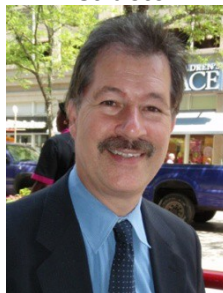**TWO-DAY COURSE, Saturday and Sunday**
06 Understanding, Optimizing and Applying LC/MS/MS Techniques using Electrospray, APCI and APPI to Develop Successful Methods

Instructor

Robert D. Voyksner
LCMS Limited

This course is designed for the chromatographer / mass spectrometrist who wants to be successful in developing methods, optimizing methods and solving problems using LC/MS. The course covers the atmospheric pressure ionization (API) techniques of electrospray, pneumatically assisted electrospray and atmospheric pressure chemical ionization (APCI) and atmospheric pressure photo ionization (APPI) using single quadrupole, triple quadrupole, time-of-flight and ion trap mass analyzers. Discussions of sample preparation and modes of chromatography will target method development and optimization for the analysis of "real-world" samples by LC/MS. The course highlights the following topics with respect to optimization methods to achieve the best sensitivity, specificity and sample throughput.

Specific topics that are covered include:
1. Understanding API ionization processes for electrospray, APCI and APPI, what affects the ionization process and how to maximize the ionization for compounds of interest.
2. Understanding the effects of LC columns (dimensions and particles size), flow rate, and mobile phases has upon the separation and LC/MS analysis.
3. Determining the type of ions that can form by API, how to Interpret the MS and MS/MS spectra and approaches on how to perform qualitative analysis in LC/MS/MS.
4. Understanding important issues that effect quantitative analysis results and how to optimize the method to achieve the best performance, reduce matrix suppression, and generate the best accuracy and precision.
5. Exploring what new techniques are available (e.g. direct analysis MS, chip method and MS instrumentation) that can improve the results one can obtain.

This course focuses on method development and application for the analysis of both small and large molecules that are pharmaceutically, biomedically, clinically and environmentally relevant.

Prerequisite: Working knowledge of undergraduate analytical chemistry, including hands on experience with LC separations and mass spectrometry. This is a course for those using LC/MS and LC/MS/MS who want a deeper understanding of the technique to achieve better sensitivity, specificity and to improve their data interpretation skills.