The SAS Spectrum Newsletter
The Newsletter of the Society for Applied Spectroscopy

May 2010

SAS MEMBERS' DAY AT THE RACES: YOU'RE IN THE DRIVER'S SEAT!

Mark your calendars now for the 2nd annual SAS Members' Day during the 2010 FACSS meeting in Raleigh, North Carolina.

Date: Sunday, October 17, 2010

Time: 12:30-4:00 pm

Location: Rush Hour Carting

Your day will begin with free transportation from the FACSS headquarters hotel. You will then be treated to an afternoon of championship go kart racing where you are in the driver's seat! While you are not racing you can enjoy a delicious North Carolina barbeque lunch, have a drink at the open bar, play pool, darts, and arcade games. When the fun is over, you will be transported back to the hotel.

This is a free SAS Members Only Event. Guests may attend for an additional fee. Because space is limited, you will have to R.S.V.P. to the event. Contact the SAS office at 301-694-8122 or sasadmin@s-a-s.org for more information or to sign-up.

(See next page for Contents of this issue)

2010 FACSS PROGRAM – LIST OF SECTIONS AND SYMPOSIA

ANALYTICAL METHODS

Headspace Analysis for Chemical Signatures
Drop Deposition – A Technique to Prepare Fluids or Liquids for Analysis
Materials Characterization using Vibrational Spectroscopy and Mass Spectrometry
Lasers in Analytical Chemistry: 50th Anniversary of the Laser

ATOMIC SPECTROSCOPY

Applications and Fundamentals of Laser Ablation ICP (MS and OES)
Plasmas for Atomic and Molecular Analysis
Celebrating 30 Years of ICP-MS
Novel Sample Introduction Methods for ICP-MS and ICP-OES
ICP-MS - A Lot More than Total Metals Analysis
Fundamental Studies and Exciting New Applications of Glow Discharge Spectroscopies
Chemistry in Art and Archaeology
Laser Induced Breakdown Spectroscopy
Atomic Analyses in the Pharmaceutical and Nutraceutical Industries
The JAAS Silver Anniversary Celebration: Highlighting Young Investigators in Atomic Spectroscopy

AWARDS

Anachem Award
Clara Craver Award
Ellis R. Lippincott Award
Charles Mann Award
William F. Meggers Award
Lester W. Strock Award
Student Awards

CHEMOMETRICS

Novel but Important Data Analysis Techniques in Analytical Chemistry
Chemometrics in the Pharmaceutical Industry
Chemometrics Applied to Oceanography, Marine Life, and Coastal Waterways or
Environmental Applications of Chemometrics
Chemometrics in Forensics
Chemometrics for Biological and Biomedical Spectroscopy

CHROMATOGRAPHY AND SEPARATIONS

CE with NMR Detection
Electrophoresis/Dielectrophoresis
General Chromatography
Chiral Chromatography
HPLC in Pharma

HOMELAND SECURITY

Instrumentation Needs for Homeland Security

INFRARED

Special William G. Fateley Session – I
Special William G. Fateley Session – II
Near- and Mid-Infrared Imaging
Ionic Liquids for Spectroscopy: A Green and Happy Marriage
Practical Aspects of Chiral Analysis Using VCD and ROA
NIR – General
Two-Dimensional Correlation Spectroscopy
Next Generation Spectroscopic Techniques for the Analysis of Pharmaceutical Systems
Quantum Cascade Laser Applications
Optical Effects in IR Imaging
Biomedical Applications of Spectroscopic Imaging
Imaging of Wound Healing
Terahertz Spectroscopy
Memorial to Don Sting
Memorial to Raul Curbelo

MASS SPECTROMETRY

MS Fundamentals and Gas Phase Ion Chemistry
Advances in Mass Spectrometry Instrumentation
H/D Exchange Mass Spectrometry
Developments and Applications of Biological Mass Spectrometry

NANOTECHNOLOGY

3 Symposia

PROCESS ANALYTICAL TECHNOLOGY

PAT in BioPharm
PAT New Technology
PAT Applications in the Pharmaceutical Industry SAS PAT Technical Session
Applications of Computational Chemistry and Spectroscopy for Industrial Problem Solving
Sustainability: Improving Energy Consumption through Advanced Combustion Measurements
Continuous Processing and PAT

RAMAN
Biomedical Raman Spectroscopy
Micro-Reactors and Their Role in Optimized Chemistries
Emerging Raman
SERS 1
SERS 2
Pharma Raman
Controlled Hot Spot Fabrication in SERS-Active Gold Nanoparticle Dimers
TERS
Raman Microscopy/Imaging

ROYAL SOCIETY OF CHEMISTRY ANALYTICAL DIVISION
RSC-AD Molecular Spectroscopy Group

SURFACE PLASMON RESONANCE
Surface Plasmon Resonance: Instrumentation and Applications 1
Surface Plasmon Resonance: Instrumentation and Applications 2
Nanomaterials for Surface Plasmon Resonance

SAS AWARDS TO BE PRESENTED AT FACSS 2010 IN RALEIGH, NC, OCTOBER 17 - 21

1. LESTER W. STROCK AWARD

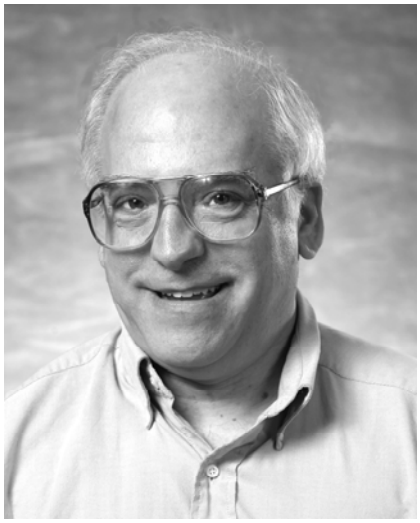
The Lester W. Strock Award is given by the New England Section in recognition of a selected publication of substantive research in/or application of analytical atomic spectrochemistry in the fields of earth science, life sciences, or stellar and cosmic sciences. The 2010 Award will be presented to Prof. Dr. Kay NIEMAX, who is the Wilhelm-Ostwald-Fellow at the Department I (Analytical Chemistry and Reference Materials) of the Federal Institute for Materials Research and Testing (BAM) in Berlin (Germany). His current fields of research are plasma and laser spectrochemistry. He studied physics, chemistry and mathematics at University of Kiel (Germany) and received his Diploma and Ph.D. in physics from the Institute of Experimental Physics at Kiel University in 1970 and 1972, respectively. In 1979 he became a lecturer in physics (Habilitation) and in 1984 professor of physics in Kiel. In 1979-1980 he was Visiting Fellow at JILA in Boulder (Colorado), one of the worldwide leading research institutes in atomic and molecular physics, home of three recent Nobel Price winners in Physics. In 1985 he became head of the Elemental Analysis Department at the Institute of Spectrochemistry and Applied Spectroscopy in Dortmund and moved to Stuttgart (Germany) in 1993 where he received the Chair in Physics of the University of Stuttgart-Hohenheim. From 1997-2010 he was director at ISAS-Institute for Analytical Sciences in Dortmund (Germany) and professor for Physical-Chemical Analysis at the Faculty of Physics of the Technical University of Dortmund.

From 1970 to 1985 his major research interests were in the field of plasma and laser physics, laser spectroscopy of atoms and small molecules, spectral line broadening and atomic collisions processes at thermal energy. In particular, the laser spectroscopic technique to derive level isotope shifts of atoms from highly resolved Rydberg series lines and the investigations of pressure broadening and shift of

Rydberg levels are closely connected with his name. Since 1985 Professor Niemax has been working in the field of spectrochemistry and applied spectroscopy. He is developing laser based techniques for chemical analysis of solid, liquid and gaseous samples. Very recently he succeeded in quantifying the chemical composition of nanoparticles by plasma spectrometry. In the future this new technique will be of high importance in those fields where the elemental composition and mass either of airborne nanoparticles or nanoparticles in liquids have to be controlled and measured.

Professor Niemax has published over 230 papers in peer reviewed international journals and made numerous scientific contributions to proceedings and books. He gave more than 120 invited plenary and keynote talks at international conferences and numerous invited talks at universities and research institutes in Germany and abroad. He is serving as reviewer for the major scientific journals and many funding agencies in Germany and abroad, such as DFG, National Science Foundation (USA) or Department of Energy (USA). He is a member of several review panels evaluating scientific institutions in Germany and abroad. Furthermore, he is a Fellow of the Society of Applied Spectroscopy (USA).

2. DISTINGUISHED SERVICE AWARD



The Distinguished Service Award was established to recognize members for continued outstanding service to the Society. This award will be bestowed upon Dr. Alexander Scheeline, who is Professor of Chemistry at the University of Illinois at Urbana-Champaign. He is a native of Hollidaysburg, PA. He attended Michigan State University, where he did research with S. R. Crouch in heteropolymolybdate kinetics. He received his Ph.D. from the University of Wisconsin-Madison under the direction of J. P. Walters, focusing on plasma diagnostics of bipolar pulse spark discharges. Following a National Research Council post-doctoral fellowship at the National Institute for Standards and Technology, he was assistant professor at the University of Iowa before moving to Illinois. He served as Program Officer in Analytical and Surface Chemistry at the National Science Foundation for one year. Current research interests are in instrument development (ultrasonically-levitated drops as microreactors), reactive oxygen species, oscillatory reactions, nonlinear dynamics, and noise-induced hearing loss.

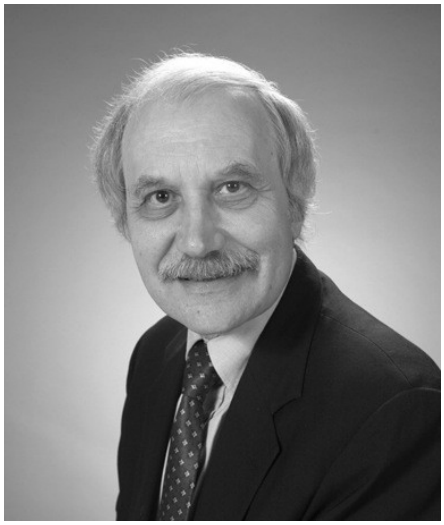
Scheeline joined SAS as a student in 1975. He has served the Society in numerous roles including tour speaker, representative to the FACSS governing board, member of the nominating committee, member (and chair) of the Strock Award committee, member of the publications committee, member (and chair) of the tour speaker committee, frequent member of the team judging student posters at FACSS, Book Review Editor for *Applied Spectroscopy*, and Secretary. In collaboration with mentors and students, he has twice been recipient of the W. F. Meggers Award. Together with Syd Fleming, he participated in the beginnings of electronic publishing in *Applied Spectroscopy* by submitting the FACSS Preliminary Program to the Journal electronically in 1986. He is proud to have been a friend of Bill Fateley's, and enjoyed service on the search committee that hired SAS Executive Director Bonnie Saylor. He became a Fellow of the Society in 2008.

In addition to membership in SAS, Scheeline is a member of the American Chemical Society, The Electrochemical Society, Society of Electroanalytical Chemists, Society for Free Radical Biology and

Medicine, Association for Research in Otolaryngology, Coblentz Society, Optical Society of America, the EPR Society, Sigma Xi, Phi Kappa Phi, and Alpha Chi Sigma. He is on the editorial board of *Biophysical Chemistry* and editor of the *Journal of the Analytical Sciences Digital Library*. He has been program chair and governing board chair of FACSS. He is one of six members of the Chemistry faculty at Illinois to teach the standard undergraduate curriculum at the Faculty of Chemistry, Hanoi University of Science. In his "copious" free time, he is a history buff, playing popular piano and vocal music from the early 20th century and the occasional ditty by Tom Lehrer. A notable character flaw is a tendency to punning.

3. HONORARY MEMBERSHIP

Honorary members are those individuals who have made exceptional contributions to the art and science of spectroscopy in scientific or laboratory research, development of new or innovative instrumentation or equipment, or development of aids, standards, etc., that help spectroscopists practice their craft in a more efficient and accurate manner. They are awarded a lifetime membership and subscription to *Applied Spectroscopy*.



SAS is pleased to announce that this year Nicolo Omenetto will be recognized with honorary membership. Dr. Omenetto joined the University of Florida in Gainesville at the end of 2001 and is currently Professor in the Department of Chemistry. After earning his *Laurea* in Chemistry from the University of Padova (Italy) in 1964, he was appointed as Assistant Professor at the University of Pavia (Italy) in 1969, and received the *Libera Docenza* in Spectrochemistry in 1971. From 1979 until 2001, he was appointed at the Joint Research Centre of the European Commission in Ispra (Italy). He did postdoctoral work with Jim Winefordner from 1971-73 and 1978-79.

The research interests of Dr. Omenetto have been directed towards the theory and applications of atomic and molecular spectroscopic methods of analysis, with particular emphasis to the use of tunable lasers and to the development of techniques such as atomic and molecular fluorescence, atomic ionization, photo-thermal, photo-fragmentation, and laser induced breakdown spectroscopy (LIBS). In addition to these developments, fundamental diagnostic studies of flames and plasmas have been pursued, improving the understanding of the interaction between the laser and the atomic/molecular systems investigated. One publication on LIBS modeling was recognized with the Spectrochimica Acta Atomic Spectroscopy Award in 2001.

Dr. Omenetto has delivered many keynote and plenary lectures and has published over 240 scientific papers in peer-reviewed journals, including five book chapters and two monographs (with J.D. Winefordner). He has edited two books: "Analytical Laser Spectroscopy", Wiley, N.Y. (1979) and (together with J. Parks) the book "Resonance Ionization Spectroscopy 1990", Institute of Physics Conference Series No. 114, IOP Publishing Ltd., Bristol, U.K. (1991).

Since 1994, he is one of the editors of Spectrochimica Acta Part B, Atomic Spectroscopy. In September 2006, he was elected *Fellow of the Society of Applied Spectroscopy*. Dr. Omenetto was the 2009 recipient of the Lester W. Strock Award.

OBITUARY - HARRY J. ROSE. JR.

SAS Fellow and Honorary Member Harry J. Rose, Jr. passed away on Tuesday, December 8, 2009.

Harry Rose was born in Brooklyn, New York on December 27, 1925. He entered Fordham University in 1943. In 1944 he was drafted into the Navy and served until 1946. He attended St. Francis College in Brooklyn, New York, graduating with a B.S. degree in Chemistry in 1948. He was accepted in the graduate chemistry program at the University of Maryland, receiving an M.S. degree in 1952. He joined the U.S. Geological Survey in 1951 working in optical emission spectroscopy and developed methods for the analysis of rare earth elements in silicate rocks. He transferred to x-ray spectroscopy in 1958 where he developed methods for the analysis of major and minor elements in a wide range of geological materials. He became Chief of the X-Ray and Electron Microscopy project administering analytical activities, research and instrument development for the analysis of macro and micro geological samples. He became a Principal Investigator in the Lunar Analysis Program in 1967 analyzing some 125 samples returned from the moon. In 1972 he became a member of the Inorganic Analysis Team in the Martian Viking Program working on the final design of an x-ray spectrometer that landed on the Martian surface and analyzed the soil. Over all, the previously mentioned studies resulted in some 90 published papers.

Harry also held a Visiting Professorship at the University of Maryland from 1969 to 1982 and was Chairman of the Geochemistry Division of the Chemistry Department for eight years. He taught courses in Optical Emission Spectroscopy, X-Ray Spectroscopy, and Analytical Geochemistry. During the Viking program he was a Visiting Associate in Geochemistry at California Institute of Technology. He presented papers to many scientific groups such as the Pittsburgh Conference, American Chemical Society, Denver X-Ray Conference, the International Conference on Spectroscopy, the Naval Academy and at national and local meetings of the Society for Applied Spectroscopy. He also presented lectures at the French Geologic Institute, the Turkish Geologic Institute, the International School of Earth Sciences in Erice, Sicily, at both the American Center and Abdul Azziz University in Saudi Arabia, the Italian Mineralogical Society in Padua, Italy, the Onaid-I-Azam University in Islamabad, Pakistan, the Jordanian Geological Institute, the Israeli Geological Institute and the Egyptian Geological Institute in Cairo.

Harry received a number of awards: Outstanding Performance Award of the U.S. Geological Survey (1960), Lyndon B. Johnson Presidential Citation (1964), Society of Applied Spectroscopy (1967), Meggers Award of Society for Applied Spectroscopy (1968), AAAS Newcomb Cleveland to Mars Viking Authors in Science (1976), Theodore Von Karmen Science Award to Viking Science Teams (1977), Robert Goddard Trophy to Viking Scientists (1977), Meritorious Award by the U.S. Department of the Interior (1982), the Plinius Award by the Italian Mineralogical Society (1983), Outstanding Member Award by Baltimore-Washington Section of SAS (1983), and in 1996 Harry was accepted as Honorary Member of the Society for Applied Spectroscopy. He became Member Emeritus of the American Chemical Society in 2001.

In 1982, Harry retired from the U.S. Geological Survey and became President of Products International, a company involved with hardware and software for X-Ray systems. In 1986 Products International merged with Diano Corporation and he became Applications Manager. He retired from the position in 1992, but continued to consult and present programs.

Harry leaves behind a wife, Concetta "Tina" Rose, with whom he had just celebrated 60 years of marriage. They had four children and six grandchildren. More important than any award, Harry was an outstanding husband, father and grandfather.

SAS UK Regional Section Formed

The Society for Applied Spectroscopy, SAS, has launched its first Regional Section outside of the American continent. This group, the UK Regional Section, has as its Chairperson Pavel Matousek of the Rutherford Appleton Laboratory. Other founding members of its Committee are Caroline Rodger, Andy Brookes, and John Chalmers.

In line with SAS' mission the principal goal of this SAS Regional Section is to promote applied spectroscopy within the UK and the rest of Europe.

For further information contact: SASUKRegion@gmail.com

SAS Chicago

Polymer Characterization Workshop

Friday, May 14, 2010
The McCrone Group, 850 Pasquinelli Drive, Westmont, IL

8:00 am Workshop Registration
8:30 am Understanding Particle Sizing and Zeta Potential
Eric Olson, *Particle Technology Labs*
9:50 am Practical Applications of GPC/SEC
Tom Dent/Michael Kamerlink, *Varian*
11:10 am Industrial Polymer/Material Characterization using MALDI-ToF MS and GPC
Mark Arnould, Ph.D., *Xerox*
12:00 pm Lunch (provided) & visit Vendors
1:00 pm Modern Solution NMR Methods for Characterizing Synthetic Polymers
Peter Rinaldi, Ph.D., *University of Akron*
2:10 pm Vibrational Spectroscopic Tools for Polymer Analysis
Fred LaPlant, Ph.D., *3M Corp.*
3:20 pm Applications of Rheological Testing for Material Characterization and Performance Predictions
Greg Kamykowski, Ph.D., *TA Instruments.*
4:00 pm Q&A Closing

A workbook of the presentation slides will be provided to all attendees.

Registration: Pre-registration only. Seating is limited and there will be NO registration on the day of the workshop.

Registration deadline: **Tuesday**, **May 10, 2010.**

Fee: Fee for the workshop is $100.00 per attendee (members or nonmembers). Fee for full time college students is $30.00. Fee includes lunch, break refreshments and workbook.

Payment can be made by check, cash or credit card. Check should be payable to *The Chicago Section of SAS*. Checks should be mailed in advance to:

Fred Swiecinski
Nalco Company
1601 W Diehl Rd.
Naperville, IL 60563

Payment by credit cards must be made in advance at our secure online site. The URL of the site is http://sas-chicago.bbnow.org/donate.php.

On-line Registration Link

Map and Directions to the McCrone Group

Directions:

From I-294 - Exit onto Ogden Avenue west (Rte. 34). Drive 2 miles west, and immediately after Rte. 83, at the second set of lights, turn right onto Pasquinelli Drive. McCrone Associates is on the left hand side, 850 Pasquinelli Dr., 0.6 miles north of Ogden Avenue.

From I-55 – Exit onto Rte. 83 northbound (Kingery Hwy). Drive 5 miles north to Ogden Avenue. Go west on Ogden (turn right). Then, at the second set of lights after the underpass, turn right onto Pasquinelli Drive. McCrone Associates is on the left hand side, 850 Pasquinelli Dr., 0.6 miles north of Ogden Avenue.

From I-88 (west) – Exit onto Highland Ave. southbound. Left onto 31st Street. Follow for 2.8 miles to Rte. 83 south. Right turn onto Rte. 83 (Kingery Hwy). Follow for 0.8 miles. Turn right at the next exit (Oakmont Lane). At the stop sign, turn left onto Pasquinelli Drive. McCrone Associates is 1 block south, on the right.

From I-290 (Chicago) - Take the Eisenhower Expressway (I-290) west about 20 miles. Follow the signs for Roosevelt Road (center lane when at the split in Hillside). Exit onto Roosevelt; drive west about 2 miles. Exit Rte. 83 south. After 31st Street, turn right at the next exit (Oakmont Lane). At the stop sign, turn left onto Pasquinelli Drive. McCrone Associates is 1 block south, on the right.

Lodging: Special rates are available at the Club House Inn about a quarter mile from McCrone. Contact them at (630) 920-2200 and request the McCrone College of Microscopy rate of $67.00 a night plus tax. Go to http://westmont.clubhouseinn.com/location.php for directions.

Meeting Announcement

Sponsors/Vendors:

Bruker: www.Bruker.com

Horiba: www.Horiba.com

Particle Technology Labs: www.ParticleTechLabs.com

Thermo Scientific: www.AhuraScientific.com

May Historical Events in Spectroscopy

by Leopold May, Catholic University

May 7, 1909

One hundred years ago on this date, Edwin H. Land was born. He developed a light polarizing material called Polaroid and color photography system, invented Polaroid Land camera, and founded the Polaroid Corporation.

May 5, 1811

John W. Draper, who was born on this date, was a pioneer in photography and improved on the Daguerre's process. He developed the proposition in 1842 that only light rays that are absorbed can produce chemical change. It came to be known as the Grotthuss-Draper law when his name was teamed with C.J.T. de Grotthuss, a prior promulgator of the same idea in 1817. Draper served as the first president of the American Chemical Society.

May 10, 1860 Robert Bunsen and Gustav R. Kirchhoff announced the discovery of cesium using flame spectroscopy on this day.

Comments to butcherATemail.wcu.edu