

SFC Short Course

SFC 2010

September 29, 2019

Course Description

This course will focus on fundamentals and advances in packed column supercritical fluid chromatography (pcSFC) employing carbon dioxide-based mobile phases. Particular emphasis will be directed toward pharmaceuticals and other fields where SFC currently plays or will play a critical role such as metabolomics, specialty chemicals, biodiesel, foods, natural products and fragrances. During the half day course attendees will gain the following knowledge:

- Advantages of SFC over HPLC based separations and purifications
- How to develop analytical SFC separations and preparative SFC purifications
- How carbon dioxide based mobile phases improve efficiency and throughput while reducing costs of analysis and purification
- How to choose stationary phases for achiral and chiral SFC separations
- How to use SFC to increase environmental friendliness of separations
- Which molecules are suitable for SFC, and which molecules are not suitable
- How to modify HPLC process to exploit the advantages of SFC
- The role of carbon dioxide, modifiers and additives in SFC separations
- Options for detection in SFC, with special emphasis on SFC/MS
- What are the latest developments and what is the future of SFC

Target Audience

Anyone currently using HPLC or other chromatographic techniques for analysis and/or purification and interesting in learning how SFC can increase efficiency while reducing costs will find this course of interest. This includes academic and industrial separation scientists, process chemists, laboratory and R&D managers in the pharmaceutical, specialty chemicals, food, metabolomics, biodiesel, natural products, fragrance, materials and medical research industries. Actual experience or knowledge of SFC is not required. Some knowledge of chromatographic principles is desirable.

Agenda:

9:00 am – Registration

10:00 – Introduction of Instructors and Course Orientation

10:10 – Introduction to Supercritical Fluids and pcSFC – Taylor

11:10 - Instrumentation in Analytical-Scale SFC – Pinkston

11:40 - Method Development for Chiral Analytical pcSFC – Miller

12:30 – Lunch

1:10 - Method Development for Achiral pcSFC – Pinkston

2:10 – Preparative pcSFC – Miller

3:10 – Break

3:25 - Detection in Packed Column SFC - Pinkston

4:15 - Introduction to Supercritical Fluid Extraction - Taylor

5:15 – Discussion, Q&A

5:30 - Adjourn

Biography of Course Instructors

Pinkston Biography: J. David Pinkston is retired from Kellogg's Global Chemistry organization. His research interests have included the development and application of various forms of pressurized fluid chromatography and the coupling of these separation methods to intelligent detectors, such as mass spectrometry. Most recently, his interests have focused on flavor/aroma chemistry, trace-level contaminants, and oil/fat chemistry, degradation, and preservation. David received his Ph.D. in 1985 from Michigan State University working in separations and mass spectrometry under the direction of J. Throck Watson and John Allison. He was Chair of the ACS's Division of Analytical Chemistry in 2002 – 2003, was the Division's Program Chair for the Fall 2002 and Spring 2003 National ACS Meetings, and has served on the Executive Committee of the Subdivision of Chromatography and Separations Chemistry. David

has authored or co-authored over 55 publications, and presented over 130 lectures, the majority of which are in the areas of SFC and SFC/MS. He has taught various versions of the SFC short course since the early 1990s. David loves downhill skiing, and is an avid cyclist.

Miller Biography: Larry Miller is a Principal Scientist in the Discovery Analytical Sciences group at Amgen in Cambridge, MA. He graduated with a BS degree from the University of Illinois in Urbana-Champaign and a MS from Roosevelt University. He has over 30 years of experience performing small molecule achiral and chiral purifications at the mg to multi-kg scale. During his career he spent 20 years at Searle/Pharmacia and has spent the last 13 years at Amgen. At Amgen he is responsible for discovery and early development purification support utilizing preparative SFC and HPLC. Larry has over 30 peer reviewed publications, over 40 presentations at scientific meetings and serves as co-instructor for SFC short courses in the US and Europe. In addition, Larry is the past president of the Green Chemistry Group which organizes the annual SFC conference.

Taylor Biography: Larry T. Taylor is Emeritus Professor of Chemistry, Virginia Tech (Blacksburg, VA) and President of Applied Analytical, Inc. He is a member of the editorial boards for the Journal of Chromatographic Science, Chromatographia, and the Journal of Supercritical Fluids. He was a member of the organizing committee for the 4th through the 10th International Symposia on SFC/SFE during the 1980's. More recently he has served as the Co-Chair with Larry Miller (Amgen) of the Scientific Committee for SFC 2008 (Zurich), SFC 2009 (Philadelphia), SFC 2010 (Stockholm), SFC 2011 (New York City), SFC 2012 (Brussels), SFC 2013 (Boston), SFC 2014 (Basel), SFC 2015 (Philadelphia), and SFC 2016 (Vienna). Larry is the author or co-author of approximately 400 peer reviewed publications, one book entitled "Analytical Supercritical Fluid Extraction", and 12 patents. He presently serves as co-teacher of short courses addressed to SFC and SFE. Recent industrial partnerships have included: Waters Corp., Pfizer, Eli Lilly, Princeton Chromatography, ES Industries, Amgen, Applied Separations, Procter & Gamble, Merck, Wythe, and Abbott Labs.