

Sep. 26-27, 2007, Toronto, Canada

LC-MS/MS 2-day Course

!!! LC-MS/MS Technique & Fundamentals of Method Development !!!

Instructor: **Dr. Fabio Garofolo** (Algorithme Pharma)

Dr. Garofolo has been working on **Liquid Chromatography - Tandem Mass Spectrometry (LC-MS/MS)**, High Performance Liquid Chromatography (HPLC), Gas Chromatography - Mass Spectrometry (GC-MS) for **more than 15 years**. His work is specialized in applications of LC-MS in **FORENSIC, ANALYTICAL** and **BIOANALYTICAL** fields.

Dr. Garofolo has started **teaching LC-MS since 1995**. He is the official LC-MS instructor in Canada for the Calibration and Validation Group (CVG is a non-profit, scientific organization based in Toronto).

Capitalizing on an extensive occupational background within his specialization field, Dr. Garofolo provides *innovative solutions and specific training for fast method development in LC-MS*. He has developed a multilevel LC-MS courses focused on **High Throughput LC-MS/MS and Advance Method Development**.

More than **2000 students**, mainly from Canada but also from USA, Europe, and Mexico, have attended different levels of Dr. Garofolo's courses. He has taught over **32 courses** on LC-MS/MS and Method Development.

Dr. Garofolo is also the founder and chair of the LC-MS Discussion Group in Toronto. The most well-known scientific meeting of this LC-MS group is the Post-ASMS one, which reached more than 260 attendees in 2006.

Course Duration: 2-day full-immersion course

Course Objective: To familiarize with LC-MS/MS theory, technique, operations, and fundamentals of method development.

Course Purpose: The main purpose of this course is to teach the fundamental principles of Liquid Chromatography Tandem Mass Spectrometry and method development to better understand the practical use and potentials of this important analytical technique.

Who Should Attend: This course will be of value to all regulatory, technical and QA/QC personnel who work in an LC-MS laboratory with a general understanding of mass spectrometry (MS) and tandem mass spectrometry (MS/MS).

This course has been also designed for all the **NEW** LC-MS/MS users, HPLC experts interested in Mass Spectrometry, analytical chemists and university students with limited understanding of mass spectrometry but willing to learn more about it.

COURSE PROGRAM

1- INTRODUCTION AND INLETS

Introduction to Mass Spectrometry; Main components of a Mass Spectrometer; Arpino Symbolism (HPLC Vs MS); Main historical background on LC-MS; Interfaces and flow-rates; Stopped flow; Disk interface; Particle Beam; Thermo Spray; Moving Belt; Ionization Techniques: MALDI, FAB, EI, CI

2- API SOURCES

Ionization Techniques: API; Electrospray (ESI); Ionspray (IS); Turboionspray (TIS); Heated Nebulizer (HN); APCI

3- MASS ANALYZERS

Magnetic Sector; Ion trap; TOF; FT-MS; Quadrupole: Theory, Ion Stability, Mathieu Equation

4- QUADRUPOLE OPERATION

Quadrupole MS Operations: Full Scan; Selected Ion Monitoring (SIM); Quadrupole MS/MS Operations: Precursor Ion Scan, Multiple or Selected Reaction Monitoring (MRM or SRM), Product Ion Scan; Ion Path; Lenses and Mass Filters; Collision Cell; Ion Detection.

5- FUNDAMENTALS OF LC-MS/MS METHOD DEVELOPMENT

Optimal chemistry for ESI; Sample characterization; Internal standard and stable-labeled IS, H₂, C₁₃, and N₁₅; Matrix considerations; Extraction types: protein precipitation, matrix dilution, liquid-liquid extraction, solid phase extraction;

LC parameters; ESI Vs APCI, matrix effect, ion suppression; Analyte pK_a and pH; Deductions from molecular structure; Analyte stability, volatility, polarity; Chemical artifacts; Acid-base scale for positive and negative ions; LC column selection, isocratic and gradient LC methods; Interference evaluation; Isobaric species; Unique selectivity; Connecting tubes; Optimization software: MS parameters, resolution and MS/MS auto optimization;

6- ACTUAL STUDY CASES

Applications: Erythromycin, Vit D₂, Minoxidil, Naproxen, Progesterone, Acetylmorphine, Procainamide, Caffeine, Propranolol, Polyphenols, Nortriptyline and Oxazepam.

Cost of LC-MS Course:

Registration fee per person.....\$990.00 + GST

Registration fee includes Course Binder, Course Certificate, Continental Breakfast, Lunch and Refreshments

INTERESTED? You can **register** the courses by sending email to us at lcms_registration@cvq.ca.