

Supercritical fluid chromatography (SFC)

Course Overview

This introductory course covers all major aspects of supercritical fluid chromatography. The basic theory of supercritical fluids and SFC is reviewed. Currently available commercial instrumentation is discussed in relation with kinetic performance and instrumental constraints.

The strategies to quickly develop high-quality and robust SFC methods are examined in detail, with a focus on the choice of stationary phase and mobile phase composition (nature and proportion of co-solvent introduced in CO₂, use of additives), depending on analyte type (acidic, basic, neutral, polar or non-polar). Secondary optimization parameters (temperature, pressure, flow-rate) are also covered. Practical aspects of the hyphenation of SFC with MS are reviewed.

In addition, applications for a wide range of samples are presented and discussed at different stages throughout the course.

Who Should Attend

Everyone interested in using Supercritical Fluid Chromatography as an alternative technique to their current analytical method (GC, LC, CE...), or those who are already using SFC, but want a better understanding of the underlying principles of separation performance, retention and selectivity.

Biography Caroline West

Caroline West is a full professor in analytical chemistry at the University of Orleans, France, where she is teaching separation science and chemometrics.

Her main scientific interests lie in fundamentals of chromatographic selectivity, both in the achiral and chiral modes mainly in SFC, but also in HPLC (reversed-phase, HILIC, mixed-mode...). She is also applying these methods, with or without hyphenation to extraction methods and/or mass spectrometry, to samples of pharmaceutical interest and natural products. She has authored more than 100 papers in international peer-reviewed journals and has presented about 100 lectures in national and international conferences and seminars.

She was formerly a Junior member of the French University Institute (IUF, 2015-2020), a service of the Ministry of Higher education distinguishing a small number of university professors for excellent research. In 2015, she received the "LC-GC Emerging Leader in Chromatography" award from LC-GC North America and was ranked several times among the most influential people in analytical chemistry by "The Analytical Scientist" magazine ("Top 40 under 40" 2014 & 2018, "The Power List" 2019, 2020 & 2021). More recently, she was the recipient of the Jubilee medal from the Chromatographic Society (2021). She is also an advisory board member for several journals in separation science (Journal of Chromatography A, Journal of Pharmaceutical and Biomedical Analysis, Chromatographia, LC-GC North America...).

Biography Davy Guillarme

Davy Guillarme holds a Ph.D. degree in analytical chemistry from the University of Lyon, France. He is now senior lecturer and research associate at the University of Geneva in Switzerland. He authored more than 300 journal articles related to pharmaceutical analysis. His expertise includes HPLC, UHPLC, HILIC, LC-MS, SFC, SFC-MS, multidimensional LC, analysis of proteins, mAbs and ADCs.

He is an associate editor of Journal of chromatography B and editorial advisory board member of several journals (Trends in analytical chemistry, Journal of Chromatography A, Journal of Separation Science, LC-GC North America...). He was the recipient of the LC-GC emerging leader award in chromatography in 2013, the jubilee medal from the chromatographic society in 2018, and the international award of the Belgian society of pharmaceutical sciences in 2022. He was also elected as one of the world's most influential analytical scientists by "Analytical Scientist" magazine in 2013, 2014, 2015, 2017, 2019, 2020 and 2021.

Last, he is also widely involved in teaching and education activities, such as training courses, seminars, and conferences on HPLC, SFC, biopharmaceuticals analysis...