REGISTRATION
Please register via Internet or by mail at the office of GDCh until October 29, 2019.

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

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

INFORMATION ABOUT FURTHER GDCH-COURSES

588/19 Datenmanagement und regulatorische Anforderungen zur Erstellung und Pflege von Sicherheitsdatenblättern
Leitung: Dr. Thorben Bonarius
2. Dezember 2019 · Frankfurt am Main

530/19 Datenintegrität und Computervalidierung im analytischen Labor
Die Umsetzung von Annex 11 und OECD 17 Advisory Document in der Praxis
Leitung: Carsten Buschmann
5. – 6. Dezember 2019 · Frankfurt am Main

962/19 Intensivkurs Marketing für Chemiker
Leitung: Prof. Dr. Stefanie Bröring
5. – 6. Dezember 2019 · Frankfurt am Main
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 – the skills and techniques needed to Efficiently Scale-up chemical processes. 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 26, 2019
9.00 Synthetic Route Discovery
   Introduction – the purpose of chemical development
   Discovering the best synthetic route
   Selecting the best route for scale-up
   Choice of raw material, reagents etc.
   Problem classes and case studies
   Costing of chemical processes
Afternoon
   Chemical Development & Optimisation
   The investigative approach to chemical development
   Effect of process variables on yield and quality of products
   Problems and case studies
   Solvent effects
18.00 Expected end of the first day
19.00 Get-together (Upon invitation by GDCh)

WEDNESDAY, NOVEMBER 27, 2019
9.00 Statistical Methods of Optimisation
   Selecting the parameters to vary
   Factorial designs; Simplex and evolutionary operation
   Response surfaces
   Quality control and in process analysis as an aid to optimisation
   Problems and case studies
Afternoon
   Work up and product isolation
   Chemical Engineering Aspects
   Appreciation of chemical engineering concepts, understanding the importance of heat and mass transfer, mixing, kinetics etc.
   Problems and case studies
   Scale-up and troubleshooting on plant
18.00 Expected end of the second day

THURSDAY, NOVEMBER 28, 2019
9.00 Crystalisation and polymorphism
   Emerging technologies in process R&D
Afternoon
   Thermal hazard testing and runaway reactions
   Design of environmentally friendly processes
   Effluent minimisation and control
   Case studies
   Final overview
15.30 Expected end of the course

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
Scientific Update, Mayfield/UK
(see Organiser)

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

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.

www.gdch.de/fortbildung