



HPLC 2024

DENVER, COLORADO, USA

JULY 20-25, 2024

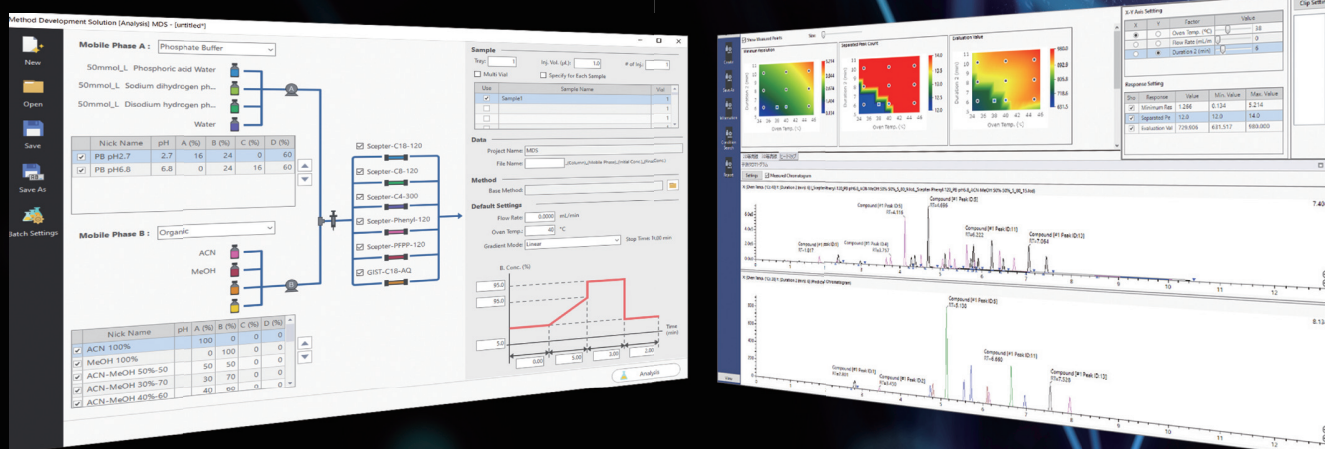
HPLC 2024

52nd International Symposium on High Performance
Liquid Phase Separations and Related Techniques

SYMPOSIUM PROGRAM

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hplc2024-symposium.org



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Welcome from the Chair

It is my great pleasure to welcome you to HPLC 2024 in Denver. The HPLC Symposium is world renowned forum on liquid phase separations and related technologies. The scientific committee has organized a program of 150 oral presentations by world leaders and rising stars of analytical separation science.

The oral program has three concurrent sessions each day. Presentations on the challenges in the pharmaceutical industry as well as the characterization of biological samples occur every day. In addition, there are numerous talks on innovative column technology. As analytical separation science combined with powerful detection technology continues to solve major societal challenges such as disease detection and characterization, environmental pollutant analyses, and forensic studies, we illustrate the power of this combination across the symposium. Microscale separation methods are powerful tools for characterizing mixtures in small volumes. State- of-the- art science from this field is also highlighted. Finally, as we envision the future of separation science, there are many talks on predictive modeling and the use of AI and machine learning to facilitate improved separations.

Immediately after our oral sessions on Monday, the HPLC Tube presentations will occur. This is a forum where scientists compete to celebrate their science, illustrate their creativity through video technology. This is always a fun event.

Also, we are offering an expansive array of short courses and vendor workshops that should entice beginners and experts in the field.

The poster programming and vendor exhibits will round out the symposium. The poster presentations will allow you to see a broad array of work in our field and you will have an opportunity to meet with these creative scientists.

An outstanding vendor exhibit is provided this year where you will be able to take a close look at the latest technology and have a chance to meet the exhibitors who will be illustrating their science. The interactions with the vendors will give you a chance to think about how their technology might apply to your work and help solve challenges in your current efforts and help envision your future endeavors.

Finally, Denver is a vibrant city with so much to offer. The views from the mile high city are spectacular. There are microbreweries, art museums, science museums, hiking and numerous outdoor sports activities, as well as Colorado Rockies baseball games.

Wishing you a spectacular Denver HPLC 2024!



A handwritten signature in black ink that reads "Susan Olesik".

Susan Olesik

HPLC 2024 – Denver Program Chair
The Ohio State University

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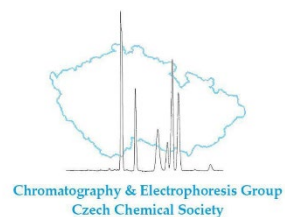
Contributors



Exhibitors

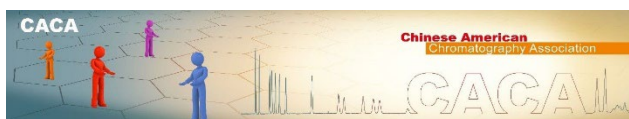
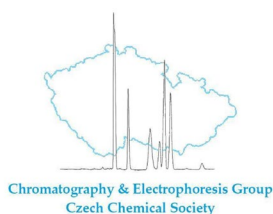


Media Partners



the Analytical Scientist

Travel Grants



Committees

Permanent Scientific Committee (PSC)

Alberto Cavazzini, University of Ferrara, Italy
Gert Desmet Vrije, Universiteit Brussel, Belgium
Atilla Felinger, University of Pecs, Hungary
Gérard Hopfgartner, University of Geneva, Switzerland
Robert T. Kennedy, University of Michigan, USA
Gongke Li Sun, Yat-sen University, China
Susan Olesik, Ohio State University, USA
Koji Otsuka, Kyoto University, Japan
Guowang Xu, Dalian Institute of Chemical Physics, CAS, China
John Yates, The Scripps Research Institute, USA
Kelly Zhang, Genentech, USA

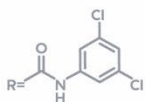
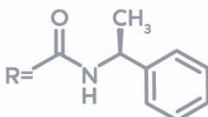
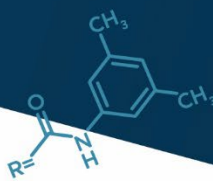
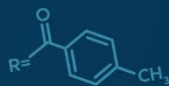
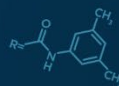
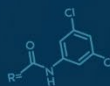
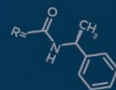
Organizing Scientific Committee

Jared Anderson, Iowa State University, Iowa, USA
Ying Ge, University of Wisconsin – Madison, USA
Jim Grinias, Rowan University, Glassboro, New Jersey, USA
Lisa Holland, West Virginia University, USA
Todd Maloney, Eli Lilly, Indianapolis, Indiana, USA
Kevin Schug, University of Texas – Arlington, Texas, USA
Mark Schure, Kroungold Analytical, USA
Dwight Stoll, Gustavus Adolphus College, USA

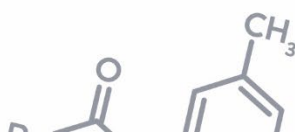
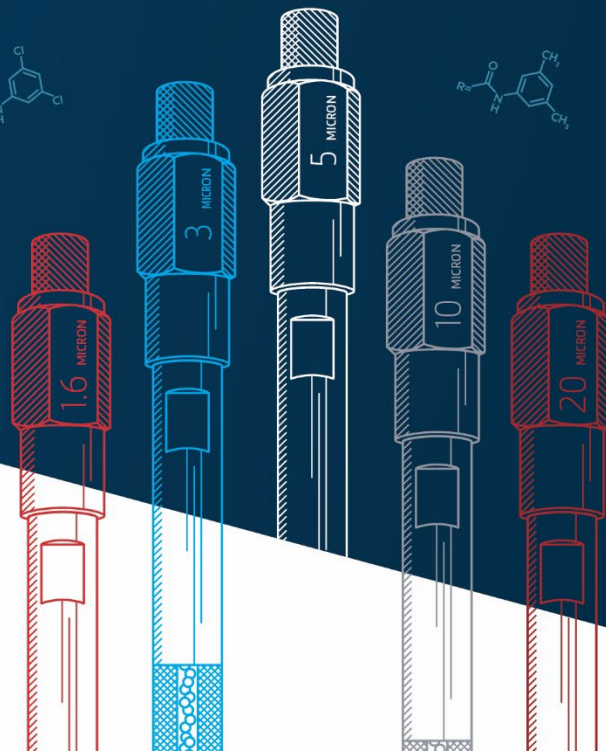
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History & Future of the HPLC Conference Series

Year	No.	Location	Chair(s)
1973	1st	Interlaken, Switzerland	Willy Simon
1975	2nd	Wilmington, USA	Jack J. Kirkland
1977	3rd	Salzburg, Austria	Joseph F.K. Huber
1979	4th	Boston, USA	Barry L. Karger
1981	5th	Avignon, France	Georges Guiochon
1982	6th	Cherry Hill, USA	Robert Bardford
1983	7th	Baden-Baden, Germany	Klaus Peter Hupe
1984	8th	New York City, USA	Csaba Horvath
1985	9th	Edinburgh, UK	John H. Knox
1986	10th	San Francisco, USA	Ronald E. Majors
1987	11th	Amsterdam, The Netherlands	Hans Poppe
1988	12th	Washington, USA	Georges Guiochon
1989	13th	Stockholm, Sweden	Douglas Westerlund
1990	14th	Boston, USA	Barry L. Karger
1991	15th	Basel, Switzerland	Fritz Erni
1992	16th	Baltimore, USA	Fred E. Regnier
1993	17th	Hamburg, Germany	Klaus K. Unger
1994	18th	Minneapolis, USA	Larry D. Bowers and Peter W. Carr
1995	19th	Innsbruck, Austria	Wolfgang Lindner
1996	20th	San Francisco, USA	William S. Hancock
1997	21st	Birmingham, UK	Anthony F. Fell
1998	22nd	St. Louis, USA	Daniel W. Armstrong
1999	23rd	Granada, Spain	Emilio Gelpi
2000	24th	Seattle, USA	Edward S. Yeung
2001	25th	Maastricht, The Netherlands	Hans Poppe and Henk Lingeman
2001	-	Kyoto, Japan	Nobuo Tanaka and Shigeru Terabe
2002	26th	Montreal, Canada	Irving W. Wainer
2003	27th	Nice, France	Antoine M. Siouffi
2004	28th	Philadelphia, USA	Mark R. Schure
2005	29th	Stockholm, Sweden	Douglas Westerlund
2006	30th	San Francisco, USA	John H. Frenz
2007	31st	Gent, Belgium	Jacques Crommen and Pat Sandra
2008	32nd	Baltimore, USA	Georges Guiochon and Steven Jacobson
2008	33rd	Kyoto, Japan	Koji Otsuka and Nobuo Tanaka
2009	34th	Dresden, Germany	Christian Huber
2010	35th	Boston, USA	Steven A. Cohen

Year	No.	Location	Chair(s)
2011	36th	Budapest, Hungary	Attila Felinger
2011	37th	Dalian, China	Yukui Zhang and Peter Schoenmakers
2012	38th	Anaheim, USA	Frantisek Svec
2013	39th	Amsterdam, The Netherlands	Peter Schoenmakers
2013	40th	Hobart, Australia	Paul Haddad
2014	41st	New Orleans, USA	J. Michael Ramsey
2015	42nd	Geneva, Switzerland	Gérard Hopfgartner
2015	43rd	Beijing, China	Guibin Jiang
2016	44th	San Francisco, USA	Robert T. Kennedy
2017	45th	Prague, Czech Republic	Michal Holčápek and František Foret
2017	46th	Jeju Island, Korea	Doo Soo Chung
2018	47th	Washington, DC, USA	Norman Dovichi
2019	48th	Milan, Italy	Alberto Cavazzini and Massimo Morbidelli
2019	49th	Kyoto, Japan	Koji Otsuka
2020	-	San Diego, USA	Mary J. Wirth (postponed due to COVID pandemic)
2022	50th	San Diego, USA	Frantisek Svec
2023	51st	Düsseldorf, Germany	Michael Lämmerhofer and Oliver J. Schmitz
2024	52nd	Denver, USA	Susan Olesik
2024	53rd	Dalian, China	Guowang Xu
2025	54th	Bruges, Belgium	Gert Desmet, Ken Broeckhoven, Deirdre Cabooter, Sebastiaan Eeltink, Frederic Lynen
2026	55th	Indianapolis, USA	Todd Maloney

Social Events

Sunday, July 21 | 16:30–17:00

Opening Ceremony

Colorado F–J

Sunday, July 21 | 18:20–20:20

Welcome Reception & Toast

Colorado A–E

Wednesday, July 24 | 18:00–22:00

Conference Dinner

Ellie Caulkins Opera House

**Separate ticket or bundled registration required*

18:00–19:00 – Cocktail hour

19:00–22:00 – Dinner & Networking

Address: 1385 Curtis Street

Denver, CO 80204

**13-minute walk from the venue*

Thursday, July 25 | 16:30–17:30

Farewell Drink

Plaza

HPLC Tube – Monday, July 22



HPLC Tube Mixer – 18:00–18:30

HPLC Tube – 18:30–19:30

HPLC Tube Reception – 19:30–20:00

The HPLC Tube is a scientific competition for the best video in which the presenting scientists show the impact of their research on our society.

For this competition, participants had to submit 3-minute videos on the topic “How is your chromatography making a difference in the world” before HPLC 2024.

At the end of the session, three winners will be announced by the Jury:

Gold Winner (\$1500)

Silver Winner (\$1000)

Bronze Winner (\$500)

Please note: Registration required as part of the online registration process.

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Awards

Best Poster Awards (BPA)

Presentation of scientific work on a poster is an essential part of the scientific program of the HPLC Symposium Series. A poster is an efficient way to disseminate, share, and discuss the results of liquid phase separation research, progress in new instrumentation and separation method development, applications in life science research, (bio)pharmaceutical product R&D, for the safety and authenticity of consumer goods, in forensics, and environmental monitoring and protection with one's peers. The HPLC symposium series invites academic, institutional, and industrial researchers to share and discuss the results of their work with delegates. The Best Poster Award (BPA) provides a stimulus and incentive for all scientists to attend the HPLC Symposium and present their research results on a poster. But primarily and for all, the HPLC Symposium Series intends to foster young scientists and encourage them to take the opportunity to present their work at the symposium as a starter in their international scientific career.

An international panel of scientific peers, headed by a chairperson, will review the participating posters.

Best Poster Award Chairmen

Jiří Urban, Masaryk University, Brno

Gerard Rozing, Rozing.com Consulting

Awards

The top ten winners will be awarded \$500 each.

The reviewers will be evaluating all participating posters using the following criteria:

- Novelty, originality, and creativity of work
- The scope of the work, the quality of the experimental design, and practical execution
- The presentation of the poster, especially the author's presence, and explanation during the designated poster session
- Impact of the work

Procedure

In the first round of evaluation, reviewers will nominate one poster presentation in the set they judge for a second-round review. The review will be during the designated poster session. The authors of the nominated posters will present in a final poster session on Thursday morning.

Honorary Session

The awardees will be announced and called to the podium in an honorary session on the last day of the symposium. Awardees who are absent unexcused at the honorary ceremony will lose their award. All nominees not awarded will receive an honorary mention certificate for their achievement in the second review round.

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Awards

Chromatographic Society Jubilee Medal

The Jubilee Medal was created in 1982 to mark the 25th anniversary of The Chromatographic Society, with the intention of recognizing up-and-coming separation scientists who have made major use of separation science in their own field or have made important contributions to a particular area of separation science.

2024 Silver Jubilee Medal winner, Kevin A Schug, University of Texas at Arlington, USA.

This award will be presented in Kevin's Keynote Talk Session: HPLC-MS Quantification/Identification, 16:30-18:00
Monday, 22 July, 2024

More Information: <https://chromsoc.com/jubilee-and-martin-medal-2024-winners/>



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Awards

Csaba Horváth Young Scientist Award

About the Award

The purpose of the Award is to honor the memory of Csaba Horváth and recognize his contributions to HPLC, including his interest in fostering the careers of young people in separation science and engineering. The award includes an invitation to speak at the HPLC 2025 Symposium, a grant to support travel to that meeting, and a trophy engraved with the winner's name. The award is sponsored by HPLC, Inc. The award will be presented during the Closing Ceremony on Thursday, July 25.

Eligibility Criteria

All presenters of oral contributions (excepting past winners) who are less than 35 years of age at the time of their lecture are eligible for consideration. Candidates will be required to provide evidence of eligibility (e.g., passport, driver's license).

Selection Process

The Scientific Committee selects abstracts for inclusion in the oral program. An Award Jury judges the eligible presentations and chooses a winner. The winner will be announced at the Closing Ceremony.

About Csaba Horváth

Professor Csaba Horváth (1930–2004) was born in Hungary and graduated in chemical engineering from the Budapest Institute of Technology. After receiving his Ph.D. in physical chemistry at the J.W. Goethe University in Frankfurt under the direction of Prof. Halász, he immigrated to the United States in 1963 and started research at the Harvard Medical School. In the following year, Dr. Horváth moved to Yale where he designed and built the first high performance liquid chromatograph to demonstrate the feasibility and potential of HPLC in bioseparation sciences. He chaired the Department of Chemical Engineering at Yale from 1987 to 1993 and was named as Roberto C. Goizueta Professor of Chemical Engineering in 1998. Professor Horváth contributed close to 300 publications to the field of separation sciences and had nine patents. His main topics were all fundamental aspects of separations, including instrumentation, stationary phase designs, and mechanisms of separation processes, as well as their application mainly to biological and biomedical research, especially for the high-resolution separation of proteins and peptides.

Past Recipients of the Csaba Horváth Young Scientist Award

HPLC 2006, San Francisco, USA	Norma Scully, University of Cork, Ireland
HPLC 2007, Gent, Belgium	Caterina Temporini, University of Pavia, Italy
HPLC 2008, Baltimore, USA	Jude Abia, University of Tennessee, USA
HPLC 2009, Dresden, Germany	André de Villiers, Stellenbosch University, South Africa
HPLC 2010, Boston, USA	Jesse Omamogho, University College Cork, Ireland
HPLC 2011, Budapest, Hungary	Matthias Verstraeten, Free University of Brussels, Belgium
HPLC 2012, Anaheim, USA	Stefan Bruns, Philipps-University Marburg, Germany
HPLC 2013, Amsterdam, The Netherlands	James Grinias, University of North Carolina Chapel Hill, USA
HPLC 2014, New Orleans, USA	William Black, University of North Carolina Chapel Hill, USA
HPLC 2015, Geneva, Switzerland	Andrea Gargano, University of Amsterdam, The Netherlands
HPLC 2016, San Francisco, USA	Simone Dimartino, University of Edinburgh, UK
HPLC 2017, Prague, Czech Republic	Bob Pirok, University of Amsterdam, The Netherlands
HPLC 2018, Washington, DC, USA	Martina Catani, Università degli Studi di Ferrara, Italy
HPLC 2019, Milan, Italy	Sebastian Plendl, University of Leipzig, Germany
HPLC 2022, San Diego, USA	Brady Anderson, University of Michigan, Ann Arbor, MI, USA
HPLC 2023, Duesseldorf, Germany	Simona Felletti, University of Ferrara, Italy

Awards

HPLC 2024 Denver Csaba Horváth Young Scientist Award Finalists

Matthew Fischer, University of Wisconsin-Madison, USA

LC&CE for Proteomics I, Tuesday, July 23, 09:20-09:40 am

Samuel Foster, Rowan University, USA

Microscale Separations I, Tuesday, July 23, 09:00-09:20 am

Gioacchino Luca Losacco, Merck & Co., Inc., USA

SFC, Wednesday, July 24, 09:40-10:00 am

Tanmaye Nallan, Eli Lilly, USA

Characterization of Adeno-Associated Viruses, Tuesday, July 23, 11:00-11:20 am

Kateřina Plachká, Charles University, Faculty of Pharmacy in Hradec Králové, Czech Republic

Theory II, Monday, July 22, 02:40-03:00 pm

Daniel Meston, Gustavus Adolphus College, USA

Multidimensional Sep. I, Wednesday, July 24, 02:40-03:00 pm

Md Khalid Bin Islam, Clemson University, USA

UHPLC for Challenging Applications, Tuesday, July 23, 02:40-03:00 pm

Quang Dong Bui, Vrije Universiteit Brussel, Belgium

Multidimensional Sep. I, Wednesday, July 24, 02:00-02:20 pm

Devin Makey, University of Michigan, USA

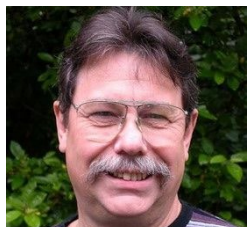
LC IC-MS of complex mixtures, Tuesday, July 23, 05:00-05:20 pm

Makenzie Witzel, C. Eugene Bennett Department of Chemistry, West Virginia University, USA

Forensic Analysis, Wednesday, July 24, 05:40-06:00 pm

Awards

Uwe D. Neue Award in Separation Science



About the Award

The Uwe D. Neue Award was created to recognize scientists who have made and continue to make significant contributions to the field of separation science, in honor of the legacy of Dr. Uwe D. Neue, late scientist and Waters® Corporate Fellow. The award will be given at the opening ceremony of the 52nd International Symposium on High-Performance-Liquid-Phase Separations and Related Techniques (HPLC 2024) held from July 20–25, 2024 in Denver, Colorado, USA.

Eligibility Criteria

The award will honor a distinguished industrial scientist, 15–20 years or more after receiving his or her degree, who has made a significant contribution to the field of separation science. In addition, the awardee should be an industrial scientist, and one who was instrumental in the embodiment of technology in commercial products.

Awardees

The award recipient will receive a commemorative plaque, a \$7,500 check and travel support. The recipient of the 2024 Uwe D. Neue Award in Separation Science is Dr. Miroslav Janco. The award will be presented during the Opening Session on Sunday, July 21. Dr. Janco will present a research lecture during the Session “Challenges in Pharma- Meth. Dev. App.” on Wednesday, July 24 from 08:30–08:50 am in Colorado G–J.

The award is sponsored by Waters Corporation.

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Past Awardees

HPLC 2013: Dr. Jack Kirkland
HPLC 2014: Dr. Gerard Rozing
HPLC 2015: Dr. Mark Schure
HPLC 2016: Dr. Lloyd Snyder
HPLC 2017: Dr. Andrew Alpert
HPLC 2018: Christopher Pohl
HPLC 2019: Dr. Christopher Welch
HPLC 2022: Dr. John Dolan
HPLC 2023: Dr. Thomas H. Walter
HPLC 2024: Dr. Miroslav Janco

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The kit is a strategic complement to HPLCs.

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Brief Instructional Video



PROTEOMETER-L WORKFLOW



Sample Collection

Collect and clarify fermentation broth sample



Plug & Play Analysis

Attach the Proteometer to your instrument and run samples



Rapid Results + Accelerated Development

10 minute LC fluorescence of titer and relative aggregate content

PRICING



Price:

- Proteometer-L Starter Kit: \$2,995
 - 200 assays
- Proteometer-L Kit: \$4,250
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Kit components:

- Reconstitution Reagent
- Reactor
- Reagent
- Buffer

Visit novilytic.com/shop to purchase a kit.

General Information

Online Web App



Scan the QR Code to get access to the conference web application. You should have received an email from Oxford Abstracts on Friday, July 19 inviting you to log in. Please use the login to access this web app. From here, you will access the entire schedule, connect with fellow attendees, stay tuned to the latest announcements, and view exhibitors' virtual exhibit booths.

Oral Presentations

Duration

- Keynote Talks – 30 minutes (including Q&A)
- Oral Presentations – 20 minutes (including Q&A)

On the Day of your Session

- Please bring your slides in either PowerPoint or PDF form on a flash drive the morning of your presentation day. You will be able to upload your slides to the presentation laptop in the morning of your presentation day from 7:30–8:30 am. The room to upload your slides will be Denver 1–3.
- Please arrive at least 15 minutes early to your session.
- The moderator will introduce the session and each individual presenter as well as moderate the Q&A for each talk. Please be prepared to answer questions at the conclusion of your talk.

Poster Presentations

- The conference language is English, and the posters must also be in English.
- Posters should be intelligible in themselves, even in the absence of the authors and without a study of the abstract.
- Posters will be located in Colorado F.
- Posters need to be placed on the boards at least 15 minutes prior to your poster session time, and should be removed immediately after your session concludes. Failure to take down your poster after your session concludes may result in your poster being thrown out.

Photographs Taken at HPLC 2024 Denver

- Pictures taken at HPLC 2024 Denver are used exclusively by HPLC 2024 organizing committee for documentation, news coverage and advertisement.
- A selection of images will be available on the HPLC website following the event.
- Participants are not allowed to take photos or videos of the lectures or the poster presentations without the prior permission of the respective author.

Registration Desk Hours

Saturday, July 20	7:00–16:30
Sunday, July 21	7:00–18:00
Monday, July 22	7:30–18:00
Tuesday, July 23	7:30–18:00
Wednesday, July 24	7:30–17:00
Thursday, July 25	7:30–16:30

Wifi

SSID: HPLC 2024

Password: HPLC2024!

General Information

Conference Venue

Hilton Denver City Center
1701 California St,
Denver, CO 80202

Conference Dinner

Ellie Caulkins Opera House
1385 Curtis Street, Denver, CO 80204

- 13-minute walk from the conference venue
- This event will occur on the evening of Wednesday, July 24, 2024.
- Tickets can be purchased either in conference registration "bundles" or separately, in addition to full registration.

Lunch

Lunch will be on your own for all short course attendees on Saturday & Sunday, July 20-21. Lunch will be provided for all attendees Monday-Thursday, July 22-25.



Conference Floor

Lower Level 2



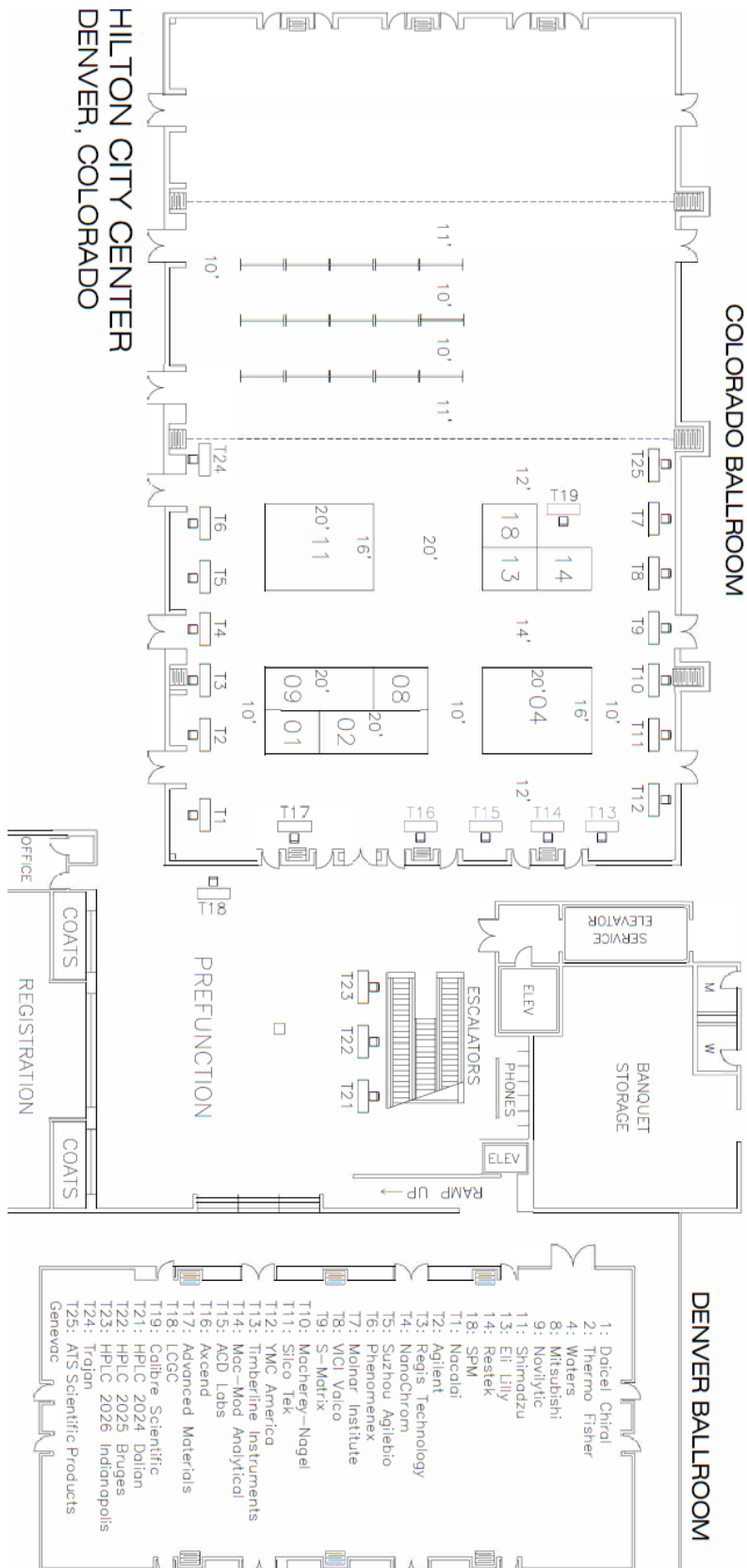
Scientific Sessions

Plenary

Exhibition Hall

Poster Session

Exhibition Hall



Take your science a step beyond
HPLC 2024

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Featuring operating pressures from 700–1500 bar, you can enjoy flexible applications, flow rates, and detection options. Our intuitive and customizable technology allows you to maximize productivity, save over \$5K per year on instrument costs, and generate quality results.

- ✓ Maximize your lab throughput and method robustness with Thermo Scientific™ Vanquish™ LC Systems
- ✓ Enhance your analytical sensitivity with our exclusive MS and CAD detectors
- ✓ Fine-tune your separations using our columns and vials
- ✓ Automate your workflows and data analysis with Thermo Scientific™ Chromeleon™ CDS

What our customers really love

“All the Vanquish LC systems I’ve used are very robust and user friendly. The data analysis workflow is excellent and has saved me and my team lots of time due to its automatic and customizable features.”

— Bo Y. | *Pharmaceutical*

“I love my Vanquish HPLC so much because its performance is so reliable. During the pandemic, we didn’t get a chance to work on it, and it was turned off for over a year. But after we returned to the lab, we did quick routine maintenance and inject some QC samples. The retention times of the standards aligned SO WELL with previous QCs. I was absolutely in awe of the reproducibility. I would definitely recommend Vanquish to my colleagues.”

— Harong L. | *Academia*

Learn more at thermofisher.com/LoveMyVanquish

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Program-at-a-Glance

Saturday, July 20 – Short Courses		
Two-dimensional Liquid Chromatography: Principles, Instrumentation, Method Development, and Applications 8:00–9:30 Colorado G	Practical LC-MS/MS method development 8:00–9:30 Colorado H	Analysis of Oligonucleotide Therapeutics 8:00–9:30 Colorado I
Coffee Break 9:30–10:00 Pre-function Area		
Two-dimensional Liquid Chromatography: Principles, Instrumentation, Method Development, and Applications 10:00–11:30 Colorado G	Practical LC-MS/MS method development 10:00–11:30 Colorado H	Analysis of Oligonucleotide Therapeutics 10:00–11:30 Colorado I
Lunch on your own 11:30–13:00		
Two-dimensional Liquid Chromatography: Principles, Instrumentation, Method Development, and Applications 13:00–14:30 Colorado G	Practical LC-MS/MS method development 13:00–14:30 Colorado H	Analysis of Oligonucleotide Therapeutics 13:00–14:30 Colorado I
Coffee Break 14:30–15:00 Pre-Function		
Two-dimensional Liquid Chromatography: Principles, Instrumentation, Method Development, and Applications 15:00–16:30 Colorado G	Practical LC-MS/MS method development 15:00–16:30 Colorado H	Analysis of Oligonucleotide Therapeutics 15:00–16:30 Colorado I

Program-at-a-Glance

Sunday, July 21 – Short Courses				
(u)HPLC Method Development 8:00–9:30 Colorado G	FFF/SEC with light scattering detection 8:00–9:30 Colorado H	Chiral Liquid Chromatography 8:00–9:30 Colorado I	Supercritical Fluid Chromatography 8:00–9:30 Colorado J	
Coffee Break 9:30–10:00 Pre-Function Area				
(u)HPLC Method Development 10:00–11:30 Colorado G	FFF/SEC with light scattering detection 10:00–11:30 Colorado H	Chiral Liquid Chromatography 10:00–11:30 Colorado I	Supercritical Fluid Chromatography 10:00–11:30 Colorado J	
Lunch on your own 11:30–13:00				
Capillary Electrophoresis with Mass Spectrometry Detection 13:00–14:30 Denver 1	HPLC Operation, Maintenance and Troubleshooting 13:00–14:30 Denver 2	Learning Chromatography in Chromatograms 13:00–14:30 Denver 3	Separation of Glycans and Glycopeptides derived from Glycoproteins 13:00–14:30 Denver 4	Capillary Liquid Chromatography 13:00–14:30 Denver 5
Coffee Break 14:30–15:00 Pre-Function Area				
Capillary Electrophoresis with Mass Spectrometry Detection 15:00–16:30 Denver 1	HPLC Operation, Maintenance and Troubleshooting 15:00–16:30 Denver 2	Learning Chromatography in Chromatograms 15:00–16:30 Denver 3	Separation of Glycans and Glycopeptides derived from Glycoproteins 15:00–16:30 Denver 4	Capillary Liquid Chromatography 13:00–14:30 Denver 5
Opening Ceremony 16:30–17:00 Colorado F–J				
Plenary 1 – Steven Soper 17:00–17:40 Colorado F–J				
Plenary 2 – Janusz Pawliszyn 17:40–18:20 Colorado F–J				
Welcome Reception & Toast 18:20–20:20 Colorado A–E				

Program-at-a-Glance

Monday, July 22		
Opening Session 8:30-8:40 Colorado F-J		
Plenary 3 - Claus Rentel 8:40-9:20 Colorado F-J		
Plenary 4 - Alexandra Ros 9:20-10:00 Colorado F-J		
Coffee Break 10:00-10:30 Pre-Function Area		
Pharma Analysis I 10:30-11:30 Denver 1-3	Theory I 10:30-11:30 Colorado G-J	Predictive Modeling I 10:30-11:30 Denver 4-6
Poster Session & Exhibition 11:30-12:30 Colorado A-F		
Waters Vendor Seminar & Lunch 12:30-13:30 Colorado G-J		
Column Technology I 13:30-15:00 Denver 1-3	Electrodriven Separations 13:30-15:00 Colorado G-J	Theory II 13:30-15:00 Denver 4-6
Poster Session, Exhibition, & Coffee Break 15:00-16:30 Colorado A-F		
Pharmaceutical Anal. II 16:30-18:00 Denver 1-3	HPLC-MS Quantification/Identification 16:30-18:00 Colorado G-J	Microfab, I LC&CE 16:30-18:00 Denver 4-6
HPLC Tube Mixer 18:00-18:30 Pre-Function Area		
HPLC Tube 18:30-19:30 Colorado G-J		
HPLC Tube Reception 19:30-20:00 Pre-Function Area		

Program-at-a-Glance

Tuesday, July 23		
Challenges in Pharma- Process Monitoring 8:30-10:00 Denver 1-3	Microscale Separations I 8:30-10:00 Colorado G-J	LC&CE for Proteomics I (in honor of Andy Alpert) 8:30-10:00 Denver 4-6
Poster Session, Exhibition, & Coffee Break 10:00-11:00 Colorado A-F		
Characterization of Adeno- Associated Viruses 11:00-12:30 Denver 1-3	Selective Separation Methods for Biological Analytes 11:00-12:30 Colorado G-J	Lipidomics & Metabolomics 11:00-12:30 Denver 4-6
Shimadzu Vendor Seminar & Lunch 12:30-13:30 Colorado G-J		
UHPLC for Challenging Applications 13:30-15:00 Denver 1-3	Microscale II 13:30-15:00 Colorado G-J	Metabolomics 13:30-15:00 Denver 4-6
Poster Session, Exhibition, & Coffee Break 15:00-16:30 Colorado A-F		
LC IC-MS of complex mixtures 16:30-18:00 Denver 1-3	Stationary Phases (in honor of Andy Alpert) 16:30-18:00 Colorado G-J	Nanoparticle Separations/FFF 16:30-18:00 Denver 4-6

Program-at-a-Glance

Wednesday, July 24		
SFC (in honor of Terry Berger) 8:30-10:00 Denver 1-3	Challenges in Pharma- Meth. Dev.App. 8:30-10:00 Colorado G-J	Nucleic Acids and Oligos 8:30-10:00 Denver 4-6
Poster Session, Exhibition, & Coffee Break 10:00-11:00 Colorado A-F		
Column Technology II 11:00-12:30 Denver 1-3	LC/CE-MS Proteomics -2 11:00-12:30 Colorado G-J	Green and Effective Sample Analysis 11:00-12:30 Denver 4-6
Novilytic Vendor Seminar & Lunch 12:30-13:30 Denver 1-3	Thermo Fisher Vendor Seminar & Lunch 12:30-13:30 Colorado G-J	
Multidimensional Sep. I 13:30-15:00 Denver 1-3	Omics 13:30-15:00 Colorado G-J	Challenges in Biopharma- High Throughput Analysis 13:30-15:00 Denver 4-6
Poster Session, Exhibition, & Coffee Break 15:00-16:30 Colorado A-F		
Forensic Analysis 16:30-18:00 Denver 1-3	Environmental Analysis 16:30-18:00 Colorado G-J	Proteomics/Clinical Diagnostics 16:30-18:00 Denver 4-6
Cocktail Hour <i>Bundled Registration or Additional Ticket Required</i> 18:00-19:00 Ellie Caulkins Opera House		
Conference Dinner <i>Bundled Registration or Additional Ticket Required</i> 19:00-22:00 Ellie Caulkins Opera House		

Program-at-a-Glance

Thursday, July 25		
Multidimensional- II 8:30-10:00 Denver 1-3	Sample Prep 8:30-10:00 Colorado G-J	Pharmaceutical Anal. III 8:30-10:00 Denver 4-6
Finalist Poster Session, Exhibition, & Coffee Break 10:00-11:00 Colorado A-F		
Predictive Modeling II: AI and other modeling 11:00-12:30 Denver 1-3	Chiral Chromatography 11:00-12:30 Colorado G-J	Stationary Phase 2 11:00-12:30 Denver 4-6
Lunch 12:30-13:30		
Plenary/Awards/Introduction to Future HPLCs/Closing 13:30-16:05 Colorado F-J		
Farewell Drink 16:05-17:05 Plaza		



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In Memorium of Dr. Terry Alan Berger

(14th November 1946 – 5th May 2024)



It is with great sadness former Martin medal winner Terry Berger who died unexpectedly at the age of 77, several days after a surgical procedure.

Terry was born in Stillwater, Minnesota, and attended Carroll College in Wisconsin where he obtained his BSc and MSc in analytical chemistry. From there, he went to Purdue University for two years but moved to England to Imperial College to undertake his PhD work which he completed in 1976. Berger then accepted a visiting professorship in Brazil at the Universidade Federal de Pernambuco, but in 1977, he moved back to the United States and worked as a project leader for Life Systems, designing and building safety systems for spacecraft and submarines. After two years of developing electrochemical fuel cells, Berger accepted a job with Hewlett-Packard (HP) in Avondale, Pennsylvania

where his initial projects were focused on gas chromatography. However, not content with just working on gas chromatography projects, Berger also designed the pulsed amperometric detector for HPLC, detection concepts for capillary electrophoresis, and a novel GC-MS detection system generating several patents in the process.

Berger is often considered as the father of modern supercritical fluid chromatography (SFC). He began his first studies in SFC in 1985. Via literature and experimental work, he began to build his understanding of supercritical and subcritical fluids and their utility to separation science. At the time capillary SFC was deemed the future of the technique. However, Berger disagreed with this position and slowly won the community over to packed column chromatography which perseveres today. His early work included:

- Deconvoluting density and solvent strength effects.
- Showed that, large pressure drops did not result in serious efficiency losses .
- Introduced the use of additives and studied their effect on peak shape and retention.
- Demonstrated the first separations of broad classes of compounds and showed that packed column SFC was broadly applicable to much more polar solutes than previously thought.

Due to his interest in the field and SFC's potential, Berger approached HP management and proposed the idea of buying out the SFC product line and intellectual property portfolio and forming his own company. In 1995, he formed Berger Instruments and invented an analytical scale SFC instrument. He also embarked on building an automated, high recovery purification platform using supercritical and subcritical fluids. His work attracted Mettler-Toledo and they acquired Berger Instruments in 2004 (and later their SFC portfolio was purchased by Waters). Berger then founded Aurora SFC which built a module to convert analytical scale HPLC's into SFC's. This module became the basis for the Agilent 1260 Infinity SFC.

Dr. Berger's book "Packed Column SFC", published in 1995 by the RSC, fundamentally changed the perception of SFC in separation science, illustrating modern SFC to be more like HPLC than GC. In 2015 he published a primer through Agilent which provide an update on his initial book. Berger has published over 110 papers, 7 book chapters and holds over 25 patents. He taught numerous courses on SFC and gave hundreds of presentations on the technique. He also won two IR&D100 awards and a NICE III environmental award from the Department of Energy. In recognition of his many contributions to the field of SFC, he was awarded the 2004 Martin Medal winner. In 2008, Carroll College recognized Berger with their Distinguished Alumnus Award for Professional Achievement. Berger was publishing as recently as 2023 and his work continued to provide important insight into the field of SFC. It is unlikely that any scientist will surpass his vast knowledge of the technique. We would like to thank Carroll College for the permission to use the photo of Terry where he was receiving the distinguished Alumnus Award for Professional Achievement in 2008.

Berger is survived by his wife of 51 years, Leslie, his daughter Blair and son-in-law Jasper. Our thoughts are with them at this sad time.

In Memorium of Dr. Andrew James Alpert

(1951 – 2023)



Dr. Andrew (Andy) James Alpert, a visionary scientist renowned for his groundbreaking contributions to chromatography, bid farewell to this world unexpectedly on May 29, 2023, at the age of 72. His departure leaves an immense void in the scientific community, echoing the sentiments of grief felt deeply among family, friends, and colleagues.

Andy began his collegiate career at Yale where he earned his B.S. in 1973. He quickly followed with a M.S. in Biochemistry from the University of Nebraska Medical Center in 1977. His journey in chromatography commenced during his doctoral studies at Purdue University, where he was nurtured under the tutelage of Professor Fred Regnier, obtaining his Ph.D. in Biochemistry in 1980. Dr. Alpert's indelible mark on chromatography kicked off in 1983 during a post-doctoral fellowship at Baylor. A collaboration with the esteemed Dr. Ching-Nan Ou of Texas Children's Hospital propelled him to found PolyLC Inc. in 1985. His company would redefine the standards in analyzing hemoglobin variants, particularly those linked to sickle cell anemia.

Among Dr. Alpert's myriad achievements, none shines brighter than his pioneering invention of Hydrophilic Interaction Liquid Chromatography (HILIC), a watershed moment detailed in his seminal 1990 publication. HILIC revolutionized the separation of polar analytes, dismantling long-standing barriers in biochemical research. Its seamless integration with mass spectrometry has since propelled it to the forefront of analytical techniques, empowering researchers to unravel the complexity of sugars, glycans, amino acids, and small molecule drugs across diverse scientific domains. His 2008 paper on Electrostatic Repulsion Hydrophilic Interaction Chromatography (ERLIC) marked a significant milestone in chromatography research. This innovative approach combined the principles of electrostatic repulsion and hydrophilic interaction to achieve superior separation of complex mixtures. By leveraging the unique properties of both techniques, ERLIC offered enhanced selectivity and resolution, opening new avenues for analyzing challenging samples in proteomics, metabolomics, and other fields. Andy's paper not only demonstrated his expertise in chromatography but also showcased his ability to push the boundaries of scientific innovation, contributing to the advancement of chromatography methodologies worldwide.

Dr. Alpert's impact transcended the boundaries of HILIC/ERLIC, extending into the realm of LC-MS-based proteomics where his contributions were transformative. A significant part of Dr. Alpert's legacy is his collaboration with Professor John Yates in advancing Multidimensional Protein Identification Technology (MudPIT). MudPIT, a technique combining strong cation exchange (SCX) and reverse-phase liquid chromatography, allows comprehensive analysis of complex protein mixtures. Andy's contributions to refining MudPIT have enabled high-throughput and detailed identification of proteins in complex biological samples, significantly impacting proteomics by facilitating deeper insights into cellular functions and disease mechanisms. In collaboration with Professor Ying Ge's group at UW-Madison, Andy developed new Hydrophobic Interaction Chromatography (HIC) materials and serial size-exclusion chromatography (sSEC) for top-down proteomics. These advancements significantly improved the separation and analysis of hydrophobic proteins, antibody-drug-conjugates and other large biomolecules. Andy was also an honorary member of the Ge group, underscoring his contributions and influence.

In 2017, Andy received the prestigious Uwe D. Neue Award, a testament to his outstanding contributions to the field of analytical chemistry. This esteemed recognition highlighted Andy's remarkable achievements and significant impact on the scientific community. His dedication to advancing analytical chemistry through groundbreaking research and innovative methodologies earned him the respect and admiration of his peers.

Obituary: Dr. Andrew James Alpert (cont.)

(1951 – 2023)

Andy's commitment to making a difference extended beyond the laboratory. In 2019, he exemplified his dedication to global health initiatives by donating sickle cell disease (SCD) screening equipment to the Noguchi Memorial Institute for Medical Research in Ghana. This generous donation was accompanied by personal training from Andy and his team of chemists. This trip provided crucial resources for diagnosing and managing SCD, a prevalent and debilitating genetic disorder in many regions of the world. Andy's philanthropic gesture underscored his belief in the importance of leveraging scientific advancements to improve healthcare outcomes and positively impact communities worldwide. His legacy of compassion, generosity, and scientific excellence continues to inspire future generations to make a difference in the world.

Beyond his scientific endeavors, Andy was a stalwart supporter of community-building within the chromatography fraternity, epitomized by his active engagement with the Chinese American Chromatography Association (CACA). His company's unwavering sponsorship of CACA events, coupled with his artistic contributions, served as testaments to his commitment to fostering collaboration and inclusivity within scientific circles.

Despite his towering achievements in the realm of chromatography, Andy remained anchored in the warmth of his personal life. A polymath at heart, he was celebrated not only for his scientific acumen but also for his artistic talents, linguistic proficiency, and unwavering devotion to family. He was a devoted family man, remembered as a loving husband, father, brother, and grandfather to five grandchildren. He is survived by his beloved wife of 45 years, Stacey Keen; children, Rachel Alpert (Aaron Faust) and Michael Alpert (Paris Spies-Gans).

The departure of Dr. Andrew James Alpert leaves an irreplaceable void, yet his legacy in chromatography and proteomics stands as a beacon of inspiration for future generations of scientists. His innovative spirit, coupled with his unyielding pursuit of scientific excellence, will continue to shape the landscape of analytical chemistry for years to come, ensuring that his memory remains forever enshrined in the annals of scientific history.

Short Courses

Saturday, July 20

8:00–16:30

Two-dimensional Liquid Chromatography: Principles, Instrumentation, Method Development, and Applications

Dwight Stoll, Gustavus Adolphus College & Mark Schure, Kroungold Analytical

Colorado G

Practical LC-MS/MS method development

Perry Wang, USA FDA

Colorado H

Analysis of Oligonucleotide Therapeutics

Claus Rentel, Ionis Pharmaceuticals

Colorado I

Sunday, July 21

8:00–11:30

(u)HPLC Method Development

Michael Dong, MWD Consulting

Colorado G

FFF/SEC with light scattering detection

Andre Striegel, National Institute of Standards and Technology (NIST)

Colorado H

Chiral Liquid Chromatography

Bezhan Chankvetadze, Tbilisi State University

Colorado I

Supercritical Fluid Chromatography

Larry Miller, Novartis

Colorado J

Short Courses

Sunday, July 21

13:00–16:30

Capillary Electrophoresis with Mass Spectrometry Detection

David Chen, University of British Columbia

Denver 1

HPLC Operation, Maintenance and Troubleshooting

Michael Dong, MWD Consulting

Denver 2

Learning Chromatography in Chromatograms

Martin Gilar, Waters Corporation

Denver 3

Separation of Glycans and Glycopeptides derived from Glycoproteins

Yehia Mechref, Texas Tech University

Denver 4

Introduction to Capillary Liquid Chromatography

Justin Godinho, GlaxoSmithKline & James Grinias, Rowan University, Glassboro, New Jersey

Denver 5

Scientific Sessions – Sunday, July 21

16:30–18:20

Opening Ceremony/Award/Plenary

Colorado F–J

Session Chairs: Lisa Holland & Susan Olesik

16:30–17:00

Opening & Award

17:00–17:40

Plenary: Detection and Identification of Single Molecules and Particles using Resistive Pulse Sensing and Nanoscale Electrophoresis

Steven Soper, University of Kansas

17:40–18:20

Plenary: Chemical Biopsy SPME Probe, a Green Sample Preparation Alternative for HPLC

Janusz Pawliszyn, University of Waterloo

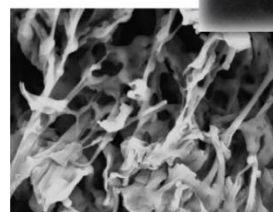
18:20–20:20

Welcome Reception & Toast

Colorado A–E

Innovative Separation Platform via Spongy Monoliths for Proteins, Antibodies, EVs, Viruses, and Cells

Booth #18



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Scientific Sessions – Monday, July 22

8:30–10:00

Opening Session/Plenary

Colorado F–J

Session Chairs: Jared Anderson & Susan Olesik

8:30–8:40

Opening Session

8:40–9:20

Plenary: Analysis of Oligonucleotide Therapeutics

Claus Rentel, Ionis Pharmaceuticals

9:20–10:00

Plenary: HPPC and HPDEP: High Performance Protein Crystallography and Dielectrophoresis

Alexandra Ros, Arizona State University

10:00 – 10:30

Coffee Break

Pre-Function Area

10:30 – 11:30

Pharma Analysis 1

Denver 1–3

Session Chair: Perry Wang

10:30 – 11:00

Keynote: 11 Dual-Gradient Unified Chromatography: The Blueprint for Versatility in Simultaneous Multicomponent Analysis

Erik Regalado, Gioacchino Luca Losacco, Raffael Bennett, Imad A. Haidar Ahmad, Rodell Barrientos, Jimmy DaSilva
Merck & Co., Inc.

11:00 – 11:20

126 A comprehensive analytical toolbox to characterize monoclonal antibody (mAb) high molecular weight (HMW) species

Qian (Veronica) Qin, Noah Yared, Ruchi Hooda, Kim Evans, Nicholas Knutson, Mats Wikstroem, Linda Collins, Cameron Cunningham, Zhongqi Zhang, Helen Chung, Andy Maloney, Joe Basconi, Hao Zhang, Alla Polozova
Amgen, USA

Scientific Sessions – Monday, July 22

10:30 – 11:30

Theory I

Colorado G–J

Session Chair: Mark Schure

10:30 – 11:00

Keynote: 165 Visualizing Van Deemter: Super-Resolution Imaging of Mass Transfer Dynamics

Lydia Kisley

Case Western Reserve University, USA

11:00 – 11:20

34 Improved hydrophobic subtraction model of liquid chromatographic retention based on a large dataset of high-throughput retention data with a focus on isomer selectivity

Sarah Rutan¹, Trevor Kempen², Tina Dahlseid², Zachary Kruger², Bob Pirok^{2,3}, Jonathan Shackman⁴, Yiyang Zhou⁴, Qinggang Wang⁴, Dwight Stoll²

¹Virginia Commonwealth University, USA. ²Gustavus Adolphus College, USA. ³University of Amsterdam, Netherlands.

⁴Bristol Myers Squibb, USA

10:30 – 11:30

Predictive Modeling I

Denver 4–6

Session Chair: Justin Godinho

10:30 – 11:00

Keynote: 166 Reinforcement learning for method development in liquid chromatography

Deirdre Cabooter

KU Leuven, Belgium

11:00 – 11:20

86 Mechanistic studies to understand organic acid peak tailing due to silanophilic interactions in reversed-phase liquid chromatography

Yiyang Zhou, Antonio Ramirez, Elizabeth Yuill, Qinggang Wang

Bristol Myers Squibb, USA

11:30 – 12:30

Poster Session & Exhibition

Colorado A–F

180 Modernization of an Isocratic Cannabinoid High Pressure Liquid Chromatographic Separation Method

Catharine Layton¹, Paul Rainville¹, Michael Baynham²

¹Waters Corporation, USA. ²Waters Corporation, United Kingdom

224 Separation of Glycoproteins Based on Sugar Chains Using Novel Stationary Phases Modified with Boronic-Acid Derivatives

Keisuke Koda¹, Takuya Kubo²

¹Kyoto University, Japan. ²Kyoto Prefectural University, Japan

Scientific Sessions – Monday, July 22

306 Mirror-image cyclodextrins

Saba Aslani¹, Yong Wu², Fraser Stoddart², Daniel Armstrong¹

¹The University of Texas at Arlington, USA. ²The University of Hong Kong, China

295 Separation of Dichloroprop Enantiomers Using Cyclodextrin Derivatives as Chiral Selectors

Lali Tchankvetadze, Ann Gogolashvili, Bezhan Chankvetadze

Iv. Javakhishvili Tbilisi State University, Institute of Physical and Analytical Chemistry., Georgia

221 Evaluation of Green Chemistry Separation Techniques for Chiral Agrochemicals

O'Donnell Sylvester, Sophia Sarpong-Kumankomah

Corteva Agriscience, USA

296 Study of Enantiomeric Separation Mechanisms of Mecoprop Herbicide Using Cyclodextrin Derivatives as Chiral Selectors

Ann Gogolashvili¹, Lali Tchankvetadze², Bezhan Chankvetadze¹

¹Iv. Javakhishvili Tbilisi State University, Institute of Physical and Analytical Chemistry., Georgia. ²Iv. Javakhishvili Tbilisi State University, Institute of Physical and Analytical Chemistry, Georgia

102 Evaluation, Performance and Comparison of a 1.5 mm Internal Diameter LC Column for Pharmaceutical Analysis

Alan McKeown, Marianna Gonzales

Vertex Pharmaceuticals, United Kingdom

124 Suitable Size Exclusion Column for Efficient Adeno-Associated Virus Aggregate Analysis

Ramkumar Dhandapani

Phenomenex, USA

131 Enhancing High Throughput Preparative HPLC: Offline Regeneration of Identical Superficially Porous Particle Preparative Columns Utilizing The 1290 Infinity II Preparative LC System and Agilent InfinityLab Poroshell 120 Preparative LC Columns to extend Column Lifetime, Minimize Sample Carryover and Increase Throughput

Lori Sanford¹, Florian Rieck², Ron Guilliet³, Gina Black¹

¹Agilent, USA. ²Agilent, Germany. ³Agilent, Netherlands

146 New porous monodisperse particles for increasing resolution in Liquid Chromatography

Mark Woodruff¹, Ken Butchart¹, Geoff Faden²

¹Fortis Technologies Ltd, United Kingdom. ²Mac-Mod, USA

153 Scalability of Solid-Core Particles for Chromatographic Analyses

Gabrielle Zabala, Gary Izzo, Weiqiang Gu, Thomas Walter, Cheryl Boissel, Maureen DeLoffi, Daniel Walsh

Waters Corporation, USA

210 Systematic Protocol Utilizing High Performance Surface Technology for the Improved Separation and Quantification of Synthetic Peptides and Associated Impurities

Adam Bengtson, Paul Rainville, Stephanie Harden

Waters Corporation, USA

Scientific Sessions – Monday, July 22

216 The effects of column walls on concentration and temperature profiles for solutes with high adsorption heat

Mateusz Przywara, Marcin Chutkowski, Krzysztof Kaczmarski

Rzeszow University of Technology, Powstancow Warszawy Street 12, 35-959 Rzeszow, Poland, Poland

157 Unlocking the Potential of Basic Compounds Analysis Through pH Optimization Using a High Alkali-Resistant Column in RPLC Analysis

Tomoya Ohmura, Shinya Ogata, Hiroshi Sakamaki

Chemicals Evaluation and Research Institute, Japan, Japan

158 Development and use of high-performance affinity microcolumns to study interactions by humic acids with pharmaceuticals in water

Harshana Lakmal Olupathage

University Of Nebraska, USA

217 A newly developed C18 phase with superficially porous particle technology for polar compounds analysis

RONGJIE FU¹, Ta-Chen Wei², Jia Sheng¹

¹Agilent Technologies (Shanghai) Co. Ltd., China. ²Agilent Technologies Inc., USA

145 New Porous Monodisperse HPLC particles

Mark Woodruff¹, Ken Butchart¹, Geoff Faden²

¹Fortis Technologies Ltd, United Kingdom. ²Mac-Mod, USA

134 Exploring Achiral Separation with Green Super Critical Fluid Chromatography

Ramkumar Dhandapani

Phenomenex, USA

248 2.7-µm Superficially Porous Particles for Chiral Chromatography in HPLC and SFC

Edward Franklin, Melissa Wilcox, Gay Lowden

Regis Technologies, Inc., USA

249 Scaling Reverse-Phase and Hydrophilic Interaction Liquid Chromatography (HILIC) Methods to HPLC

Margaret Maziarz, Stephanie Harden, Paul Rainville

Waters Corporation, USA

255 Preparation and Characterization of Stationary Phase Gradients on Butyl Functionalized Liquid Chromatography Columns for Protein and Peptide Separations

Ash Young, Thomas Cecil, Maryanne Collinson, Sarah Rutan

Virginia Commonwealth University, USA

257 Comparison of 1.0 and 2.1 mm I.D columns in Untargeted Metabolomics workflows

Danila La Gioia, Eduardo Sommella, Pietro Campiglia

University of Salerno, Italy

298 Polymeric Achiral Stationary Phases for the Analysis of Cannabinoid Mixtures

Weston Umstead, John Ferraro

Daicel Chiral Technologies, USA

Scientific Sessions – Monday, July 22

238 Peptide Retention Prediction for Electrostatic Repulsion-Hydrophilic Interaction Chromatography

Quinn Neale, Darien Yeung, Victor Spicer, Oleg Krokhin

University of Manitoba, Canada

12:30 – 13:30

Waters Vendor Seminar & Lunch

Colorado G–J

Lunch Provided

Chromatographic solutions for analysis of therapeutic nucleic acids

Martin Gilar

Waters Corporation

13:30 – 15:00

Column Technology I

Denver 1–3

Session Chair: Frank Steiner

13:30 – 14:00

Keynote: 167 Miniaturizing LC Columns and Instruments

James Grinias

Rowan University, Glassboro, New Jersey, USA

14:00 – 14:20

92 Optimal thermal control for temperature responsive LC columns

Ken Broeckhoven, Sander Deridder, Gert Desmet, Ali Moussa

Vrije Universiteit Brussel, Belgium

14:20 – 14:40

108 Investigation of the utility of radical grafted acrylamide monomers for use in the preparation of high-performance anion-exchange phases

Christopher Pohl

Cap Chromatography LLC, USA

14:40 – 15:00

80 Ethylene Bridged Polyethylene Oxide Surfaces to Improve Packing Materials for Widepore Size Exclusion Chromatography

Kristine Joy Camacho, Oksana Tchoul, Yuehong Xu, Abraham Finny, Lavelay Kizekai, Justin McLaughlin, Steven Byrd, Balasubrahmanyam Addepalli, Mingcheng Xu, Matthew Lauber

Waters Corporation, USA

Scientific Sessions – Monday, July 22

13:30 – 15:00

Electrodriven Separations

Colorado G–J

Session Chair: Maryanne Collinson

13:30 – 14:00

Keynote: 168 Applications of Micro Free Flow Electrophoresis

Michael Bowser

University of Minnesota, USA

14:00 – 14:30

Keynote: 169 Rapid Quantification of Enzyme Inhibition with Nanogel Electrophoresis

Lisa Holland

West Virginia University, USA

14:30 – 14:50

128 Quantification of H1N1 Neuraminidase Inhibition with Capillary Gel Electrophoresis

Laura Taylor, Makenzie Witzel, Lisa Holland

West Virginia University, USA

13:30 – 15:00

Theory II

Denver 4–6

Session Chair: Lydia Kisley

13:30 – 14:00

Keynote: 45 Molecular Simulations and Retention Measurements of Hydrophilic Interaction Liquid Chromatography (HILIC): How HILIC works

Mark Schure¹, Hsiao-Feng Liu^{2,3}, Chung-Kai Chang^{2,3}, J. Ilja Siepmann^{2,3}, Stephanie Schuster⁴, Peter Pellegrinelli⁴

¹Kroungold Analytical, USA. ²Dept. of Chemical Engineering and Materials Science, University of Minnesota, USA. ³Dept. of Chemistry and Chemical Theory Center, University of Minnesota, USA. ⁴Advanced Materials Technology, USA

14:00 – 14:20

17 Streamlined HPLC Method Development using Automated Screening and Computer-Assisted Modelling for Application in Biopharmaceutical Industry

Mohamed Hemida, Imad A. Haidar Ahmad, Rodell C Barrientos, Gioacchino Luca Losacco, Erik L. Regalado

Analytical Research and Development, MRL, Merck & Co., Inc., 126 E. Lincoln Avenue, Rahway, New Jersey, 07065 United States, USA

14:20 – 14:40

3 Optical Baseline Noise Reduction in Proteomics Applications Through Destructive Concentration Interferences: Introducing Order to Counteract Chaos

Fabrice Gritti

Waters Corporation, USA

Scientific Sessions – Monday, July 22

14:40 – 15:00  2024 Horvath Award Finalist

47 Artificial neural networks and QSRR for description and prediction of retention behavior in SFC: long-term study of stationary phases with amine moieties

Kateřina Plachká¹, Veronika Pilařová¹, Taťána Gazárková¹, Jean-Christophe Garrigues², Lucie Nováková¹

¹Charles University, Faculty of Pharmacy in Hradec Králové, Czech Republic. ²SOFTMAT (IMRCP) Laboratory, SMODD Team, CNRS, Toulouse III Paul Sabatier University, Toulouse, France, France

15:00 – 16:30

Poster Session, Exhibition, & Coffee Break

Colorado A-F

263 Use of Bioinert UHPLC Hardware for the Analysis of Four Different Biomolecule Types

J Preston

YMC America, USA

264 Studying the metabolomic fate of oral contraceptive hormones on various gut bacteria

Ellen Kuang, Myedith Damba, Danielle Beerfas, Christopher Harrison

San Diego State University, USA

269 Optimizing Continuous Size-Based Dielectrophoretic Separation of Mitochondria Using a Ratchet Device from Numerical Modeling and Experimental Validation

Domin Koh

Arizona State University, USA

278 Aggregate analysis on Adeno-Associated Virus and Virus-Like Particle Analysis using newly developed novel Size Exclusion Chromatography Columns

Charu Kumar¹, John Davies², Ace Galermo¹, Andrei Bordunov¹, Oscar Potter¹, Andrew Coffey², Ta-Chen Wei¹

¹Agilent Technologies, USA. ²Agilent Technologies, United Kingdom

272 Robust, Rapid SEC-MALS Titer Analysis of AAV Particles Using 3µm, 550Å Monodisperse SEC Media in Bioinert Column Hardware

Ashleigh Koontz, Jessie Ashworth, Victor Nieves, Ke Ma, Shane Bechler, Steven Milian

Thermo Fisher Scientific, USA

282 Quantifying Radiation Response: Amino Acid Biomarkers Analysis via Liquid Chromatography in High Dose Rate Laser-Driven Radiation Experiments

Silvana Vasilca¹, Mihai Voda¹, Ioana Fidel¹, Daniel Negut², Liviu Neagu³, Mihai Suditu⁴, Ovidiu Tesileanu³, Paul Vasos¹

¹Extreme Light Infrastructure – Nuclear Physics (ELI-NP), IFIN-HH, Biophysics and Biomedical Applications Laboratory and Group, Laser Gamma Experiments Department, LGED, Romania. ²“Horia Hulubei” National Institute for Physics and Nuclear Engineering (IFIN-HH), IRASM Department – Radiation Processing Centre, Romania. ³Extreme Light Infrastructure – Nuclear Physics (ELI-NP), IFIN-HH, Laser Gamma Experiments Department, LGED, Romania. ⁴Amethyst Radiotherapy, Romania

Scientific Sessions – Monday, July 22

284 Fast, sensitive LC–MS enantioresolution of α -hydroxy acid biomarkers via SPP-teicoplanin with an alternative UV detection approach

Saba Aslani, Daniel Armstrong

University of Texas at Arlington, USA

268 Best Practices for Liposome Analysis with the Charged Aerosol Detector

Stephanie Koczur¹, Susanne Fabel², Katherine Lovejoy², Yan Yang³, Sissi White¹

¹Thermo Fisher Scientific, USA. ²Thermo Fisher Scientific, Germany. ³Thermo Fisher Scientific, China

273 Identification of Resolution Limits and Recycling Solutions for the Characterization of Monoclonal Antibodies by Size Exclusion Chromatography

Fabrice Gritti

Waters Corporation, USA

283 Specific separation of TR active compounds via molecularly imprinted polymers based on weak intermolecular interactions

Sayaka Konishi-Yamada, Tetsuya Tanigawa, Yoshiyuki Watabe, Takuya Kubo

Kyoto Prefectural University, Japan

274 Emerging Alternative Analytical Techniques for Oligonucleotide Separation and Purification: HILIC & SEC

Connor Flannery, Anne Blackwell, Jordy Hsiao, Andrew Coffey

Agilent Technologies, USA

280 Efficient Human Plasma Proteome Profiling at up to 300 Samples Per Day

Paul Jacobs¹, Jeff Op d¹, Robert V², Yuan Lin³, Shanhua Lin³

¹Thermo Fisher Scientific, Ghent, Belgium. ²Thermo Fisher Scientific, Breda, Netherlands. ³Thermo Fisher Scientific, Sunnyvale, USA

281 Nuclease P1 Digestion for Bottom-Up RNA Sequencing of Modified siRNA Therapeutics

Joshua Jones^{1,2}, Kathleen Grassmyer¹, Robert Kennedy², Kristin Koutmou², Todd Maloney¹

¹Eli Lilly and Company, USA. ²University of Michigan, USA

259 Sequential Recovery and Characterization of Immunoglobulin G and Exosomes from CHO Cell Supernatant in a ProAxHIC 2DLC Modality

Sarah Wysor, Aastha Pandey, Richard Marcus

Clemson University, USA

2 Effect of bioactive components identified by HPLC and NMR from ethyl acetate fraction in *Ruellia tuberosa* L. on improving glucose uptake in TNF- α induced-insulin resistant mouse FL83B hepatocytes

Szu-Chuan Shen¹, Yi-Chen Chen², Yu-Yuan Jhang¹, Wen-Chang Chang³, Da-Wei Huang⁴, James Swi-Bea Wu²

¹National Taiwan Normal University, Taiwan. ²National Taiwan University, Taiwan. ³National Chiayi University, Taiwan.

⁴Southern Taiwan University of Science and Technology, Taiwan

104 Routine Quantitation of 17 Underivatized Amino Acids by LCMS

Susan Dantonio¹, Donna Payne², William Long¹

¹Agilent Technologies, USA. ²Analyteval, USA

Scientific Sessions – Monday, July 22

105 Determination of Limonin in Citrus Flour by LC/MS

Susan Dantonio¹, Donna Payne², William Long³

¹Agilent technologies, USA. ²Analyteval, USA. ³Agilent Technologies, USA

109 LIQUID CHROMATOGRAPHY–MASS SPECTROMETRY BASED PROCEDURE FOR ISOLATION OF OVATOXIN-A FROM OSTREOPSIS CF. OVATA

Valentina Miele¹, Michela Varra¹, Fabio Varriale¹, Luciana Tartaglione¹, David Kulis², Don Anderson², Carmela Dell'Aversano^{1,3}

¹University of Naples Federico II, School of Medicine and Surgery, Department of Pharmacy, Italy. ²Woods Hole Oceanographic Institution, Woods Hole, USA. ³National Biodiversity Future Center, Palermo, Italy

148 Modernization of a Legacy Normal Phase Method on a Modern HPLC System

Elom Pedanou, Lise Gauthier, Paula Hong

Waters Corporation, USA

64 Isolation of Urinary Exosomes via Hydrophobic Interaction Chromatography using a Nylon-6, Capillary-Channeled Polymer-Based Column

William Pons, R. Kenneth Marcus

Clemson University, USA

212 Online LC Reaction Co-Monitoring Utilizing Trajan's Prototype Miniature LC and Waters Patrol

Samuel Britner, Angel Diaz

Pfizer, USA

250 Anion-Exchange Chromatography separation of AAV empty and full capsids using non-toxic choline-type salts

Werner Conze¹, Sam Kurth², Tianyu Li², Alana Hausker², William E Evans², Romain Dabre¹, Egbert Müller¹, Jukka Kervinen²

¹Tosoh Bioscience GmbH, Germany. ²Tosoh Bioscience LLC, USA

251 Impact of HPLC Instrumentation on Non-Specific Adsorption of Peptides

Elom Pedanou, Andrew Steere, Corey Reed, Lise Gauthier, Paula Hong

Waters Corporation, USA

309 Multicolumn low-flow nanoLC-MS platform for high-throughput label-free single-cell proteomics

Chao Wang¹, Siqi Huang¹, Thy Truong², Xiaofeng Xie², Ryan Kelly¹

¹Brigham Young University, USA. ²MicrOmics Technologies, USA

16:30 – 18:00

Pharmaceutical Anal. II

Denver 1–3

Session Chair: Stephen Groskreutz

16:30 – 17:00

Keynote: 170 Exploring New Horizons in messenger RNA and plasmid DNA Characterization

Alexandre Goyon

Genentech, USA

Scientific Sessions – Monday, July 22

17:00 – 17:30

Keynote: 171 High-Sensitivity LC-MS Strategies for Top-down Proteomics

Ying Ge

University of Wisconsin, USA

17:30 – 17:50

48 Key considerations in designing and operating semi-preparative chromatographic columns for characterization and purification of emerging biologic modalities

Ke Ma¹, Shane Bechler¹, Ken Cook², Shanhua Lin¹

¹Thermo Fisher Scientific, USA. ²Thermo Fisher Scientific, United Kingdom

16:30 – 18:00

HPLC-MS Quantification/Identification

Colorado G-J

Session Chair: Gerard Hopfgartner

16:30 – 17:00  *Chromatographic Society Jubilee Award Medalist*

Keynote: 172 Comprehensive Chemical Analysis of Treated Oilfield Wastewater Featuring Targeted and Untargeted Liquid Chromatography – Mass Spectrometric Analysis

Kevin Schug

The University of Texas at Arlington, USA

17:00 – 17:20

203 Progress in Screening and Identification of Environmental Organic Pollutants by Liquid Chromatography-Mass Spectrometry

Guibin Jiang

Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, China

17:20 – 17:40

163 Quantitation of Proteins Using Enhanced Fluidity Liquid Chromatography

Susan Olesik, O'Donnell Sylvester

The Ohio State University, USA

17:40 – 18:00

99 Characterization of Complex Hydrogel Drug Delivery Systems Using Online Multimodal Liquid Chromatography-Mass Spectrometry

Brady Drennan¹, Phat Dinh¹, Samuel Yang², Kevin Schug¹

¹The University of Texas at Arlington, USA. ²Genentech, USA

Scientific Sessions – Monday, July 22

16:30 – 18:00

Microfab, ILC&CE

Denver 4-6

Session Chair: Lisa Holland

16:30 – 17:00

Keynote: 173 Single Particle Electrophoresis in Nanofluidic Devices

Stephen Jacobson

Indiana University, USA

17:00 – 17:30

Keynote: 174 3D Printed Microfluidic Devices Enabling Novel Separation Capabilities

Adam Woolley

Brigham Young University, USA

17:30–17:50

312 Novel Thermoplastic Microvalves Based on an Elastomeric Cyclic Olefin Copolymer

Katie Childers

The University of Kansas, USA

18:00–20:00

HPLC Tube Mixer/Session/Reception

Sponsored by Thermo Fisher Scientific

18:00 – 18:30

HPLC Tube Mixer

Pre-Function Area



18:30 – 19:30

HPLC Tube

Colorado G-J

19:30 – 20:00

HPLC Tube Reception

Pre-Function Area

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Scientific Sessions – Tuesday, July 23

08:30 – 10:00

Challenges in Pharma- Process Monitoring

Denver 1-3

Session Chairs: Erik Regalado, Eli Larson

08:30 – 09:00

Keynote: 175 Lessons Learned from Implementing Online UHPLC-based PAT in Commercial Continuous Manufacturing of Tirzepatide Drug Substance

Stephen Groskreutz

Lilly, USA

09:00 – 09:20

28 Online-LC as PAT to support vaccines: Early development to commercialization.

Gunjan Dixit

Merck & Co Inc., USA

09:20 – 09:40

26 Integration of Multi-Dimensional LC-MS into Process Analytical Technology for On-line and Real-Time Monitoring of Quality Attributes during the Production of Biotherapeutics

Thomas Bouvarel¹, Julien Camperi², Cinzia Stella¹

¹Protein Analytical Chemistry, Genentech, USA. ²Cell Therapy Engineering and Development, Genentech, USA

09:40 – 10:00

75 Applications of Online Liquid Chromatography in Chemical Industry

Binghe Gu¹, Matthias Pursch², Shruti Biyani¹, Wei Gao¹, Anne-Catherine Bedard¹

¹Dow, USA. ²Dow, Germany

08:30 – 10:00

Microscale Separations I

Colorado G-J

Session Chair: Andre Striegel

08:30 – 09:00

Keynote: 176 High Throughput Capillary LC

Robert Kennedy

University of Michigan, USA

09:00 – 09:20  *2024 Horvath Award Finalist*

33 Improving Throughput and Sensitivity in Capillary LC

Samuel Foster¹, Deklin Parker¹, Elisabeth Gates², Matthew Morse², Yue Xin³, Robert Kennedy³, Milton Lee², James Grinias¹

¹Rowan University, USA. ²Axcend Corp, USA. ³University of Michigan, USA

09:20 – 09:40

127 Comparison of Ultrahigh-Pressure and Low-Pressure Packing Techniques for Long Capillary Columns

Tate Hancock, Robert Kennedy

University of Michigan, USA

Scientific Sessions – Tuesday, July 23

09:40 – 10:00

81 Effect of stationary phase architecture and surface chemistry in proteomics

Jiri Urban, Jan Valasek, Eliska Drgova, Lukas Hekerle, Katerina Konecna

Department of Chemistry, Faculty of Science, Masaryk University, Brno, Czech Republic

08:30 – 10:00

LC&CE for Proteomics I (in honor of Andy Alpert)

Denver 4–6

Session Chair: Ying Ge

08:30 – 09:00

Keynote: 177 How a single mutation in CFTR causes the systemic disease cystic fibrosis: interactions, PTMs, and structure

John Yates

The Scripps Research Institute, USA

09:00 – 09:20

56 Reversed-phase C18 separation media for proteomic applications: comparison of separation selectivity and carryover characteristics

Oleg Krokhn, Darien Yeung, Victor Spicer

University of Manitoba, Canada

09:20 – 09:40  *2024 Horvath Award Finalist*

30 A Multidimensional Native Separation for the Online Analysis of Endogenous Protein Complexes from Human Heart Tissue

Matthew Fischer¹, Holden Rogers¹, Emily Chapman¹, Boris Krichel^{1,2}, Eli Larson¹, Zhan Gao¹, Ying Ge¹

¹University of Wisconsin–Madison, USA. ²University of Siegen, Germany

09:40 – 10:00

151 High-sensitive spatial visual proteomics

Ruijun Tian

Southern University of Science and Technology (SUSTech), China

10:00 – 11:00

Poster Session, Exhibition, & Coffee Break

Colorado A–F

226 Separation and purification of medium- and long-stranded RNAs by RP-HPLC, optimizing mobile phase composition and pore size for C₁₈ columns

Daniel Keck, Makoto Ozaki, Tomomi Kuwayama, Motoshi Shimotsuma, Tsunehisa Hirose

Nacalai Tesque, Inc., Japan

292 Unique and predictable peptide separations using polymer-based separation materials

Tomooki Tsuchiya¹, Shohei Ohara¹, Tadashi Adachi¹, Keiichi Watanabe²

¹Separation Materials Group, Wellness Technology Department, Technology Strategy Division, Advanced Solutions Domain, Mitsubishi Chemical Corporation., Japan. ²IER Business Group, Separation Materials Department, Water & Environment Solutions Division, Advanced Solutions Domain, Mitsubishi Chemical Corporation., Japan

Scientific Sessions – Tuesday, July 23

293 Analyze Adeno-Associated Virus (AAV) Aggregates Using Size Exclusion Chromatography (SEC)

Xiaodong Liu, Yongmei Zhang, Haiyu Tian, Xuefei Sun
NanoChrom Technologies (Suzhou) Co., Ltd, China

239 Enantiomeric Purity Determination of Lactofen Formulations through Chemometric Deconvolution of Partially Overlapped Chromatographic Profiles

Matías E. Díaz Merino^{1,2}, Sofía R. Peirano^{1,2}, Rocío B. Pellegrino Vidal^{1,2}, Juan M. Padró^{2,3}, Cecilia B. Castells^{1,2}
¹Laboratorio de Investigación y Desarrollo en Métodos Analíticos (LIDMA), Facultad de Ciencias Exactas, Universidad Nacional de La Plata (UNLP), Calle 49 y 115 (B1900AJL), La Plata, Argentina. ²División Química Analítica, Facultad de Ciencias Exactas, Universidad Nacional de La Plata (UNLP), 47 y 115 (B1900AJL), Ciudad de La Plata, Provincia de Buenos Aires, Argentina. ³YPF Tecnología S.A., Av. Del Petróleo s/n entre 129 y 143 (B1923), Berisso, Argentina

247 Development of a green method for the analysis of parabens by using new carbon material as stationary phases in superheated water chromatography

Roberta La Tella¹, Paola Donato¹, Francesca Rigano¹, Michael Ye², Paola Dugo^{1,3}, Luigi Mondello^{1,3}
¹Messina Institute of Technology c/o Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, former Veterinary School, University of Messina, Viale G. Palatucci snc 98168 – Messina, Italy.
²MilliporeSigma, Bellefonte, Pennsylvania, USA. ³Chromaleont s.r.l., c/o Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, former Veterinary School, University of Messina, Viale G. Palatucci snc 98168 – Messina, Italy

218 Development Of A High-Performance Immunoaffinity Chromatographic Method For Vaccine Analysis

Isaac Kyei¹, Jacob Jones¹, Avery Campbell¹, BK Sajeeb¹, Matthew Sobansky², Marlies Hager², David Hage¹
¹University of Nebraska-Lincoln, USA. ²Zoetis, USA

294 MRM based free fatty acids profiling in human plasma using LC-MS/MS

Yuki Suzuki, Shinichi Fujisaki, Masaki Yamada
Shimadzu Corporation, Japan

240 Polymeric Chiral and Achiral Stationary Phases for the Analysis of Nucleic Acids and Sugars

Tomotaka Mizuguchi¹, Kengo Murata¹, Hideki Motoda¹, Kanji Nagai¹, Takafumi Onishi¹, Atsushi Ohnishi¹, Mireille Schaeffer², Christophe Kientzy², Pilar Franco²
¹DAICEL Corporation, Japan. ²Chiral Technologies Europe, France

241 Lipid effects of perfluorooctane sulfonate in the kidney of rats

Ching-yu Lin, Tzu-Hsin Yen, Hao-Jan Liang
National Taiwan University, Taiwan

242 Going Big, Small, and Low: Semi-Prep Columns with Small Particles for Polynucleotide Applications

Shane Bechler¹, Simonas Dapkus², Simonas Simonas Balčiūnas², Binalkumari Mistry¹, James Peterman¹, Brandon Robson¹, Matas Damonskis², Shanhua Lin¹
¹Thermo Fisher Scientific, USA. ²Thermo Fisher Scientific, Lithuania

244 Investigation of phytoalexins from *Agave sisalana* leaves by artificial wound response

Su-Jung Hsu, Pi-Yu Chen, Ching-Kuo Lee
School of Pharmacy, Taipei Medical University, Taiwan

Scientific Sessions – Tuesday, July 23

245 Comparison of LC-MS/MS method and mass concentration measurement analysis of aerosols from mixtures of quaternary ammonium compounds with polyethylene glycol

Minsik Kim^{1,2}, Su-Hyun Choi¹, Min-Seok Kim¹

¹Korea Institute of Toxicology, Korea, Republic of. ²University of Science and Technology, Korea, Republic of

246 2D-HPLC Enantioseparation of Selective HDAC6 Inhibitors

Maria Lattanzio, Ilaria Rocchio, Mattia Marchini, Giovanni Sandrone, Christian Steinkuhler, Andrea Stevenazzi, Barbara Vergani

Italfarmaco SpA, Italy

243 Performance evaluation of a new reversed-phase column for peptide mapping and monitoring of monoclonal antibodies

Sylvia Grosse¹, Michaela S. Scherz¹, Jonathan Turner², Silvia Millán-Martín³, Sara Carillo³, Jonathan Bones³, Kai Scheffler¹, Serdar Bilgesoy⁴

¹Thermo Fisher Scientific, Germany. ²Thermo Fisher Scientific, USA. ³National Institute for Bioprocessing Research and Training (NIBRT), Ireland. ⁴Thermo Fisher Scientific, Turkey

32 Improving Chromatographic Resolution of the JECFA Method for the Analysis of Steviol Glycosides

Jinchuan Yang, Paul Rainville, Stephanie Harden

Waters Corporation, USA

206 Liquid chromatography: Quo vadis? Can everything be separated?

Ilja Burdman

CAS/ACS International, Germany

209 Application of Physics-Informed Neural Network in prediction of chromatographic concentration profiles

Filip Rękas¹, Marcin Chutkowski², Krzysztof Kaczmarek²

¹Doctoral School of the Rzeszów University of Technology, Poland. ²Rzeszów University of Technology, Poland

223 Dipolarity Polarity Component of the Mobile Phase: A Crucial Factor in the Separation of Steroid Enantiomers in RPLC-MS

Mst Ummul Khair¹, Eric Kipruto², David Anderson²

¹Cleveland, USA. ²

254 Analysis of Gingerols using HPLC from commercially available food and nutraceutical products

Zeshan Aqeel, J Preston, Jeff Kakaley

YMC America, USA

219 Practical Implementation of ICH Q14 Guidelines in Digital Method Development

Anne Marie Smith, Irina Oshchepkova

ACD/Labs, Canada

271 Ion Pairing LCMS as a Platform Analytical Method to Support Medicinal Chemistry Efforts Towards Amino Acid-Boronic Acid Inhibitors of Arginase

Adam Beard, Lisa Nogle

Merck, USA

Scientific Sessions – Tuesday, July 23

156 Analytical Quality by Design Based Method Development for the Analysis of Cold and Cough Formulations

[Fadi Alkhateeb](#)¹, Adam Bengtson²

¹MILFORD, USA. ²Waters Corps, USA

87 Advancements Towards a Universal, Sensitive, and Selective Detection Technology for Liquid Chromatography

[Alex Hodgson](#), Dale Harrison, Peter Boler

VUV Analytics, USA

305 The wikiChrom Project – Principles, Results, and Knowledge

[Dwight Stoll](#), Ella Sontowski, Grace LaTourelle, Zachary Kruger, Trevor Kempen, Tina Dahlseid, Sarah Rutan, Bob Pirok

Gustavus Adolphus College, USA

311 Investigating Internal Energy Transfer and Ion Desorption Efficiency of Plasmonic Nanomaterial Incorporated Electrospun Surface Assisted Laser Desorption Ionization Substrates

[Yechan Moon](#)

The Ohio State University, USA

11:00 – 12:30

Characterization of Adeno-Associated Viruses

Denver 1-3

Session Chair: Steve Soper

11:00 – 11:20  *2024 Horvath Award Finalist*

41 Development of Two-Dimensional Liquid Chromatography for Analytical Characterization of Adeno-Associated Viruses

[Tanmaye Nallan](#), Kaixiang Huang, Adam Washburn

Eli Lilly and Company, USA

11:20 – 11:40

95 Characterize Adeno-Associated Virus (AAV) Related Substances by HPLC

[Xiaodong Liu](#), Xuefei Sun, Yanhai Zhang, Haiyu Tian, Yongmei Zhang

NanoChrom Technologies, China

11:40 – 12:00

123 Exploring Size Exclusion Column for Efficient Adeno-Associated Virus Aggregate Analysis

[Ramkumar Dhandapani](#)

Phenomenex, USA

12:00 – 12:20

93 A comprehensive study on adeno-associated virus analysis using a 3 µm monodisperse size exclusion chromatography column

[Ke Ma](#), Shane Bechler, Shanhua Lin

Thermo Fisher Scientific, USA

Scientific Sessions – Tuesday, July 23

11:00 – 12:30

Selective Separation Methods for Biological Analytes

Colorado G–J

Session Chair: Jim Grinias

11:00 – 11:30

Keynote: 7 Moving Beyond Traditional Chromatography: New Frontiers in Affinity Separations for Chemical and Biochemical Analysis

David Hage

University of Nebraska–Lincoln, USA

11:30 – 11:50

69 Use of Immobilized Recombinant FcγIIIa Receptor for Fractionation and Characterization of Antibody Preparations

Egbert Müller¹, Petra Grbčić², Marko Filipović², Djuro Josic^{2,3}

¹Tosoh Bioscience, Germany. ²Juraj Dobrila University of Pula, Croatia. ³Warren Alpert Medical School, Brown University, USA

11:50 – 12:10

38 Dengue E Protein Quantitation for a Multivalent Dengue Vaccine by Capillary Western Assay

Nathan Kuster

Merck, USA

12:10 – 12:30

96 Detection of Residual T7 RNA Polymerase used in mRNA In-Vitro Transcription by Simple Western

Yvonne Shieh, Andrew Swartz, Richard Rustandi

Merck & Co., USA

11:00 – 12:30

Lipidomics & Metabolomics

Denver 4–6

Session Chair: Lucie Novakova

11:00 – 11:30

Keynote: 178 Isomer Separations in Lipidomics and Metabolomics

Michael Laemmerhofer

University of Tuebingen, Germany

11:30 – 11:50

46 Post Column Epoxidation for differentiating polar and non-polar lipids isomers via Liquid Chromatography Co-axial Contained-ESI Mass Spectrometry

Niraj Panday¹, Alexander Grooms², Abraham Badu-Tawiah²

¹The Ohio state University, USA. ²The Ohio State University, USA

Scientific Sessions – Tuesday, July 23

11:50 – 12:10

106 Multimethod characterization of polymer–lipid molecular properties

Ekaterina Tsarenko^{1,2}, Ilya Anufriev^{1,2}, Caroline T. Holick^{1,2}, Tobias Klein^{1,2}, Ulrich S. Schubert^{1,2}, Ivo Nischang^{1,2,3,4}

¹Laboratory of Organic and Macromolecular Chemistry (IOMC), Friedrich Schiller University Jena, Germany. ²Jena Center for Soft Matter (JCSM), Friedrich Schiller University Jena, Germany. ³Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (HZB), Germany. ⁴Helmholtz Institute for Polymers in Energy Applications Jena (HIPOLE Jena), Germany

12:10 – 12:30

261 Understanding the utility of SFC and alternative ionization sources for analysis of polar, hydrophilic xenobiotic metabolites

Krishnamoorthy Kuppannan, Chris Brown, David Robbins, Jeffrey Gilbert, Chris Bianca, Yelena Adelfinskaya, Jesse Balcer, Richa Athalye, Eowyn Acres
Corteva Agriscience, USA

12:30 – 13:30

Shimadzu Vendor Seminar & Lunch

Colorado G–J

Lunch Provided

Expanding the Potential of Supercritical Fluid Chromatography (SFC)

Nivesh K. Mittal & Nicholas Lehr
Shimadzu Scientific Instruments

13:30 – 15:00

UHPLC for Challenging Applications

Denver 1–3

Session Chair: Ramkumar Dhandapani

13:30 – 14:00

Keynote: 179 UHPLC – From Mainstream to Specialized Solutions

Matthias Pursch
Dow, Germany

14:00 – 14:20

98 Hydrophilic Interaction Liquid Chromatography and Two-dimensional Liquid Chromatography for Compositional Characterization of Biodegradable Non-ionic Surfactants

Peilin Yang, Conner Stultz, Yicheng Hu, Wanglin Yu
Dow Chemical, USA

14:20 – 14:40

84 Harnessing the Potential of 1.0 mm ID columns in UHPLC–HRMS based untargeted metabolomics.

Eduardo Sommella, Danila La Gioia, Pietro Campiglia
University of Salerno, Department of Pharmacy, Italy

Scientific Sessions – Tuesday, July 23

14:40 – 15:00  2024 Horvath Award Finalist

62 Comparative Analysis of Exosome Elution Solvents in Hydrophobic Interaction Chromatography on Polyester, Capillary-Channeled Polymer Fiber Column

Md Khalid Bin Islam, R. Kenneth Marcus

Clemson University, USA

13:30 – 15:00

Microscale II

Colorado G–J

Session Chair: Michael Dong

13:30 – 14:00

Keynote: 181 Optimizing nanoLC Separations for Single-cell Proteomics

Ryan Kelly

Brigham Young University, USA

14:00 – 14:30

Keynote: 205 The Use of Specific Interactions in Microscale Liquid Phase Separations

Takuya Kubo

Kyoto University, Japan

14:30 – 14:50

94 Hierarchically porous polymer monoliths for size-based separations

R. Dario Arrua¹, Ester Lubomirsky¹, Amin Khodabandeh¹, Emily Hilder^{1,2}, Thorsten Hofe³, Jasmin Preis³

¹University of South Australia, STEM, Future Industries Institute, SA, 5000, Australia, Australia. ²Department of Defence, Science and Technology, South Australia 5000, Australia, Australia. ³Polymer Standards Service (PSS, now part of Agilent Technologies), 55120, Mainz, Germany, Germany

13:30 – 15:00

Metabolomics

Denver 4–6

Session Chair: Michael Laemmerhofer

13:30 – 14:00

Keynote: 183 Application of Multimodal Mass Spectrometry in Metabolomics to improve Characterization of Endogenous and Exogenous Metabolites in Food and Human Samples

Gérard Hopfgartner

University of Geneva, Switzerland

Scientific Sessions – Tuesday, July 23

14:00 – 14:20

122 Exploration of different separation properties in comprehensive two-dimensional liquid chromatography for the in-depth metabolites characterization of complex food samples

Katia Arena¹, Roberto Laganà Vinci¹, Francesco Cacciola², Paola Donato¹, Paola Dugo^{1,3}, Luigi Mondello^{4,3}

¹Messina Institute of Technology c/o Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, former Veterinary School, University of Messina, Viale G. Palatucci snc – Messina, Italy. ²Department of Biomedical, Dental, Morphological and Functional Imaging Sciences, University of Messina, Via Consolare Valeria 98125 – Messina, Italy. ³Chromaleont s.r.l., c/o Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, former Veterinary School, University of Messina, Viale G. Palatucci snc 98168 – Messina, Italy. ⁴Messina Institute of Technology c/o Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, former Veterinary School, University of Messina, Viale G. Palatucci snc 98168 – Messina, Italy

14:20 – 14:40

138 Identification of metabolite biomarkers for the differentiation of banana cultivars and anti-infective activities

Sam Li

NUS, Singapore

14:40 – 15:00

78 PAMDA: Publicly Available Metabolomics Dataset Alignment and Analysis of Human Urine Measured by RPLC-MS

Hani Habra, Yamil Simon, Tytus Mak

National Institute of Standards and Technologies, USA

15:00 – 16:30

Poster Session, Exhibition, & Coffee Break

Colorado A-F

36 High-sensitivity pesticide analysis using micro-flow LC-MS

Alec Valenta¹, Runsheng Zheng², Christopher Pynn², Katherine Lovejoy², Ece Aydin², Kenneth Matuszak¹, Wim Decrop², Stephanie Koczur², Martin Samonig³

¹Thermo Fisher Scientific, USA. ²Thermo Fisher Scientific, Germany. ³Thermo Fisher Scientific, Austria

287 Laboratory Considerations for the Analysis of PFAS by LC-MS/MS

Geoffrey Faden¹, Matt James², Tony Edge²

¹MAC-MOD Analytical, USA. ²Avantor Sciences, United Kingdom

237 Environmental Characteristics of Rural Cattle Tanks and Well Water

RYAN LAU

Texas A&M University Corpus Christi, USA

236 StayClean Ion Source QSight LC-MS/MS for Analysis of PFAS in Surface Water and Wastewater Using Automated SPE Based on US EPA Method 1633

Jingcun Wu¹, Victor Cai², Jacob Jalali²

¹PerkinElmer, LLC, Canada. ²PerkinElmer, LLC, USA

Scientific Sessions – Tuesday, July 23

266 Optimizing the Separation of Key Beverage Ingredients and Aspartame Degradation Products

Fadi Alkhateeb

MILFORD, USA

301 Development of analytical method for the determination of Acibenzolar-S-methyl and its acidic metabolite residues in agricultural products

Young Bin Song, Yoo Sun Lee, Soo Jung Hu

Seoul Regional Office of Food and Drug Safety, Ministry of Food and Drug Safety, Korea, Republic of

304 Determination of Polyaromatic Hydrocarbons in Edible Oils by Fluorescence HPLC Analysis

Adrian Garcia Segal, Victor Cai

PerkinElmer LLC, USA

144 An analytical study of the factors affecting the determination of bromate in drinking water by ion chromatography.

Mostafa Alsamti, Mohrah Alenazi, Hamad Almutairi, Abdulwahab AL-Abdulwahab

Saudi Food and Drug Authority, Saudi Arabia

229 Interactive Ion Peak Analysis and Differencing for Comparing Two-Dimensional Liquid Chromatography Data

Daniel Geschwender, Qingping Tao, Chase Heble

GC Image, LLC., USA

270 Investigating the addition of deep eutectic solvents for the improvement of CE based separations

Jessica Torres, Christopher Harrison

San Diego State University, USA

276 Comparison of ester and carbonate solvents as “green” alternatives for dispersive liquid-liquid microextraction

Neil Danielson, Hina Ali, Mohamed Abdelaziz, Michael Crowder

Miami University, USA

162 Deciphering the microbiome: a targeted LC/MS/MS method for the comprehensive analysis of bile acids in biological samples

Pietro Morlacchi¹, Ruben Ramos², Justin Cross², Christophe Deckers¹, Limian Zhao¹, Mark Sartain¹, Daniel Cuthbertson¹

¹Agilent Technologies, Inc., USA. ²Memorial Sloan Kettering Cancer Center, USA

159 Untargeted analysis of psychedelic and non-psychedelic mushrooms using Liquid Chromatography-Quadrupole Time of Flight- Mass Spectrometry

Sabrina Islam¹, Tiffany Liden², Roman Goff¹, Kevin Schug¹

¹The University of Texas at Arlington, USA. ²Shimadzu Scientific Instruments, USA

136 Development of an LCMS Analysis for Per- and Polyfluoroalkyl Substances (PFAS) in Consumer Products

Logan Miller¹, Michael Deible², Rachel Hale², William Lipps²

¹Shimadzu Scientific Instruments, Inc., USA. ²RJ Lee Group, USA

Scientific Sessions – Tuesday, July 23

63 When separation is not enough: adding a cryogenic IR spectroscopic dimension to LC-MS

Stephan Warnke, Ali Abikhodr, Ahmed Ben Faleh, Thomas Rizzo

Isospec Analytics SA, Switzerland

208 High Throughput Mass-Directed Purification of Macrocyclic Peptides via Reversed Phase HPLC

Maria Ruiz Gonzalez

Genentech, USA

89 Caffeine metabolism in the Danio rerio larvae: concurrent analysis of caffeine and its main metabolites by liquid chromatography–tandem mass spectrometry

Adrian Bartoszek, Agata Sumara, Anna Kozub, Alicja Trzpil, Anna Stachniuk, Emilia Fornal

Department of Bioanalytics, Medical University of Lublin, ul. Jaczewskiego 8b, 20-090 Lublin, Poland, Poland

132 Method Development Approach to Separating Oligonucleotides with Superficially Porous Particle Columns

Peter Pellegrinelli, Ben Libert, Stephanie Schuster

Advanced Materials Technologies, USA

234 Comparative Digestive Efficiencies of RNaseR from Three Different Vendors for Selective Enrichment of Circular RNAs

Pankaj Dwivedi, Faith Osinaga, Ravikiran Yerabolu, Matt Schombs

Merck, USA

232 Quantitative analysis of medicaments containing narcotic and psychotropic substances by using HPLC method

Ludmila Komorousová, Lucie Kocourková

Institute of Criminalistics Police of the Czech Republic, Czech Republic

258 Dual ESI/APCI StayClean Ion Source QSight LC-MS/MS for Analysis of Near 400 Polar and Non-polar Pesticide Residues in Tea

Jacob Jalali, Victor Cai

PerkinElmer, USA

303 Field-deployable compact LC-MS for determination of per, and polyfluoroalkyl substances

David Edwards¹, John Lam², Andrew Gooley², Fraser Smith², Matthew Askeland³

¹Trajan Scientific Americas, USA. ²Trajan Scientific and Medical, Australia. ³ADE Consulting Group, Australia

74 Preparation of Fibrous Organo-silica Particles for HPLC

Dulan Edirisinghe, Luis Colón

Department of Chemistry, University at Buffalo, Buffalo, NY, USA

91 “Challenging Separations” on SPP 3,5-Dinitrobenzamido- LC Stationary Phase

Abdulrahman Al-Abcha¹, Stephen Childs¹, Stephen Matlin², John Lough¹

¹University of Sunderland, United Kingdom. ²Imperial College London, United Kingdom

Scientific Sessions – Tuesday, July 23

110 Cation/anion-exchange mode switching chromatography utilizing pH-responsive polymer for pharmaceutical separations

[Yuki Hiruta](#), Taisei Kaku, Koichi Deura, Tomoka Yoshii, Daniel Citterio
Keio University, Japan

16:30 – 18:00

LC IC-MS of complex mixtures

Denver 1-3

Session Chair: Kelly Zhang

16:30 – 17:00

Keynote: 184 Why Separations Continue to Drive Shotgun Proteomics

[Josh Coon](#)

University of Wisconsin, USA

17:00 – 17:20  *2024 Horvath Award Finalist*

111 High-Throughput Monoclonal Antibody Characterization at the Peptide Level Using Rapid Gradient Separations Coupled to Ion Mobility-Mass Spectrometry

[Devin Makey](#), Brandon Ruotolo, Robert Kennedy

University of Michigan, USA

17:20 – 17:40

202 Ordered colloidal crystal column enabled high throughput proteome analysis

[Lihua Zhang](#)

Dalian Institute of Chemical Physics, Chinese Academy of Sciences, China

17:40 – 18:00

204 Free solution capillary electrophoresis separation for characterization of protein-DNA supercomplexes and aggregates

[Hailin Wang](#)

Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, China

16:30 – 18:00

Stationary Phases (in honor of Andy Alpert)

Colorado G-J

Session Chair: Martin Gilar

16:30 – 17:00

Keynote: 185 Combining Linear and Nonlinear Chromatography to Study the Retention Behavior in HPLC

[Attila Felinger](#)

University of Pécs, Hungary

17:00 – 17:20

60 Fibrous Azide-Silicas for Liquid Phase Separations

[Luis Colón](#), Dulán Edirisinghe, Damalka Balasuriya, Raúl Díaz-Santiago

University at Buffalo, USA

Scientific Sessions – Tuesday, July 23

17:20 – 17:40

119 Investigation of solute retention behavior in supercritical fluid chromatography on porous graphitic carbon

Paola Donato¹, Francesca Rigano¹, Katia Arena¹, Paola Dugo^{1,2}, Simona Felletti³, Martina Catani⁴, Alberto Cavazzini^{4,5}, Luigi Mondello^{1,2}

¹Messina Institute of Technology c/o Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, former Veterinary School, University of Messina, Viale G. Palatucci snc 98168 – Messina, Italy. ²Chromaleont s.r.l., c/o Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, former Veterinary School, University of Messina, Viale G. Palatucci snc 98168 – Messina, Italy. ³Department of Environmental and Prevention Sciences, via Borsari 46, 44121 – Ferrara, Italy. ⁴Department of Chemical, Pharmaceutical and Agricultural Sciences, via Borsari 46, 44121 – Ferrara, Italy. ⁵Council for Agricultural Research and Economics, CREA, via della Navicella 2/4, 00184 – Rome, Italy

17:40 – 18:00

19 Flow rate effects and the influence of the water layer in hydrophilic interaction chromatography.

David McCalley

University of the West of England, Bristol, United Kingdom

16:30 – 18:00

Nanoparticle Separations/FFF

Denver 4–6

Session Chair: Yehia Mechref

16:30 – 17:00

Keynote: 4 Enhance analysis of biological vesicles by open-channel separation techniques

Wenwan Zhong¹, Ziting Gao²

¹University of Science and Technology of China, China. ²University of California–Riverside, USA

17:00 – 17:20

6 Determining absolute molar masses of macromolecules by SEC/MALS using mixed solvents

Andre Striegel

National Institute of Standards and Technology, USA

17:20 – 17:40

67 mRNA/LNP Multiattribute Quantitation of Payload(s), Size and Heterogeneity With Size Exclusion Chromatography Coupled to Multiangle Light Scattering

Lavelay Kizekai, Mateusz Imiolek, Bala Addepalli, Szabolcs Fekete, Matthew Lauber

Waters Corporation, USA

17:40 – 18:00

141 Hierarchical Heterostructure Nanoparticles Assisted LDI-MS for Serum Metabolic Fingerprinting of Lung Cancer Diagnosis

Tao Ning, Jun Yang, Tianrun Xu, Siming Pu, Ting Li, Chunxiu Hu, Xinyu Liu, Xianzhe Shi*, Guowang Xu*

Dalian Institute of Chemical Physics, CAS, China



53rd International Symposium on High Performance Liquid Phase Separations and Related Techniques

Honorary chairmen:

Academician Yukui Zhang

Academician Guibin Jiang

Chairman:

Prof. Guowang Xu

Co-chairman:

Prof. Lihua Zhang

Conference highlights

- ◆ In addition to 100 keynote lectures from Chinese experts, 30 invited foreign experts have been invited to give keynote lectures. 9 plenary lectures have been defined.
- ◆ The conference specifically establishes the Best Youth Oral Presentation Award, the HPLC Tube Competition and the Best Poster Awards.
- ◆ The conference includes workshops, tutorials, editor author reader meetings, etc. The conference paper will have a special issue at JCA.
- ◆ At that time, an exhibition of chromatography-related instruments and accessories will be held by famous analytical instrument manufacturers around the world in recent years.
- ◆ The registration fee for HPLC 2024 Dalian conference is very low.
- ◆ The venue was renovated for the Summer Davos World Economic Forum on June 24-27, 2024 and we are very happy to enjoy this benefit.

Welcome to attend HPLC!

Please keep visiting our website:
www.hplc2024-dalian.com for new information.

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Oct. 21-23, 2024

Dalian International Conference Center Dalian · Liaoning · China

Scientific Sessions – Wednesday, July 24

08:30 – 10:00

SFC (in honor of Terry Berger)

Denver 1–3

Session Chair: Larry Miller

08:30 – 09:00

Keynote: 101 How can artificial neural networks contribute to fundamental studies of SFC stationary phases?

Lucie Nováková¹, Kateřina Plachká¹, Veronika Pilařová¹, Tatána Gazárková¹, Jean-Christophe Garrigues²

¹Charles University, Faculty of Pharmacy, Czech Republic. ²Paul Sabatier University, France

09:00 – 09:20

55 Harder, Better, Faster, Stronger – Improving separations by using supercritical fluid chromatography

Stefan Lamotte

BASF SE, Germany

09:20 – 09:40

5 Advantages of SFC–MS over LC–MS in food safety analysis

Gesa Schäd

Shimadzu Europa GmbH, Germany

09:40 – 10:00  *2024 Horvath Award Finalist*

35 Exploring the full potential of CO₂-based chromatography within pharmaceutical drug development settings

Gioacchino Luca Losacco, Zhao Liu, Elizabeth Pierson, Erik L. Regalado

Merck & Co., Inc., USA

08:30 – 10:00

Challenges in Pharma- Meth. Dev.App.

Colorado G–J

Session Chair: Todd Maloney

08:30 – 08:50  *Neue Award Winner*

310 Speeding Up Size-Based Separations and Improving the Richness of Analysis

Miroslav Janco

Dow Chemical, USA

08:50 – 09:20

Keynote: 13 Characterization and Quantification of Multi-valent Vaccines by Separation Techniques

James Deng

Merck & Co, USA

09:20 – 09:40

118 Development of an Ion-pairing Reversed-phase and a Hydrophilic Interaction Chromatograph Methods for Characterization of Synthetic Guide Ribonucleic Acids

Jenny Wang, Kelly Zhang, Bingchuan Wei

Genentech Inc., USA

Scientific Sessions – Wednesday, July 24

09:40 – 10:00

129 Design and Implementation of a Platform Analytical Characterization Strategy for Rapid Candidate Screening and the study of Degradation Mechanism Pathways of Synthetic Peptide Therapeutics

Samuel Yang

Genentech, USA

08:30 – 10:00

Nucleic Acids and Oligos

Denver 4-6

Session Chair: John Yates

08:30 – 09:00

Keynote: 186 Analytical Challenges and Recent Advancements in Nucleic Acid Based Medicines

Kelly Zhang

Genentech, USA

09:00 – 09:20

61 Characterization of Synthetic Oligonucleotides Utilizing Multiple Modes of Chromatography and Mass Spectrometry

Todd Maloney¹, Matt Sorensen¹, MJ Paulines¹, Chen-Chun Chen¹, Brad King¹, Jeffrey Roberts¹, Daniel Meston², Dwight Stoll²

¹Eli Lilly and Company, USA. ²Gustavus Adolphus College, USA

09:20 – 09:40

59 Liquid Chromatography Challenges in Analytical to Preparative Scale-up of Denaturing Methods for siRNA Therapeutics

Gregory Jones, Yuan (David) Ren

Alnylam Pharmaceuticals, USA

09:40 – 10:00

139 LC-MS Analysis of Oligonucleotides on Polymer Substrate Using a Secondary Amine

Robert Ross

Thermo Fisher Scientific, USA

10:00 – 11:00

Poster Session, Exhibition, & Coffee Break

Colorado A-F

260 Comparison of Mixer Performance for HPLC Methods Utilizing TFA Gradients

Lise Gauthier, Kimberly Martin, Elom Pedanou, Paula Hong

Waters Corporation, USA

262 Method Modernization of Compendial Methods Using USP <621> with a Next-Generation HPLC System

Pawel Bigos, Duanduan Han, Xiangsha Du, Robert Birdsall, Karen Nyholm

Waters Corporation, USA

Scientific Sessions – Wednesday, July 24

265 Development of an isolation workflow for impurities in agricultural active ingredients

Marina Sarcinella, Brett Marsh, Jens Richards, Mingming Ma
Corteva Agriscience, USA

285 Automatic Optimization of Gradient Conditions Using AI Algorithm for LC Method Development with Functional Foods

SHINICHI FUJISAKI, HIDETOSHI TERADA
SHIMADZU CORPORATION, Japan

286 The Development of a Virtual Liquid Chromatography Method Development Tool

Melinda Ulrich¹, Derick Lucas¹, Justin Steimling¹, Jamie York¹, Chris Nelson¹, Tim Yosca¹, John Garrett²
¹Restek Corporation, USA. ²Analytical Innovations LLC, USA

289 A RPLC Method to Quantify NIAS using Large Volume Injection of Strong Sample Solvents

Deborah Phelps¹, Shayne Green¹, Matthias Pursch², Peilin Yang¹, Jingchun Yang¹, Victor Poroj¹, Hannes Graf³, Thomas Ortmann³, Edgar Naegele³
¹Dow, USA. ²Dow, Germany. ³Agilent Technologies, Germany

290 HPLC analysis of chemical components in e-waste

Jelle Verdonck¹, Katrien Poels¹, Jeroen Vanoirbeek¹, Lode Godderis^{1,2}
¹KU Leuven, Belgium. ²Idewe, Belgium

125 Quantification of metal ion leaching in metal alloys used in HPLC instruments and columns and the impact it can have to separations

Jesse Bischof
SilcoTek Corporation, USA

267 Confident Material Selection in Liquid Chromatography Instrumentation – the Meaning of Inertness

Katherine Lovejoy¹, Mauro De Pra¹, Chris Tuczemskyi², Frank Steiner¹
¹Thermo Fisher Scientific, Germany. ²Thermo Fisher Scientific, United Kingdom

51 Streamlining Chromatographic Method Evaluation and Ensuring Data Quality through Advanced Tools

Gavin Shear
Mestrelab Research, Spain

297 Preparation of Porous Polymer Coated Open Tubular Capillary Columns for the Separation of Trypsin digest of Human Serum Albumin

Ashraf Ali
Henan University of Technology, China

225 Applying Macroscopic Dynamic Simulation Techniques to Accelerate and Evaluate Development of Novel Capillary Column Modules

Thomas Austin¹, Christopher Piccolo², Michael Keller¹, Daniel Czarnecki¹, Graham Shelper¹, James Grinias²
¹IDEX Health & Science, USA. ²Rowan University, USA

Scientific Sessions – Wednesday, July 24

230 Chromatography as a Tool in High-throughput Physico-chemical and ADME-PK Property Estimation of Small Molecules

Jennifer Le, Abhijit Tarafder
Eikon Therapeutics, USA

29 Online-LC as PAT to support vaccines: Early development to commercialization.

Gunjan Dixit
Merck & Co INC., USA

235 Using QTOF Fragmentation to Identify Extractables and Leachables Compounds

John Hobson, Bin Sun
Cytiva, USA

233 Effective method transfer of semi-preparative reversed-phase liquid chromatographic purification of oligonucleotides

Dennis Köhler¹, Talia Hill², Susanne Fabel¹, Mauro De Pra¹
¹Thermo Fisher Scientific, Germany. ²Thermo Fisher Scientific, USA

135 Exploring Fast and Robust Analysis of Cationic and Anionic Pesticides by LC-MS/MS

Ramkumar Dhandapani
Phenomenex, USA

161 Supercritical fluids in the extraction and analysis of biologically active compounds from plant sources

Veronika Pilařová, Kateřina Plachká, Lucie Nováková
Department of Analytical Chemistry, Faculty of Pharmacy in Hradec Králové, Charles University, Czech Republic

279 Characterization of Hydrophobically Modified Polymers by Micellar Size Exclusion Chromatography Coupled with Multiangle Light Scattering and Differential Refractive Index Detectors

Ramses S. Meleán Brito^{1,2}, Joana E. Tasque³, Miriam C. Strumia^{1,2}, Facundo Mattea^{1,2}, Juan M. Giussi³, Juan M. Milanesio^{2,4}, Juan M. Padró^{3,5}

¹Universidad Nacional de Córdoba, Facultad de Ciencias Químicas, Departamento de Química Orgánica. Av. Haya de la Torre y Av. Medina Allende, Córdoba, X5000HUA, Argentina. ²CONICET, Instituto de Investigación y Desarrollo en Ingeniería de Procesos y Química Aplicada (IPQA – UNC – CONICET). Av. Vélez Sarsfield 1611, Córdoba, X5016GCA, Argentina. ³YPF TECNOLOGÍA S.A., Av. Del Petróleo s/n (entre 129 y 143), Berisso, Argentina. ⁴Universidad Nacional de Córdoba, Facultad de Ciencias Exactas, Físicas y Naturales. Departamento de Química Industrial y Aplicada. Av. Vélez Sarsfield 1611, Córdoba, X5016GCA, Argentina. ⁵División Química Analítica, Facultad de Ciencias Exactas, Universidad Nacional de La Plata (UNLP), 47 y 115 (B1900AJL), Ciudad de La Plata, Provincia de Buenos Aires, Argentina

Scientific Sessions – Wednesday, July 24

253 Green analytical methods for assessing oil quality and authenticity by subcritical fluid chromatography

Paola Donato¹, Antonella Satira¹, Francesca Rigano¹, Roberta La Tella¹, Paola Dugo^{1,2}, Víctor Cutillas³, Patrik Appelblad⁴, Luigi Mondello^{1,2}

¹Messina Institute of Technology c/o Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, former Veterinary School, University of Messina, Viale G. Palatucci snc 98168 – Messina, Italy. ²Chromaleont s.r.l., c/o Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, former Veterinary School, University of Messina, Viale G. Palatucci snc 98168 – Messina, Italy. ³European Union Reference Laboratory for Pesticide Residues in Fruit & Vegetables. University of Almería, Agrifood Campus of International Excellence (ceiA3), Ctra. Sacramento S/Nº, La Cañada de San Urbano, 04120, Almería, Spain. ⁴Merck Life Science AS, Drammensveien 123, 0277 – Oslo, Norway

57 Highly Efficient LC-MS/MS Analysis of Multiple Mycotoxins Utilizing Biphenyl Column Selectivity with Inert Column Technology

Jared Burkhardt, Shun-Hsin Liang, Justin Steimling, Diego Lopez
Restek, USA

308 Enhanced Fluidity Liquid Chromatography for separation of oligonucleotides and sgRNA

Navid Mohammadian Tabrizi, Susan Olesik
The Ohio State University, USA

23 Using an OneFAST System as µLC system for the Determination of Cr(VI) and Cr(III)

Jelle Verdonck¹, Katrien Poels¹, Jeroen Vanoirbeek¹, Radu Duca^{1,2}, Lode Godderis^{1,3}, Erik Smolders¹
¹KU Leuven, Belgium. ²LNS, Luxembourg. ³Idewe, Belgium

155 Surrogate Optimization with Multivariate Adaptive Regression Splines for Supercritical Fluid Extraction-Supercritical Fluid Chromatography hyphenated Tandem Mass Spectrometry

Niray Bhakta, Jaivardhan Sood, Destini Black, Jay Rosenberger, Victoria Chen, Kevin Schug
University of Texas at Arlington, USA

313 Optimizing HPLC Operation using the Agilent InfinityLab LC Performance Standard

Fred Chan, Jennifer Sanderson
Agilent Technologies, USA

11:00 – 12:30

Column Technology II

Denver 1-3

Session Chair: Attila Fellinger

11:00 – 11:20

15 UPLC Columns: Past, Present and Future

Thomas Walter

Waters Corporation, USA

Scientific Sessions – Wednesday, July 24

11:20 – 11:40

72 Mixed-Mode Continuous Stationary Phase Gradients for LC Separations

Maryanne Collinson, Sarah Rutan, Thomas Cecil, Ashley Young
Department of Chemistry, Virginia Commonwealth University, USA

11:40 – 12:00

130 Development of a Twin Column Continuous Chromatography Oligo Purification Process

J Preston, Zeshan Aqeel, Ilio Durandis
YMC America, USA

12:00 – 12:20

147 Utilization of Monodisperse Fully Porous Particles for Chromatographic Improvement in Mass Spectrometry based Metabolomics for Disease Detection

Geoff Faden¹, Timothy Garrett², Ed Faden¹, Mark Woodruff³
¹Mac-Mod, USA. ²University of Florida, USA. ³Fortis Technologies Ltd, United Kingdom

11:00 – 12:30

LC/CE-MS Proteomics –2

Colorado G–J
Session Chair: David Chen

11:00 – 11:30

Keynote: 187 Adventures in High-performance Separations for Cellular Activity Profiling of Small Molecule Inhibitors

Jarrold Marto
Dana-Farber, USA

11:30 – 11:50

37 A novel tandem LC workflow for proteome analysis with near 100% MS utilization

Runsheng Zheng¹, Martin Rendl¹, Tabiwang Array¹, Neloni Wijeratne², Christopher Pynn¹, Alec Valenta², Ece Aydin¹, Maksim Daniliuk³, Robert van Ling⁴, Scott Peterman², Eugen Damoc¹, Claudia Martins², Philip Remes², Cristina Jacob², Wim Decrop¹, Martin Samonig⁵, Anne Morgenstern¹
¹Thermo Fisher Scientific, Germany. ²Thermo Fisher Scientific, USA. ³Thermo Fisher Scientific, Lithuania. ⁴Thermo Fisher Scientific, Netherlands. ⁵Thermo Fisher Scientific, Austria

11:50 – 12:10

88 Analysis of IgG Biosimilars Using the Novilytic Proteometer–L Kit

Eric Bowen, Fred Regnier, Meena Narsimhan, Mary Bower, Nathan Morris
Novilytic, USA

12:10 – 12:30

114 Versatile and bidirectional use of microfluidic LC columns, optimized configuration for achieving significant increases in proteome coverage at low nanoLC flow rates

Paul Jacobs¹, Robert van Ling^{1,2}, Natalie Van Landuyt¹, Jeff Op de Beeck¹
¹Thermo Fisher Scientific, Belgium. ²Thermo Fisher Scientific, Netherlands

Scientific Sessions – Wednesday, July 24

11:00 – 12:30

Green and Effective Sample Analysis

Denver 4–6

Session Chair: Alexandra Ros

11:00 – 11:30

Keynote: 43 Analytical chemistry: From lines to circles

Elia Psillakis

Technical University of Crete, Greece

11:30 – 12:00

Keynote: 188 Streamlining Sample Treatment: The Power of Flow-Based Automation

Marcela Segundo

University of Porto, Portugal

12:00 – 12:20

73 Linear alkyl carbonates as green mobile phase modifiers for HILIC and RPLC

Neil Danielson, Philip Boes, Sophie Elleman, Leah McDermott, Abdullah Alqahtani, Mohamed Abdelazziz

Miami University, USA

12:30 – 13:30

Novilytic Vendor Seminar & Lunch

Denver 1–3

Lunch Provided

Supercharge your HPLC for mAb Analysis while Keeping the Current Workflow

Eric Bowen

BSc., MBA, Director of Product Management, Novilytic LLC

12:30 – 13:30

Thermo Fisher Scientific Vendor Seminar & Lunch

Colorado G–J

Lunch Provided

Integrating Charged Aerosol Detection into Chromatographic Workflows

Jim Grinias

Rowan University, Glassboro, New Jersey

Scientific Sessions – Wednesday, July 24

13:30 – 15:00

Multidimensional Sep. I

Denver 1-3

Session Chair: Dwight Stoll

13:30 – 14:00

Keynote: 189 Multi-task Bayesian optimization and retention modeling to enhance comprehensive 2D-LC separations and the role of optimization algorithms

Bob Pirok

University of Amsterdam,, Netherlands

14:00 – 14:20

 *2024 Horvath Award Finalist*

82 Optimization of anion exchange – ion pair reversed phase 2D-LC approach for the separation of denaturing phosphorothioate oligonucleotides.

Quang Dong Bui

Vrije Universiteit Brussel, Belgium

14:20 – 14:40

52 An innovative one and two-dimensional liquid chromatographic strategies to identify potential on-column degradation in modern day pharmaceuticals

CJ Venkatramani

South San Francisco, USA

14:40 – 15:00

 *2024 Horvath Award Finalist*

49 Development of Multiple Heartcutting Two-Dimensional Liquid Chromatography with Ion-Pairing Reversed-Phase and Hydrophilic Interaction Chromatography for Characterization of Impurities in Therapeutic Oligonucleotides

Daniel Meston¹, Matt Sorensen², Todd Maloney², Dwight Stoll¹

¹Gustavus Adolphus College, USA. ²Eli Lilly and Company, USA

13:30 – 15:00

Omics

Colorado G-J

Session Chair: Wenwan Zhong

13:30 – 14:00

Keynote: 190 Oligonucleotide Mapping via LC-UV-MS/MS to Enable Comprehensive Primary Structure Characterization of mRNA Drug Substance

Brian Gau

Pfizer, USA

14:00 – 14:30

Keynote: 198 Development of LC-MS/MS to Facilitate Efficient Isomeric Separation of Glycans Derived from Biological Samples

Yehia Mechref

Texas Tech University, USA

Scientific Sessions – Wednesday, July 24

14:30 – 14:50

120 New Capillary C18 and Carbon HPLC Columns for Bio-analysis

Michael Ye, Breanne Smith, Bill Maule, Olga Shimelis, Cory Muraco

MilliporeSigma, USA

13:30 – 15:00

Challenges in Biopharma- High Throughput Analysis

Denver 4-6

Session Chair: Janusz Pawliszyn

13:30 – 14:00

Keynote: 191 Greening the downstream of biopharmaceuticals through process intensification and the use of innovative eco-compatible solvents

Martina Catani

University of Ferrara,, Italy

14:00 – 14:20

117 Rapid Analysis of Drug Conjugation Efficiency for Intact and Reduced Antibody Drug-Conjugates by Reversed Phase Liquid Chromatography and Mass Spectrometry

Eli Larson

Merck & Co. Inc., USA

14:20 – 14:40

40 Enabling high-throughput purification and quantitation at microgram levels of targeted libraries using mass-directed isolation (ug-HTPP) and charged aerosol detection (CAD)

Wesley Barnhart¹, Kate Ashton¹, Mike Berke¹, Larry Miller², Abhijit Tarafder³

¹Amgen Inc, USA. ²Novartis, USA. ³Eikon Therapeutics, USA

14:40 – 15:00

50 Accelerating Product Development with Automation: Boosting Productivity, Consistency, and Data Accessibility

Teresa Schu, Daniela Olszova, Yilin Han, Yuanhui Ma, Frank Nguyen, Steven Chung, YenRu Pan, David Gronbach, Frantz Gabeau, Tawnya Flick, Alexandre Ambrogelly

Gilead, USA

15:00 – 16:30

Poster Session, Exhibition, & Coffee Break

Colorado A-F

222 Development of improved chromatographic methods for the separation of synthetic peptide medications and associated impurities

Paul Rainville, Brianna Clements

Waters Corporation, USA

Scientific Sessions – Wednesday, July 24

252 A novel approach for multiple PQAs monitoring of mAbs from bioreactors using 2D-LC-MS

Maria Grübner¹, Christof Mitterer¹, Alexander Schwahn², Aleš Holfeld², Sara Carillo³, Ken Cook⁴

¹Thermo Fisher Scientific, Germany. ²Thermo Fisher Scientific, Switzerland. ³NIBRT, Ireland. ⁴Thermo Fisher Scientific, United Kingdom

256 Advancing Analytical Performance for Biotherapeutics with a Bio-Inert HPLC System

Pawel Bigos, Xiangsha Du, Duanduan Han, Robert Birdsall, Karen Nyholm

Waters Corporation, USA

142 Novel Platform icIEF Method with Fluorescence Detection for Protein Therapeutics Charge Heterogeneity Analysis

Qi Hu, Will Hamouda, Ally Liu, Tawnya Flick

Gilead Sciences, Inc., USA

58 An Analytical Method for Determining N-nitrosodimethylamine and N-nitrosodiethylamine Contamination in Irbesartan, Olmesartan, and Metformin by UPLC-APCI-MS/MS in Tablet Dosage Form

Ahmad Deeb¹, Mohammad Hailat¹, Hani Aldoqum², Mohammad Abuothman², Omar Abuyaman³, Wael Abu Dayyih⁴

¹Al-Zaytoonah University of Jordan, Jordan. ²Royal Scientific Society, Jordan. ³The Hashemite University, Jordan.

⁴Mutah University, Jordan

149 Analysis of Related Substances of Chlorhexidine Digluconate: Kinetex 5 µm C18 Batch Reproducibility

Jason Anspach¹, Amra Perva², Janja Vasilić², Phil Koerner¹

¹Phenomenex, USA. ²University of Maribor, Slovenia

211 Application of Flow-NMR and Online UHPLC-MS as Process Analytical Technologies (PAT) in support of Batch and Flow Reaction Development

Angel Diaz, Samuel Britner, Aritra Sarkar, Cameron Armstrong, Kakasaheb Nandiwale, Katharina Grohowalski

Pfizer Inc., USA

213 Streamlining Impurity Analysis in Atorvastatin with the ACQUITY™ QDa™ II Mass Detector for Enhanced Detection and Quantification

Henry Foddy, Jonathan Pugh, Cristian Cojocariu

Waters, United Kingdom

214 Real-time Nitrosamine Reactivity Assessment Using Liquid Chromatography with Photodiode-Array Detection

Alan Wei, Armen Shamirian, Yi Li, Olivier St-Jean, Trevor Rainey, Chris Foti

Gilead Sciences, USA

215 Application of ASAPprime® Accelerated Stability Studies on Drug Substances in Early Development Phases

Lihui Jia¹, Mary Ababat¹, Lucy Zhao¹, Jiangwei Li¹, Frank Wu²

¹Neurocrine Biosciences, USA. ²Neurocrine biosciences, USA

1 Digital Transformation of Monoclonal Antibody Characterization Analytical Workflows

Yulan Bian¹, Miles Bradshaw²

¹Agilent Technologies, Singapore. ²Agilent Technologies, USA

Scientific Sessions – Wednesday, July 24

150 Nitrosamines in Drug Products: Overcoming Sample Preparation Challenges via SPE for Simultaneous Quantification of 13 N-Nitrosamines in Various Drug Products

Jason Anspach¹, Timeja Planinšek Parfant², Taja Skube², Robert Roškar², Phil Koerner¹

¹Phenomenex, USA. ²University of Ljubljana, Slovenia

182 Modernization of an Antiviral Impurities Monograph When Using the Globally Harmonized Pharmacopeial Guidance for Liquid Chromatography

Catharine Layton¹, Paul Rainville¹, Michael Baynham²

¹Waters Corporation, USA. ²Waters Corporation, United Kingdom

143 SIMULTANEOUS SEPARATION OF CARDIOVASCULAR MEDICATIONS IN THEIR COMBINATION DRUGS USING MICELLAR LIQUID CHROMATOGRAPHY By UPLC

Ibrahim Alothaim, Yahya M. Alshehri

Saudi Food and Drug Authority, Saudi Arabia

300 Evaluation of thickness-tapered channel in flow field-flow fractionation

Yopung Neom Kim¹, Jaihoo Kim¹, P. Stephen Williams², Myeong Hee Moon¹

¹Yonsei University, Korea, Republic of. ²Cambrian Technologies Inc, USA

227 Preparation of Capillary LC Columns in Tube-in-Manifold Microfluidic Devices

Christopher Piccolo¹, Michael Keller², Daniel J. Czarnecki³, Thomas Austin², Graham Shelver², James P. Grinias¹

¹Department of Chemistry & Biochemistry, Rowan University, Glassboro, NJ 08028, USA. ²IDEX Health & Science, Rohnert Park, CA 94928, USA. ³IDEX Health & Science, Bristol, CT 06010, USA

220 Antibody purification using synthetic polymer column packing materials with peptidomimetic molecular design

Koichi Deura, Yasuhiro Moriwaki, Daniel Citterio, Yuki Hiruta

Keio University, Japan

275 Analysis and Purification of Therapeutic Oligonucleotides: Method development optimization from the analytical scale through semi-prep and preparative purification.

Connor Flannery, Andrea Tripodi, Andrew Coffey, Jordy Hsiao

Agilent Technologies, USA

231 RNA Extraction using Magnetic Nanoparticles in a 3D-Printed Device

Timothy Skaggs, Jacob Nielsen, Brett Pickett, Greg Nordin, Adam Woolley

Brigham Young University, USA

228 Salt Gradient Separation of Nucleic acid components in Adeno-Associated Virus using anion exchange chromatography.

Sissi White¹, Estee Tooles¹, Ken Thompson¹, Ken Cook², Min Du¹

¹Thermo Fisher Scientific, USA. ²Thermo Fisher Scientific, United Kingdom

Scientific Sessions – Wednesday, July 24

291 Immunoaffinity Capture and Solid-phase Extraction 3D Printed Microfluidic Devices for Preterm Birth Biomarker Analysis

Michael Haggard, James Holladay, Zachary Berkheimer, Gregory Nordin, Adam Woolley
Brigham Young University, USA

299 Microfluidic magnetic analyte delivery technique for separation, enrichment, and ultrasensitive detection of biomarkers

Ling Xia, Jiani Yang, Jianwei Dong, Gongke Li
Sun Yat-sen University, China

152 HPPC and HPDEP: High performance protein crystallography and dielectrophoresis

Alexandra Ros
Arizona State University, USA

27 Determination of multiple mycotoxins in different tea samples and their drinking risk assessment

Deng-Jye Yang, Chien-Ni Huang
National Yang Ming Chiao Tung University, Taiwan

103 An Overview of Injector Programing for Standard and Sample Dilutions versus Traditional Manual Dilutions in LC Methods

Susan Dantonio, William Long
Agilent Technologies, USA

277 The modification of PDMS for improved sampling of nicotine and other analytes

Sergio Renteria, Christopher Harrison
San Diego State University, USA

288 Optimising the extraction of oligonucleotides by SPE

Edward Faden¹, Matt James²
¹MAC-MOD Analytical, USA. ²Avantor Sciences, United Kingdom

16:30 – 18:00

Forensic Analysis

Denver 1-3

Session Chair: Jared Anderson

16:30 – 17:00

Keynote: 192 Developing Rapid and Fieldable Methods for the Detection of Opioids and Other Novel Psychoactive Substances

Bruce McCord
Florida International University, USA

Scientific Sessions – Wednesday, July 24

17:00 – 17:20

44 Feasibility Study on the Use of Artificial Intelligence in the Analysis of LC/MS Chromatograms for Doping Control in Horse Racing

Chun Sing Lai, April Sum Yee Wong, Kin Sing Wong, Terence See Ming Wan, Emmie Ngai Man Ho
Racing Laboratory, The Hong Kong Jockey Club, Hong Kong

17:20 – 17:40

53 Characterization of an Untargeted Multi-Omics Human Fecal Reference Material

Amanda Bayless, Clay Davis, Fabio Casu, Tracey Schock
National Institute of Standards and Technology, USA

17:40 – 18:00  2024 Horvath Award Finalist

133 Coupling Capillary Electrophoresis to Mass Spectrometry Through Vibrating Sharp-Edge Spray Ionization for Protein Analysis

Makenzie Witzel¹, Lindsay Veltri¹, Marius Kostelic², Yousef Elshamy¹, John Lucas¹, Stella Lai², Chen Du², Vicki Wysocki², Lisa Holland¹

¹C. Eugene Bennett Department of Chemistry, West Virginia University, USA. ²Resource for Native Mass Spectrometry Guided Structural Biology, The Ohio State University, USA

16:30 – 18:00

Environmental Analysis

Colorado G–J

Session Chair: Elia Psillakis

16:30 – 17:00

Keynote: 193 Small Molecule Separation in Complex Samples through Sustainable and High Throughput Microextraction Techniques

Emanuela Gionfriddo

University at Buffalo, the State University of New York, USA

17:00 – 17:20

85 Comprehensive PFAS Analysis Using Diverse LC Column Types

Derick Lucas, Jamie York, Shun-Hsin Liang, Justin Steimling
Restek Corp., USA

17:20 – 17:40

21 Demonstration of the Utility of a 1.5 mm ID UHPLC column for Pesticide Analysis using the Multi-Analyte Method

Stephanie Schuster¹, Austin Whittington², Mary Ellen McNally²

¹Advanced Materials Technology, USA. ²FMC Corporation, USA

17:40 – 18:00

71 Determination of Plastic Waste Pyrolysis Oil Feedstock and Characterization of Polar Heteroatom Containing Compounds

Alexander Kaplitz¹, Niray Bhakta¹, Sadid Morshed¹, Jean-Francois Borny², Kevin Schug¹

¹The University of Texas at Arlington, USA. ²Lummus Technology, USA

Scientific Sessions – Wednesday, July 24

16:30 – 18:00

Proteomics/ Clinical Diagnostics

Denver 4-6

Session Chair: Robert Kennedy

16:30 – 17:00

Keynote: 194 From LC-MS/MS DPMs drug targets discovery to an α -aging Immunotherapy

Newman Sze

Brock University, Canada

17:00 – 17:20

100 Neuron Protective Effects of the Astrocyte Secretome During Oxygen-Glucose Deprivation

Qin Fu¹, Manasa Vegesna¹, Dermot McGovern¹, Christopher Murray¹, Yue Xuan², Jennifer Van Eyk¹

¹Cedars-Sinai Medical Center, USA. ²ThermoFisher, Germany

17:20 – 17:40

66 Milking It: Isolation of Bovine Milk Derived Extracellular Vesicles via a Polyester Capillary Channeled Polymer Fiber Stationary Phase

Carolina Mata¹, Jerisa Pimentel², R. Kenneth Marcus²

¹SENECA, USA. ²Clemson University, USA

17:40 – 18:00

79 Development of a robust cation exchange chromatography method for charge variant analysis using an analytical quality-by-design approach

Xuepu Li¹, Sylvia Grosse², Mauro De Pra², Xiaoxi Zhang¹, Min Du³, Richard Verseput⁴

¹ThermoFisher, China. ²ThermoFisher, Germany. ³ThermoFisher, USA. ⁴S-Matrix, USA

18:00–22:00

Cocktail Hour/Conference Dinner

Ellie Caulkins Opera House

Bundled Registration or Additional Ticket Required

18:00 – 19:00

Cocktail Hour

19:00 – 22:00

Conference Dinner



**54th International
Symposium on High
Performance Liquid
Phase Separations &
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Convention Centre (BMCC)**

Contact:
Symporg SA
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1201 Geneva / Switzerland
contact@hplc2025-bruges.org

Symposium Chair & co-Chairs:
**Gert Desmet | Ken Broeckhoven
Deirdre Cabooter | Sebastiaan Eeltink
Frederic Lynen**
Honorary Chair: **Pat Sandra**



Scientific Sessions – Thursday, July 25

08:30 – 10:00

Multidimensional- II

Denver 1-3

Session Chair: Gert Desmet

08:30 – 09:00

Keynote: 195 An Aliquot Push-Pull Interface for Coupling the First and Second Dimension Separations in Two-dimensional Liquid Chromatography

Dwight Stoll

Gustavus Adolphus College, USA

09:00 – 09:20

31 Trapping Mode Two-Dimensional Liquid Chromatography for Quantitative Low-Level Impurity Enrichment in Pharmaceutical Development

Ziqing Lin, Qinggang Wang, Yiyang Zhou, Jonathan Shackman

Bristol Myers Squibb Company, USA

09:20 – 09:40

76 Two-dimensional Liquid Chromatography Method Development for Compositional Analysis of Nonionic PEG-based Rheology Modifiers

Meng Jing¹, Owen Young¹, Kathleen Michels¹, Yujing Tan¹, David Meunier¹, Shiling Zhang², Fanwen Zeng¹

¹The Dow Chemical Company, USA. ²The Dow Chemical Company, China

09:40 – 10:00

70 Two-dimensional Liquid Chromatography (2D-LC) Method Development for Peak Purity Analysis

Jane Kawakami, Rob North, Doug Farrand, Qi Yan, Juan Mesa Arteaga

Pfizer, USA

08:30 – 10:00

Sample Prep

Colorado G-J

Session Chair: Guowang Xu

08:30 – 09:00

Keynote: 196 Advances in Nucleic Acid Purification and Separations

Jared Anderson

Iowa State University, USA

09:00 – 09:30

Keynote: 197 Sample preparation techniques for rapid analysis of complex samples

Gongke Li

Sun Yat-sen University, China

Scientific Sessions – Thursday, July 25

09:30 – 09:50

116 Ultra-fast Online Solid Phase Extraction LC/MS/MS Method for the Simultaneous Analysis of Steroid Hormones Using a Multiplexed 4-channel System

Logan Miller¹, Eishi Imoto¹, Vikki Johnson¹, Toshiya Matsubara¹, Daiki Fujimura²

¹Shimadzu Scientific Instruments, Inc., USA. ²Shimadzu Corporation, Japan

08:30 – 10:00

Pharmaceutical Anal. III

Denver 4-6

Session Chair: Martina Catani

08:30 – 09:00

Keynote: 201 Exploring structure and function of therapeutic antibodies using LC and MS

Koen Sandra

RIC Group, Belgium

09:00 – 09:20

24 Super rapid and efficient separation for antibodies, extracellular vesicles, and viruses using macroporous spongy-monolithic column

Takuya Kubo^{1,2}, Eisuke Kanao², Tetsuya Tanigawa², Takeshi Kobayashi³, Yasushi Ishihama², Koji Otsuka²

¹Kyoto Prefectural University, Japan. ²Kyoto University, Japan. ³Osaka University, Japan

09:20 – 09:40

42 Chromatographic Appraisal of Monoclonal Antibody Performance

Fred Regnier, Meena Narsimhan, Nathan Morris, Mary Bower

Novilytic, USA

09:40 – 10:00

20 An Industry Perspective on the Practical Application of Platform Analytical Procedures

He Meng

Sanofi, USA

10:00 – 11:00

Finalist Poster Session, Exhibition, & Coffee Break

Colorado A-F

11:00 – 12:30

Predictive Modeling II: AI and other modeling

Denver 1-3

Session Chair: Deirdre Cabooter

11:00 – 11:20

16 All Hands on Deck: AI-aided LC Method Development & Innovative Screening Approaches for In-depth Analysis of Complex Biologics

Anastasiia Tikhomirova, Priya Patel, Zachary Breitbach, Calvin Becker, Sam Melton, Nicholas Gallo

AbbVie, USA

Scientific Sessions – Thursday, July 25

11:20 – 11:40

14 Software-assisted Process for Efficient and Expedited Development of Chromatographic Methods (SPEED-CHROM)

Jens Richards¹, O'Donnell Sylvester¹, Faith Turner²

¹Corteva Agriscience, USA. ²Kelly Scientific, USA

11:40 – 12:00

97 A Novel Deep Generative Learning Module to Process and Contextualize LC and LC-MS Data Streams

Lalin Theverapperuma, Andi Krupke, Pulasthi Ekanayake, Pasindu Tennakoon, Doreen Chrishanth

Expert Intelligence, USA

12:00 – 12:20

121 Optimizing SFC Separation of Polypeptides Using Automation and QbD Principles

Brian Domanski, Nivesh Mittal, Evgenia Barranikova, Kodai Imaeda

Shimadzu Scientific Instruments, Inc., USA

11:00 – 12:30

Chiral Chromatography

Colorado G–J

Session Chair: Gongke Li

11:00 – 11:30

Keynote: 199 Isotope effect in achiral and chiral high-performance liquid chromatography

Bezhn Chankvetadze

Tbilisi State University, Georgia

11:30 – 11:50

25 Leveraging Chiral Stationary Phases with Opposite Configurations to Simplify Chiral Method Development for Drug Substance and Intermediates of A LPA1 Receptor Antagonist

Brian He, Hui Lin, Yan Zha, Xiaomei Zhou, Peter Tattersall

Bristol Myers Squibb, USA

11:50 – 12:20

 **2023 Horvath Award Winner**

9 How do we deal with unexpected van Deemter curves?

Simona Felletti¹, Chiara De Luca¹, Bezhn Chankvetadze², Francesco Gasparri³, Martina Catani¹, Alberto Cavazzini^{1,4}

¹University of Ferrara, Italy. ²Tbilisi State University, Georgia. ³“La Sapienza” Università di Roma, Italy. ⁴Council for Agricultural Research and Economics, CREA, Italy

Scientific Sessions – Thursday, July 25

11:00 – 12:30

Stationary Phase 2

Denver 4-6

Session Chair: Emanuela Gionfriddo

11:00 – 11:20

90 Evaluation of Positively Charged Surface Phenyl–Hexyl Stationary Phase for Separation of Basic Small Molecule Drugs

William Miles, Benjamin Libert, Barry Boyes

Advanced Materials Technology Inc., USA

11:20 – 11:40

107 Incorporation of Novel Zwitterionic Silica Particles in UHPLC Workflows: Fundamental Investigations into Kinetic Performance and Selectivity

Cory Muraco¹, Clinton Corman¹, Patrik Appelblad², Egidijus Machtejevas³, Gabriel Odugbesi¹

¹MilliporeSigma, USA. ²Merck KGaA, Norway. ³Merck KGaA, Germany

11:40 – 12:00

112 Study of reversed–phase column bonded with adamantyl groups

Satoshi Makino, Imre Sallay

OSAKA SODA Co., Ltd, Japan

12:00 – 12:20

137 Hybrid grafted and hyperbranched anion exchangers for ion chromatography

Alexandra Zatirakha¹, Christopher Pohl²

¹Thermo Fisher Scientific, USA. ²CAP Chromatography Consulting, USA

12:30 – 13:30

Lunch

Pre-Function Area

13:30 – 16:30

Plenary/Awards/Introduction to Future HPLCs/Closing

Colorado F–J

13:30 – 14:10

Plenary: Challenges and Solutions for Metabolomics and Exposomics Based on High–resolution Mass Spectrometry With/Without Chromatography

Guowang Xu

HPLC 2024 – Dalian Program Chair

14:10 – 14:15

Introduction to HPLC 2024 – Dalian

Guowang Xu

HPLC 2024 – Dalian Program Chair

Scientific Sessions – Thursday, July 25

14:15 – 14:55

Plenary: Recent Advances in the Modeling of Chromatographic Media

Gert Desmet

HPLC 2025 Program Chair

14:55 – 15:00

Introduction to HPLC 2025 – Bruges

Gert Desmet

HPLC 2025 Program Chair

15:00 – 15:05

Introduction to HPLC 2026 – Indianapolis

Todd Maloney & Jared Anderson

HPLC 2026 Program Chairs

15:05 – 15:35

CSABA HORVÁTH YOUNG SCIENTIST AWARD and BEST POSTER AWARDS PRESENTATION

15:35 – 16:05

Closing

Susan Olesik

HPLC 2024 – Denver Program Chair

16:05 – 17:05

Farewell Drink

Plaza