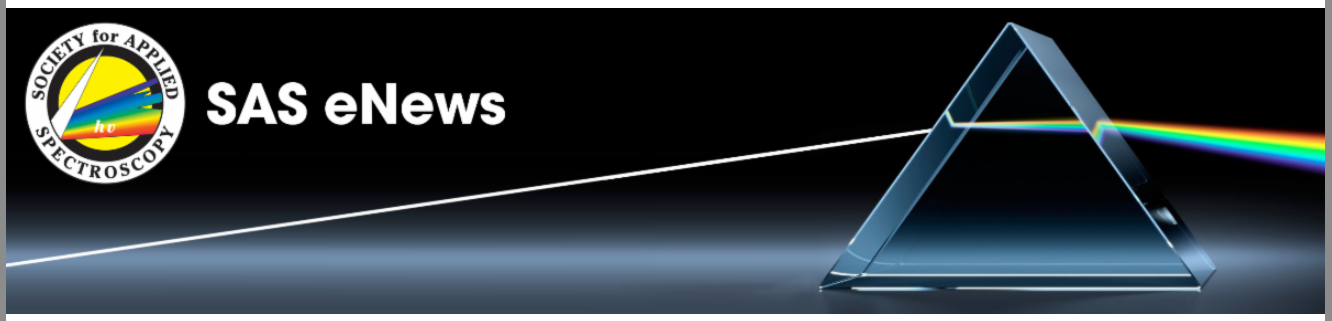
November 2023



First Edition of *Applied Spectroscopy Practica*

The Society of Applied Spectroscopy (SAS) is proud to announce the first volume of Applied Spectroscopy, *Practica*. *Practica* is an Open Access all-digital journal edited by Richard Crocombe and focuses on the publishing applications of currently available technologies. Its launch is underwritten by eleven corporate sponsors and three society members, all of whom have made a five-year commitment to the journal. The first volume has three articles and is being distributed widely beyond SAS membership. Explore and share the first volume here: https://practica.s-a-s.org/.

SAS Management is Changing: Governing Board and Executive Committee Approves CHMS to Manage Society

The Executive Committee is pleased to announce that the Society for Applied Spectroscopy (SAS) has selected Capitol Hill Management Services (CHMS) as the new firm for managing the Society. "We are pleased to have a proven and accredited national leader in association management to help SAS advance our Society's administrative and membership services, grow and support our membership while increasing awareness of the Society across the country", said Board President Peter Larkin. SAS Executive Director Bonnie Saylor will be completing her service to the Society at year's end.

"Through its committed members and outstanding programs, the SAS advances, promotes, and disseminates knowledge and information concerning the art and science of spectroscopy and other allied sciences", said John A. Graziano, Jr., President of Capitol Hill Management Services. "We are pleased to work with the Society's dedicated Executive Committee, Governing Board, and volunteers in ensuring a successful future for this professional organization".

President Larkin adds: "At this time, we would also like to thank Bonnie Saylor for her 27 years of service to SAS, the Governing Board, and our members. Bonnie has been a valuable partner and we have appreciated her dedication and hard work to help SAS advance its mission".

The Society is taking a collaborative approach to this management and staffing transition. For the remainder of the year, Bonnie will continue to serve as Executive Director, sharing her operational knowledge and experience with our new staff team at Capitol Hill Management Services. This team consists of Angela Gordon, Ph.D., who will serve in the capacity of Deputy Executive Director until 31 December 2023, and Lindsey Weitz, who will be the Society's Administrator. They will be supported by CHMS colleagues from the Finance, Conference and Meeting Planning, Marketing and Communications, and Graphic Design teams.

More SciX 2023 Content Featured in December Newsletter

Typically, the November newsletter includes pages of content that recaps the events at SciX. However, this year, most of that content will be featured in the December newsletter. With SciX occurring in mid-October, and our new publication schedule, it was not possible to get full conference coverage into this newsletter.

If you have pictures or other content related to SciX that you would like to be features in the December newsletter, please send it to konnorkjones@gmail.com.

Thank You for Attending the Early Career Interest Group's Events at SciX 2023!

Thank you to everyone who attended our Early Career Interest Group (ECIG) events at SciX 2023! We had a great turnout for our special session and our social event. We also want to thank everyone who showed their support by wearing one of our ECIG T-shirts. Last, but not least, we want to say a special thanks to those of you who were unable to attend SciX this year but continue to support the ECIG and our mission. We hope that many of you will be able to join us at SciX 2024. Please continue to watch this space for the latest in news and announcements from ECIG in the months ahead.

SAS Early Career Interest Group

Process Analytical Technology Panel Discussion at SciX 2023

At SciX 2023, our first-ever panel discussion in the Process Analytical Technology (PAT) session exceeded all expectations. Engaging conversations, insights on PAT barriers, standardization, and regulations—it was interactive and informative with much of the audience jumping in to ask questions and offer their perspectives in additional to the five panelists, who collectively have over 100 years of PAT experience. We covered many non-technical but equally important topics critical for PAT success.

The verdict? We're excited to do it all over again at SciX 2024!

Xiaoyun (Shawn) Chen, SAS Website Chair

Process Analytical Technology (PAT) panelists.

Dichroic Glass: From Ancient Wonders to Modern Marvels

Glass can display multiple different colors depending on ambient lighting conditions and the angle of viewing. The oldest surviving specimen of dichroic glass is the fourth century Lycurgus cup, which appears deep red when backlit and has a green hue when lit from in front. The dichroic effect is caused by the presence of colloidal silver and gold particles dispersed through the glass.

Lycurgus cup lit from the back (left) and the front (right).

In modern times, dichroic glass is a multilayer coating placed on glass. A modern dichroic sheet coating may contain 30 to 50 layers stacked, with a total thickness of about 800 μm. Each layer of the coating is produced by vaporizing quartz crystal and transparent oxides of metals, such as Ti, Cr, and Al, among others, with an electron beam gun in a vacuum chamber. The vapor then condenses on the surface of the glass in a crystalline structure. Modern dichroic glass was developed for shielding astronauts and spacecraft instruments from unfiltered sunlight and cosmic radiation. Its uses have now spilled into artistic as well as architectural applications. A notable architectural application of dichroic glass is on the building façade on Amazon's corporate headquarters in Seattle, Washington, USA.

If you have interesting images, write-ups, advice, or anecdotes related to your research or the field of spectroscopy, send them to konnorkjones@gmail.com to be considered for the next issue.

Shruti Ghanekar, SAS Newsletter Committee Member

Start Planning for the International Day of Light 2024!

In 2023, The Cincinnati TriState section hosted a very successful day of Demos at the Cincinnati Museum Center for the International Day of Light. In each demo we aim to tie the fun back to applied spectroscopy and real-world questions. To help you plan your own great event, we will share our demos with you over the next several months.

This month: Exploring Emissions! So many forms of spectroscopy rely on interactions between molecules and light. In this demo, we set up an ultraviolet light box with fluorescence minerals and nanoparticles, phosphorescent vinyl (think glow-in-the-dark stars), and glow sticks to demonstrate fluorescence, phosphorescence, and chemiluminescence, respectively.

The instructional demo follows below.

Exploring Emissions: How do things glow?

Emission is the process of giving off light. There are several types of emission, such as ***fluorescence (FL)***, ***phosphorescence* (PH)**, and ***chemiluminescence* (CL)**. Each type of emission results from the interaction of molecules either with light (FL and PH) or with other molecules (CL).

Interactions with Light

Fluorescence and **Phosphorescence** both result when a molecule is *excited* by photons of light.

Sometimes this interaction (absorption, relaxation, emission) is very **fast**. This is **fluorescence** and looks "instant" to our eyes. While you are shining light, the molecules glow. When you turn off the light, the molecules stop glowing.

For some molecules, extra steps occur (absorption, relaxation, intersystem crossing, emission) making the transition **pretty slow**. This is **phosphorescence** and looks to the eye like it is delayed. When you shine a light, the glow isn't so noticeable, but when the light is turned off, you see a bright glow!

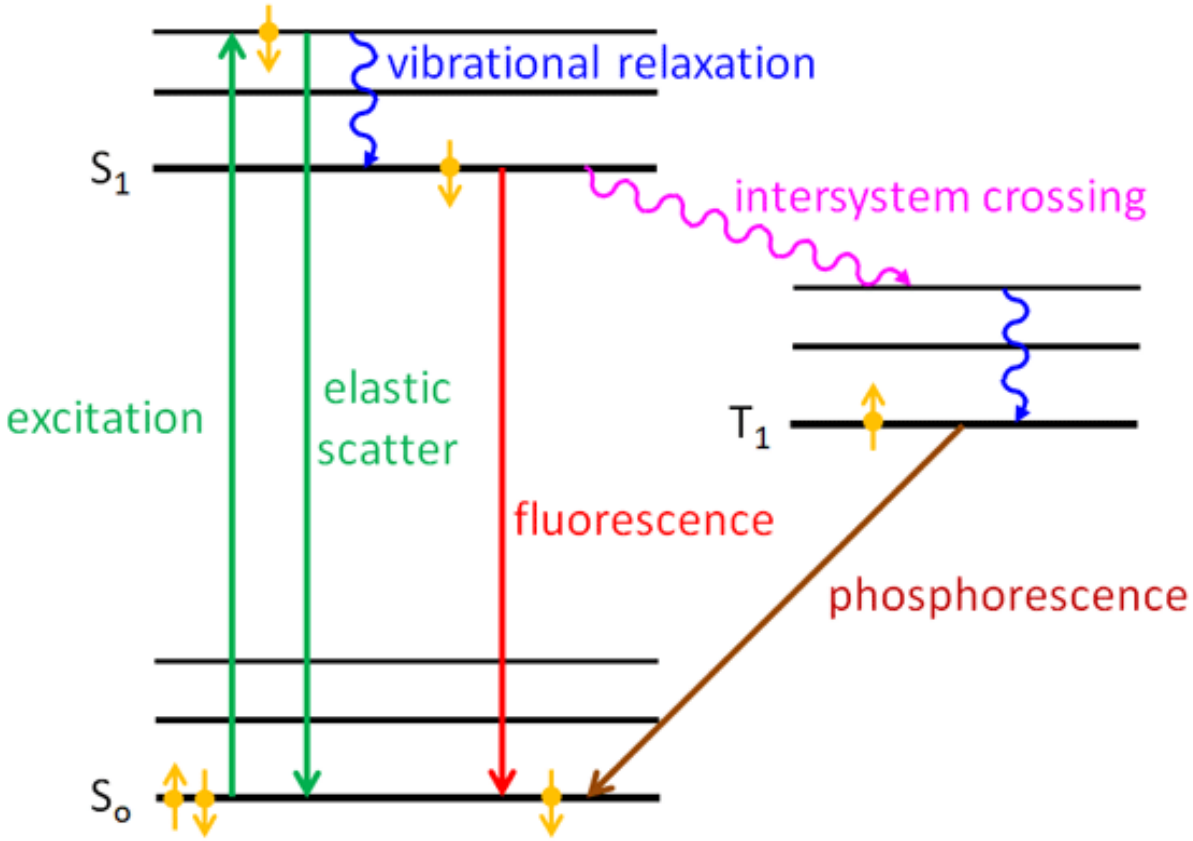


Image from https://www.oceanopticsbook.info/view/scattering/level-2/theory-fluorescence-and-phosphorescence

Interactions with Other Molecules

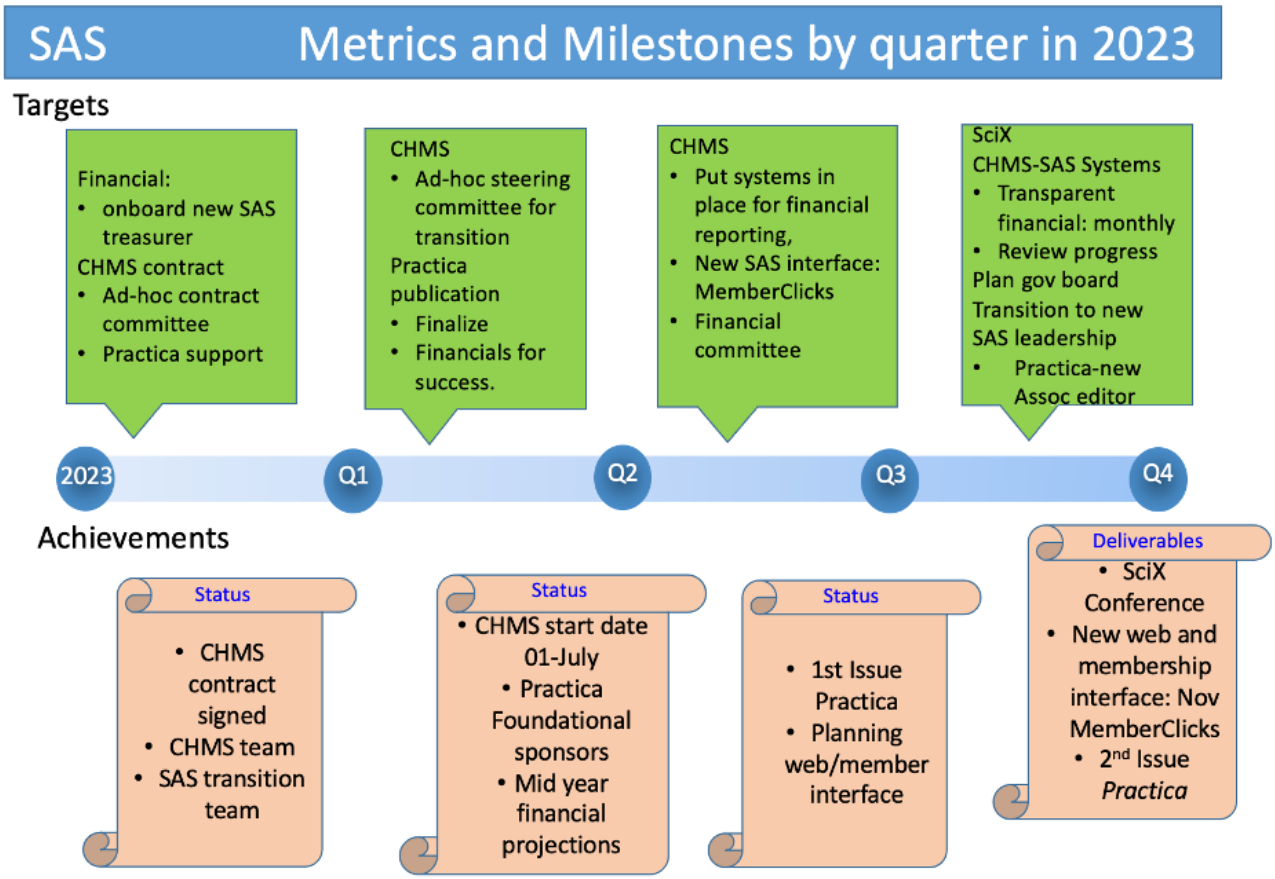
Chemiluminescence occurs when two molecules react and form an excited intermediate molecule. This reaction is very fast and ends when all molecules have reacted. To control the reaction, the two chemicals are kept separate until it is time to glow—so go ahead and crack your glowstick to see **chemiluminescence** at work!

Cincinnati TriState Section, SAS

SAS Achievements in 2023

For over 60 years, SAS has served the scientific community by advancing and disseminating knowledge and information concerning the art and science of spectroscopy. The Society's longevity and success can be attributed to many reasons, one of which is the Society consistently sets and completes annual objectives. To assure the Society's continued success, SAS President Peter Larkin outlined key targets in the February newsletter for the Society to attain by year's end. As we approach the 2024, and with next month's newsletter primarily focusing recapping SciX 2023, Peter wishes to revisit the targets and share our achievements as a Society now. A summary of our Society's targets and achievements for 2023 is below! Thank you to all who worked to achieve our society goals this year!

Peter Larkin, SAS President 2023



SAS Contact Information Updates (as of 8/7/23)

Our phone number has changed: 518-313-1160 **Please note!**

Our fax number has changed: 518-463-8656 **Please note!**

Our general office email will be: sasadmin@s-a-s.org **Please note!**

Our new mailing address is: **Please note!**
230 Washington Avenue Extension
Suite 101
Albany, New York 12203

Our online services continue at: www.s-a-s.org

Peter Larkin, 2023 SAS President

Congratulations to the Newly Elected SAS Leadership!

You casted your votes and the results are here! We are delighted to introduce the newly elected SAS officers and governing board delegates. Take a moment to read their biographies, which discusses the backgrounds, experience, and qualifications of these dedicated individuals who will shape the future of our organization.

Officers

President-Elect, Steven J. Ray
Biography

Steven Ray, Ph.D., is currently the Winkler Assistant Professor of Chemistry in the Department of Chemistry, State University of New York at Buffalo. Steven received his B.S. in Chemistry from Hope College (Holland, MI), and Ph.D. from Indiana University (IU) under the direction of Professor Gary Hieftje. He worked as the Senior Mass Spectrometrist for Indiana University before becoming an Associate Research Scientist in the Laboratory for Spectrochemistry at IU. Steven moved to SUNY-Buffalo in 2015. Dr. Ray has published more than 95 manuscripts and book chapters and holds 9 patents.

Professor Ray holds a lifetime Society of Applied Spectroscopy (SAS) membership. He has served the local Niagara Frontier Section of the SAS as Secretary and President and serves as the faculty liaison to the local student section at SUNY-Buffalo. He has served the national SAS on the long-range planning, fellow, and nomination committees, and has served on the Applied Spectroscopy publication committee. He has served as the governing board chairperson of the Federation of Analytical Chemistry and Spectroscopy Societies. Professor Ray serves on the Editorial Advisory Boards of the *Applied Spectroscopy*, *Journal of Analytical Atomic Spectrometry*, *Spectrochimica Acta*, *Part B*, *Applied Spectroscopy Practica*, *Atomic Spectroscopy*, and *Spectroscopy*. Dr. Ray was the recipient of the 2014 Lester Strock Medal from the Society for Applied Spectroscopy, the 2021 Edward Steers Memorial Award for Best Manuscript, the 2016 Young Plasma Spectrochemist Award, the 2015 Best Paper Award given by Analytical and Bioanalytical Chemistry, the 2013 Ron Hites Award given by the American Society for Mass Spectrometry for the best paper in the Journal of the American Society for Mass Spectrometry, and a 2011 R&D 100 Award. He is a Fellow of the Royal Society of Chemistry. His research interests involve novel aspects of analytical chemistry and instrumentation, including atomic spectroscopy, time-of-flight mass spectrometry, distance-of-flight mass spectrometry, ambient mass spectrometry, plasma spectrochemistry, and metallomics methodologies.

Secretary, Ellen V. Miseo
Biography

Ellen V. Miseo, Ph.D., has been involved in vibrational spectroscopy and instrument development her entire career. Originally trained as a physical chemist, her primary interest is in new applications of spectroscopic techniques and infrared imaging. She has worked for instrument companies as well as run laboratory operations during her career in both the food and material science areas. She was the Chief Technical Officer for TeakOrigin, Inc. whose mission was to use spectroscopy in the food supply chain to determine quality and authenticity. Currently she is consulting on a number of projects including technical development and education.

Dr. Miseo is actively involved in a number of professional societies related to spectroscopy. She is the past President of the Coblentz Society and Past President of the Society for Applied Spectroscopy. She is also a member of the American Chemical Society. She received her B.S. in chemistry from St. Francis College, Brooklyn, New York, and her Ph.D. in Physical Chemistry from Polytechnic Institute of New York, now part of New York University.

Governing Board Delegates

Lydia Breckenridge
Biography

Dr. Lydia Breckenridge is an Associate Scientific Director at Bristol Myers Squibb (BMS) and is the Head of the Atomic Spectroscopy Center of Excellence. In this position, Lydia leads a group responsible for the testing of inorganic impurities and elemental analysis for the global BMS organization, serving early development through commercial manufacturing. Lydia's group has significant expertise in a wide variety of techniques, including ICP-MS, ICP-AES, XRF, LA, LIBS, and CHN analysis. Prior to joining BMS in 2007, Lydia received her Ph.D. from the University of Florida under the direction of Dr. James D. Winefordner, as well as dual MS degrees in Forensic Toxicology and Drug Chemistry, both under the direction of Dr. Ian Tebbitt. Lydia's current research interests include applications of laser-based techniques for solid-state elemental pharmaceutical analysis as well as the use of ICP-MS for the assessment of pharmaceutical packaging attributes and integrity. In her free time, Lydia enjoys long-distance running (especially marathons!), devouring murder-mystery novels, lettering, bullet journaling, and traveling back to England to spend time with her family.

Linda Kidder Yarlott
Biography
I got a Ph.D. in physical chemistry at Johns Hopkins because of my relentless curiosity. I chose a career in

analytical instrumentation because of my desire to share technology that solves problems. It was during my post-doctoral work at the National Institutes of Health (NIH) that I found my passion for analytical instrumentation. While developing novel spectroscopic imaging techniques, including Raman and FT-IR, I discovered my desire to share technologies that solve real-world problems.

This led me to co-found Spectral Dimensions, a company focused on providing innovative spectroscopic solutions. Over the course of seven years, I played a pivotal role in the company's growth, eventually assuming the position of Vice President of Operations. This experience not only deepened my understanding of the business side of spectroscopy but also reinforced my commitment to introducing cutting-edge technologies to the industry, with a particular emphasis on molecular spectroscopy and particle characterization.

Currently, I am Life Science Business Development Manager at HORIBA where I have the privilege of exploring how unique technologies align with the unmet needs in life science. This role has been incredibly fulfilling, allowing me to merge my passion for innovation with the opportunity to address real challenges faced by practitioners in the field. It constantly reminds me of the initial spark that ignited my love for this business.

I've kept active in the broader scientific community, supporting spectroscopy and analytical chemistry through leadership roles in several professional societies. I was General Chair of the Virtual SciX conference in 2020 and served as the Molecular Spectroscopy Section Chair for five years. I have served two non-consecutive terms on the Governing Board of the Society for Applied Spectroscopy and coordinated the Tour Speakers Program twice. I have also served the Coblentz Society in several roles: on the Board of Managers, head of the Finance Committee, as Coblentz Program coordinator for EAS, on the Williams Wright Award Committee, and Chair of the Coblentz Award Committees. I'm a member of ASTM E13 as well as E55 and have participated in NSF and NASA workshops.

Karl Booksh
Biography

I have been a professor of chemistry at the University of Delaware since 2007. Prior, I was a professor at Arizona State University and did my postdoctoral studies at the University of South Carolina. I graduated with my doctorate in chemistry from the University of Washington, specializing in chemometrics applied to spectroscopic data. As an undergraduate, I attended the University of Alaska Fairbanks.

My research interests have always lay at the intersection between spectroscopy and data science. Perhaps the uniting theme of my research is applying spectroscopy for process analysis, whether the process is industrial, biomedical, or environmental. Early in my career I worked a lot with multiway analysis of excitation and emission matrix fluorescence data. I have enjoyed fruitful research projects developing novel surface plasmon resonance sensors, adapting spectroscopic sensors to monitor the chemistry of deep-sea hydrothermal vents, and applying Raman imaging to identify geochemical biomarkers. My current research centers on reimagining strategies for deploying handheld LIBS and XRF sensors for field-based analyses; we are interested in applying these sensors to determine the geospatial origin of mineral and botanical samples.

I have been a member of the Society for Applied Spectroscopy (SAS) since I was a graduate student. I have been privileged to serve the Society in a number of roles including President of the SAS (2021). I have served as the Chemometrics focus group treasurer (2016 - 2020), on the SAS Professional Certification Committee (2017–2018, Chair 2018), and have served on the SAS Fellows selection committee (2016). I have organized symposia in chemometrics, surface plasmon resonance spectroscopy, and other spectroscopic applications.

The two main challenges facing SAS are money and people. Trends in the publishing industry foretell a decline in revenue from traditional subscription-based journals, such as the model used for applied spectroscopy. Trends also show a decreasing identification by young professionals with the professional societies in their chosen field. The future of the society is contingent upon our ability to mitigate any deleterious outcomes from these trends.

Nancy Pleshko
Biography

Dr. Nancy Pleshko is a Laura H. Carnell Professor in the Department of Bioengineering and the Associate Dean of Research and Graduate Studies in the College of Engineering at Temple University, Philadelphia, Pennsylvania. She received her B.S. in Chemistry from McGill University, Montreal, Canada, and her Ph.D. in Chemistry from Rutgers University, New Jersey, in the field of infrared spectroscopic applications to biomineralization. She was the director of the Musculoskeletal Imaging and Spectroscopy Laboratory at the Hospital for Special Surgery, an affiliate of Weill Cornell Medical School in New York City, for 15 years

prior to joining Temple University in 2009. At Temple, her research program focuses on assessment of biological tissues at the molecular, cellular, and structural level through application and development of optical spectroscopic approaches in concert with complementary techniques. Her research program encompasses basic and translational research in connective tissue pathophysiology, including studies of osteoarthritis and cartilage repair, tissue engineering, osteoporosis and osteogenesis imperfecta, and biomaterials. Dr. Pleshko's work has been funded by the National Institutes of Health continuously since 1997, and she has published over 150 peer-reviewed articles. She has been a member of the Society for Applied Spectroscopy and has attended annual meetings for approximately 15 years, has served as a session organizer for the annual meeting, and is a member of the Editorial Board for the journal Applied Spectroscopy. In addition, she was selected and served actively as a Society of Applied Spectroscopy Tour Speaker, providing educational research-level seminars to undergraduate and graduate students in chemistry.

Daniel Willett
Biography

Dr. Daniel Willett is a Senior Research Scientist in the Division of Complex Drug Analysis within the Office of Pharmaceutical Quality. He holds a Ph.D. in Analytical Chemistry from Clemson University and embarked on his FDA career in 2016 as an ORISE Research Fellow, ultimately deciding to make it his long-term professional home. With a focus on spectroscopic and imaging-based approaches, coupled with multivariate data analysis techniques, Daniel has been instrumental in developing a comprehensive toolbox for physicochemical analysis of pharmaceutical products on both the nano and macro scales.

Throughout his academic and professional journey, Daniel has demonstrated his commitment to advancing the field of spectroscopy. He has authored/co-authored 20 peer-reviewed articles, with a significant portion of his research conducted at the FDA. His expertise and contributions in the applied spectroscopy field have been recognized within the scientific community.

Daniel's involvement with the Society of Applied Spectroscopy (SAS) spans several years. He first connected with SAS at a social event for students during the 2014 Pittcon. Since then, his engagement with SAS has evolved from volunteering and actively participating as a graduate student to taking on more significant roles. Notably, he played a key part in establishing the student chapter at Clemson and has been actively involved in the website committee and the local St. Louis chapter since commencing his professional career.

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 konnorkjones@gmail.com.
