

Safety and Selectivity in the Scale-Up of Chemical Reactions

9-10 OCTOBER 2017



Lisbon, Portugal
Sana Malhoa Hotel

A 2 day course given by Dr Will Watson,
Scientific Update

"The course is really
helpful to improve safety
& selectivity in the
scale up of chemical and
hazardous reactions."

Glenmark Pharma

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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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Safety and Selectivity in the Scale-Up of Chemical Reactions

A 2 day course given by Dr Will Watson,
Scientific Update

9-10 October 2017 Sana Malhoa Hotel, Lisbon, Portugal

Multiple attendees discounts
UP TO 15% available

INTRODUCTION

The aim of the course is to give lab chemists an understanding of the issues that need to be considered during the early stages of scale up to large laboratory scale equipment (10-20 litre vessels) / kilo lab.

The course will concentrate on chemical safety and selectivity issues and include information on what safety testing equipment is available and the uses and limitations of this equipment.

Attendees will learn how to identify potential problems whether they be thermal hazards or selectivity issues. Methods used by other companies for handling hazardous reagents and reactions will be described as well as alternative chemistry to circumvent these reactions and/or reagents.

Who should attend?

Any laboratory chemist involved in the scale-up to large scale equipment/ kilo lab or beyond.

IN-HOUSE COURSE

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

COURSE CONTENT

Introduction

- > The safety literature
- > Functional groups which can cause problems on scale up

Improving safety and selectivity in chemical reactions

- > Inherent safety, choosing the right synthetic route
- > Reaction criticality classes (Stoessel diagrams)
- > Solvent selection
- > Choosing the right reagent
- > Catalysis – the plusses and minuses
- > Choosing the right reaction conditions, the effect of concentration

Thermal Hazard Testing and Runaway Reactions

- > Introduction and overview of safety issues in the chemical industry
- > Heat loss considerations
- > Desk screening – unstable groups, Oxygen balance equation etc
- > Principles of hazard testing – equipment and uses
- > Effect of changes to reaction variables

Solvent Selection and Solvent Effects

- > Reasons for choosing a solvent
- > Solvent guides
- > The effect of solvents on chemical reactions
- > Useful solvent parameters
- > Phase transfer catalysis
- > Water as a solvent
- > Alternative solvents – supercritical fluids, ionic liquids, fluorinated solvents

Oxidation and reduction

- > Choice of reagent(s)
- > Stoichiometric versus catalytic
- > Reagent stability
- > Safety issues

Hazardous Reactions and Reagents

- > Azides
- > Making triazoles and tetrazoles
- > Diazo compounds, including diazomethane
- > Petasis methylation
- > Grignard Reagents and Organolithiums
- > Use of cyanide

Work Up

- > Quenching reactions / reagents
- > Minimising work up – Telescoping
- > Catalyst removal
- > Product isolation

Scaling up chemical reactions

- > What can go wrong – it's not what you do but the way that you do it
- > Heat transfer areas
- > Importance of dose control and in process analysis
- > Reactions with initiation periods
- > Simple do's and don't's
- > Flammability issues

Case studies

- > Grignard reaction
- > Azide chemistry
- > Oxidation and reduction
- > Vilsmeier reaction

Start 8.45am - Monday 9 October
Finish 4.30pm - Tuesday 10 October
Course dinner 7.30pm - Monday 9 October

Course Fee: €1,725

Which includes comprehensive course manual, refreshments throughout the day, lunch and one course dinner.

Course Fee: €1,725

COURSE TUTOR



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

VENUE

Sana Malhoa Hotel Av Jose Malhoa
1099 - 089
LISBON Portugal
P. +351 21 006 1803
www.sanahotels.com

Located in a main financial district, this glass-fronted business hotel is a 7-minute walk from a metro stop and 5 km from Praça do Comércio's trendy shops and nightlife.

The modern rooms come with free Wi-Fi, flat-screen TVs and minibars. Suites add verandas and sitting areas with sofas. There's 24-hour room service.

Breakfast is included and served in a Mediterranean restaurant with an atrium dining room. Other amenities include a lobby bar/piano lounge, plus a health club with a fitness area, a sauna, and a whirlpool tub. Parking is complimentary.

A limited number of rooms have been reserved at the hotel for the special rate of €80.00 per night including breakfast and VAT. A hotel booking form will be sent when you register.

REGISTRATION

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

Scientific Update
Maycroft Place, Stone Cross, Mayfield,
East Sussex, TN20 6EW, UK
Fax Number +44 1435 872734

How to Pay

When you register online, you can have the option to pay via credit card (Amex, Mastercard or Visa) For email payments please include course title, card number, expiry date and security code. A receipted invoice will be automatically generated once paid and sent via email. Should your company wish to pay by cheque or bank transfer bank details will be supplied with an invoice.

Bank Transfer or Cheque

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.

Group Discounts

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.

Course:

Dates:

Location:

No. of attendees

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* Currency Payments

If you select to pay in GBP or Dollars, the amount charged will be based on the exchange rate at the time of preparing the invoice.

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For full terms of business and payment details please see our website

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