Introduction to Comprehensive Two-Dimensional Gas Chromatography (GCxGC)

Instructor	John Dimandja
Course Length	1 day

Course Description

Comprehensive two-dimensional gas chromatography (GCxGC) is an emerging technology with a growing number of industrial, environmental, and bioanalytical applications. This one-day short course is intended to provide an overview of the concepts, instrumentation, and versatile method development strategies that are possible with GCxGC. A wide variety of applications will also be covered that include the qualitative and quantitative analysis of samples such as petroleum, foods and fragrances, biofluids, etc. The emphasis throughout the course will be on the fundamental and practical aspects of the instrumentation, and an undergraduate level knowledge of chemistry will be assumed of the intended audience, with no previous experience in gas chromatography.

Target Audience

The target audience includes persons who are unfamiliar with multi-dimensional gas chromatography, people who are familiar with the technology but need additional information to assess the merits of GCxGC for their particular application, and new users who wish to optimize their use of the instrument.

Instructor Biography

Dr. John Dimandja is a professor at Spelman College and a faculty research associate at Georgia Tech's Institute of Bioengeneering and Bioscience in Atlanta (USA). He received his PhD in the laboratory of Dr. John Phillips, the inventor of GCxGC, and has over fifteen years of experience in GCxGC instrument, method, and applications development. Highlights of his work include the development of GCxGC modulators, the Phillips mix for GCxGC column characterization, and data visualization and quantitation software that is now part of several commercial systems. He has authored over 30 peer-reviewed publications and has given over 200 conference presentations. He has also taught over 15 workshops on GCxGC since 1997, and is a member of the organizing committee for the International Symposium on GCxGC.

Course Outline

I. Introduction to Multi-dimensional Gas Chromatography
   a. Overview of 1D GC Technology
   b. Overview of 2D GC Technology
   c. The GCxGC Advantage

II. Instrumentation Overview
   a. Modulators
   b. Columns
   c. Detectors
   d. Data Processing Software

III. Method Development Strategies
   a. 2D or not 2D? Preliminary Evaluations
   b. Column Selection
   c. Method Optimization/Validation

IV. Applications Overview
   a. Industrial Applications
   b. Environmental Applications
   c. Bioanalytical Applications

V. Open Disscussion