

## IHRE VORTEILE IM ÜBERBLICK



- ✓ Die Online-Kurse werden analog der Präsenzschulung LIVE umgesetzt: Sie sehen die Referenten, die Präsentation und bei Bedarf den Flipchart.
- ✓ Chats ermöglichen Ihnen die Interaktion mit den Referenten und den Teilnehmern.
- ✓ Sie sparen Reisezeit und -kosten.
- ✓ Ihre Teilnahme ist ortsunabhängig.
- ✓ Ihre Seminarunterlagen stehen Ihnen vor Kursbeginn zum Download auf der Plattform zur Verfügung.

## TECHNISCHE DETAILS

- ⚙ Die Online-Kurse finden auf der GDCh E-Learning Plattform statt: Eine browserbasierte Software. Es ist keine Software Installation erforderlich.
- ⚙ Für die Ton-Übertragung können Sie die Lautsprecher Ihres Computers, Tablets, Smartphones nutzen oder sich via Telefon einwählen.
- ⚙ Das System können Sie bereits im Voraus mit Ihren persönlichen Zugangsdaten testen, um Ihnen einen reibungslosen Ablauf zu gewährleisten.

## REGISTRATION

Please register via Internet or by mail at the office of GDCh until November 17, 2020.



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## FEES

Members of GDCh € 1,860.–  
Non-members € 1,940.–

Rates include instruction material. They are not liable to the value added tax (tax exemption additional § 4 Nr. 21. a) bb) UStG.)

You find our conditions at [www.gdch.de/teilnahme](http://www.gdch.de/teilnahme).

## INFORMATION ABOUT FURTHER GDCH-COURSES

- 971/20 **Online-Kurs: Strategisches Technologiemanagement**  
Kursleitung: Prof. Dr. Stefanie Bröring  
26. – 27. November 2020 · Online
- 588/20 **Online-Kurs: Datenmanagement und regulatorische Anforderungen zur Erstellung und Pflege von Sicherheitsdatenblättern**  
Am Beispiel von Software-Lösungen  
Kursleitung: Dr. Thorben Bonarius  
30. November 2020 · Online
- 529/20 **E-Learning: SOP-Intensivtraining und QS-Dokumentation**  
Für den Durchblick im QM-Dschungel  
Kursleitung: Dr. Stephan Walch  
1. – 20. Dezember 2020 · Online
- 530/20 **E-Learning: Datenintegrität und Computervalidierung im analytischen Labor**  
Die Umsetzung von Annex 11 und OECD 17 Advisory Document in der Praxis  
Kursleitung: Carsten Buschmann  
1. – 20. Dezember 2020 · Online
- 535/20 **Online-Kurs: GMP-Intensivtraining: Hintergründe und Essentials der GMP (Gute Herstellungspraxis) auf deutscher, europäischer und amerikanischer Ebene – mit Praxisteil**  
Kursleitung: Dipl.-Ing. Jürgen Ortlepp  
7. – 8. Dezember 2020 · Online



GESELLSCHAFT DEUTSCHER CHEMIKER



## Online-course: Chemical Development and Scale-Up in the Fine Chemical and Pharmaceutical Industries

Dr. Will Watson  
Dr. John Studley

- Process R&D
- Industrial Synthesis
- Optimisation
- Kg to tonne scale
- Process Safety



907/20

November 24 – 26, 2020 · Online

**OBJECTIVES**

- To train R&D chemists and engineers in the most efficient methods for developing cheap, robust processes used to manufacture fine organic chemicals in the minimum amount of time
- To educate chemists in the principles of Scale-up and development, in basic chemical engineering concepts and techniques for the optimization of processes
- To educate chemists to learn from the experience (and mistakes) of others by examining case studies from industry

**TOPICS**

Converting a synthetic route used to make gram quantities of a chemical to a process for manufacturing tonne quantities is a topic about which much is known, but where the „tricks of the trade“ are handed down within companies. There is little shared experience between chemists in different companies, and the result is a lack of awareness of what is involved in chemical development – the skills and techniques needed to Efficiently Scale-up chemical processes. Since many processes require chiral synthesis or use chiral catalysts, where control of conditions and optical purity are critical, the development chemist who transfers these processes to plant needs to be aware of the techniques which will lead to efficient Scale-up. The course will show that the fascination of chemical development lies in its multi-disciplinary nature, from the initial interaction with research, to the liaison with chemical engineers in a production environment. A Logical investigative approach to all aspects of development and Scale-up will be used with many industrial case studies to illustrate the concepts.

**TARGET GROUPS**

Young Chemists who have just started work in industry as development chemists. Organic Chemists/Medicinal Chemists in Research and Development who would like to gain in appreciation of development and Scale-up and who are contemplating moving into Perhaps Chemical Development. Development and Production Chemists in industry who would like to improve efficiency and gain of their insight into alternative approaches to chemical development. Chemical Engineers who wish to understand a chemist's approach to chemical development of batch processes (a good grounding in organic chemistry is important). Students who are about to enter the industry and can obtain company sponsorship.

**PREVIOUS KNOWLEDGE**

A working knowledge of organic chemistry would be of advantage.

**TEACHING METHODS**

Lectures and problem sessions

**PARTICIPANTS**

max. 24 participants

**TUESDAY, NOVEMBER 24, 2020**

- 9.00 Introduction  
Synthetic Route Discovery
- 10.30 Coffee
- 10.50 Problem Session
- 12.15 Costing of Chemical Processes
- 12.45 Lunch
- 13.45 The Investigative Approach to Chemical Development
- 14.45 Coffee
- 15.15 The Investigative Approach to Chemical Development (continued)
- 15.45 Problem Session
- 16.45 Solvent Effects
- 17.45 Finish

**WEDNESDAY, NOVEMBER 25, 2020**

- 9.00 Statistical Methods of Optimisation
- 10.15 Coffee
- 10.45 Analytical Issues in Process R&D (Process Validation, Specifications etc)
- 12.00 Problem Session
- 12.45 Lunch
- 13.45 Work Up
- 14.30 Appreciation of Chemical Engineering Concepts, part 1
- 15.00 Coffee
- 15.30 Appreciation of Chemical Engineering Concepts, part 2
- 16.15 Problem Session
- 17.00 Planning for Scale Up
- 17.30 Finish

**THURSDAY, NOVEMBER 26, 2020**

- 9.00 Crystallisation and Polymorphism
- 10.15 Coffee
- 10.35 Chemical Development of Enantiomerically Pure Compounds
- 11.35 Problem Session
- 12.30 Lunch
- 13.30 Thermal Hazard Testing and Runaway Reactions
- 14.30 Effluent Minimisation and Control
- 15.15 Final Overview and Summing Up
- 15.30 FINISH

**ORGANISER****Dr. Will Watson**

Scientific Update  
Mayfield/United Kingdom

Dr. Will Watson joined Scientific Update in May 2000 carrying out consultancy work and lecturing on courses such as „Chemical Development and Scale-Up“. In addition he has developed a number of new courses including „Safety & Selectivity“. Prior to that Dr. Watson worked for BP and Lancaster Synthesis (Clariant) for 20 years where he was responsible for lab and pilot production.

**Dr. John Studley**

Scientific Update  
Mayfield/United Kingdom

Dr. John Studley joined Scientific Update as Scientific Director in 2018. In 1999 he joined Vertex Pharmaceuticals initially in Medicinal Chemistry and then transferring in to Process Chemistry in 2005, and finally becoming head of process chemistry for Vertex, UK in 2012. After a post doc at the University of Sheffield in 1995-1997 he joined Oxford Asymmetry. His industrial career started at Rhone-Poulenc in 1986, before obtaining a BSc and PhD from the University of Bath.

**LECTURER**

Dr. John Studley (see Organiser)	Scientific Update, Mayfield/UK
Dr. Will Watson (see Organiser)	Scientific Update, Mayfield/UK

**INSTRUCTION MATERIAL**

The participants receive at the beginning of the event extensive backup materials and at the end of the course a certificate of GDCh.

Subject to changes