

**Minnesota Chromatography Forum
27th Annual Spring Symposium
May 16-18, 2006
Earle Brown Heritage Center
Minneapolis, MN**

Abstract submission deadline for a technical presentation: April 21, 2006

Course registration deadline: May 5, 2006

Symposium Advanced Registration deadline: May 5, 2006

For further information contact Janice Jopke
by phone at (952) 949-2518 or email at ccs@mn.rr.com
Or, visit the MCF Website at www.minnchrom.org

Minnesota Chromatography Forum
PO Box 44562
Eden Prairie, MN 55344

The Minnesota Chromatography Forum invites you to participate in its 27th 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 —

“The Characterization and Use of Reversed-phase Column Selectivity”

By
Lloyd Snyder

— FOCUS SESSIONS —

— GENERAL SESSIONS —

— POSTER SESSIONS —

— SPECIAL TOPIC SESSIONS —

— INTENSIVE SHORT COURSES —

“Troubleshooting HPLC Systems”

by John Dolan

“Basic Care, Maintenance and Troubleshooting of Capillary GC Systems”

by Daron Decker

“HPLC Method Development for LC/MS”

by Shane Needham

“SPME – Solid Phase Micro-Extraction”

by Doug Raynie

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

On Wednesday, you are invited to an afternoon session of Vendor Seminars, Special Topic Sessions 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 are an excellent opportunity to chat with fellow chromatographers.

DAILY PROGRAM

Tuesday, May 16, 2006

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

“Troubleshooting HPLC Systems”

“Basic Care, Maintenance and Troubleshooting for Capillary GC”

“HPLC Method Development for LC/MS”

“SPME – Solid Phase Micro-Extraction”

Wednesday, May 17, 2006

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

12:30pm - 6:00pm **Equipment Exhibition opens**

1:00pm - 5:00pm **Vendor Seminars**

1:00pm - 3:00pm **Special Topic Sessions**

3:30pm - 5:30pm Reception in the Exhibit Area

5:00pm Prize Drawing in Exhibit Area

1:00pm - 5:00pm Posters to be displayed

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

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

Thursday's sessions require registration.

Thursday, May 18, 2006

7:30am - 8:30am Registration

10:00am - 4:00pm Vendor Exhibits

10:00am - 3:40pm Posters*

8:30am - 10:00am **Opening Session**

8:30am Welcome

8:45am Palmer Award presentation

8:55am Undergraduate Research Award

9:00am Keynote Address

10:00am Refreshments

10:30am - 12:00pm **Morning Session**

12:00pm Lunch

1:20pm - 3:00pm **Early Afternoon Session**

3:00pm - 3:40pm Refreshments and Prize Drawings in the Exhibit Area

3:40pm - 5:00pm **Late Afternoon Session**

5:00pm Annual Business Meeting

*3:00pm - 3:40pm Authors asked to be at posters

— SHORT COURSES —

Tuesday & Wednesday, May 16 & 17

The Minnesota Chromatography Forum Education Committee presents four short courses in conjunction with the 2006 Spring Symposium. These courses will be conducted all day May 16th and the morning of May 17th at the Earle Brown Heritage Center. **The registration deadline is May 5, 2006.** Course fees are \$430 and include luncheons, refreshments, and course materials.

The course fee is \$100 (undergraduate), and \$200 (graduate) for students. A current fee statement from your school is required for the student discount.

— SPECIAL TOPIC SESSIONS —

Wednesday Afternoon, May 17

Special Topic Sessions will be held on Wednesday afternoon. The sessions will address practical laboratory topics in HPLC and GC. The intent is to provide topics of general interest and current utility to local chromatographers by leaders in each Special Topic area.

The sessions will be 45 minutes in length, and focus on practical topics. After a brief introduction to a topic, the moderators will open the discussion for comments and questions. Participants are encouraged to bring questions and problems from their areas of interest to the sessions.

1:00pm **HPLC** John Dolan
Dan Marchand
John Kern

2:00pm **GC** Daron Decker
Rick Rossiter

— FOCUS TOPICS & INVITED SPEAKERS —

Thursday, May 18

HPLC

Dr. Brian Bidlingmeyer, Agilent Technologies

Gas Chromatography

Professor Eugene Berry, Univ of MA - Lowell

Mass Spectrometry

Dr. Martin Sadilek, University of Washington

CE

Professor Gyula Vigh, Texas A & M

Bioanalytical

Dr. Robert Cunico, Bay Bioanalytical

— KEYNOTE ADDRESS —

Thursday, May 18

“The Characterization and Use of Reversed-phase Column Selectivity”By Lloyd Snyder
LC Resources**Abstract**

Chromatographers have long known that C₁₈ columns from different manufacturers can result in different separations, mainly as a result of differences in selectivity. Nominally equivalent columns from different production batches can also exhibit selectivity differences and unacceptable separation, although this problem is less common today. The ability to vary column selectivity can be useful when developing an HPLC method, but changes in selectivity after the method is developed are of course undesirable. To take advantage of column selectivity differences, or to avoid problems with variable selectivity, we need a quantitative means of characterizing reversed-phase columns.

Differences in column selectivity have long been ascribed to “silanol effects”. Within the past 20 years, additional contributions to selectivity such as “shape selectivity” have been reported. More recently, several different groups have proposed more quantitative and complete means for characterizing column selectivity. A review will be presented of the history and present status of these past attempts at understanding and using column selectivity. Remaining problems and opportunities in this area will also be discussed, with emphasis on the so-called hydrophobic-subtraction model¹.

1. L. R. Snyder, J. W. Dolan and P. W. Carr, *J. Chromatogr. A*, 1060 (2004) 77

Refer to the MCF Web Page

For Updated Symposium Info

www.minnchrom.org

COURSE OUTLINES

“Troubleshooting HPLC Systems”

by John Dolan, Ph.D.

This popular 1-1/2 day course returns to MCF to help build the HPLC troubleshooting skills of the participants. The course reviews all aspects of HPLC equipment operation and maintenance. Time is spent to help improve the understanding of the separation process and many practical examples are used to help attendees develop skills to identify and correct problems with chromatographic separations. Students get to practice their skills with a set of case studies done in small groups. Each participant will receive a workbook containing all the slides and notes presented in the course. Ample time is available for discussion of specific problems that users bring to the class. Students with a working knowledge of HPLC with some hands-on experience will benefit most from this course.

Please note: This course does not have a lab this year.

“Basic Care, Maintenance and Troubleshooting of Capillary GC Systems”

by Daron Decker

This day and a half course with lab will focus on just how gas chromatography works and just what is really going on inside the capillary. The information will be presented first in a very straight-forward way and reinforced with basic chromatographic theory so that the novice as well as the experienced chromatographer can benefit from the discussion. Installing and conditioning the column and then making a successful injection are the keys to starting the chromatographic process and subsequent analysis right. This will be discussed in lecture and reinforced with the hands-on experience with the various manufacturers present, citing the similarities and differences one can expect from instrument to instrument.

Since keeping the GC system up and running is the goal, preventative maintenance is the key. Things that damage the column and ways to prevent problems before they occur will be explored. The four major reasons why columns die will be presented as well as how to avoid those problems so that the column, theoretically, will last forever. After care and maintenance is explored the discussion will shift to troubleshooting. Knowing how to diagnose problems and correct them is not generally taught before the analyst ever gets in front of the instrument. Therefore, experience, trial and error, and dumb luck often lead to remedies that have a lot of "voo doo" attached to them. Knowing what can truly go wrong with capillary and how to fix it will be tackled.

“HPLC Method Development for LC/MS”

by Shane Needham, Ph.D.

This practical course on HPLC method development for LC/MS covers the specifics of how HPLC methods are developed for interfacing to ESI and APCI. The course discusses the importance of HPLC when interfaced with mass spectrometry including the optimization of HPLC methods for mass spectrometry. The most advantageous column chemistry for each LC/MS application are thoroughly discussed including, reverse phase, normal phase, ion-exchange, HILIC, monolithic and polar embedded phases. Details of choosing the mobile phase additives, mode of separation, and best column size for a particular application are presented. The aspects of chromatographic retention, peak shape and resolution relative to LC/MS methods will also be presented. A section of the course is devoted to the minimization of ionization effects that occur in the MS source by the development of good quality HPLC methods. The development of general HPLC/MS methods for use with a diverse set of compounds and development of specific HPLC/MS methods for use with a single compound class will be discussed. Specific examples are included for each topic discussed including “real-world” problem solving and applications. Compound classes that are presented include, small molecules, peptides, zwitterions, amines, acids, etc. A step-wise method development tutorial of developing methods for specific compound classes based on the structure will be included in the final summary.

“SPME – Solid Phase Micro-Extraction”

by Doug Raynie, Ph.D.

SPME Course Outline
General Extraction Theory
SPME Theory
Fiber Selection
Sampling & Desorption
Method Development Guidelines
 Troubleshooting SPME
Alternate Methods of SPME
 Headspace Sampling
 In-tube
Comparison of SPME with Other, Similar Methods
Applications Overview
 Pharmaceuticals and Related Compounds
 Environmental Samples
 Foods and Flavors
 Other

BIOGRAPHICAL SKETCHES OF COURSE INSTRUCTORS

Dr. John Dolan is a Principal Trainer and consultant for LC Resources, Inc.. John received his Ph.D. from the University of California at Davis in 1976 and has more than 30 years of HPLC experience. After finishing graduate school, he did postdoctoral work at Northeastern University and then joined Technicon Instruments Corporation, where he worked for three years developing clinical HPLC technology. He moved to IBM Instruments, where he was involved in design and support of LC, IR, and UV products. As a columnist for LC/GC magazine, he has written over 200 installments of the "LC Troubleshooting" monthly column since 1983. In 1984, John and Lloyd Snyder founded LC Resources, which offered support to the separations community via teaching, software, consulting, and laboratory services. In 2002, LC Resources sold the software products to Rheodyne, the laboratory to Bioanalytical Systems, and retained the training business. After acting as General Manager of the BASi Northwest Laboratory for three years, John now spends full time teaching and consulting. He has written more than 100 scientific papers on LC theory, instrumentation, and applications as well as a book on troubleshooting LC instruments and methods. John is the 2002 recipient of the MCF Palmer Award.

Daron Decker works for Agilent Technologies as a technical specialist within the Consumable and Accessories organization. Prior to joining Agilent he performed the same role with Chromatography Inc. a contractor of technical support for Agilent GC and HPLC columns and supplies. He spent ten years working for J&W Scientific, Inc. also in the area of technical support. Daron has given hundreds of seminars, courses and technical papers on GC (both domestic and international). He started his career at an environmental lab in south central Minnesota (MVTL) and worked there for two and half years as an analytical chemist. He received his BS in Chemistry (ACS Degree) from the University of South Dakota in 1987. Daron has been a long time proponent of the MCF and member since 1987. He currently lives in Pearland, TX (south of Houston) with his wife of 19 years and their 4 children. Daron was the 2003 recipient of the MCF Palmer Award.

Shane R. Needham, Ph.D. is the laboratory director of Alturas Analytics, Inc. He also manages all scientific aspects of the HPLC/MS/MS bioanalytical contract laboratory at Alturas Analytics, Inc. The course instructor has taught similar LC/MS courses in collaboration with Restek, Inc. on the national and international level. Shane has over 60 publications and external presentations in the area of LC/MS. He has

over 10 years of LC/MS and analytical lab experience in the drug discovery through drug development stage in the pharmaceutical industry. He previously worked for Pfizer Central Research in Groton, CT where he developed and validated GLP and non-GLP LC/MS/MS methods for the trace analysis of drugs and metabolites in biological fluids. He also performed *in vivo* and *in vitro* structure elucidation studies of drugs and metabolites using HPLC/MS/MS and HPLC/MSⁿ instrumentation. Shane continued his work in assay development by developing high-throughput HPLC/MS/MS methods for the quantitative analysis of drugs and metabolites in support of high-throughput screening. He also developed novel methods for the on-line extraction of drugs from biological fluids when interfaced to HPLC/MS. Shane has LC/MS experience working with triple quadrupole, single quadrupole, ion trap, time-of-flight and quadrupole time-of-flight instrumentation. His area of academic research included the development of optimized stationary phases to improve the assay of pharmaceuticals by HPLC/MS. Shane is a member of the American Chemical Society, American Society for Mass Spectrometry, American Association of Pharmaceutical Scientists and the International Society of the Study of Xenobiotics.

Dr. Douglas Raynie is a Research Assistant Professor in the Department of Chemistry and Biochemistry at South Dakota State University. Prior to joining SDSU, he was employed for eleven years as a Senior Scientist at Procter and Gamble's Corporate Research Division. He earned his Ph.D. at Brigham Young University under the direction of Dr. Milton L. Lee. His undergraduate degree is from Augustana (South Dakota) College, with majors in chemistry and biology.

Dr. Raynie's research interests include high-resolution chromatography (including high-temperature LC and SFC), chromatographic sample preparation (including ASE, SFE, SPME, and SPE), chromatography theory, green chemistry, and problem-based learning in analytical chemistry. Dr. Raynie has 29 publications and 53 presentations related to these fields, has taught 39 short courses covering extraction methodology and analytical problem-solving, and served on the editorial advisory boards of the *Journal of Microcolumn Separations* and the *Encyclopedia of Separation Science*. Doug was a founder and past-president of the Tri-State Supercritical Fluids Discussion Group. He is a member of the American Chemical Society (Division of Analytical Chemistry, Subdivision on Chromatography and Division of Industrial and Engineering Chemistry, Subdivision on Green Chemistry and Engineering), the American Association

for the Advancement of Science, and the International Society for the Advancement of Supercritical Fluids.

- KEYNOTE SPEAKER -

Lloyd Snyder, Ph.D., received his BS and PhD degrees in chemistry from the University of California at Berkeley, followed by positions at Shell Oil, Union Oil and the Technicon corporation. In 1984 he and John Dolan formed LC Resources, a company that provided HPLC training, laboratory services, and DryLab software for method development. LC Resources was sold in 2002, and the training business was repurchased in 2004 under the original name of LC Resources. Dr. Snyder has been active in the field of chromatography since 1955. He is the author or co-author of half a dozen books on liquid chromatography (including *Introduction to Modern Liquid Chromatography*, *Practical HPLC Method Development*, and *Troubleshooting HPLC Systems*), as well as several hundred reviewed publications. His recent research interests include HPLC method development, column

selectivity and gradient elution. Another book (High-performance Gradient Elution, Wiley) with John Dolan as co-author will appear in late 2006 or early 2007. Dr. Snyder's contributions to the development of HPLC have been recognized by a number of international awards, including the ACS awards in chromatography and the Pittsburgh Conference Analytical Chemistry Award. Dr. Snyder was the 1985 recipient of the L.S. Palmer Award from the Minnesota Chromatography Forum.

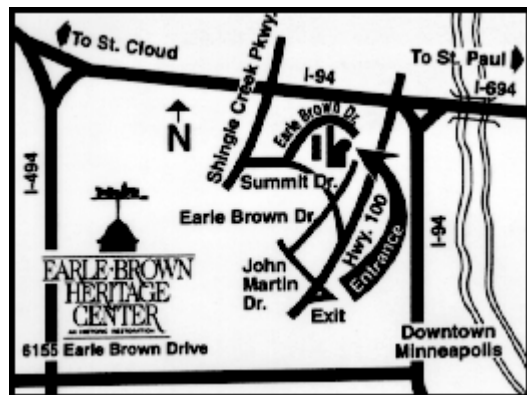
Refer to the MCF Web Page

For Updated Symposium Info

www.minnchrom.org

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 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.

All of these 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.

INVITED SPEAKERS AND CONTRIBUTED PAPERS

A list of invited speakers and contributed papers may be viewed at the MCF webpage

www.minnchrom.org

2006 MCF SPRING SYMPOSIUM / COURSE REGISTRATION FORM

MCF MEMBERSHIP ONLY (1-YEAR) \$ 20.00 \$ _____

SPRING SYMPOSIUM - Includes luncheon and complimentary 1-year MCF membership.

Spring Symposium (.5 CEU) (May 18) \$ 95.00 adv-reg. \$ _____

Advanced Registration Deadline – May 5 \$ 125.00 on-site \$ _____

Spring Symposium **with course** (May 16-18) \$ 60.00 \$ _____

Spring Symposium: Full Time students (May 18) \$ 25.00 \$ _____

SHORT COURSE REGISTRATION

Short courses include luncheon for 2 days and complimentary 1-year MCF membership.

Short course fees do not include Spring Symposium Registration (May 18) but short course participants may register for the Spring Symposium for only \$60! Deadline for Course Registration is May 5, 2006.

“Troubleshooting HPLC Systems” (May 16-17) \$ 430.00 \$ _____

“Care, Maintenance & Troubleshooting for Cap-GC” (May 16-17) \$ 430.00 \$ _____

“HPLC Method Development for LC/MS” (May 16-17) \$ 430.00 \$ _____

“SPME - Solid Phase Micro Extraction” (May 16-17) \$ 430.00 \$ _____

Full-time Students: Graduate: \$ 200.00 Undergraduate: \$ 100.00 \$ _____

Students: Indicate Course name here: _____

TOTAL ENCLOSED (Payable to the MN Chromatography Forum, Inc.) \$ _____

Visa, MasterCard or AMEX No. _____ **Exp. Date** _____

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Need a vegetarian meal? Check here: _____ (Advance order required)

Mail Payment and MCF Registration to:

MN Chromatography Forum Symposium
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6611 Countryside Dr.
Eden Prairie, MN 55346
 email: ccs@mn.rr.com
 Phone: (952) 949-2518
 FAX: (952) 934-6741

Where to Stay: The MCF has blocked a limited number of rooms for Spring Symposium participants at:

Country Inn & Suites, Brooklyn Center (763-561-0900) at \$89 single, \$99 double per night

Make reservations as soon as possible, limited space is available. Participants desiring accommodation should call the hotels directly to make reservations. Please be sure to mention that you are attending Minnesota Chromatography Forum (or MCF) Spring Symposium.