North Jersey Chromatography Group ACS Annual Symposium

Advancing Separations Through Column Chemistries and Advanced Column Technology

Nicholas Snow
Professor
Seton Hall University

Mary Ellen McNally
Fellow
FMC Corporation

James Grinias
Professor
Rowan University

Mohamed Hemida
Senior Scientist
Merck

16 October 2026
10 AM – 4 PM

Hilton Hotels and Executive Meeting Center

3 Tower Center Blvd,
East Brunswick, NJ 08816

Gabrielle Zabala
Scientist II
Waters Corporation

Register for Free Now

www.njacs.org/topical-group/chromatography

Lunch and Refreshments Will Be Provided

Questions? Contact NJCG1234@gmail.com

Register Here

Agenda

Time	Moderator/Speaker	Title
10:00–10:15 am	NJCG Staff	Registration Vendor Show
10:15–10:20 am	Catherine Mihalec NJCG Chair (BMS)	Welcome Introduction From NJCG
10:20–10:30 am	Dennis MacMullin Waters Corporation	Introduction From Waters Corporation
10:30–11:00 am	**Speaker 1** Nicholas Snow Seton Hall University	The Chemistry-Based Origins of Selectivity and Resolution in Capillary Gas Chromatography
11:00–11:30 am	**Speaker 2** Mary Ellen McNally FMC Corporation	Evaluating Analytical Methods Both Sample Prep and Chromatography for Their Greenness Scores: Why and How
11:30–1:00 pm		Lunch Vendor Show
1:00–1:15 pm	NJ-ACS Member	NJ-ACS Overview
1:15–1:45 pm	**Speaker 3** Jim Grinias Rowan University	New Approaches to Capillary LC Column Development
1:45–2:15 pm	**Speaker 4** Gabrielle Zabala Waters Corporation	Design and Development of a Novel Aromatic Stationary Phase as a Unique Tool for Advanced Method Development Scientists
2:15–3:15 pm		Refreshment Break Vendor Show
3:15–3:45 pm	**Speaker 5** Mohamed Hemida Merck & Co.	Integrated Liquid Chromatography Workflows for High-Throughput Biopharmaceutical Analysis and Development
3:45–4:00 pm	Jiangtao He NJCG Chair-Elect (BMS)	Closing Remarks

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The Chemistry-Based Origins of Selectivity and Resolution in Capillary Gas Chromatography

Nicholas Snow

Professor in Department of Chemistry and Biochemistry; Chair of Department of Chemistry and Biochemistry
Seton Hall University

Abstract

While capillary gas chromatography is among the most efficient separation techniques available, with columns easily generating hundreds of thousands of plates, intermolecular forces and the resulting separation chemistry are still the main drivers of separation power. In this talk, we will discuss the main intermolecular forces impacting separations on capillary columns, how these forces drive and impact separation and resolution and we will constructively analyze and criticize the various methods, including retention indexes, phase constants and polarity numbers that have been used to characterize stationary phases over the years.

Biography

Dr. Nicholas H. Snow is the Thomas and Sylvia Tencza Professor and Chair of Chemistry and Biochemistry, with extensive expertise in analytical chemistry, chromatography, and separation science. He has mentored numerous graduate and undergraduate researchers, authored more than 100 publications and two books, serves in several editorial leadership roles, and received the 2025 Eastern Analytical Symposium Award for Outstanding Achievements in Separation Science. Beyond his research accomplishments, Dr. Snow has a distinguished record of university service, teaching, and academic leadership, earning multiple awards for faculty service and student mentorship. He has held senior administrative and leadership positions for more than 20 years, including department chair, Associate Provost, and Director of Grants and Research Services.

Evaluating Analytical Methods both Sample Prep and Chromatography for their Greenness Scores: Why and How

Mary Ellen McNally

FMC Fellow at FMC's Stine Research Center
FMC Corporation

Abstract

Coming Soon

Biography

Dr. Mary Ellen McNally is a Technical Fellow at FMC Corporation and a widely recognized leader in analytical chemistry, separations science, sample preparation, and sensor technologies. During a distinguished career spanning 33 years at DuPont and her current role at FMC, she has led innovative research programs, received numerous industry awards, and was named among The Analytical Scientist's Top 50 Most Influential Women in Analytical Science. She has made significant contributions to chromatography, supercritical fluid technologies, and ultra-trace analysis, while serving in numerous leadership roles for professional organizations, journals, and conferences, including the Eastern Analytical Symposium and Chromatography Forum of Delaware Valley. Her current work focuses on analytical challenges related to manufacturing and process development.

New Approaches to Capillary LC Column Development

James Grinias

Professor in Department of Chemistry and Biochemistry
Rowan University

Abstract

As greener approaches to chemical analysis continue to grow in popularity, the significant decrease in mobile phase flow rates makes capillary LC an appealing choice for liquid chromatographic separations. In this presentation, recent advances in capillary LC column design will be described. The use of a “tube-in-manifold” design to enable circular cross-section columns within microfluidic column formats improves column loading and performance for integrated column chips. Integrated column cartridges where a column, heater, and detector are combined within a single unit promote ease-of-use for capillary LC, especially within miniaturized systems. Descriptions of various stationary phases used in these column formats will also be presented.

Biography

Dr. James Grinias is an award-winning analytical chemist whose research focuses on chromatography, microfluidics, and the development of advanced capillary and microfluidic liquid chromatography (LC) technologies. His work has improved the performance of miniaturized separation systems and expanded the application of LC-MS to complex problems in neuroscience and molecular physiology. A recognized leader in separation science, Dr. Grinias has received numerous honors, including the NSF CAREER Award, NIH MIRA Award, ACS Satinder Ahuja Award for Young Investigator in Separation Science, and multiple selections to The Analytical Scientist's "Top 40 Under 40" list. His research continues to drive innovation in chromatographic column technology and next-generation analytical instrumentation.

Design and Development of a Novel Aromatic Stationary Phase as a Unique Tool for Advanced Method Development Scientists

Gabrielle Zabala

Sr. Scientist, Separation Sciences, Analytical R&D
Waters Corporation

Abstract

While C18 bonded phases remain the most widely used stationary phases for reversed-phase high-performance liquid chromatography (RP-HPLC), materials offering alternative selectivity are needed for some separations. Of the different retention mechanisms involved in RP separations, one that is not provided by alkyl bonded phases is π–π interaction between the stationary phase and analytes possessing π electrons. Due to this interaction biphenyl stationary phases are excellent at separating aromatic compounds, phenolic analytes, isomeric mixtures and polyaromatic hydrocarbons. Although biphenyl stationary phases provide unique selectivity, there are some limitations to biphenyl stationary phases, such as UV-detected column bleed, incapability with highly acidic or basic conditions and concerns regarding reproducibility. To address these challenges, we developed a biphenyl stationary phase with ethylene-bridged-hybrid (BEH™) particles. In this presentation, the design and development of the Waters™ Biphenyl Column with MaxPeak™ Premier Technology will be discussed.

Comparative studies will highlight the column's enhanced pH stability, reduced UV-detected bleed, unique selectivity, and improved robustness relative to conventional biphenyl columns. Application examples from analytical and pharmaceutical separations will demonstrate the versatility of the Waters Biphenyl Column and its utility as a reliable tool for modern LC method development.

Biography

Gabrielle Zabala is a Scientist II at Waters Corporation where she has spent the past four years supporting the development of innovative separation science technologies as a member of the research and development team. Her experience includes experimental design, method evaluation, data analysis, and cross-functional collaboration across product development initiatives. She holds a Bachelor of Science in Chemistry from Emmanuel College and is passionate about applying scientific rigor and creative problem-solving to advance analytical science and deliver impactful solutions for customers.

Integrated Liquid Chromatography Workflows for High-Throughput Biopharmaceutical Analysis and Development

Mohamed Hemida

Sr. Scientist, Separation Sciences, Analytical R&D

Merck & Co., Inc.

Abstract

The evolution of biopharmaceuticals toward increasingly complex and diverse modalities demands analytical approaches that are both sophisticated, streamlined, and efficient. Liquid chromatography (LC) remains the industry's gold standard, yet traditional method development is often time-consuming, solvent-intensive, and reliant on expertise, and manual trial-and error approach, barriers to timely, robust characterization across modern drug classes. Here, we describe integrated LC workflows designed to accelerate biopharmaceutical analysis and development by combining automated column screening, computer-assisted method selection, and targeted chromatographic strategies. The workflows leverage complementary techniques: reversed-phase LC (RPLC), hydrophilic interaction LC (HILIC), Ion-pair reversed-phase liquid chromatography (IP-RPLC) and size-exclusion chromatography (SEC) coupled with spectroscopic and mass-spectrometric detection to resolve complex mixtures encountered from early discovery through late-stage development. Examples demonstrate reduced development time, lower solvent consumption, and improved reproducibility while maintaining analytical rigor for downstream characterization. These streamlined, generic approaches enable faster decision-making and scalable implementation of robust LC methods across diverse biopharmaceutical modalities.

Biography

Mohamed Hemida is a Senior Research Scientist in the Separation Science group at Merck Research Laboratories, where he focuses on multi-scale, mixed-modalities separation, and purification workflows. He has broad expertise in separation and analytical science across biopharmaceutical and pharmaceutical industry. His work spans RPLC, HILIC, IP-RPLC, NPLC, SEC, HIC, IEX, Affinity chromatography, SFC, and 2D-LC, with a strong emphasis on automated, high-throughput, and computer-assisted analytical workflows. Dr. Hemida has authored 15 peer-reviewed publications, delivered more than 20 international presentations, and received multiple awards for scientific excellence and innovation.