

TRAINING COURSE

How to Develop HPLC Methods

[Total Learning time = 10 hours]

Learn how to select appropriate method conditions and perform suitable investigative experiments to obtain a set of method parameters which enables the desired separation for mixtures of analytes. In doing so you will learn how HPLC methods work even if you never need to develop a new method. This course will enable you to take a strategic approach to developing HPLC methods with an understanding of the factors which can be adjusted to manipulate the retention time of analytes.

Additionally, learn how to implement strategies to achieve satisfactory separation for 'complex' samples and to find solutions for difficult HPLC separations in order to develop robust and fit for purpose HPLC methods.

Learning Objectives

1. Define the objectives for the development of a HPLC analytical method.
2. Effectively assess all the available relevant information relating to the desired method, e.g., pKa of the analyte.
3. Select and prepare a suitable sample or samples to be used for the method development.
4. Select suitable scouting conditions to find a suitable column and mobile phase system.
5. Optimise the chromatographic conditions to result in the best possible separation.
6. Apply strategies to achieve satisfactory separations for 'complex' samples with respect to:
 - Optimising gradient methods,
 - Sample preparation,
 - Detection methods,

- Retaining very polar analytes,
- Selecting columns.

This course focuses on reversed phase mode separations.

Attendees are invited to bring along any real life examples that they would like advice on during the training. These may be discussed during group exercises, or, where intellectual property is an issue, privately with the trainer.

Delivery options for this course

This course is available either as an open enrolment option, where anyone can book onto the course, or as an in-house option where the course is run for employees in a specific company.

The open enrolment option is delivered as a 2 day 'virtual' live online training event which is delivered over a 6 hour period on each day, from 9am to 3pm, including breaks. There are optional additional sessions on each day from 3:15pm to 4:15pm where the trainer is available to answer questions on particular method development examples, if desired.

The time zone is typically based on GMT (UTC) from November to March, and BST (UTC+1) from April to October.

The agenda is provided on (starting on page 4) and the full schedule of dates is available on the MTS website, [click here](#).

The in-house option may be delivered either in the live online format or in a classroom based format at your site. In-house training may include customisation to meet specific requirements.

This course is suitable for

Those who have experience of running HPLC methods and now want to learn how to develop new methods or just to understand how they work.

For example:

- Analytical chemists in industry (the course is not specific to a particular industry)
- Researchers who need to use HPLC

Included in the course fees

- Comprehensive course hand-outs - The training book is provided as an electronic copy (pdf) for both live online and classroom based options.

- Certificate of Attendance
- Optional post training assessment (accessed in e-MTS, our learning management system) which leads to a Certificate of Training.
- Access to training materials via e-MTS
- Post training support – Attendees can contact the trainer with questions that may occur when they apply their learning to real life situations.

Course Agenda & Outline

Live Online Training Option

Day 1

Timings (approximate)	Content
0900 to 1030	Common strategies for method development Introduction to 5 step strategy Step 1: Setting suitable objectives for method development
1030 to 1045	<i>Refreshment break</i>
1045 to 1130	Step 2: Assessing all available information e.g., Molecular structure, size, polarity, pKa, etc. Step 3: Selecting suitable samples for method development
1230 to 1315	<i>Lunch</i>
1315 to 1500	Step 4: Performing scouting experiments to select suitable initial conditions Stationary phase and mobile phase selection Step 5: Optimising the method to define method parameters which achieve the desired separation
1500 to 1515	<i>Refreshment break</i>
1515 to 1615	<i>Optional session</i> Q&A

Day 2

Timings (approximate)	Content
0900 to 1030	Case studies of method development following the 5-step strategy Separation Theory Method development objectives: Strategies for maximising resolution in HPLC using retention factor, k' , selectivity, α , and efficiency, N . Review of the 5-step strategy for HPLC method development with particular attention to reasons why some separations are 'challenging'
1030 to 1045	<i>Refreshment break</i>
1045 to 1130	Review of the 5-step strategy continued Optimising Gradient Methods
1230 to 1315	<i>Lunch</i>
1315 to 1500	Sample Preparation A general approach to sample preparation is provided with considerations regarding the most suitable technique. Detection Techniques Retaining Very Polar Analytes Selecting Columns
1500 to 1515	<i>Refreshment break</i>
1515 to 1615	<i>Optional session</i> Q&A