SCIENTIFIC UPDATE
We've Got Chemistry

Chemical Development & Scale-Up in the Fine Chemical & Pharmaceutical Industries

Principles and Practice

1-3 FEBRUARY 2017

Mumbai, India
The Sea Princess Hotel

A 3 day course presented by
Dr Will Watson and Dr John Knight

Who is the course aimed at?
Organic Chemists/Medicinal Chemists
Development and Production Chemists
Chemical Engineers
Students and Young Chemists

"A "must-do" for chemists going into industry from academia. Interactive & engaged material. Will & John have lots of experience & are generous to share. John makes jokes! Company money well spent."
Givaudan

Professional Development Training

Scientific Update provides training courses for industrial chemists and chemical engineers in chemical development and scale-up and many other specialist topics in organic and process chemistry. Our short intensive training courses enable scientists to learn about highly relevant topics, to broaden their knowledge and to keep abreast of new science, new technology and new techniques.

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Chemical Development & Scale-Up in the Fine Chemical & Pharmaceutical Industries

A 3 day course presented by
Dr Will Watson and Dr John Knight

1 - 3 February 2017 The Sea Princess Hotel, Mumbai, India

Multiple attendees discounts
UP TO 15% available

INTRODUCTION

Chemical process development is generally not taught as part of degree courses in higher education; the conversion of a synthetic route used for making milligram or gram quantities of a chemical into a process for manufacturing multi-kilogram and tonne quantities is typically learnt "on the job" by chemists in industry. For many years, little chemical development work was published in the literature, until the establishment of the Organic Process R & D journal by Dr Trevor Laird (founder of Scientific Update). Even now, "tricks of the trade" are handed down within individual company organisations, and it can be difficult to gain an awareness of what is involved in chemical development, and of the skills and techniques required to efficiently scale-up chemical processes.

This three-day course, written and presented by highly experienced process chemists from the pharmaceutical and fine chemical industries, provides a comprehensive overview of this fascinating and important element of the chemical industry. A logical investigative approach to all aspects of chemical development is described, with an abundance of case studies from literature, conferences and private communications. The multi-disciplinary nature of chemical development is emphasised, from the initial interaction with laboratory research scientists to the vital partnership with chemical engineers in the pilot plant and in the production environment. The lectures are interspersed with interactive problem sessions, enabling participants to share in the problem solving and troubleshooting typically experienced during chemical development.

COURSE OUTLINE

Introduction
- The purpose of chemical development

Synthetic Route Discovery
- Route design
- Selecting the best route for scale-up
- Choice of raw materials, reagents etc

Costing of Chemical Processes
- Raw materials
- Overheads
- Context

The Investigative Approach to Chemical Development
- Optimising Chemical Reactions
- Making processes robust
- Minimising scale-up difficulties

Solvent Effects
- Often overlooked
- Key to making a modest process a great process

Statistical Methods of Optimisation
- Vital, but under-utilised
- Design of Experiments
- Simplex
- Factorial design

Analytical Issues
- In Process Control
- Quality Control and Specification Setting
- Regulatory Guidelines
- GMP, Validation
- Use of analysis to aid process optimisation

Work Up
- Product isolation

Planning for Scale-Up
- Key points to consider

Appreciation of Chemical Engineering Principles
- Mass Transfer
- Mixing
- Heat Transfer
- Kinetics

Crystallisation and Polymorphism
- Particle size control
- Polymorph control
- Methods of analysis
- Crystallisation of chiral compounds

New and Emerging Technologies in Process R&D
- Microwave chemistry
- Continuous flow chemistry
- Process intensification

Thermal Hazard Testing and Runaway Reactions
- Essential process safety considerations
- Equipment and screening approaches

Effluent Minimisation and Control
- Environmental considerations
- Cost considerations
- Green chemistry

VENUE

The Sea Princess Hotel
969 Juhu Tara Road
Juhu Beach
Santacruz (W)
Mumbai 400 049
India

Tel: +91 22 26611111
Fax: +91 22 26603973

www.seaprincess.com

Located along the Juhu sea coast, Sea Princess Hotel is a 10-minute drive from Shoppers Stop. Mumbai's domestic and international airports are a 30-minute drive away and hotel also provides free airport transfers from both Chhatrapati Shivaji Domestic and International Airports.

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Start 09.00am - Wednesday 1 February
Finish 3.00pm - Friday 3 February
Course dinner 6.30pm - Wednesday 1 February

Course Fee: $795
Which includes comprehensive course manual, refreshments throughout the day, lunch and one course dinner.

Course Fee: $795

COURSE TUTORS

Dr Will Watson
Technical Director,
Scientific Update

Will Watson gained his PhD in Organic Chemistry from the University of Leeds in 1980. He joined the BP Research Centre at Sunbury-on-Thames and spent five and a half years working as a research chemist on a variety of topics including catalytic dewaxing, residue upgrading, synthesis of novel oxygenates for use as gasoline supplements, surfactants for use as gasoline detergent additives and non-linear optical compounds.

In 1986 he joined Lancaster Synthesis and during the next 7 years he was responsible for laboratory scale production and process research and development to support Lancaster's catalogue, semi-bulk and custom synthesis businesses. In 1993 he was appointed to the position of Technical Director, responsible for all Production (Laboratory and Pilot Plant scale), Process Research and Development, Engineering and Quality Control. He helped set up and run the Lancaster Laboratories near Chennai, India and had technical responsibility for the former PCR laboratories at Gainesville, Florida. He joined Scientific Update as Technical Director in May 2000. He is also involved in an advisory capacity in setting up conferences and in the running of the events. He is active in the consultancy side of the business and sits on the Scientific Advisory Boards of various companies.

will@scientificupdate.co.uk

Dr John Knight
Consultant,
JKonsult Ltd

John first started his industrial career at the age of 16 as a technician with ICI. Following several years' laboratory experience he went on to study at the University of Southampton for a degree in chemistry, staying on to complete his PhD with Phil Parsons. John then took up a NATO-funded post-doctoral position with Gilbert Stork before returning to the UK to work for Glaxo, initially in medicinal chemistry before transferring to chemical development. John then moved to work for a small contract research organisation which, after significant growth, is now part of Aptuit. John left Aptuit at the end of 2007, following 14 years in the CRO arena, to join Scientific Update LLP where he provided training and consultancy services. In January 2015 John established his own consultancy business while continuing to work very closely with Scientific Update.

John's main professional focus is in working with early stage chemical development projects and transfer to plant, often working with small pharma companies where he helps with CMC issues and securing material supplies to toxicological studies and Phase I and II clinical trials.

john@jkonsult.co.uk

IN-HOUSE COURSE

For 8+ people contact us to discuss holding this event In-House - sciup@scientificupdate.co.uk

At the end of the course, participants will have gained:

- A logical investigative approach to chemical development and optimisation
- An insight into the factors involved in scale-up
- An appreciation of chemical engineering concepts, particularly mixing, heat transfer and process control
- A preliminary knowledge of statistical methods of optimisation
- Improved ability to decide which parts of the chemical process to examine in detail
- Ideas for efficient resource allocation
- Improved troubleshooting and problem solving ability

REGISTRATION

You can either use our fast online booking system or mail or fax the attached registration form to:

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Should your company wish to pay by cheque or bank transfer, on booking you can choose between paying in either £ or $. All bank details will be supplied with an invoice.

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Group discounts are available on multiples of 2 or more attendees – see registration form. This offer only applies if bookings are made simultaneously and from the same billing address.

Confirmation of your registration
Confirmation and your invoice will be sent via email.

Late Applications
For late applications, please register on-line or fax the completed registration form, including credit card payment information.

Cancellations/Refunds
Should you be unable to attend and cancel in writing no later than 1 month before the start of the course, Scientific Update will refund your registration less £300 processing fee. Unfortunately refunds are not possible after that date. Substitutions can be made at any time.

Chemical Development & Scale-Up

1 - 3 February 2017, Mumbai, India

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