



proGamma Science Corporation
Seeking and Providing Excellence in Training and Consulting
Since 1985

LC BootCamp

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Boot Camp

Montreal



Features:

- **Solid understanding of theory and practice**
- **Modern HPLC instrumentation**
- **How to develop a method?**
- **How to control resolution?**
- **Advanced Topics**
- **Method Development**
- **4 workshops**

Day 1

8:00 Registration- Continental Breakfast

8:30 Course Starts

INTRODUCTION

- Principles of Chromatography
- Branches of Chromatography
- Advantages of HPLC
- Terminology

INSTRUMENTATION

- Hardware
- Pumps
- Detectors
- Recorders, Integrators
- Chromatography data stations
- Instrument Maintenance & Troubleshooting

CHROMATOGRAPHY COLUMNS

- Column materials
- Column Types
- Column selection guides
- Best column properties
- Column packing
- Column maintenance

CHROMATOGRAPHIC DATA ACQUISITION AND PROCESSING

- Principals
- Different models
- Hardware and software

4:30 End of day one

Day 2

8:00 Continental Breakfast

8:30 Course Starts

DEVELOPING AN LC SEPARATION

- Defining the Problem
- Standardization of Conditions
- Operating Parameters
- Preparation of Sample
- Steps to a Satisfactory Separation

CONTROLLING RESOLUTION

- Dealing with Excessive Resolution:
 - Solvent Programming
 - Flow Programming
- Dealing with Insufficient Resolution-Recycling

QUANTITATION

- With Internal Standard
- Without Internal Standard

Workshop 1

4:30 End of Course

Day 3

Advanced Topics

8:00 Continental Breakfast

8:30 Course Starts

NEW ADVANCES IN HPLC INSTRUMENTATION

- Solvent Delivery systems
- Detection systems
- Advanced troubleshooting

NEW ADVANCES IN HPLC COLUMN PACKING DESIGN

- Porous Packing
- Non-porous and superficially porous packing
- Monolithic columns
- Sol-gel silica columns
- Practical operation of bonded-phase columns:
 - Types of Bonded-Phase Chromatography
 - Characteristics of Silica Gel
 - Preparation of Bonded Phases
 - Phase Chain Length and its effect
 - Modes of Reverse-Phase Chromatography
 - Ion-Pair Chromatography

WHY SUBSTITUTE COLUMNS?

- How to characterize columns?
- Column selectivity
- How columns can be similar?
- How to select columns for various analytical methods (LC/MS) ?

CHIRAL LC SEPARATION

- What is chiral compounds?
- Column selection and conditions
- Method development hints

Workshop 2

4:30 End of day one

Day 4

8:00 Continental Breakfast

8:30 Course Starts

OPTIMIZATION IN LIQUID CHROMATOGRAPHY

- Resolution and Efficiency
- Analysis Time, Flow Rate, and Pressure
- Flow Velocity and Column Efficiency
- What to Optimize in Liquid Chromatography ?
- Ways to Achieve 5000 Plates in 5 Minutes
- Column Performance at Minimum Inlet Pressure
- Achievement of Fastest Analyses
- Practical Considerations
- Equipment Specifications

FAST LIQUID CHROMATOGRAPHY

- What is uHPLC?
- Comparison of HPLC vs FIC or UPLC
- Equipment and column requirements
- Operating Parameters
- How to transfer HPLC methods to UPLC

LC Method Development

Systematic method development approach I

- Detection conditions
- First steps in getting the separation

Gradient Elution

- Principals
- Experimental considerations

Validation of Analytical Methods I

- Why Validate?
- Objective of method validation
- Equipment validation IQ, OQ, PQ,
- Analytical Performance parameters

Workshop 3

Day 5

8:00 Continental Breakfast

8:30 Course Starts

Reverse Phase and Ion Pair

- Choice of column packing
- Mobile phase selection
- Ion suppression
- Additives for ion pairing
- Control of ion pairing separations

Workshop 4

Systematic method development approach: II

- Solvent Selectivity
- Solvent optimization RP HPLC

Modern HPLC method development using computer-assisted chromatography

- Which variable to pick?
- Simulation programs
- Chemometric Techniques
- The seven important steps for method developments
- Life examples

Validation of Analytical Methods II

- Statistical Approach
- Linear Regression
- ANOVA
- t-test
- F-test
- How to use DOE?

4:30 End of Course

