The Orange County Section of the American Chemical Society

March Dinner Meeting

Thursday, March 15th, 2018

The Doubletree Club Hotel
7 Hutton Centre Drive, Santa Ana
Phone: 714-751-2400

Social:	5:30PM
Dinner:	6:00PM
Presentation:	7:20PM

Integrated Workflows with Multidimensional Chromatography

Claude R Mallet, PhD
Senior Scientist, Waters Corporation, Milford, MA

Reservations

Advance registration by all is requested, and required for those attending the Dinner. Please contact us at ocacs@sbcglobal.net as soon as possible, but no later than noon on Tuesday, March 13, 2018. Indicate if you will be eating dinner, or attending the program only. Also, please list all the names of the attendees.
Dinner cost is $30 for members and member's significant others; $35 for non-members or those without reservations. Cash/check at the door (no cards) or in advance to: OCACS, P.O. Box 211, Placentia CA 90871. Note: OCACS pays the hotel on the basis of the number of dinner reservations made. Your RSVP for the Dinner is a commitment to pay for dinner.
The first five students who register for a meeting will receive a $10 discount on their dinner. If you don't want dinner, you may attend the talk for FREE at 7:15PM.

Directions

Take the Costa Mesa Freeway (55), exit at MacArthur Blvd. and go west (towards South Coast Plaza). Turn left on to MacArthur Place. The DoubleTree Club Hotel is straight ahead on the left. *(Do not turn right at MacArthur Place to the DoubleTree Hotel, which is easily mistaken for the DoubleTree Club Hotel.)*
Park in front of the hotel, or follow the signs. If the parking lot is full, ask the valet staff where to park.

Abstract

Integrated Workflows with Multidimensional Chromatography

Chromatography is the first-choice separation technique for a wide selection of applications, across many fields, ranging from simple to highly complex extracts. The main rationale for its use is the resolution power, or peak capacity, and ultimately the separation recording of an extract into its distinct components. Thus, increasing the performance of chromatography is inevitably linked to improvements in peak capacity. With this goal in mind, innovative researchers lead the introduction of sub 2µm particles (UPLC), core-shell particles, and monolithic stationary phases, and produced attainable performance of peak capacity up to a thousand for 1D LC separation.

With new technologies newer solutions emerge for the most difficult of applications. The concept of hyphenated systems or multi-dimensional chromatography was designed, at first, for solving complex analyses. The peak capacity, or chromatographic separation power, can be increased by combining several separation dimensions (in most cases, two) each using optimized conditions for maximum resolution. The main challenge is the transfer of closely resolved analytes from the primary resolving dimension (PRD) to the secondary resolving dimension (SRD). Nowadays, multi-dimensional chromatography is gaining acceptance for both targeted and untargeted analysis of complex mixtures. However, at its beginnings, the technique was perceived as too complex in terms of the necessary hardware and difficulty to gain in-depth insight for practical usage.

In recent years, advances in software control and have enabled hyphenated instrumentation platforms with enhanced performance and relative ease of use. Additionally, multi-fluidic circuits have been shown to decrease the cost and time of sample preparation, improve chromatographic peak shape, and enhance sensitivity. In this presentation, several forensic and environmental applications will be discussed to fully demonstrate the capabilities of modern 2D LC/MS/MS workflows.

Biography

Dr. Claude R Mallet is from a small town named "Dieppe" in the province of New Brunswick. Canada. The town was renamed in 1946 to commemorate the Canadian soldiers for their bravery during second World War's operation Jubilee, also known as "the Dieppe Raid of 1942", on Normandy Beaches, France.

In 1997, Dr. Mallet received his Ph.D. in analytical chemistry from the University of Montreal, Montreal, Canada. His thesis was entitled “Time-Coupled-timed-Resolved Chromatography or TCRC”. This new hyphenated system was based on an experimental GC/GC/MS/MS orthogonal chromatograph using a mobile heated pulse. In 1997, Dr. Mallet was hired as a senior application chemist in several biotech, contract research organization (CRO’s) and life-science firms, before accepting a senior scientist’s position at Waters Corporation in 2000. From his doctoral work with Time Decoupled Chromatography concept, the technique was extended to Waters Liquid Chromatography portfolio. Since 2013, Dr. Mallet was tasked by the Separation Technology Division to pursue research interest in automated 2D & 3D LC/MS/MS technologies.