

SAS SPECTRUM eNEWS

Celebrating 60 Years of Spectroscopy Excellence

Year-Long Celebration to Mark the 60th Anniversary of the Society for Applied Spectroscopy Culminated in an Exciting and Memorable SciX 2018

The SciX conference is always a special place for Society for Applied Spectroscopy members because it is the home of the SAS Annual Meeting. At SciX, there is a strong SAS presence in the program, awards, exhibit, and networking events. SAS members enjoy reconnecting with old colleagues, meeting new friends, and advancing their technical knowledge through the oral and poster sessions.

SciX 2018 was an exceptional conference for the SAS because it is where the society held its major celebrations for its 60th anniversary. The events were an opportunity to reflect on the growth of our field and look toward the future as spectroscopy moves into even more realms of laboratory, analytical, and process applications. SciX 2018 was held at a new location for 2018: The Marriott Marquis in Atlanta, Georgia—a beautiful venue that allowed SciX to expand its technical program, offer new workshops, and enable new networking opportunities.

Strong contributions were made to the SAS technical program, sponsoring four technical sessions and three awards. The SAS PAT Technical Section had sponsored sessions in "PAT in the Biopharmaceutical Industry" and "PAT in the Pharmaceutical Industry". Both sessions featured industrial, academic, and vendor talks. I was pleased to see how quickly these sessions have grown in just one year! Both sessions were completely full, with standing-room-only space. Two special sessions reflected on "Past, Present and Future: Celebrating 60 Years of SAS and Spectroscopy Innovations", highlighting the past and present of laser induced breakdown spectroscopy (LIBS), infrared, Raman, atomic, and fluorescence spectroscopy. Because of SAS's strong support of these sessions, world-class scientists were able to present their work and attendees were able to learn new approaches and advance their own science.

Three prestigious SAS awards were presented at SciX and were marked with special plenary lectures and award sessions. The Lester W. Strock Award is given by the New England Section of the SAS 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 2018 Strock awardee was Javier Laserna for his work in LIBS-related technologies. The *Applied Spectroscopy* William F. Meggers award is given to the authors of an outstanding *Applied Spectroscopy* paper. The 2018 Meggers awardees were S. Michael Angel, Patrick Barnett, Nirmal Lamsal, Kelly Paul, and K. Alicia Strange Fessler for their work in "Monolithic Spatial Heterodyne Raman Spectrometers (mSHRS): Progress Toward Highly Miniature Raman Chemical Sensors". The Bruce R. Kowalski Award honors the legacy of Professor Kowalski by recognizing outstanding young researchers in the field of chemometrics and by extension, for advanced mathematical and/or statistical methods in chemistry. The 2018 Kowalski awardee was Andrew Weakley. The SAS/NASLIBS Award, recognizing an outstanding LIBS paper published in *Applied Spectroscopy*, was first awarded at SciX 2018. The 2018 honorees of the SAS–NASLIBS Award were S. Michael Angel, Patrick Barnett, and Nirmal Lamsal.

By design, SAS provides many opportunities to recognize and support students at SciX. The October 21 Sunday evening event featured the SAS Student Poster Session and Student Awards presentation. I can attest to the poster session's success in encouraging young scientists to not only keep up with their research but also to get involved with the Society. Another popular student-focused networking event is the Speed Mentoring Event on Monday afternoon, which SAS co-hosts with the Coblenz Society. The Speed Mentoring Event provided students with a chance to connect with peers and meet established scientists. These networking events create strong ties within the community and ensure that the society has a bright future.

I would be remiss if I did not mention the Tuesday night award presentation and Wine and Cheese Reception! This year was a new format, where the awards were presented in the plenary lecture hall before the Wine and Cheese Reception was held in an adjacent room. The SAS Distinguished Service Award, Honorary Membership, Emeritus Membership, and SAS Fellows were among those recognized and honored. And, a grand celebration was held for the Wine and Cheese Reception featuring the Andrews Brothers Dueling Piano Show and plenty of dancing on the dance floor.

These events and celebrations would not have been possible without the hard work and dedication from a team of volunteers and the SAS office. I thank those SAS members who organized technical sessions, gave plenary lectures, spent time at the booth in the exhibit hall, raised money, contributed to the special issue of *Applied Spectroscopy*, and planned the special anniversary events. You helped to make the SAS events at SciX 2018 memorable. Finally, I thank the many SAS members who attend SciX. You make this conference special, whether it is your first or forty-fourth time attending. SciX is truly the annual meeting home of SAS and I look forward to many more successful, enjoyable, and collaborative years with SAS and SciX.

Contributed by Karen Esmonde-White (karen@esmonde-white.com), 2018 SciX Program Chair, Senior Marcom Specialist, Kaiser Optical Systems, Inc., Ann Arbor, Michigan, USA

In Memoriam: Gary Horlick, 1944–2018

By Gary Hieftje and Mike Blades

It is with great sadness that we announce that Gary Horlick, a giant in the field of analytical spectroscopy, passed away on November 1, 2018. Horlick was world-renowned for his scientific insight and for the clarity and effectiveness of both his scientific publications and conference presentations. He made seminal contributions in several areas of spectroscopy and spectrochemical analysis.

Gary was born in Regina, Saskatchewan, on April 15, 1944, and he attended early school in Calgary, Alberta. He received a BS degree from the University of Alberta in 1965 and a PhD degree in 1970 from the University of Illinois, Urbana-Champaign, working with Howard Malmstadt. He joined the Department of Chemistry at the University of Alberta as an Assistant Professor in 1969. He rapidly rose through the ranks and served as Department Head at Alberta from 1996–2001.



His research interests were in the general area of analytical spectroscopy, with an emphasis on the development of new methods and instruments for elemental and molecular analysis. Gary was among the first to employ the then newly described method of Fourier transform infrared (FT-IR) spectroscopy and as a graduate student fabricated his own Michelson interferometer. This was a heroic task that required him to not only design the instrument from the ground up, but even to grind and polish his own NaCl optics. This early instrument was improved and applied during his early days at Alberta and modified to enable its use in the ultraviolet and visible spectral regions. Later, Horlick pioneered the application of linear image sensors (photodiode arrays) for atomic spectrochemical measurements, work that predated the commercial developments in this area by two decades. In his laboratory, a number of novel elemental analysis systems were developed based on photodiode arrays and FT-IR spectrometry, and acousto-optic tunable filters that would form the basis of an all-electronic spectrometer system.

His work with Fourier transforms led Horlick naturally into correlation methods, signal processing, and the use of computers in the chemistry laboratory. He was among the first to adopt microprocessors and to incorporate them into his routine laboratory measurements. He and his students even formulated their own laboratory software for spectral storage and file searching.

For much of his later career, Gary addressed unexplained instrumental behavior in ICP spectrometry. At the beginning of those studies, there was considerable confusion among those studying ICP emission spectrometry about the origin and nature of matrix effects. For example, when an easily ionized element (EIE) such as potassium was added to a sample solution, some workers found a signal enhancement whereas others reported a depression. Gary and his group showed that this apparent discrepancy arose from a downward shift and a slight loss in intensity of analyte emission in the presence of the EIE. As a result, workers who viewed emission high in the plasma saw a loss in signal while those who employed a lower viewing position experienced an enhancement. Horlick was also an early adopter of inductively coupled plasma mass spectrometry (ICP-MS) and published a number of key papers that clarified the origin of interelement and matrix effects in that method. One such study explored the influence of ICP central-gas flow rate, and produced what might have been the densest data sets in analytical spectrochemistry. These plots became known as "Horlick Mountains" because of their shape.

Gary received the Meggers Award from the Society for Applied Spectroscopy in 1985, and the Fisher Scientific Lecture Award from the Chemical Institute of Canada in 1987. In 1989, he received the Lester W. Strock Award from the Society for Applied Spectroscopy, and he was elected as a fellow of the Royal Society of Canada in 1990. In 1996, he received the Spectrochemical Analysis Award from the American Chemical Society Division of Analytical Chemistry and in 2003 the Pittsburgh Spectroscopy Award from the Spectroscopy Society of Pittsburgh, in recognition of his lifelong contributions to the development and characterization of new methods and systems for elemental analysis. He received the *Spectrochimica Acta Part B: Atomic Spectroscopy* best paper award in both 1990 and 1992.

Gary mentored many undergraduates, graduate students, and postdoctoral fellows during his career. His laboratory was a "must" stop for most scientific visitors to North America and attracted a broad range of collaborators and co-workers.

To spend more time with his family, Gary retired in 2006. He was keenly interested in photography and would enthusiastically show his beautiful collection of local wildlife photos to visitors at his home in Victoria, British Columbia.

Gary was a gentleman and scholar. He delivered his science and his critiques with honesty and most often with characteristic Canadian charm and effusiveness. His friends and colleagues will miss him but most of all he will be missed by his wife, Maureen, and his two daughters, Karen and Laura, and his grandchildren Kalan and Tessa.

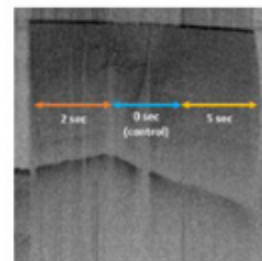
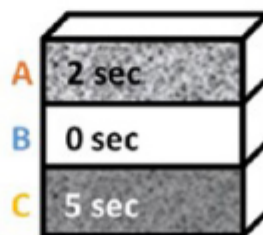


Gary Horlick (in Mickey Mouse shirt) surrounded by colleagues at the FACSS 2006 symposium held in his honor.

NYSAS Meeting Summary Reports: October 2018 and November 2018

By Deborah A. Peru

The October 2018 dinner and networking meeting of the New York Section of the Society for Applied Spectroscopy (NYSAS) was held on October 30, 2018, at the new Horiba Optical Spectroscopy center in Piscataway, New Jersey. Twenty-six people attended the event. This month, we began live streaming the presentation to members who cannot attend live and we are happy to report this option was a success. We are very grateful for Horiba's support in hosting our meetings, which has improved attendance at our meetings due to the easy access to the facility and plentiful on-site parking.



The speaker, Christine Sahyoun is currently pursuing her PhD in Biomedical Engineering at Rutgers University under the guidance of her advisor, Dr. Mark Pierce. Her work focuses on developing and using optical imaging methods such as OCT and short-wave infrared (SWIR) imaging for the assessment and quantification of tissue health and disease, specifically focusing on oral health. Christine received her BS (2014) and MS (2016) in Biomedical Engineering from Rutgers University.

Optical coherence tomography image of bovine enamel exposed to phosphoric acid for 0 sec, 2 sec, and 5 sec.

Christine's talk was titled *A Comparison of Structural and Functional Optical Coherence Tomography Systems for Assessment of Hard Dental Tissues*. In this talk, Christine discussed the use of optical coherence tomography hardware for oral hard tissue analysis, as a safe non-ionizing alternative to X-ray imaging for early detection. Optical coherence tomography (OCT) provides cross-sectional images of tissue extending up to 2 mm in depth, allowing visualization of the enamel and dentin layers in teeth. Previous investigations of OCT in dentistry have used commercial systems operating in the 1325 nm wavelength region with low NA optics. However, there are many modifications to this standard configuration that can potentially reveal additional structural and/or functional information. In her presentation, Christine demonstrated the pros and cons of using different light sources, 1325 and 827 nm for in vivo measurements and the effect of sample arm numerical aperture (0.04, 0.15) on transverse resolution in en face reconstructions. Christine also discussed the benefits of using polarization-sensitive OCT. These system configurations were then used for imaging healthy dental tissue in vivo, as well as ex vivo specimens with indications including demineralization, cracks, caries, and white spot lesions. Her research demonstrates the need for different OCT hardware configurations in clinical studies to enhance the sensitivity for measuring different indications.

At the end of the post Q&A session, Christine was presented with a SAS baseball hat and a custom-designed light prism as tokens of thanks from the Society.

NYSAS November Meeting in Conjunction with EAS

For the November meeting, the NYSAS organization hosted the Gold Medal Award session at the Eastern Analytical Symposium (EAS), honoring Dr. Professor Igor Lednev, Albany University SUNY. Several of our members presented talks at the symposium. Fran Adar, Howard Mark, and Deborah Peru presented a talk at the 60th SAS Anniversary Session chaired by John Wasylyk. The title of the talk was NYSAS celebrates 60+ Years of Scientific Collaboration, which included a presentation of the history of *Statistics and Chemometrics*, and another talk about the *Impact of Chemometrics on the Evolution of Raman Spectroscopy*.

The NYSAS Regional Section had a booth (a table) at the exhibit area of EAS, where we distributed promotional materials for SAS and the NY Regional Section, and encouraged people to sign up for membership and for NYSAS monthly meeting announcements.

More information about the chapter and the schedule of meetings can be found at www.nysas.org.

SAS SEEKS VOLUNTEER CANDIDATES FOR MEMBERSHIP CHAIR POSITION

SAS is looking for an enthusiastic and creative individual to be the next SAS Membership Chair. This person will work directly with the Marketing Chair, Andrew Whitley, and Executive Director, Bonnie Saylor, to actively expand membership and membership value in the society. Responsibilities include:

Chair the membership committee to plan and implement membership expansion, promotion and retention programs. Gather, record, analyze, and retain membership statistics and trends. The membership committee should study and review the membership and potential membership needs to enhance the society value to the membership. This includes proposing and helping to coordinate membership activities.

If you are interested in volunteering for this important position and for a more complete review of the Membership Chair position and responsibilities, please contact Bonnie Saylor at: exdir@s-a-s.org

**Do you have something spectroscopy-related you want to discuss in the newsletter?
Or something that will help our membership such as career tips or application tips?
Please let us know by emailing xchen4@dow.com.**

**Become SAS
Certified**



**SOCIETY FOR APPLIED
SPECTROSCOPY**

Just one of the many member benefits for Spectroscopists

Learn More About the "New SAS Certification Program"