

Advanced LC Method Development: Best Practices for HPLC and UHPLC

**A comprehensive course in liquid chromatography
method development using Quality by Design (QbD)**

11-12 October 2017 at Symbion in Copenhagen

HPLC and UHPLC Troubleshooting: A Performance Qualification Approach

**A comprehensive short course in the isolation, correction, and prevention of
liquid chromatographic problems**

13 October 2017 at Symbion in Copenhagen

By Dr. John Dolan – (this will be the last courses offered by John Dolan in Denmark as he'll retire)



Detailed information about the two courses on the next pages

and at <http://md-scientific.dk/courses>

Registration for the course



Please send an e-mail to MD Scientific (marekd@md-scientific.dk) with the following information:

- Name
- Company/Institutions
- E-mail
- Phone no.
- Title of the course(s) you wish to attend

Advanced LC Method Development: Best Practices for HPLC and UHPLC

**A comprehensive course in liquid chromatography
method development using Quality by Design (QbD)**

With Dr. John Dolan

11-12 October 2017 at 9:00-17:00 at Symbion in Copenhagen

The central tenant of Quality by Design (ICH Q8) is that quality cannot be tested into a product – instead it must be designed into the product. When the product is an HPLC or UHPLC method, QbD strategies can guide the development process to result in a standardized method development process, more easily validated methods, and methods that are easier to use and adjust in routine applications.

UHPLC is one of the buzz-words in the liquid chromatography (LC) laboratory today, but it really is just an extension of traditional HPLC -- with higher pressures and smaller particles. Our Advanced HPLC Method Development course includes both HPLC and UHPLC – and points out where they are the same, where they are different, and how to take maximum advantage of each technology.

This 2- day class is designed for laboratory workers involved in HPLC or UHPLC method development as well as those who must transfer of existing methods into a routine laboratory. The class focuses on separation fundamentals and applies them in a time-proven strategy that applies QbD principles to developing robust LC methods quickly. Based on the instructor's extensive experience in a laboratory supporting pharmaceutical and bioanalytical methods, the attendees should gain practical skills to develop realistic LC methods in a short time. The techniques can be used as a stand-alone strategy or added to existing development procedures to help streamline the process. The course content assumes a basic understanding of LC, but not necessarily experience in method development. Delegates will be introduced to LC method development software to help find satisfactory separation conditions. Attendees will receive a comprehensive set of course notes, including copies of all visual materials presented.

Contents

Day 1

- Section 1 – Introduction to LC Method Development
- Section 2 –LC Basics
- Section 3 –Columns
- Section 4 – Reversed-Phase Separation
- Section 5 – Dealing with Ionic Samples
- Section 6 – Equivalent and Orthogonal Columns

Day 2

- Section 7 – Gradient Elution
- Section 8 – UHPLC Considerations
- Section 9 – Quality by Design
- Bonus Options
 - Normal Phase and HILIC - Chiral Separations - Ion-Exchange Chromatography
 - Quality Issues - LC-MS Basics - Sample Preparation

The normal class covers Sections 1-9. Depending on the interests of the particular group of attendees and the remaining time, one or more of the Bonus topics may be included. Each student receives a course notebook, which contains copies of all the slides used in the class plus a written summary of the key points for each slide.

This course makes use of chromatography simulation software as a teaching tool. The principles used in computer modeling are fully applicable to separations in your lab. You will learn how to do the best possible chromatography. Save hours of frustration and improve your results time after time.

Our main goal is not to get through a canned curriculum, but to provide practical help to attendees that can be applied in real situations in the lab. Students are encouraged to bring questions, separations problems, and other topics of interest to discuss during the class or one-on-one with the instructor.

Course fee (including course material and lunch/coffee): DKK 9,500

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About the John Dolan

Dr. John Dolan is best known as the author of the *LC Troubleshooting* column in LCGC Magazine, contributing over 375 installments over the last 33 years. He also has published over 130 scientific articles with emphasis on method development techniques, gradient elution, and column selectivity. He is the author (with Lloyd Snyder) of three books, *Troubleshooting LC Systems*, *High-Performance Gradient Elution*, and the 3rd edition of *Introduction to Modern Liquid Chromatography* (also with Jack Kirkland) – often referred to as the Bible of HPLC. Over the last 32 years as one of the principals of LC Resources, he has provided consultation services, written the well-known DryLab method development software, managed a contract method development and analysis laboratory, and taught more than 10,000 students in short courses. John brings all this experience to each class along with his love for teaching – the result is what students often write on their feedback forms: “the best HPLC class I ever took.”



HPLC and UHPLC Troubleshooting: A Performance Qualification Approach

A comprehensive short course in the isolation, correction, and prevention of liquid chromatographic problems.

With Dr. John Dolan

13 October 2017 at 9:00-17:00 at Symbion in Copenhagen

Who should take this course?

This course is designed for anyone who works with HPLC or UHPLC. No previous experience with HPLC or UHPLC systems is assumed; however, much of the course will appeal to the more experienced worker. This is one of our most popular classes – one that students say is a “must take” for everyone who uses HPLC and UHPLC. Students are encouraged to bring examples of problems they have in the laboratory for discussion in the class.

What does it cover?

"HPLC & UHPLC Troubleshooting: A Performance Qualification Approach" is an intensive one-day course that teaches you the ins and outs of solving problems that occur with your LC methods. You will learn how to qualify the performance of your HPLC using specific tests that also can be used for isolating existing problems. More importantly, you'll learn how to prevent many of these problems from happening in the first place. Here's what the course covers:

- The operating principles of each module in an HPLC and UHPLC system
- A review of basic HPLC theory as it applies to troubleshooting and instrument maintenance
- Why performance qualification (PQ) is so important to ensure the reliable operation of your HPLC and UHPLC and improve the quality of your results
- Proven techniques for systematic problem-solving and instrument maintenance
- The most effective, timesaving, money saving approaches to preventing common hardware problems and method failures.

What will I get from this course?

- What you learn will demystify your instrument.
- You'll discover that understanding how each instrument module works will help you to diagnose and correct problems quickly.
- You'll find that all of the perplexing and frustrating problems your experience have simple and logical solutions.
- You'll learn how to prevent most problems.
- You'll be equipped with testing techniques to help evaluate instrument performance and to isolate problems when they occur.
- You'll find how tell the difference between equipment and separation problems.
- You'll learn how to use the appearance of the chromatogram to help diagnose the problem source and how to correct the problem.
- You'll have access to one of the world's experts in HPLC troubleshooting to help solve your specific problems.

Lecture topics

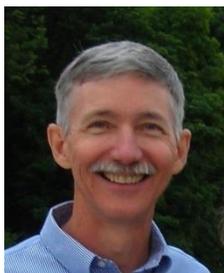
Section 1.	Principles of HPLC & UHPLC Troubleshooting
Section 2.	Performance Qualification, Part 1: Pump & Detector
Section 3.	PQ, Part 2: On-Line Mixing
Section 4.	PQ, Part 3: Chromatographic Checks
Section 5.	The Separation: Physical Problems with Columns
Section 6.	The Separation: Chemical Problems with Columns
Section 7.	Problems with Quantification

Course fee (including course material and lunch/coffee): DKK 5,500

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