



# MINNESOTA CHROMATOGRAPHY FORUM

---

**40th Annual Spring Symposium  
May 7 - 9, 2019  
Earle Brown Heritage Center  
Minneapolis, MN**

**Symposium Early Registration Deadline: April 14, 2019**

**Short Course Early Registration Deadline: April 14, 2019**

**Abstract Submission Deadline for a Technical Presentation: April 15, 2019**

**Short Course Final Registration Deadline: May 1, 2019**

**Symposium Advance Registration Deadline: May 1, 2019**

**Symposium On-Site Registration: after May 7 - 9, 2019**

For further information contact Jenn Rosen  
by phone at (612) 990-3924 or email at [jenn@rosetreeevents.com](mailto:jenn@rosetreeevents.com)  
Or, visit the MCF Website at [www.minnchrom.com](http://www.minnchrom.com)

Minnesota Chromatography Forum  
c/o Rosetree Events  
201 East Hennepin, Suite 210  
Minneapolis, MN 55414

The Minnesota Chromatography Forum invites you to participate in its 40<sup>th</sup> Annual Spring Symposium and Short Courses at the Earle Brown Heritage Center in Minneapolis, MN. This year's program will interest people from all areas of separation science.

— KEYNOTE ADDRESS —

**“From Identifying Reaction Products to Suspect Screening, Chromatography Enables Environmental Analytical Chemistry”**

By

**Dr. William Arnold**

**Distinguished McKnight University Professor  
Joseph T. and Rose S. Ling Professor  
Associate Head of the Department of Civil,  
Environmental, and Geo- Engineering  
University of Minnesota**

— FOCUS SESSIONS —

— GENERAL SESSIONS —

— POSTER SESSIONS —

— SPECIAL TOPICS SESSION —

— INTENSIVE SHORT COURSES —

**“GC Method Development”**

by **Daron Decker**

**“CSI – GC/MS Style”**

by **Robert J Kobelski, Ph.D., Principal Scientist**

**“LC Method Development Tips for Robust and Reproducible Methods”**

by **Lori Sandford and Natalie Rassmussen**

**THE UPPER MIDWEST'S LARGEST  
CHROMATOGRAPHIC  
INSTRUMENTATION AND SUPPLIES  
EXHIBITION**

On Wednesday afternoon, May 9, you are invited to the Special Topic Session, Vendor Seminars and a concurrent Exhibition of chromatography supplies and instrumentation. Other highlights of Wednesday afternoon are the complimentary Reception in the Exhibit Hall, and the poster session. The Reception, Vendor Seminars, Special Topic Sessions, Equipment Exhibition and Poster Session are free of charge and provide an excellent opportunity to network with fellow chromatographers.

**DAILY PROGRAM**

**Tuesday, May 7, 2018**

8:00am- 4:30pm **Concurrent Short Courses**

“GC Method Development”

“CSI – GC/MS Style”

“LC Method Development Tips for Robust and Reproducible Methods”

**Wednesday, May 8, 2018**

8:00am - 12:00pm **Concurrent Short Courses**  
(continued from Tuesday)

12:00pm - 6:00pm **Equipment Exhibition open**

1:00pm - 2:00pm **Special Topics Session**

2:00pm - 5:00pm **Vendor Seminars**

3:30pm - 6:00pm **Reception** in the Exhibit Area

1:00pm - 6:00pm **Posters** to be displayed

4:00pm - 5:00pm **Authors** asked to be with their posters

— SPECIAL TOPICS DISCUSSION —

**1pm Wednesday Afternoon, May 9**

**Led by: Daron Decker**

Registration is *not* required for the Vendor Seminars, Special Topic Sessions, Equipment Exhibition, Reception and Poster Session on Wednesday.

**Registration is required** to attend Thursday's sessions.

**Thur, May 9, 2018** (Registration required, see p8)

8:00am - 3:00pm	<b>Registration</b>
10:00am - 4:00pm	Vendor Exhibits
10:00am - 3:40pm	Posters
8:40am - 10:00am	<b>Opening Session</b>
8:40am	Welcome
8:45am	Announcements
	Palmer Award
9:00am	Keynote Address
10:00am	Refreshments
10:30am - 12:00pm	<b>Morning Session</b>
12:00pm	Lunch
1:00pm - 4:00pm	<b>Afternoon Session</b>
3:00pm	Refreshments
3:00pm - 3:40pm	Authors asked to be at posters
4:00pm	Prize Drawings in the Exhibit Area
5:00pm	Annual Business Meeting

## — KEYNOTE ADDRESS —

Thursday Morning, May 9

**“From Identifying Reaction Products to Suspect Screening, Chromatography Enables Environmental Analytical Chemistry”****Dr. William Arnold**

Distinguished McKnight University Professor  
Joseph T. and Rose S. Ling Professor  
Associate Head of the Department of Civil,  
Environmental, and Geo- Engineering  
University of Minnesota

Numerous pharmaceuticals, pesticides, and consumer products are continuously released into the environment. Once released, these chemicals undergo various transformations, leading to chemicals of unknown structure and biological activity. Isolation and separation using chromatographic techniques is critical to understanding the fate of these emerging pollutants in aquatic systems. Chemicals with antibacterial or antimicrobial properties are of particular interest. A decade-long investigation into the presence and fate of triclosan in the environment began with observation of a single unusual peak in a chromatogram. Solid phase extraction coupled with separation via high pressure liquid chromatography has allowed improved understanding of the potential impact of antibiotics on Minnesota's lakes. A normal phase chromatographic separation coupled to high resolution mass spectrometry allows quantification of quaternary ammonium compounds in waters and sediments. The results provide insight into where efforts should be focused to minimize the introduction of antibiotic/antibacterial chemicals into the environment.

## \*\*\* KEYNOTE SPEAKER \*\*\*

**William Arnold** is a Distinguished McKnight University Professor and the Joseph T. and Rose S. Ling Professor and Associate Head of the Department of Civil, Environmental, and Geo- Engineering at the University of Minnesota. His research focuses on the fate of organic chemicals in natural and engineered aquatic systems. He received his S.B. in Chemical Engineering from MIT (1994), M.S. in Chemical Engineering from Yale (1995), and Ph.D. in Environmental Engineering from the Johns Hopkins University (1999). He then joined the U of MN faculty. He has won both the AEESP Frontiers in Research Award and Outstanding Publication Award.

## \*\*\* 2019 MCF PALMER AWARDEE \*\*\*

**Paul R. Mahaffy, PhD****Director - Solar System Exploration Division  
NASA Goddard Space Flight Center**

**Paul Mahaffy** has participated for many years at Goddard Space Flight Center in the study of planetary atmospheres and the development of space qualified instrumentation. His main research interests are: (1) Planetary science, especially chemical and isotopic composition of planetary atmospheres and comets, (2) Advanced instrument development for organic and light isotope analysis in planetary targets, and (3) Analog studies for martian and cometary materials including both laboratory and field work.

## — L. S. PALMER AWARD ADDRESS —

**“Discovery of Organics on Mars  
with the SAM Experiment on the Curiosity Rover”**

The Curiosity rover has been systematically exploring for nearly seven years the rocks and soils in an ancient martian crater that once contained a long-lived lake. The exploration of the habitability of this site on Mars is a major goal of the mission. Over the course of the mission, to date, the Sample Analysis at Mars (SAM) instrument suite on the Curiosity rover has enabled a range of geochemical investigations including: (1) atmospheric composition (including methane) and its seasonal variation, (2) isotopic composition of gases in the present atmosphere and gases released from solid samples, (3) dating of rock formation ages using K/Ar measurements, (4) cosmic radiation exposure ages from noble gases released from minerals, (5) characteristics of clays, perchlorates, sulfates, and hydrated minerals from evolved gas analysis (EGA), and (6) identification of organic compounds extracted from soils and rocks. SAM's measurements are nicely complemented by mineralogical data from an x-ray diffractometer and elemental abundances secured by an alpha-particle x-ray spectrometer as well as other cameras and spectrometers on the rover.

The first in situ detection of organic compounds from the surface of Mars using GCMS was of chlorobenzene and three chlorinated alkanes from the Cumberland mudstone. More recently sulfur compounds such as thiophene, methyl and di-methyl thiophene, dimethylsulfide, and methanethiol have since been discovered as well as fragments of heavier aromatic and alkyl compounds. The first chemical derivatization experiments have now been conducted on Mars and are planned to continue as the rover traverses a most interesting clay rich region where organic compounds may be preserved. Unraveling the nature of organic compounds on Mars and the multiple mechanisms responsible for their preservation or degradation in rocks paves the way for a more direct search for extinct or extant life on this planet.

**— SHORT COURSES —****Tuesday & Wednesday, May 7 & 8**

The Minnesota Chromatography Forum Education Committee presents three short courses in conjunction with the 2019 Spring Symposium. These courses will be conducted all day May 7<sup>th</sup> and the morning of May 8<sup>th</sup> at the Earle Brown Heritage Center. **The registration deadline is May 1, 2018.** Course fees are \$525 for early registration before April 15, and \$575 from April 15 to May 1. Registration fees include luncheons, refreshments, and course materials. Course attendees can register for the Spring Symposium at reduced rates. Refer to the registration form for details.

*Discounts are available for full time students, please contact the events coordinator to authenticate and provide discount information.*

**— COURSE DESCRIPTION —****“GC Method Development”****by Daron Decker**

This advanced GC course will explore how to properly develop a method utilizing and applying GC theory, software programs and common sense. Problems will arise and so Troubleshooting will also be examined at length. Analysts should come away with the necessary skills to optimize existing and future methods for faster run times, better resolution, and/or overall robustness.

**Course Outline**

- Review of GC Theory
- Carrier Gas Considerations (Type, Flow rate, EPC)
- Maximizing Sample Introduction Efficiency
- Effect of Dimensions (Internal diameter, length, and film thickness) and Effects of Phase Type (Selectivity)
- Effect of Temperature
- Maximizing Resolution vs. Fast GC (Method Translation Software)
- Troubleshooting
- Conclusions, Discussion, Q&A

**Instructor**

**Daron Decker** is a Gas Chromatography Applications Specialist for the Chemistries and Supplies Division at Agilent Technologies. Prior to Agilent Daron worked for nearly a decade for J&W Scientific in the area of technical support. Daron has given many seminars, courses and technical papers on GC both domestic and international. Daron’s seminars are well known in the

industry for being excellent, informative and entertaining! In May 2003, Daron was awarded the Palmer Award by the MCF. Daron has over 30 years of GC experience and currently lives in the Houston, TX area with his wife of 32 years.

**— COURSE DESCRIPTION —****“CSI – GC/MS Style”****by Robert J Kobelski, Ph.D., Principal Scientist**

Imagine being able to solve a crime at the speed of a LaserJet printer just like on TV; you’ll have to imagine it because it won’t happen until the forensic Tricorder is developed and distributed in the 23<sup>rd</sup> century. Until then we will have to stumble forward with the tools of routine chemical analysis, the most powerful of which is often GC/MS.

This fun course will attempt to solve a series of criminal chemical exposures using data from: clinical presentation, 2-D GC detectors (TCD, FID, NPD, ECD), proton NMR, FTIR and EIMS spectra. Each scenario will introduce important fundamental concepts in the evaluation and interpretation of mass spectra. The concepts that will be discussed include:

- Estimating the number of carbon and nitrogen atoms in a molecule
- Recognizing the number of bromine, chlorine, silicon and sulfur atoms
- Determining the number of atoms of mono-isotope elements
- Assembling the information about atoms present to propose possible molecular formula

**Instructor**

**Dr. Kobelski’s** career as an analytical chemist has spanned more than 35 years in a variety of roles and environments. From bench positions in private industry to a leadership role in government he has been driven by his desire to solve problems through chemical analysis and transfer the techniques and technologies for problem solving to others. At CDC he was responsible for developing high throughput clinical analysis methods, creating a mechanism for training more than 40 public health laboratories in the performance of those methods and establishing and maintaining a proficiency testing program to demonstrate the lab network’s capability.

**\*\*\* ON-LINE REGISTRATION \*\*\***  
**\*\*\* at [www.minnchrom.com](http://www.minnchrom.com) \*\*\***

— COURSE DESCRIPTION —

**“LC Method Development Tips for Robust and Reproducible Methods”**

by **Lori Sandford and Natalie Rasmussen**

**Course Outline**

This course is for beginning to intermediate users of HPLC. It will cover the theory of chromatography, types of instrumentation, column type and selection, method development practices, method transfer, and troubleshooting.

**Instructors**

**Lori Sandford** is an HPLC Applications Scientist with Agilent Technologies, Inc. in Wood Dale, IL. Lori has been working at Agilent Technologies supporting HPLC instrumentation since 2010. Prior to Agilent, she was the Global Technology Manager for Prep and Process Chromatography at W. R. Grace/Alltech. Her career started at G.D. Searle/Pfizer in 1998 as a chromatography specialist in the Prep and Process Chromatography group supporting both Medicinal and Process Separations. When she isn't tinkering with an HPLC in the lab, you'll find her getting back on the ice at a hockey rink after nursing her last injury or planning her next scuba adventure.

**Natalie Rasmussen** graduated from the University of Utah with a BS in biology in 2004. She began work at ARUP Laboratories in Salt Lake City in 2005. She worked in a clinical toxicology lab, preparing and analyzing meconium, urine, and serum samples by enzyme immunoassay and mass spectrometry (LC-MS/MS and LC-(Q)TOF-MS). After 8 years of routine bench work, she moved into the research and development area. There she coordinated a head injury study with the University of Utah football team, developed and improved mass spec-based diagnostic tests, collaborated in research studies, presented at national conferences, and contributed to peer-reviewed publications and application notes. She resides in Salt Lake City, Utah. She enjoys exploring the outdoors, running, cooking, and playing softball in her free time. Natalie joined Agilent as a LC Separations Applications Scientist in August 2017.

**For Updated Symposium Information:**  
**[www.minnchrom.com](http://www.minnchrom.com)**

...

## JOB BOARD

Listings for "Positions Wanted" and "Positions Available" will be posted on the Job Board. Additional information and forms will be available at the Registration Desk.

## DIRECTIONS



### Directions to the Earle Brown Heritage Center:

#### From the West:

Take I-94 East and I-694 East to Shingle Creek Parkway exit, follow cloverleaf around, turn left onto Shingle Creek Parkway, left at stoplight (Summit Drive North), left again one block at Earle Brown Drive (first turn), follow around to the main entrance on your right.

#### From the East:

Take I-94 West and I-694 West to Shingle Creek Parkway exit, follow cloverleaf around, turn right onto Shingle Creek Parkway, left at second stoplight (Summit Drive North), left again one block at Earle Brown Drive, follow around to the main entrance on your right.

#### From the South:

Take I-494 West to Hwy. 100 North, exit at John Martin Drive, at top of exit, cross through intersection 57th Avenue North to John Martin Drive, turn left, continue to first stop sign, turn right onto Earle Brown Drive, continue through next stop sign, watch for main entrance on your left.

#### From the North:

Take I-35 South to I-694 West, then to Shingle Creek Parkway exit, follow cloverleaf around, turn right onto Shingle Creek Parkway, left at second stoplight (Summit Drive North), left again one block at Earle Brown Drive, follow around to the main entrance on your right.

### PARKING - FREE! FREE!! FREE!!!

There is ample free parking at the Earle Brown Heritage Center!

## WHAT IS THE MCF?

The Minnesota Chromatography Forum is a scientific society committed to the advancement of chromatography. Since its founding in 1978, the MCF has provided area chromatographers with the opportunity to expand their knowledge in the separation sciences in a variety of ways.

Each year three evening sessions (typically fall, winter, spring) are held with invited speakers ranging from local experts to leading international chromatographers. In addition to the evening meetings, a three day Spring Symposium and Exposition is held in the Minneapolis/St. Paul area.

## BE AN MCF VOLUNTEER

MCF events are organized by volunteers from the MCF membership. The MCF needs your active participation to continue to offer a variety of interesting and informative programs. Members are encouraged to sign up for any of the following committees: Education, Membership, Newsletter, or Symposium (Program, Exhibits, Facilities & Publicity). A description of each committee and a sign-up sheet will be provided in the Spring Symposium program. Please become an active member of the Minnesota Chromatography Forum.

**2019 MCF SPRING SYMPOSIUM / COURSE / MEMBERSHIP REGISTRATION FORM****\*\*\* On-Line Registration for MCF Spring Symposium at [www.minnchrom.com](http://www.minnchrom.com) \*\*\*****MCF MEMBERSHIP ONLY (1-YEAR) \$ 25.00****SPRING SYMPOSIUM - Includes luncheon and complimentary 1-year MCF membership.**

Spring Symposium (May 9)

**Advanced Registration:** \$125 before April 15 \$150 from April 15 to May 1**On-site Registration** \$170 after May 1Spring Symposium **with course** \$100 before April 15 \$115 from April 15 to May 1*NOTE: Discounts are available for full time students & retirees. Contact events coordinator to authenticate and provide discount.***SHORT COURSE REGISTRATION****Short courses include luncheon for 2 days and complimentary 1-year MCF membership.****Short course fees do not include registration for Spring Symposium (May 10) but short course participants may register for the Spring Symposium for a reduced rate! Deadline for Course Registration is May 1, 2018.****Short Course Registration:** \$525 before April 15 \$575 from April 15 to May 1**Short Course Offerings:**

“GC Method Development” by Daron Decker (May 7-8)

“CSI – GC/MS Style” by Robert J Kobelski, Ph.D., Principal Scientist (May 7-8)

“LC Method Development Tips for Robust and Reproducible Methods” by L. Sandford and N. Rassmussen (May 7-8)

**Event Coordinator:**

Jenn Rosen

Email: [jenn@rosetreeevents.com](mailto:jenn@rosetreeevents.com)

Phone: 612-990-3924

**Where to Stay:****• Embassy Suites, Minneapolis North - Brooklyn Center (763-560-2700):***This hotel is connected to the Earle Brown Heritage Center*MCF has reserved a block of rooms at a discounted rate for the Spring Symposium, starting at \$149. Reserve your hotel room now at Embassy Suites by Hilton: Minneapolis North-Brooklyn Center. **The discounted rate ends April 26th.**Reservations can be made through the MCF online group page:[https://embassysuites.hilton.com/en/es/groups/personalized/M/MSPBRES-MCF-20190506/index.jhtml?WT.mc\\_id=POG](https://embassysuites.hilton.com/en/es/groups/personalized/M/MSPBRES-MCF-20190506/index.jhtml?WT.mc_id=POG)or the Embassy Suites website or by phone at 763-560-2700 or 1-800-Embassy. Please use group code “MCF” when reserving a room via phone or through the Embassy Suites website.**• Country Inn & Suites – Brooklyn Center: (763-561-0900):***This hotel is located at 2550 Freeway Blvd, Brooklyn Center (1.5 miles from the Earle Brown Heritage Center)*

MCF has reserved a block of rooms at a discounted rate for the MCF Spring Symposium, starting at \$109.

Make reservations as soon as possible, limited space is available. **The discounted rate ends April 26th.**

Participants desiring accommodation can phone 800-830-5222 or phone the hotel directly at 763-561-0900.

**Option 1: (ONLINE) click on the link**[www.countryinns.com/brooklyncentermn](http://www.countryinns.com/brooklyncentermn)

1. Enter the dates you desire, select the number of rooms you desire, then click “More Search Options” below.
2. Select Promotional Code under the Rate Type and enter in **G0506C** in the next field, then click Search
3. A room type will be available on the next page, pick which room type, and click continue.

4. Enter in your personal information, a credit card is required to guarantee the reservation. This card does not get charged unless the guest cancels their reservation less than 24 hours prior to arrival. If reservation is cancelled less than 24 hours prior to arrival, the card on file will be charged a one night stay.
5. If you entered in an email address, your confirmation will be emailed, or you may print your confirmation

**Option 2: (TELEPHONE)**

Call 763-561-0900

1. Tell the agent the dates you desire, and tell them you are with the MN Chromatography Forum group.
2. Give the agent your information. If reservation is cancelled less than 24 hours prior to arrival, the credit card will be charged a one night stay.
3. The agent can email the confirmation