of Leeds

09.30 Workflow for crystallisation process development – a case study
Dr John Hone,
Syngenta

10.45 Coffee

11.00 Continuous crystallisation processes
Dr Anne Cathrine Kufner,
GEA, Germany

11.45 Process spectroscopic techniques (IR, UV-vis, Raman)
Dr Xiaojun Lai,
University of Leeds

12.30 Lunch

13.10 Laboratory Demonstrations

13.15 Particle characterisation
Dr Mozhdeh Mehrabi
and Dr Tariq Mahmud,
University of Leeds

Raman spectroscopy
John Andrews,
Clairet Scientific

14.10 Laboratory Demonstrations continued

15.00 Tea

15.15 Integrating computational and experimental crystallisation workflows to enable digital product design
Dr Bob Docherty,
Visiting Professor,
University of Leeds

16.00 Post crystallisation unit operations: filtration and drying
Dr Alan Collier,
Syngenta

16.45 End of day two

Thursday 23 April 2026

08.30 Coffee

Measurements and Control

08.45 Particle size and shape measurements and characterisation (including properties and performance)
Dr Umair Zafar,
Novo Nordisk, Denmark

09.45 Control of crystallisation processes for CSD
Dr Tariq Mahmud,
School of Chemical and Process Engineering, University of Leeds

10.30 Coffee

Crystallisation Modelling and Software Demonstrations

10.45 CFD modelling of crystallisation processes
Dr Tariq Mahmud,
School of Chemical and Process Engineering, University of Leeds

11.30 Digital design of crystallization processes
Dr Niall Mitchell,
Siemens Industry Software

12.15 Lunch

13.00 Panel Discussion and troubleshooting – experimental practices and best digital tools
Chaired by Dr Tariq Mahmud

14.00 Transfer to PC Cluster

14.10 Software demonstration 1: VISUAL HABIT and the CSD – enabling solid form and particle design
Andy Maloney,
Cambridge Crystallographic Data Centre

15.10 Software demonstration 2: Introduction to the crystallization modules of gPROMS FormulatedProducts (Simulation & Global System Analysis)
Dr Niall Mitchell,
Siemens Industry Software

16.10 Wrap-up and feedback from delegates
Dr Tariq Mahmud

16.15 Optional lab visit to view the crystal growth from Day one demonstrations

End of day three and course

While every effort will be made to deliver the programme as advertised, we reserve the right to make minor changes if circumstances beyond our control require it.

View the full programme and book your place online at https://tinyurl.com/Crystallisation2026Course

Further information

Course Fees

The following course fees include the cost of tuition, course materials, lunches and light refreshments:

£1200 VAT exempt – Tuesday 21 – Thursday 23 April 2026

Discount available to full time PhD students.

Venue

The course venue will be within the Faculty of Engineering and Physical Sciences at the University of Leeds. The University campus is a 20 minute walk from Leeds city train station.

Parking on and around campus is very limited, and we recommend using public transport where possible. The nearest public car park is Woodhouse Lane (LS1 3HQ).

Accommodation

Delegates are responsible for arranging their own accommodation, if required. A list of nearby hotels will be provided with the joining instructions.

Course Dinner

The course dinner, included in the course fee, will take place at a Leeds city centre restaurant on Tuesday evening. The dress code is smart casual.

How to Book

Please book your place for this course through our secure Online Store, using debit or credit card, following the instructions below:

1. Visit our Online Store at: http://store.leeds.ac.uk
2. Select Conferences and Events in the left-hand navigation bar and 'CPD Faculty of Engineering and Physical Sciences'
3. Select the relevant course, click on 'Book Event' and complete your booking details

You will receive an automatic confirmation email within 24 hours of your booking.

Get in touch

Helen Forsyth – Course Coordinator
CPD, Conference and Events Unit
Faculty of Engineering and Physical Sciences
University of Leeds

T: +44 (0)113 343 8104
E: cpd@engineering.leeds.ac.uk
W: https://eps.leeds.ac.uk/short-courses
CPD, Conference and Events Unit, University of Leeds

Terms and conditions for booking

Payment

Payment by debit/credit card should be made at the time of booking via the Online Store. If for exceptional reasons you are unable to book and pay online a purchase order document will be required to support a manual booking process. Our standard payment terms are 30 days from date of invoice however payment must be made prior to attendance. Attendance may be refused if payment has not been received.

Changes made by the University of Leeds

The course programme may have to be re-scheduled or the speakers changed for reasons outside our control. The University of Leeds reserves the right to cancel or postpone a course, in which case fees will be refunded in full. In the event of cancellation, the University will not be held liable for delegates' travel or accommodation expenses.

Where a delegate cancels a registration

For cancellations made within seven days of booking: a full refund is payable unless the course starts within the next seven days, in which case the full fee is payable and no refunds will be made.

For cancellations made after seven days of booking: written cancellations received up to 15 working days before the course will be subject to an administrative charge of 20% of the total fee. Within 15 working days of the course the full fee is payable and no refunds will be made.

For non-attendance: the full fee is payable and no refunds will be made. Appropriate course materials will be sent to the registered delegate.

In the event of cancellation, the University will not be held liable for or refund any incurred travel or accommodation expenses. Substitutions may be made at any time.

Data/Privacy

Your right to privacy is important to us. We will only use your information to provide information on our CPD courses and relevant events. We will not pass your details on to any other organisations. The ways in which your personal data may be used when you provide it to us are defined in our Privacy Notice at https://eps.leeds.ac.uk/privacy.

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